Doc 9284
AN/905

Technical Instructions for the Safe Transport of Dangerous Goods by Air

Approved and published by
decision of the Council of ICAO

2009 – 2010 Edition

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Published in separate English, Chinese, French,
Russian and Spanish editions by the
INTERNATIONAL CIVIL AVIATION ORGANIZATION
999 University Street, Montréal, Quebec, Canada H3C 5H7

For ordering information and for a complete listing of sales agents
and booksellers, please go to the ICAO website at www.icao.int

2009–2010 Edition

ICAO Doc 9284, Technical Instructions for the Safe Transport of Dangerous Goods by Air
Order Number: Doc 9284
ISBN 978-92-9231-176-6
ISSN 1726-6181

FOREWORD

RELATIONSHIP TO ANNEX 18 TO THE CHICAGO CONVENTION

The broad principles governing the international transport of dangerous goods by air are contained in Annex 18 to the Convention on International Civil Aviation — *The Safe Transport of Dangerous Goods by Air*. These Technical Instructions amplify the basic provisions of Annex 18 and contain all the detailed instructions necessary for the safe international transport of dangerous goods by air. Interested persons may purchase copies of Annex 18 from ICAO at the following address:

International Civil Aviation Organization
Attention: Document Sales Unit
999 University Street
Montréal, Quebec
Canada H3C 5H7

VARIATIONS FROM THE TECHNICAL INSTRUCTIONS

In accordance with the provisions of Annex 18, 2.5, Contracting States are required to notify ICAO of those cases where they have adopted provisions different from those contained in these Instructions. The variations which have been notified by States are listed in Attachment 3, together with notified variations from airline operators.

UPDATING PROCEDURE

≠ It is intended that the Technical Instructions be kept up to date by an ICAO body of experts. For this purpose, the ICAO Dangerous Goods Panel will continue to meet periodically to review comments received from States and interested international organizations, to consider any changed recommendations of the United Nations Subcommittee of Experts on the Transport of Dangerous Goods or the International Atomic Energy Agency, and to prepare revised editions of the Technical Instructions. Amendments recommended by the Dangerous Goods Panel will be reviewed by the Air Navigation Commission. The Council of ICAO will then consider, with a view to approval, the amended version of the Technical Instructions and authorize their publication. Amendments will be made available on www.icao.int/anb/fls/dangerousgoods.

OPERATIONAL USE OF THE TECHNICAL INSTRUCTIONS

≠ This edition of the Technical Instructions is required to be used for operations from 1 January 2009 and will remain valid until 31 December 2010 or until such later time as a new edition becomes valid.

GENERAL PRINCIPLES USED IN DEVELOPING THE PROVISIONS OF THE TECHNICAL INSTRUCTIONS

Dangerous goods can be carried safely by air transport providing certain principles are adopted. These principles have been used in developing these Technical Instructions and are set out below; they are intended to facilitate transport while giving a level of safety such that dangerous goods can be carried without placing an aircraft or its occupants at risk, providing all the requirements are fulfilled. They try to ensure that should an incident occur it cannot lead to an accident.

In general, dangerous goods are divided into various classes or divisions according to the hazard they present. A detailed list of individual commodities is shown which indicates the class or division into which each commodity falls as well as its acceptability for transport by air and under what conditions. Since such a list cannot be exhaustive, it also includes various generic or “not otherwise specified” entries to assist in the transport of those commodities not specifically listed by name.

Some dangerous goods are identified as too dangerous ever to be carried on any aircraft; some are forbidden in normal circumstances but may be carried with specific approval from the States concerned; some are restricted to carriage only on all-cargo aircraft; but most may be carried on both passenger and all-cargo aircraft, subject to meeting the required conditions. Those restricted to all-cargo aircraft are either in larger quantities than allowed on passenger aircraft or are forbidden on such aircraft; their transport is permitted due to their being usually accessible in flight and to the ability of the flight crew to consider a greater range of actions in an emergency than is possible on passenger aircraft.

The provisions are based on material produced by the United Nations, which is contained in the Recommendations on the Transport of Dangerous Goods (ST/SG/AC.10/1), the Recommendations on the Transport of Dangerous Goods: Tests and

Criteria (ST/SG/AC.10/11), and, for radioactive materials, the International Atomic Energy Agency Regulations for the Safe Transport of Radioactive Material (TS-R-1 (ST-1, Revised)). Using a United Nations system ensures compatibility between the international modes of transport so a consignment may be carried by more than one mode without intermediate reclassification and repacking. Modifications are made to the system to take account of the peculiarities of air transport, while keeping in mind the need to ensure modal compatibility.

There are packing requirements of a general nature and packing instructions which, together, are intended to ensure that the safety of dangerous goods in air transport is assured by their packagings and the way in which they are packed. The packing requirements apply in almost all circumstances; the packing instructions mostly use UN packagings but sometimes these are not required, for instance when dangerous goods are in limited quantities. There is usually a wide choice of inner and outer packagings and single packagings are often permitted; sometimes, however, very restrictive packagings or only one or two types are permitted, or triple packagings are required. Generally, the quantity which can be put into an inner packaging and a complete package is strictly controlled. This is to minimize the inherent risk presented by the dangerous goods so that if an incident should occur, the situation would not produce an unacceptable hazard or lead to injury or major property damage.

After dangerous goods have been packed, the packages are marked with essential information, including the proper shipping name and UN number, and labels depicting all the potential hazard(s) of the contents are affixed. This is to ensure packages containing dangerous goods can be recognized and warning given of the potential hazard(s) without relying on information on accompanying documents. A dangerous goods transport document accompanies most consignments to provide detailed information about the goods so that, if required, there is a separate means of identifying the contents of packages.

There is generally no restriction on the number of packages of dangerous goods which can be loaded on an aircraft but there are provisions for their stowage. Incompatible dangerous goods are segregated and most are separated from passengers. The pilot-in-command is informed of what is on board an aircraft since, among other things, in an emergency the dangerous goods need to be considered when deciding on action. If an in-flight emergency does occur, the pilot-in-command needs to convey information to the air traffic services, in order to aid the response to such an accident or incident. In the event of an accident or incident, information is provided by the operator to the relevant authority as quickly as possible so as to ensure that any hazard arising from damage to the dangerous goods is minimized.

Dangerous goods accidents and incidents have to be reported so that an investigation by a relevant authority can establish the cause and take action to prevent a recurrence, wherever possible. In particular, any weakness or error in the Technical Instructions has to be identified.

Training is an important aid to achieving an understanding of the philosophy and requirements of the Technical Instructions. There is a need for everyone concerned to receive training on the subject either for general familiarization or to provide detailed knowledge, so that the responsibilities of the individual can be met. Dangerous goods are very unlikely to cause a problem when they are prepared and handled in compliance with the Technical Instructions.

USE OF THE TECHNICAL INSTRUCTIONS

The Technical Instructions are divided into eight Parts, with each Part divided into Chapters and each Chapter divided into paragraphs and subparagraphs.

Within each Chapter, the Chapter number is incorporated into all of the paragraph numbers; thus, in Chapter 3, paragraph 2 carries the number “3.2”. When referring to a paragraph, it is necessary to identify the appropriate Part; if the above example were located in Part 2, the reference to it would be shown as “2;3.2” (that is, Part 2; Chapter 3, paragraph 3.2).

Figures and Tables are numbered sequentially within the Part in which they appear. Thus the second figure appearing in Part 4 is identified as “Figure 4-2” and the first table appearing in Part 3 is identified as “Table 3-1”.

≠ Use of the Technical Instructions will be facilitated by reference to the detailed Index in Attachment 5.

The detailed content of the Technical Instructions gives all the necessary provisions to enable a consignment of dangerous goods to be correctly prepared for air transport. However, to assist the user of this document, the following step-by-step procedure is given for guidance to ensure all the applicable requirements for classifying, packing, labelling, marking and documenting are met.

It should be noted that the information given below is for guidance only and the relevant sections should be checked to ascertain their relevance to each consignment.

1. Determine the correct technical name or composition of the substance or the description of the article.

2. Ascertain whether the name or composition of the substance or article appears in Table 3-1 and if so what is the proper shipping name.

3. If the substance or article does not appear in Table 3-1, determine the class or division into which it falls by comparing its known properties with the definitions for the various classes, which are given in Part 2, Chapters 1 to 9. If the properties are not known, tests should be carried out to determine the appropriate class or division. If the article or substance is not listed by name in Table 3-1 and does not meet the definition of any of the classes, it is not subject to these requirements for the transport of dangerous goods. For substances or articles with multiple hazards, the

provisions of Part 2, Introductory Chapter should be followed. Once all the properties of the substance or article are known, determine whether it is forbidden for transport under any circumstance according to the provisions of 1;2.1. If the substance or article does not come within the provisions of 1;2.1, determine the proper shipping name from the most appropriate of the n.o.s. entries in Table 3-1. Information on n.o.s. entries is given in Part 2, Introductory Chapter.

≠ 4. If it is desired to transport the substance or article under the provisions for excepted quantities, all the requirements of 3;5 must be met. The substance or article will then not be subject to any of the other requirements of the Technical Instructions other than those listed in 3;5.1.1.

5. If it is desired to transport the substance or article under the provisions for limited quantities, all the requirements of 3;4 must be met and also all the applicable requirements of the Technical Instructions, except where otherwise provided for in 3;4.

6. If the substance or article is not to be transported as an excepted quantity or a limited quantity, determine whether it is desired to transport it on passenger or cargo aircraft.

≠ 7. From the information given in columns 10 to 13 of Table 3-1, ascertain whether or not the substance or article is forbidden for transport on passenger aircraft or on both passenger and cargo aircraft.

8. If the substance or article is shown as forbidden for transport on either passenger aircraft or both passenger and cargo aircraft, ascertain whether it could be subject to an exemption under the provisions of 1;1.1.2, by consulting the appropriate national authority. If the substance or article is forbidden for transport on passenger aircraft, determine whether it can be transported on cargo aircraft.

≠ 9. If it is desired to transport the substance or article on passenger aircraft and this is not forbidden and the quantity per package does not exceed the permitted maximum net quantity per package given in column 11 of Table 3-1, determine the packing instruction number, quantity limitation, special provisions and any State or operator variations as shown in Tables 3-1 and 3-2 and Attachment 3.

10. If it is desired to transport the substance or article on a cargo aircraft or if it can only be carried on such aircraft, determine the packing instruction number, quantity limitation, special provisions and any State or operator variations as shown in Tables 3-1 and 3-2 and Attachment 3.

11. Determine the packing details from the relevant information or packing instruction in Part 4 and any special requirements from Part 2, Chapters 1 to 9 and Part 5, Chapter 1.

12. Select, where permitted, a method of packing from the packing instruction, or ascertain the provisions of the instruction and ensure the packagings to be used meet all the relevant requirements of Part 4, Chapter 1 and Part 6.

13. Prepare the consignment in accordance with all the relevant requirements of paragraphs 9 to 12 above.

14. Ensure all the appropriate labels and markings are affixed to or printed on the packages according to Part 5, Chapters 2 and 3.

15. Make any appropriate advance arrangements in accordance with Part 5, Chapter 1.

16. Prepare the transport documents and complete and sign the dangerous goods transport document in accordance with Part 5, Chapter 4.

17. Offer the complete consignment for transport by air.

THE SUPPLEMENT TO THE TECHNICAL INSTRUCTIONS

A Supplement to the Technical Instructions provides information on the safe transport of dangerous goods by air that is primarily of interest to States. Publishing this information in a separate document eliminates from the Technical Instructions material which the average user has neither the need nor the desire to know. The size and complexity of the Technical Instructions is thereby reduced and its comprehensibility enhanced. Examples of the subjects dealt with in the Supplement are guidance for the issue of certain exemptions or approvals by States and the reporting of dangerous goods accidents and incidents to ICAO by Contracting States.

The Supplement is published at the same time as the Technical Instructions and is distributed to the aviation administrations of all the Contracting States of ICAO. However, it is recognized that there may be occasions when the information in the Supplement might be helpful to other readers. Copies can be purchased from the Regional Offices of ICAO or from the Headquarters of ICAO using the following address:

International Civil Aviation Organization
Attention: Document Sales Unit
999 University Street
Montréal, Quebec
Canada H3C 5H7

≠ **THE 2009-2010 EDITION**

The Technical Instructions have been amended to make them as up to date as possible and to clarify, where necessary, the intent of the requirements. Account has been taken of comments received from users throughout the world. This has resulted in numerous minor changes in all parts of the book.

≠ It is intended, for the time being, to continue issuing new versions of the Technical Instructions biennially. This is the twelfth biennial edition of the Technical Instructions and it will be valid for two years, i.e. from 1 January 2009 to 31 December 2010 or until such later time as a new edition becomes valid.

≠ The requirements have been amended so as to align them, as far as possible, with the Fifteenth Revised Edition of the United Nations *Recommendations on the Transport of Dangerous Goods* and the *International Atomic Energy Agency (IAEA) Regulations for the Safe Transport of Radioactive Material,* as incorporated therein.

≠ The amendments include the following:

— revision and clarification of recurrent training requirements (1;4.2.3);

— consolidation of general provisions concerning Class 7 into one new chapter (1;6)

— addition of new classification criteria for environmentally hazardous substances (2;9.2);

— revision of provisions for lithium batteries (3;2, 3;3, 4;11, 5;3, 8;1);

— revisions to special provisions (3;3);

— revision, addition and transfer of excepted quantity provisions into a new chapter (3;5);

— addition of new packing instructions for fuel cells in Divisions 2.1, 4.3 and Class 8 (4;4, 4;6, 4;10);

— revision of “cargo aircraft only” label (Figure 5-25);

— addition of provisions to allow for electronic documentation (5;4);

— revision of acceptance requirements (7;1);

— revision of requirements for the storage and loading of dangerous goods (7;2.4);

— revision of requirements for the provision of information related to dry ice to the pilot-in-command (7;4.1);

— addition of requirements for information to passengers (7;5.1.2);

— restructuring of the provisions for dangerous goods carried by passengers and crew (8;1.1);

— addition of new requirement making the carriage of dry ice by passenger or crew subject to approval by the operator (8;1.1);

— addition of provision for the carriage of fuel cells containing hydrogen in metal hydrides by passengers and crew under certain conditions (8;1.1);

Note.— Reformatted packing instructions have been developed which will become applicable from 1 January 2011. They are presented in a new attachment as advance notification (Attachment 4).

ABBREVIATIONS AND SYMBOLS

The abbreviations and symbols in the following table are used throughout the Instructions, or in the particular sections indicated, and have the meanings shown below.

Abbreviation or symbol	*Meaning*
A/m	amperes per metre
Bq	becquerel
cm	centimetre
°C	degree Celsius
G	gross mass as prepared for transport (as used in columns 11 and 13 of Table 3-1)
g/m^2	grams per square metre
Gy	gray
Hz	hertz
IAEA	International Atomic Energy Agency

IP	inner packaging
ISO	the International Organization for Standardization
J/g	joules per gram
J/kg	joules per kilogram
K	kelvin
kg	kilogram
kgf	kilogram-force
kPa	kilopascal
L	litre
LC	lethal concentration
LD	lethal dose
L/kg	litres per kilogram
m	metre
mL	millilitre
mm	millimetre
mS/m	millisiemens per metre
N	newton
n.o.s.	not otherwise specified
Ω/m	ohm per metre
SI	the International System of Units developed by the General Conference of Weights and Measures (Système international d'unités)
Sv	sievert
UN	the United Nations Committee of Experts on the Transport of Dangerous Goods
W/m^2	watts per square metre
W/m/K	Watts per metre per Kelvin
µm	micrometre

≠	this symbol indicates changed text
+	this symbol indicates new or relocated text
>	this symbol indicates deleted text

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Part 1

GENERAL

Chapter 1

SCOPE AND APPLICABILITY

Parts of this Chapter are affected by State Variations AE 3, BE 2, BE 4, BE 5, CA 6, CA 12, CH 3, DE 1, DE 4, FR 3, GB 2, IN 1, IR 1, IT 1, IT 5, NL 3, NL 6, US 1, VC 1, VC 2, VC 3, VU 2; see Table A-1

Note.— Recommendations on Tests and Criteria, which are incorporated by reference into certain provisions of these Instructions, are published as a separate Manual (*United Nations* Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria) *(ST/SG/AC.10/11/Rev.4), the contents of which are:*

Part I. Classification procedures, test methods and criteria relating to explosives of Class 1;

Part II. Classification procedures, test methods and criteria relating to self-reactive substances of Division 4.1 and organic peroxides of Division 5.2; and

Part III. Classification procedures, test methods and criteria relating to substances or articles of Class 3, Class 4, Division 5.1 and Class 9.

Appendices. Information common to a number of different types of tests and national contacts for test details.

1.1 GENERAL APPLICABILITY

1.1.1 These *Technical Instructions for the Safe Transport of Dangerous Goods by Air*, referred to herein as the "Instructions", prescribe the detailed requirements applicable to the international civil transport of dangerous goods by air. Any addenda to this edition of the ICAO *Technical Instructions for the Safe Transport of Dangerous Goods by Air* issued by ICAO constitute part of these Instructions.

1.1.2 In cases of extreme urgency, or when other forms of transport are inappropriate, or full compliance with the prescribed requirements is contrary to public interest, the States concerned may grant exemptions from the provisions of the Instructions provided that in such cases every effort is made to achieve an overall level of safety in transport, which is equivalent to the level of safety provided by these Instructions. The States concerned are the States of Origin, transit, overflight and destination of the consignment, and the State of the Operator. For the State of overflight, if none of the criteria for granting an exemption are relevant, an exemption may be granted based solely on whether it is believed that an equivalent level of safety in air transport has been achieved.

Note 1.— Refer to 1;2.1 for dangerous goods forbidden for transport by air under any circumstance.

Note 2.— Unless otherwise provided for, exemptions may be granted to permit the carriage of dangerous goods that are identified in columns 10 and 11 or 12 and 13 of the Dangerous Goods List (Table 3-1) as being forbidden. Exemptions may also concern other parts of the Technical Instructions.

1.1.3 General exceptions

1.1.3.1 Except for 7;4.2, these Instructions do not apply to dangerous goods carried on an aircraft where the dangerous goods are:

≠ a) to provide, during flight, medical aid to a patient when those dangerous goods:

1) have been placed on board with the approval of the operator; or

2) form part of the permanent equipment of the aircraft when it has been adapted for specialized use;

providing that:

1) gas cylinders have been manufactured specifically for the purpose of containing and transporting that particular gas;

2) equipment containing wet cell batteries is kept and, when necessary, secured in an upright position to prevent spillage of the electrolyte;

Note.— For dangerous goods that passengers are permitted to carry as medical aid, see 8;1.1.2.

b) to provide, during flight, veterinary aid or a humane killer for an animal;

c) for dropping in connection with agricultural, horticultural, forestry or pollution control activities;

d) to provide, during flight, aid in connection with search and rescue operations;

e) vehicles carried in aircraft designed or modified for vehicle ferry operations and all of the following requirements are met:

1) authorization has been given by the appropriate authorities of the States concerned, and such authorities have prescribed specific terms and conditions for the particular operator's operation;

2) vehicles are secured in an upright position;

3) fuel tanks are so filled as to prevent spillage of fuel during loading, unloading and transit; and

4) adequate ventilation rates are maintained in the aircraft compartment in which the vehicle is carried;

f) required for the propulsion of the means of transport or the operation of its specialized equipment during transport (e.g. refrigeration units) or that are required in accordance with the operating regulations (e.g. fire extinguishers) (see 2.2).

1.1.3.2 Provision must be made to stow and secure dangerous goods transported under 1.1.3.1 a), b), c) and d) during take-off and landing and at all other times when deemed necessary by the pilot-in-command.

1.1.3.3 The dangerous goods must be under the control of trained personnel during the time when they are in use on the aircraft.

1.1.3.4 Dangerous goods transported under 1.1.3.1 a), b), c) and d) may be carried on a flight made by the same aircraft before or after a flight for the purposes identified above, when it is impracticable to load or unload the dangerous goods immediately before or after the flight, subject to the following conditions:

a) the dangerous goods must be capable of withstanding the normal conditions of air transport;

b) the dangerous goods must be appropriately identified (e.g. by marking or labelling);

c) the dangerous goods may only be carried with the approval of the operator;

d) the dangerous goods must be inspected for damage or leakage prior to loading;

e) loading must be supervised by the operator;

f) the dangerous goods must be stowed and secured in the aircraft in a manner that will prevent any movement in flight which would change their orientation;

g) the pilot-in-command must be notified of the dangerous goods loaded on board the aircraft and their loading location. In the event of a crew change, this information must be passed to the next crew;

h) all personnel must be trained commensurate with their responsibilities;

i) the provisions of 7;4.2 and 7;4.4 apply.

1.2 GENERAL TRANSPORT REQUIREMENTS

Except as otherwise provided for in these Instructions, no person may offer or accept dangerous goods for international civil transport by air unless those goods are properly classified, documented, certificated, described, packaged, marked, labelled and in the condition for shipment required by these Instructions. If a person performs a function required by these Instructions on behalf of the person who offers the dangerous goods for transport by air or on behalf of the operator, that person must perform that function in accordance with the requirements of these Instructions. No person may transport dangerous goods by air unless those goods are accepted, handled and transported in accordance with these Instructions. No person may label, mark, certify or offer a packaging as meeting the requirements of these Instructions unless that packaging is manufactured, fabricated, marked, maintained, reconditioned or repaired as required by these Instructions. No person shall carry dangerous goods or cause dangerous goods to be carried aboard an aircraft in either checked or carry-on baggage or on his/her person, unless permitted by 8;1.1.2.

Note.— When dangerous goods intended for air transport are carried by surface transport to or from an aerodrome, any other applicable national or modal transport requirements should be met in addition to those that are applicable for the goods when carried by air.

1.3 DANGEROUS GOODS PACKAGES OPENED BY CUSTOMS AND OTHER AUTHORITIES

Any package opened during an inspection must, before being forwarded to the consignee, be restored by qualified persons to a condition that complies with these Instructions.

>

1.4 RELATIONSHIP TO ANNEX 18

ICAO Standards and Recommended Practices related to the transport of dangerous goods are contained in Annex 18 to the Convention on International Civil Aviation. These Instructions contain the detailed technical material needed to support the broad provisions of Annex 18 (with Amendments 1 to 9) in order to provide a fully comprehensive set of international regulations.

1.5 REQUESTS FOR AMENDMENTS TO THE TECHNICAL INSTRUCTIONS

Any request for an amendment to the Technical Instructions must be submitted to the appropriate national authority. Requests for amendments should include the following information:

a) the text or substance of the amendment proposed or identification of the provision the petitioner seeks to have repealed, as appropriate;

b) a statement of the interest of the petitioner in the action requested; and

c) any information and arguments to support the action sought.

Chapter 2

LIMITATION OF DANGEROUS GOODS ON AIRCRAFT

Parts of this Chapter are affected by State Variations CA 5, CA 9, DQ 3, FR 8, GB 5, NL 2, US 2, VC 4; see Table A-1

2.1 DANGEROUS GOODS FORBIDDEN FOR TRANSPORT BY AIR UNDER ANY CIRCUMSTANCE

Any article or substance which, as presented for transport, is liable to explode, dangerously react, produce a flame or dangerous evolution of heat or dangerous emission of toxic, corrosive or flammable gases or vapours under conditions normally encountered in transport must not be carried on aircraft under any circumstance.

Note 1.— Certain dangerous goods known to meet the description above have been included in the Dangerous Goods List (Table 3-1) with the word "Forbidden" shown in columns 2 and 3. It must be noted, however, that it would be impossible to list all dangerous goods which are forbidden for transport by air under any circumstance. Therefore, it is essential that appropriate care be exercised to ensure that no goods meeting the above description are offered for transport.

Note 2.— Paragraph 2.1 is intended to include articles being returned to the manufacturer for safety reasons.

2.2 EXCEPTIONS FOR DANGEROUS GOODS OF THE OPERATOR

2.2.1 The provisions of these Instructions do not apply to the following:

a) articles and substances which would otherwise be classified as dangerous goods but which are required to be aboard the aircraft in accordance with the pertinent airworthiness requirements and operating regulations or that are authorized by the State of the Operator to meet special requirements;

b) aerosols, alcoholic beverages, perfumes, colognes, safety matches and liquefied gas lighters carried aboard an aircraft by the operator for use or sale on the aircraft during the flight or series of flights, but excluding non-refillable gas lighters and those lighters liable to leak when exposed to reduced pressure;

c) dry ice intended for use in food and beverage service aboard the aircraft.

2.2.2 Unless otherwise authorized by the State of the Operator, articles and substances intended as replacements for those referred to in 2.2.1 a), or articles and substances referred to in 2.2.1 a) which have been removed for replacement, must be transported in accordance with the provisions of these Instructions, except that when consigned by operators, they may be carried in containers specially designed for their transport, provided such containers are capable of meeting at least the requirements for the packagings specified in these Instructions for the items packed in the containers.

2.2.3 Unless otherwise authorized by the State of the Operator, articles and substances intended as replacements for those referred to in 2.2.1 b) and c) must be transported in accordance with the provisions of these Instructions.

2.3 TRANSPORT OF DANGEROUS GOODS BY POST

2.3.1 In accordance with the Universal Postal Union (UPU) Convention, dangerous goods as defined in these Instructions, with the exception of those listed below, are not permitted in mail. Appropriate national authorities should ensure that the provisions are complied with in relation to the transport of dangerous goods by air.

≠ 2.3.2 The following dangerous goods may be acceptable in mail for air carriage subject to the provisions of the appropriate national authorities concerned and these Instructions which relate to such material:

a) patient specimens as defined in 2;6.3.1.4 provided that they are classified, packed and marked as required by 2;6.3.2.3.6;

b) infectious substances assigned to category B (UN 3373) only, when packed in accordance with the requirements of Packing Instruction 650, and solid carbon dioxide (dry ice) when used as a refrigerant for UN 3373; and

c) radioactive material, the activity of which does not exceed one-tenth of that listed in Table 2-15.

≠

2.4 DANGEROUS GOODS IN EXCEPTED QUANTITIES

Small quantities of dangerous goods, as defined in Part 3, Chapter 5, are excepted from certain provisions of these Instructions subject to the conditions laid down in that chapter.

2.5 EXCEPTIONS FOR DANGEROUS GOODS PACKED IN LIMITED QUANTITIES

Dangerous goods packed in limited quantities are excepted from certain provisions of these Instructions subject to the conditions laid down in Part 3, Chapter 4.

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Chapter 3

GENERAL INFORMATION

Parts of this Chapter are affected by State Variation BE 1; see Table A-1

3.1 DEFINITIONS

3.1.1 The following is a list of definitions of commonly used terms in these Instructions. Definitions of terms which have their usual dictionary meanings or are used in the common technical sense are not included. Definitions of additional terms used solely in conjunction with radioactive material are contained in 2;7.1.3.

Aerosols or aerosol dispensers. Non-refillable receptacles meeting the requirements of 6;3.2.7, made of metal, glass or plastic and containing a gas, compressed, liquefied or dissolved under pressure, with or without a liquid, paste or powder, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state or in a gaseous state.

\+ ***Animal material.*** Animal carcasses, animal body parts or animal foodstuffs.

Appropriate national authority. Any authority designated, or otherwise recognized, by a State to perform specific functions related to provisions contained in these Instructions.

Approval. An authorization issued by the appropriate national authority for:

a) transport of those entries listed in Table 3-1 as forbidden on passenger and/or cargo aircraft to which Special Provision A1, A2 or A109 has been assigned in column 7; or

b) other purposes as specified in these Instructions.

Note.— Unless otherwise indicated, approval is only required from the State of Origin.

≠ ***Approval.*** For the transport of Class 7 material:

Multilateral approval. The approval by the relevant competent authority of the country of origin of the design or shipment, as applicable, and also, where the consignment is to be transported through or into any other country, approval by the competent authority of that country. The term “through or into” specifically excludes “over”, i.e. the approval and notification requirements must not apply to a country over which radioactive material is carried in an aircraft, provided that there is no scheduled stop in that country.

Unilateral approval. The approval of a design which is required to be given by the competent authority of the country of origin of the design only.

ASTM. The American Society for Testing and Materials (ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States).

Bags. Flexible packagings made of paper, plastic film, textiles, woven material or other suitable materials.

Boxes. Packagings with complete rectangular or polygonal faces, made of metal, wood, plywood, reconstituted wood, fibreboard, plastic or other suitable material. Small holes for purposes such as ease of handling or opening, or to meet classification requirements, are permitted as long as they do not compromise the integrity of the packaging during transport.

Bundles of cylinders. (See UN Recommendations, Chapter 1.2). Not permitted for air transport.

Cargo. Any property carried on an aircraft other than mail, stores and accompanied or mishandled baggage.

Cargo aircraft. Any aircraft, other than a passenger aircraft, which is carrying goods or property.

Closures. Devices which close an opening in a receptacle.

Combination packagings. A combination of packagings for transport purposes, consisting of one or more inner packagings secured in an outer packaging in accordance with the relevant provisions of Part 4.

≠ ***Competent authority.*** Any body or authority designated or otherwise recognized as such for any purpose in connection with these Instructions.

Note. — This applies to radioactive material only.

Compliance assurance. A systematic programme of measures applied by an appropriate authority which is aimed at ensuring that the provisions of these Instructions are met in practice.

Composite packagings. Packagings consisting of an outer packaging and an inner receptacle so constructed that the inner receptacle and the outer packaging form an integral packaging. Once assembled, it remains thereafter an integrated single unit; it is filled, stored, transported and emptied as such.

Note.— Composite packagings for the purpose of these Instructions are regarded as single packagings.

≠ ***Confinement system.*** For the transport of Class 7 material, the assembly of fissile material and packaging components specified by the designer and agreed to by the competent authority as intended to preserve criticality safety.

Consignee. Any person, organization or government which is entitled to take delivery of a consignment.

Consignment. One or more packages of dangerous goods accepted by an operator from one shipper at one time and at one address, receipted for in one lot and moving to one consignee at one destination address.

≠ ***Containment system.*** For the transport of Class 7 material, the assembly of components of the packaging specified by the designer as intended to retain the radioactive material during transport.

Control temperature. The maximum temperature at which the substance can be safely transported. It is assumed that during transport the temperature of the immediate surroundings of the package does not exceed 55°C and attains this value for a relatively short time only during each period of 24 hours.

Crates. Outer packagings with incomplete surfaces.

Note. — For air transport, crates may not be used as outer packagings of composite packagings.

Crew member. A person assigned by an operator to duty on an aircraft during a flight duty period.

Critical temperature. The temperature above which the substance cannot exist in the liquid state.

≠ ***Criticality safety index (CSI) assigned to a package, overpack or freight container containing fissile material***. For the transport of Class 7 material, a number which is used to provide control over the accumulation of packages, overpacks or freight containers containing fissile material.

Cryogenic receptacle. A transportable, thermally insulated receptacle for refrigerated liquefied gases, of a water capacity of not more than 1 000 litres.

Cylinders. Transportable pressure receptacles of a water capacity not exceeding 150 litres.

Dangerous goods. Articles or substances which are capable of posing a risk to health, safety, property or the environment and which are shown in the list of dangerous goods in these Instructions, or which are classified according to these Instructions.

Dangerous goods accident. An occurrence associated with and related to the transport of dangerous goods by air which results in fatal or serious injury to a person or major property damage.

Dangerous goods incident. An occurrence other than a dangerous goods accident associated with and related to the transport of dangerous goods by air, not necessarily occurring on board an aircraft, which results in injury to a person, property damage, fire, breakage, spillage, leakage of fluid or radiation or other evidence that the integrity of the packaging has not been maintained. Any occurrence relating to the transport of dangerous goods which seriously jeopardizes an aircraft or its occupants is also deemed to be a dangerous goods incident.

Note.— A dangerous goods accident or incident may also constitute an aircraft accident or incident as specified in Annex 13 — Aircraft Accident and Incident Investigation.

Dangerous goods security. Measures or precautions to be taken by operators, shippers and others involved in the transport of dangerous goods aboard aircraft to minimize theft or misuse of dangerous goods that may endanger persons or property.

≠ ***Design.*** For the transport of Class 7 material, the description of special form radioactive material, low dispersible radioactive material, package or packaging which enables such items to be fully identified. The description may include specifications, engineering drawings, reports demonstrating compliance with regulatory requirements, and other relevant documentation.

Drums. Flat-ended or convex-ended cylindrical packagings made of metal, fibreboard, plastic, plywood or other suitable materials. This definition also includes packagings of other shapes, e.g. round taper-necked packagings, or pail-shaped packagings. Jerricans are not covered by this definition.

Elevated temperature substance. A substance which is transported or offered for transport:

— in the liquid state at a temperature at or above 100°C;

— in the liquid state with a flashpoint above 60°C and which is intentionally heated to a temperature above its flashpoint; or

— in a solid state and at a temperature at or above 240°C.

***EN** (standard)*. A European standard published by the European Committee for Standardization (CEN) (CEN — 36 rue de Stassart, B-1050 Brussels, Belgium).

Exception. A provision in these Instructions which excludes a specific item of dangerous goods from the requirements normally applicable to that item.

≠ ***Exclusive use.*** For the transport of Class 7 material, the sole use, by a single shipper, of an aircraft or of a large freight container, in respect of which all initial, intermediate and final loading and unloading is carried out in accordance with the directions of the shipper or consignee.

Exemption. An authorization issued by an appropriate national authority providing relief from the provisions of these Instructions.

Note.— The requirements for exemptions are given in 1;1.1.2.

Explosive article. An article containing one or more explosive substances.

Explosive substance. A solid or liquid substance (or a mixture of substances) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Included are pyrotechnic substances even when they do not evolve gases. A substance which is not itself an explosive but which can form an explosive atmosphere of gas, vapour or dust is not included.

Filling ratio. The ratio of the mass of gas to the mass of water at 15°C that would fill completely a pressure receptacle fitted ready for use.

Flash point. The lowest temperature of a liquid at which flammable vapour is given off in a test vessel in sufficient concentration to be ignited in air when exposed momentarily to a source of ignition.

Note.— Some test methods are listed in 2;3.3.

Flight crew member. A licensed crew member charged with duties essential to the operation of an aircraft during a flight duty period.

Freight container. See unit load device.

Note.— For the definition of freight container for radioactive material, see 2;7.1.3.

Freight container in the case of radioactive material transport. An article of transport equipment designed to facilitate the transport of packaged goods by one or more modes of transport without intermediate reloading, which is of a permanent enclosed character, rigid and strong enough for repeated use, and must be fitted with devices facilitating its handling, particularly in transfer between aircraft and from one mode of transport to another. A small freight container is that which has either an overall outer dimension less than 1.5 m, or an internal volume of not more than 3 m^3. Any other freight container is considered to be a large freight container. For the transport of Class 7 material, a freight container may be used as a packaging.

Freight forwarder. A person or organization who offers the service of arranging the transport of cargo by air.

GHS. The first revised edition of the *Globally Harmonized System of Classification and Labelling of Chemicals*, published by the United Nations as document ST/SG/AC.10/30/Rev. 2.

Gross mass. The total mass of the package.

IAEA. The International Atomic Energy Agency (IAEA, P.O. Box 100 — A-1400 Vienna, Austria).

ID number. A temporary identification number for entries in Table 3-1 — Dangerous Goods List — which have not been assigned a UN number.

IEC. The International Electrotechnical Commission (IEC, 3, rue de Varembé, P.O. Box 131, CH-1211 Geneva 20, Switzerland).

IMO. The International Maritime Organization (IMO, 4 Albert Embankment, London SE1 7SR, United Kingdom).

Incompatible. Describing dangerous goods which, if mixed, would be liable to cause a dangerous evolution of heat or gas or produce a corrosive substance.

Inner packagings. Packagings for which an outer packaging is required for transport.

Inner receptacles. Receptacles which require an outer packaging in order to perform their containment function.

Inspection body. An independent inspection and testing body approved by the appropriate national authority.

Intermediate bulk containers (IBCs). (See UN Recommendations, Chapter 1.2). Not permitted for air transport.

Intermediate packagings. Packagings placed between inner packagings or articles and an outer packaging.

International System of Units (SI). A rational and coherent system of units which provides the basis for the units of measurement used for air and ground operations as contained in Annex 5 to the Convention on International Civil Aviation.

ISO (standard). An international standard published by the International Organization for Standardization (ISO — 1, rue de Varembé, CH-1204 Geneva 20, Switzerland).

Jerricans. Metal or plastic packagings of rectangular or polygonal cross-section.

Large packagings. (See UN Recommendations, Chapter 1.2). Not permitted for air transport.

Liner. A separate tube or bag inserted into a packaging but not forming an integral part of it, including the closures of its openings.

Liquids. Dangerous goods which at 50°C have a vapour pressure of not more than 300 kPa (3 bar), which are not completely gaseous at 20°C and at a pressure of 101.3 kPa, and which have a melting point or initial melting point of 20°C or less at a pressure of 101.3 kPa. A viscous substance for which a specific melting point cannot be determined must be subjected to the ASTM D 4359-90 test; or to the test for determining fluidity (penetrometer test) prescribed in section 2.3.4 of Annex A of the *European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR)* (United Nations publication: ECE/TRANS/175).

Low dispersible radioactive material. A solid radioactive material or a solid radioactive material in a sealed capsule, that has limited dispersibility and is not in powder form.

Mail. Dispatches of correspondence and other items tendered by, and intended for delivery to, postal services in accordance with the rules of the Universal Postal Union (UPU).

Manual of Tests and Criteria. The fourth revised edition of the United Nations publication entitled *Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria* (ST/SG/AC.10/11/REV.4).

Maximum capacity. The maximum inner volume of receptacles or packagings expressed in litres.

Maximum net mass. The maximum net mass of contents in a single packaging or maximum combined mass of inner packagings and the contents thereof expressed in kilograms.

≠ ***Maximum normal operating pressure.*** For the transport of Class 7 material, the maximum pressure above atmospheric pressure at mean sea level that would develop in the containment system in a period of one year under the conditions of temperature and solar radiation corresponding to environmental conditions in the absence of venting, external cooling by an ancillary system, or operational controls during transport.

Multiple-element gas containers (MEGCs). (See UN Recommendations Chapter 1.2). Not permitted for air transport.

Net quantity. The mass or volume of the dangerous goods contained in a package excluding the mass or volume of any packaging material, except in the case of explosive articles and of matches where the net mass is the mass of the finished article excluding packagings.

Open cryogenic receptacle. A metal vacuum insulated vessel, dewar or flask that is vented to the atmosphere to prevent pressure build-up.

Operator. A person, organization or enterprise engaged in or offering to engage in an aircraft operation.

Outer packaging. The outer protection of a composite or combination packaging together with any absorbent materials, cushioning and any other components necessary to contain and protect inner receptacles or inner packagings.

Overpack. An enclosure used by a single shipper to contain one or more packages and to form one handling unit for convenience of handling and stowage.

Note.— A unit load device is not included in this definition.

Package. The complete product of the packing operation, consisting of the packaging and its contents prepared for transport.

≠ ***Packaging.*** One or more receptacles and any other components or materials necessary for the receptacles to perform their containment and other safety functions.

Note.— For radioactive material, see 2;7.1.3.

Passenger aircraft. An aircraft that carries any person other than a crew member, an operator's employee in an official capacity, an authorized representative of an appropriate national authority or a person accompanying a consignment or other cargo.

Pilot-in-command. The pilot designated by the operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight.

Portable tanks. For the definition of portable tanks, see Part S-4, Chapter 12 of the Supplement.

Pressure drums. *(*See UN Recommendations, Chapter 1.2). Not permitted for air transport.

Pyrotechnic substance. A mixture or compound designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonative, self-sustaining, exothermic, chemical reactions.

Quality assurance. A systematic programme of controls and inspections applied by any organization or body which is aimed at providing adequate confidence that the standard of safety prescribed by these Instructions is achieved in practice.

≠ ***Radiation level.*** For the transport of Class 7 material, the corresponding dose rate expressed in millisieverts per hour.

≠ ***Radioactive contents.*** For the transport of Class 7 material, the radioactive material together with any contaminated or activated solids, liquids, and gases within the packaging.

Receptacles. Containment vessels for receiving and holding substances or articles, including any means of closing.

Reconditioned packagings include:

a) metal drums that are:

i) cleaned to original materials of construction, with all former contents, internal and external corrosion, and external coatings and labels removed;

ii) restored to original shape and contour, with chimes (if any) straightened and sealed, and all non-integral gaskets replaced; and

iii) inspected after cleaning but before painting, with rejection of packagings with visible pitting, significant reduction in material thickness, metal fatigue, damaged threads or closures, or other significant defects;

b) plastic drums and jerricans that:

i) are cleaned to original materials of construction, with all former contents, external coatings and labels removed;

ii) have all non-integral gaskets replaced; and

iii) are inspected after cleaning with rejection of packagings with visible damage such as tears, creases or cracks, or damaged threads or closures or other significant defects.

Note.— It is anticipated that further examples will be added in future.

Recycled plastic material. Material recovered from used industrial packagings that has been cleaned and prepared for processing into new packagings. The specific properties of the recycled material used for production of new packagings must be assured and documented regularly as part of a quality assurance programme recognized by the appropriate national authority. The quality assurance programme must include a record of proper pre-sorting and verification that each batch of recycled plastic material has the proper melt flow rate, density, and tensile yield strength, consistent with that of the design type manufactured from such recycled material. This necessarily includes knowledge about the packaging material from which the recycled plastic has been derived, as well as awareness of the prior contents of those packagings if those prior contents might reduce the capability of new packagings produced using that material. In addition, the packaging manufacturer's quality assurance programme must include performance of the mechanical design type test in Part 6, Chapter 4 on packagings manufactured from each batch of recycled plastic material. In this testing, stacking performance may be verified by appropriate dynamic compression testing rather than static load testing.

\+ *Note.— ISO 16103:2005 "Packaging — Transport packages for dangerous goods — Recycled plastics material", provides additional guidance on procedures to be followed in approving the use of recycled plastics material.*

Remanufactured packagings include:

a) metal drums that:

i) are produced as a UN type from a non-UN type;

ii) are converted from one UN type to another UN type; or

iii) undergo the replacement of integral structural components (such as non-removable heads);

b) plastic drums that:

i) are converted from one UN type to another UN type (e.g. 1H1 to 1H2); or

ii) undergo the replacement of integral structural components.

Remanufactured drums are subject to the same requirements of these Instructions as apply to a new drum of the same type.

Reused packagings. Packagings to be refilled which have been examined and found free of defects affecting the ability to withstand the performance tests; the term includes those which are refilled with the same or similar compatible contents and are transported within distribution chains controlled by the shipper of the product.

Salvage packagings. Special packagings into which damaged, defective, leaking or nonconforming dangerous goods packages, or dangerous goods that have spilled or leaked, are placed for purposes of transport for recovery or disposal.

Self-accelerating decomposition temperature (SADT). The lowest temperature at which self-accelerating decomposition may occur with a substance in the packaging as used in transport.

Serious injury. An injury which is sustained by a person in an accident and which:

a) requires hospitalization for more than 48 hours, commencing within seven days from the date the injury was received; or

b) results in a fracture of any bone (except simple fractures of fingers, toes or nose); or

c) involves lacerations which cause severe haemorrhage, nerve, muscle or tendon damage; or

d) involves injury to any internal organ; or

e) involves second or third degree burns, or any burns affecting more than 5 per cent of the body surface; or

f) involves verified exposure to infectious substances or injurious radiation.

Settled pressure. The pressure of the contents of a pressure receptacle in thermal and diffusive equilibrium.

Shipment. The specific movement of a consignment from origin to destination.

Siftproof packagings. Packagings impermeable to dry contents including fine solid material produced during transport.

Single packagings. Packagings which do not require any inner packaging to perform their containment function during transport.

Solid dangerous goods. Dangerous goods, other than gases, that do not meet the definition of Liquid dangerous goods.

State of Origin. The State in the territory of which the cargo was first loaded on an aircraft.

State of Registry. The State on whose register the aircraft is entered.

State of the Operator. The State in which the operator's principal place of business is located or, if there is no such place of business, the operator's permanent residence.

Stores (supplies). a) Stores (supplies) for consumption; and b) Stores (supplies) to be taken away.

Stores (supplies) for consumption. Goods, whether or not sold, intended for consumption by the passengers and the crew on board aircraft, and goods necessary for the operation and maintenance of aircraft, including fuel and lubricants.

Stores (supplies) to be taken away. Goods for sale to the passengers and the crew of aircraft with a view to being landed.

Tank. A tank container, portable tank, a road tank vehicle, a rail tank wagon or a receptacle intended to contain solids, liquids, or gases and has a capacity of not less than 450 litres when used for the transport of substances of Class 2. A tank container must be capable of being carried on land or on sea and of being loaded and discharged without the need of removal of its structural equipment, must possess stabilizing members and tie-down attachments external to the shell, and must be capable of being lifted when full.

Note 1. — These Technical Instructions *do not permit the use of a tank for the transport of radioactive material by air.*

Note 2. — The definition of "tank" does not include packages of uranium hexafluoride.

Test pressure. The required pressure applied during a pressure test for qualification or re-qualification.

+ ***Transport index (TI) assigned to a package, overpack or freight container.*** For the transport of Class 7 material, a number which is used to provide control over radiation exposure.

UNECE. The United Nations Economic Commission for Europe (UNECE, Palais des Nations, 8-14 avenue de la Paix, CH-1211 Geneva 10, Switzerland).

Unit load device. Any type of freight container, aircraft container, aircraft pallet with a net or aircraft pallet with a net over an igloo.

Note 1.— An overpack is not included in this definition.

Note 2.— A freight container for radioactive material is not included in this definition (see 2;7.1.3).

UN number. The four-digit number assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods to identify a substance or a particular group of substances.

Working pressure. The settled pressure of a compressed gas at a reference temperature of 15°C in a full pressure receptacle.

3.1.2 Clarifying examples for certain defined terms

The following explanations and examples are meant to assist in clarifying the use of some of the packaging terms defined in this section.

The definitions in this section are consistent with the use of defined terms throughout the Instructions. However, some of the defined terms are commonly used in other ways. This is particularly evident in respect of the term “inner receptacle” which has often been used to describe the “inners” of a combination packaging.

The “inners” of “combination packagings” are always termed “inner packagings” not “inner receptacles”. A glass bottle is an example of such an “inner packaging”.

The “inners” of “composite packagings” are normally termed “inner receptacles”. For example, the “inner” of a 6HA1 composite packaging (plastic material) is such an “inner receptacle” since it is normally not designed to perform a containment function without its “outer packaging” and is therefore not an “inner packaging”.

3.2 UNITS OF MEASUREMENT AND CONVERSION FACTORS

3.2.1 Units of measurement

The units of measurement to be used in the transport of dangerous goods by air are those specified by the International System (SI) as modified for international civil aviation by Annex 5 to the Chicago Convention. The primary units of mass and volume will be the kilogram (kg) and the litre (L) and the unit of pressure will be the kilopascal (kPa). Except as specifically provided for in these Technical Instructions, only those abbreviations for units of measurement that are indicated in this paragraph, or in Annex 5 to the Chicago Convention, may be used in the transport of dangerous goods by air.

Note.— Where measurements relating to radioactivity occur in these Instructions, the value is given in SI units followed, in parentheses, by the non-SI equivalent.

3.2.2 Non-SI equivalents

It is recognized that there are in existence many packagings which were designed and constructed for use with non-SI quantity limitations and that such packagings will continue to be used for some time to come. Table 1-1 therefore contains a list of authorized non-SI equivalents for quantity limitations expressed in SI units. It is stressed that these are not precise equivalents but are nevertheless acceptable based upon the likely availability of packaging.

3.2.3 Conversion factors

Precise conversion factors for commonly used SI units are given in Annex 5 to the Chicago Convention. Tables 1-2 and 1-3 show conversion factors, to four significant figures, for some units widely used in dangerous goods transport.

Table 1-1. Authorized equivalents

Volume		
Litres	*Imperial*	*U.S.*
0.5	1 pt	1 pt
1	1 qt	1 qt
2	2 qt	2 qt
2.5	5 pt	5 pt
5	1 gal	1.25 gal
10	2 gal	2.5 gal
15	3 gal	3.75 gal
20	4.25 gal	5 gal
25	5.5 gal	6.25 gal
30	6.5 gal	7.5 gal
42	9 gal	11 gal
50	11 gal	13 gal
60	13 gal	15 gal
100	22 gal	25 gal
120	26 gal	30 gal
220	48 gal	55 gal
250	55 gal	62.5 gal

Note.— Where quantities are specified in SI units of mass, for 500 kg or less, quantities expressed in pounds may be substituted on the basis of one pound per 500 grams.

Table 1-2. Conversion to SI units*

To convert	*to*	*Multiply by*
bar	kilopascals (kPa)	100.0
curie (Ci)	gigabecquerel (GBq)	37.00
degrees Fahrenheit	degrees Celsius (°C)	subtract 32°F and multiply by 5/9
feet	metres (m)	0.304 8
gallons (Imperial)	litres (L)	4.546
gallons (U.S. liquid)	litres (L)	3.785
inches	millimetres (mm)	25.40
kilogram-force (kgf)	newton (N)	9.807
kilograms per square centimetre	kilopascals (kPa)	98.07
oersted	amperes per metre (A/m)	79.58
ounces, fluid (Imperial)	millilitres (mL)	28.41
ounces, fluid (U.S.)	millilitres (mL)	29.57
pints (Imperial)	litres (L)	0.568 3
pints (U.S.)	litres (L)	0.473 2
pounds (avoirdupois)	kilograms (kg)	0.453 6
pounds per square inch	kilopascals (kPa)	6.895
quarts (Imperial)	litres (L)	1.137
quarts (U.S.)	litres (L)	0.946 4
rad	gray (Gy)	0.010 00
rem	sievert (Sv)	0.010 00

Table 1-3. Conversion from SI units*

To convert	*to*	*Multiply by*
amperes per metre (A/m)	oersted	0.012 57
degrees Celsius (°C)	degrees Fahrenheit	multiply by 9/5 and add 32°F
gray (Gy)	rad	100.0
kilograms (kg)	pounds	2.205
kilopascals (kPa)	bar	0.010 00
kilopascals (kPa)	kilograms per square centimetre	0.010 20
kilopascals (kPa)	pounds per square inch	0.145 0
litres (L)	gallons (Imperial)	0.220 0
litres (L)	gallons (U.S. liquid)	0.264 2
litres (L)	pints (Imperial)	1.760
litres (L)	pints (U.S.)	2.113
litres (L)	quarts (Imperial)	0.879 9
litres (L)	quarts (U.S.)	1.057
metres (m)	feet	3.281
millilitres (mL)	ounces, fluid (Imperial)	0.035 20
millilitres (mL)	ounces, fluid (U.S.)	0.033 81
millimetres (mm)	inches	0.039 37
newton (N)	kilogram-force (kgf)	0.1020
sievert (Sv)	rem	100.0
terabecquerel (TBq)	curie (Ci)	27.03

* Where a prefix is used, it indicates a multiplying factor as follows:

tera (T)	$\times 10^{12}$
giga (G)	$\times 10^{9}$
mega (M)	$\times 10^{6}$
kilo (k)	$\times 10^{3}$
milli (m)	$\times 10^{-3}$
micro (μ)	$\times 10^{-6}$
nano (n)	$\times 10^{-9}$

INTRODUCTORY NOTE

The successful application of regulations concerning the transport of dangerous goods and the achievement of their objectives are greatly dependent on the appreciation by all individuals concerned of the risks involved and on a detailed understanding of the regulations. This can only be achieved by properly planned and maintained initial and recurrent training programmes in the transport of dangerous goods for all persons concerned.

Chapter 4

TRAINING

Parts of this Chapter are affected by State Variations AE 2, CA 18, HK 1; see Table A-1

4.1 ESTABLISHMENT OF TRAINING PROGRAMMES

4.1.1 Initial and recurrent dangerous goods training programmes must be established and maintained by or on behalf of:

a) shippers of dangerous goods, including packers and persons or organizations undertaking the responsibilities of the shipper;

b) operators;

c) ground handling agencies which perform, on behalf of the operator, the act of accepting, handling, loading, unloading, transferring or other processing of cargo, mail or stores;

d) ground handling agencies located at an airport which perform, on behalf of the operator, the act of processing passengers;

e) agencies, not located at an airport, which perform, on behalf of the operator, the act of checking in passengers;

f) freight forwarders; and

g) agencies engaged in the security screening of passengers and their baggage and/or cargo, mail or stores.

4.1.2 Dangerous goods training programmes required by 4.1.1 b) must be subjected to review and approval by the appropriate authority of the State of the Operator. Dangerous goods training programmes required by other than 4.1.1 b) should be subjected to review and approval as determined by the appropriate national authority.

4.2 TRAINING CURRICULA

4.2.1 Personnel must receive training in the requirements commensurate with their responsibilities. Such training must include:

a) general familiarization training — which must be aimed at providing familiarity with the general provisions;

b) function-specific training — which must provide detailed training in the requirements applicable to the function for which that person is responsible; and

c) safety training — which must cover the hazards presented by dangerous goods, safe handling and emergency response procedures.

4.2.2 Training must be provided or verified upon the employment of personnel identified in the categories specified in Table 1-4.

≠ 4.2.3 Recurrent training must take place within 24 months of previous training to ensure knowledge is current. However, if recurrent training is completed within the final three months of validity of previous training, the period of validity extends from the date on which the recurrent training was completed until 24 months from the expiry date of that previous training.

4.2.4 A test to verify understanding must be undertaken following training. Confirmation that the test has been completed satisfactorily is required.

4.2.5 A record of training must be maintained which must include:

a) the individual's name;

b) the most recent training completion date;

c) a description, copy or reference to training materials used to meet the training requirements;

d) the name and address of the organization providing the training; and

e) evidence which shows that a test has been completed satisfactorily.

≠ The records of training must be retained for a minimum period of 36 months from the most recent training completion date and must be made available upon request to the appropriate national authority.

4.2.6 The subject matter relating to dangerous goods transport with which various categories of personnel should be familiar is indicated in Table 1-4.

\+ 4.2.7 Staff of operators not carrying dangerous goods as cargo, mail or stores must be trained commensurate with their responsibilities. The subject matter to which their various categories of staff should be familiar with is indicated in Table 1-5.

≠ **Table 1-4. Content of training courses for operators carrying dangerous goods as cargo**

≠ *Aspects of transport of dangerous goods by air with which they should be familiar, as a minimum*	*Shippers and packers*		*Freight forwarders*			*Operators and ground handling agents*						Security staff
	1	2	3	4	5	6	7	8	9	10	11	12
General philosophy	x	x	x	x	x	x	x	x	x	x	x	x
≠ Limitations	x		x	x	x	x	x	x	x	x	x	x
General requirements for shippers	x		x			x						
≠ Classification	x	x	x			x						x
List of dangerous goods	x	x	x			x				x		
Packing requirements	x	x	x			x						
Labelling and marking	x	x	x	x	x	x	x	x	x	x	x	x
Dangerous goods transport document and other relevant documentation	x		x	x		x	x					
Acceptance procedures						x						
Recognition of undeclared dangerous goods	x	x	x	x	x	x	x	x	x	x	x	x
Storage and loading procedures					x	x		x		x		
Pilots' notification						x		x		x		
Provisions for passengers and crew	x	x	x	x	x	x	x	x	x	x	x	x
Emergency procedures	x	x	x	x	x	x	x	x	x	x	x	x

KEY

1 — Shippers and persons undertaking the responsibilities of shippers
2 — Packers
3 — Staff of freight forwarders involved in processing dangerous goods
4 — Staff of freight forwarders involved in processing cargo, mail or stores (other than dangerous goods)
5 — Staff of freight forwarders involved in the handling, storage and loading of cargo, mail or stores
6 — Operator's and ground handling agent's staff accepting dangerous goods
7 — Operator's and ground handling agent's staff accepting cargo, mail or stores (other than dangerous goods)
≠ 8 — Operator's and ground handling agent's staff involved in the handling, storage and loading of cargo, mail or stores and baggage
9 — Passenger-handling staff
10 — Flight crew members and load planners
11 — Crew members (other than flight crew members)
≠ 12 — Security staff who are involved with the screening of passengers and their baggage and cargo, mail and stores, e.g. security screeners, their supervisors and staff involved in implementing security procedures

+ **Table 1-5. Content of training courses for operators not carrying dangerous goods as cargo**

Contents	7	8	9	10	11
General philosophy	X	X	X	X	X
Limitations	X	X	X	X	X
Labelling and marking	X	X	X	X	X
Dangerous goods transport document and other relevant documentation	X				
Recognition of undeclared dangerous goods	X	X	X	X	X
Provisions for passengers and crew	X	X	X	X	X
Emergency procedures	X	X	X	X	X

KEY

7 — Operator's and ground handling agent's staff accepting cargo, mail or stores (other than dangerous goods)
8 — Operator's and ground handling agent's staff involved in the handling, storage and loading of cargo, mail or stores (other than dangerous goods) and baggage
9 — Passenger handling staff
10 — Flight crew members and load planners
11 — Crew members (other than flight crew members)

≠ *Note 1. — Depending on the responsibilities of the person, the aspects of training to be covered may vary from those shown in Tables 1-4 and 1-5. For example, in respect of classification, staff involved in implementing security procedures (e.g. screeners and their supervisors) need only be trained in the general properties of dangerous goods.*

Note 2. — The categories of personnel identified in Tables 1-4 and 1-5 are not all encompassing. Personnel employed by or interacting with the aviation industry in areas such as passenger and cargo reservation centres, and engineering and maintenance, except when acting in a capacity identified in Table 1-4 or 1-5, should be provided with dangerous goods training in accordance with 4.2.

4.3 INSTRUCTOR QUALIFICATIONS

4.3.1 Unless otherwise provided for by the appropriate national authority, instructors of initial and recurrent dangerous goods training programmes must have adequate instructional skills and have successfully completed a dangerous goods training programme in the applicable category, or Category 6, prior to delivering such a dangerous goods training programme.

4.3.2 Instructors delivering initial and recurrent dangerous goods training programmes must at least every 24 months deliver such courses, or in the absence of this attend recurrent training.

Chapter 5

DANGEROUS GOODS SECURITY

Parts of this Chapter are affected by State Variation US 17; see Table A-1

Note.— This Chapter addresses the security responsibilities of operators, shippers and others involved in the transport of dangerous goods aboard aircraft. It should be noted that Annex 17 — Security*, provides comprehensive requirements for implementation of security measures by States to prevent unlawful interference with civil aviation or when such interference has been committed. In addition, the* Security Manual for Safeguarding Civil Aviation against Acts of Unlawful Interference *(Doc 8973 — Restricted) provides procedures and guidance on aspects of aviation security and is intended to assist States in the implementation of their respective national civil aviation security programmes. The requirements in the Chapter are intended to supplement the requirements of Annex 17 and to implement measures to be taken to minimize theft or misuse of dangerous goods that may endanger persons or property. The provisions of this Chapter do not supersede requirements of* Annex 17 *or the* Security Manual.

5.1 GENERAL SECURITY PROVISIONS

5.1.1 All persons engaged in the transport of dangerous goods should consider security requirements for the dangerous goods commensurate with their responsibilities.

5.1.2 Dangerous goods should only be offered to operators that have been appropriately identified.

5.2 SECURITY TRAINING

5.2.1 The training specified in 4.2 should include elements of security awareness.

5.2.2 Security awareness training should address the nature of security risks, recognizing security risks methods to address and reduce such risks, and actions to be taken in the event of a security breach. It should include awareness of security plans (if appropriate) commensurate with the responsibilities of individuals and their part in implementing security plans.

Note.— Persons who have received security training in accordance with the requirements of a national security plan or other security requirements that fulfil the elements of 5.2.2 need not receive additional training.

5.2.3 Such training should be provided or verified upon employment in a position involving dangerous goods transport. Recurrent training should take place within 24 months of previous training to ensure knowledge is current.

5.2.4 Records of all security training undertaken should be kept by the employer and made available to the employee, if requested.

5.3 SECURITY PLANS

5.3.1 Operators, shippers and others engaged in the transport of high consequence dangerous goods should adopt, implement and comply with a security plan that addresses at least the elements specified in 5.3.2. High consequence dangerous goods are those which have the potential for misuse in a terrorist incident and which may, as a result, produce serious consequences such as mass casualties or mass destruction. An indicative list of high consequence dangerous goods is provided in Table 1-6.

Note.— When national authorities issue exemptions, they should consider all of the provisions in this Chapter.

5.3.2 The security plan should comprise at least the following elements:

a) specific allocation of responsibilities for security to competent and qualified persons with appropriate authority to carry out their responsibilities;

b) records of dangerous goods or types of dangerous goods transported;

c) review of current operations and assessment of vulnerabilities, including inter-modal transfer, temporary transit storage, handling, and distribution, as appropriate;

d) clear statement of measures including training policies (including response to higher threat conditions, new employee/ employment verifications, etc.), operating practices (e.g. access to dangerous goods in temporary storage proximity to vulnerable infrastructure, etc.), equipment and resources that are to be used to reduce security risks;

e) effective and up-to-date procedures for reporting and dealing with security threats, breaches of security or security incidents;

f) procedures for the evaluation and testing of security plans and procedures for periodic review and update of the plans;

g) measures to ensure the security of transport information contained in the plan; and

h) measures to ensure that the security of the distribution of transport documentation is limited as far as possible. (Such measures must not preclude provision of the transport documentation required by Part 5, Chapter 4 of these Instructions.)

Note.— Operators, shippers and others with responsibilities for the safe and secure transport of dangerous goods should cooperate with each other and with appropriate authorities to exchange threat information, apply appropriate security measures and respond to security incidents.

5.4 RADIOACTIVE MATERIAL

≠ For radioactive material, the provisions of this Chapter are deemed to be complied with when the provisions of the Convention on Physical Protection of Nuclear Material and of IAEA INFCIRC/225 (Rev.4) are applied.

Table 1-6. Indicative list of high consequence dangerous goods

	Class 1 Division 1.1 explosives
	Class 1 Division 1.2 explosives
	Class 1 Division 1.3 compatibility group C explosives
+	Class 1 Division 1.4 UN Nos. 0104, 0237, 0255, 0267, 0289, 0361, 0365, 0366, 0440, 0441, 0455, 0456 and 0500
+	Class 1 Division 1.5 explosives
	Division 2.3 toxic gases (excluding aerosols)
+	Class 3 desensitized explosives
+	Division 4.1 desensitized explosives
	Division 6.1 substances of Packing Group 1; except when transported under the excepted quantity provisions in 3;5
	Division 6.2 infectious substances of Category A (UN Nos. 2814 and 2900)
	Class 7 radioactive materials in quantities greater than 3000 A_1 (special form) or 3000 A_2, as applicable in Type B and Type C packages.

+

Chapter 6

GENERAL PROVISIONS CONCERNING CLASS 7

Parts of this Chapter are affected by State Variations JP 3, JP 23, RU 1; see Table A-1

6.1 SCOPE AND APPLICATION

6.1.1 These Instructions establish standards of safety which provide an acceptable level of control of the radiation, criticality and thermal hazards to persons, property and the environment that are associated with the transport of radioactive material. These Instructions are based on the IAEA *Regulations for the Safe Transport of Radioactive Material*, (2005 Edition), Safety Standards Series No. TS-R-1, IAEA, Vienna (2005). Explanatory material on the 1996 edition of TS-R-1 can be found in *Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material*, Safety Standard Series No. TS-G-1.1 (ST-2), IAEA, Vienna (2002).

6.1.2 The objective of these Instructions is to protect persons, property and the environment from the effects of radiation during the transport of radioactive material. This protection is achieved by requiring:

a) containment of the radioactive contents;

b) control of external radiation levels;

c) prevention of criticality; and

d) prevention of damage caused by heat.

These requirements are satisfied firstly by applying a graded approach to the limits of the contents for packages and aircraft and to the performance standards, which are applied to package designs depending upon the hazard of the radioactive contents. Secondly, they are satisfied by imposing requirements on the design and operation of packages and on the maintenance of the packagings, including consideration of the nature of the radioactive contents. Finally, they are satisfied by requiring administrative controls including, where appropriate, approval by competent authorities.

6.1.3 These Instructions apply to the transport of radioactive material by air, including transport that is incidental to the use of the radioactive material. Transport comprises all operations and conditions associated with and involved in the movement of radioactive material; these include the design, manufacture, maintenance and repair of packaging, and the preparation, consigning, loading, carriage including in-transit storage, unloading and receipt at the final destination of the radioactive material and packages. A graded approach is applied to the performance standards in these Instructions that is characterized by three general severity levels:

a) routine conditions of transport (incident free);

b) normal conditions of transport (minor mishaps); and

c) accident conditions of transport.

6.1.4 These Instructions do not apply to:

a) radioactive material implanted or incorporated into a person or live animal for diagnosis or treatment;

b) radioactive material in consumer products which have received regulatory approval, following their sale to the end user;

c) natural material and ores containing naturally occurring radionuclides which are either in their natural state or have only been processed for purposes other than for extraction of the radionuclides, and are not intended to be processed for use of these radionuclides, provided the activity concentration of the material does not exceed 10 times the values specified in 2;7.2.2.1 b) or calculated in accordance with 2;7.2.2.2 to 7.2.2.6;

d) non-radioactive solid objects with radioactive substances present on any surfaces in quantities not in excess of the limit specified in the definition of contamination in 2;7.1.

6.1.5 Specific provisions for the transport of excepted packages

6.1.5.1 Excepted packages which contain radioactive material in limited quantities, instruments, manufactured articles and empty packages as specified in 2;7.2.4.1.1 are subject only to the following provisions of Parts 5 to 7:

a) the applicable provisions specified in 5;1.1 i), 5;1.4, 5;1.6.3, 5;1.7, 5;2.2, 5;2.4.2, 5;2.4.5.1 a), 5;2.4.5.1 e), 5;3.2.11 b), 5;3.2.11 e), 5;4.1.4.1 a), 5;4.4 and 7;3.2.2;

b) the requirements for excepted packages specified in 6;7.3; and

c) if the excepted package contains fissile material, one of the fissile exceptions provided by 2;7.2.3.5 must apply and the requirement of 6;7.6.2 must be met.

6.1.5.2 Excepted packages must be subject to the relevant provisions of all other parts of these Instructions.

6.2 RADIATION PROTECTION PROGRAMME

6.2.1 The transport of radioactive material must be subject to a radiation protection programme, which must consist of systematic arrangements aimed at providing adequate consideration of radiation protection measures.

6.2.2 Protection and safety must be optimized in order that the magnitude of individual doses, the number of persons exposed, and the likelihood of incurring exposure must be kept as low as reasonably achievable, economic and social factors being taken into account, and doses to persons must be below the relevant dose limits. A structured and systematic approach must be adopted and must include consideration of the interfaces between transport and other activities.

6.2.3 The nature and extent of the measures to be employed in the programme must be related to the magnitude and likelihood of radiation exposure. The programme must incorporate the requirements in 6.2.2 and 6.2.4 to 6.2.7. Programme documents must be available, on request, for inspection by the relevant competent authority.

6.2.4 For occupational exposure arising from transport activities, where it is assessed that the effective dose:

a) is likely to be between 1 and 6 mSv in a year, a dose assessment programme via workplace monitoring or individual monitoring must be conducted; and

b) is likely to exceed 6 mSv in a year, individual monitoring must be conducted.

When individual monitoring or workplace monitoring is conducted, appropriate records must be kept.

Note.— For occupational exposure arising from transport activities, where it is assessed that the effective dose is most unlikely to exceed 1 mSv in a year, no special work patterns, detailed monitoring, dose assessment programmes or individual record-keeping need be required.

6.2.5 In the event of accidents or incidents during the transport of radioactive material, emergency provisions, as established by relevant national and/or international organizations, must be observed to protect persons, property and the environment. Appropriate guidelines for such provisions are contained in “Planning and Preparing for Emergency Response to Transport Accidents Involving Radioactive Material”, Safety Standard Series No. TS-G-1.2 (ST-3), IAEA, Vienna (2002).

6.2.6 Emergency procedures must take into account the formation of other dangerous substances that may result from the reaction between the contents of a consignment and the environment in the event of an accident.

6.2.7 Workers must receive appropriate training concerning the radiation hazards involved and the precautions to be observed in order to ensure restriction of their exposure and that of other persons who might be affected by their actions.

6.3 QUALITY ASSURANCE

Quality assurance programmes based on international, national or other standards acceptable to the competent authority must be established and implemented for the design, manufacture, testing, documentation, use, maintenance and inspection of all special form radioactive material, low dispersible radioactive material and packages, and for transport and in-transit storage operations to ensure compliance with the relevant provisions of these Instructions. Certification that the design specification has been fully implemented must be available to the competent authority. The manufacturer, shipper or user must be prepared to provide facilities for competent authority inspection during manufacture and use and to demonstrate to any cognizant competent authority that:

a) the manufacturing methods and materials used are in accordance with the approved design specifications; and

b) all packagings are periodically inspected and, as necessary, repaired and maintained in good condition so that they continue to comply with all relevant requirements and specifications, even after repeated use.

Where competent authority approval is required, such approval must take into account and be contingent upon the adequacy of the quality assurance programme.

6.4 SPECIAL ARRANGEMENT

6.4.1 Special arrangement means those provisions, approved by the competent authority, under which consignments which do not satisfy all the requirements of these Instructions applicable to radioactive material may be transported.

6.4.2 Consignments for which conformity with any provision applicable to Class 7 is impracticable must not be transported except under special arrangement. Provided the competent authority is satisfied that conformity with the Class 7 provisions of these Instructions is impracticable and that the requisite standards of safety established by these Instructions have been demonstrated through alternative means, the competent authority may approve special arrangement transport operations for a single consignment or a planned series of multiple consignments. The overall level of safety in transport must be at least equivalent to that which would be provided if all the applicable requirements had been met. For international consignments of this type, multilateral approval must be required.

6.5 RADIOACTIVE MATERIAL POSSESSING OTHER DANGEROUS PROPERTIES

6.5.1 In addition to the radioactive and fissile properties, any subsidiary risk of the contents of a package, such as explosiveness, flammability, pyrophoricity, chemical toxicity and corrosiveness, must also be taken into account in the documentation, packing, labelling, marking, placarding, stowage, segregation and transport, in order to be in compliance with all relevant provisions for dangerous goods of these Instructions.

6.6 NON-COMPLIANCE

In the event of a non-compliance with any limit in these Instructions applicable to radiation level or contamination:

a) the shipper must be informed of the non-compliance by the operator if the non-compliance is identified during transport; or

b) the shipper and the operator must be informed of the non-compliance by the consignee if the non-compliance is identified at receipt;

c) the operator, shipper or consignee, as appropriate, must:

   i) take immediate steps to mitigate the consequences of the non-compliance;

   ii) investigate the non-compliance and its causes, circumstances and consequences;

   iii) take appropriate action to remedy the causes and circumstances that led to the non-compliance and to prevent a recurrence of similar circumstances that led to the non-compliance; and

   iv) communicate to the relevant competent authority(ies) the causes of the non-compliance and corrective or preventative actions taken or to be taken; and

d) the communication of the non-compliance to the shipper and relevant competent authority(ies), respectively, must be made as soon as practicable and it must be immediate whenever an emergency exposure situation has developed or is developing.

Part 2

CLASSIFICATION OF DANGEROUS GOODS

INTRODUCTORY CHAPTER

Parts of this Chapter are affected by State Variations DE 5, NL 4; see Table A-1

1. RESPONSIBILITIES

Classification must be made by the appropriate national authority when so required or may otherwise be made by the shipper.

2. CLASSES, DIVISIONS, PACKING GROUPS — DEFINITIONS

2.1 Substances (including mixtures and solutions) and articles subject to these Instructions are assigned to one of nine classes according to the hazard or the most predominant of the hazards they present. Some of these classes are subdivided into divisions. These classes and divisions are:

Class 1: Explosives

Division 1.1: Substances and articles which have a mass explosion hazard
Division 1.2: Substances and articles which have a projection hazard but not a mass explosion hazard
Division 1.3: Substances and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard
Division 1.4: Substances and articles which present no significant hazard
Division 1.5: Very insensitive substances which have a mass explosion hazard
Division 1.6: Extremely insensitive articles which do not have a mass explosion hazard

Class 2: Gases

Division 2.1: Flammable gases
Division 2.2: Non-flammable, non-toxic gases
Division 2.3: Toxic gases

Class 3: Flammable liquids

Class 4: Flammable solids; substances liable to spontaneous combustion; substances which, on contact with water, emit flammable gases

Division 4.1: Flammable solids, self-reactive and related substances and desensitized explosives
Division 4.2: Substances liable to spontaneous combustion
Division 4.3: Substances which, in contact with water, emit flammable gases

Class 5: Oxidizing substances and organic peroxides

Division 5.1: Oxidizing substances
Division 5.2: Organic peroxides

Class 6: Toxic and infectious substances

Division 6.1: Toxic substances
Division 6.2: Infectious substances

Class 7: Radioactive material

Class 8: Corrosive substances

Class 9: Miscellaneous dangerous substances and articles

The numerical order of the classes and divisions is not that of the degree of danger.

2.2 Many of the substances assigned to Classes 1 to 9 are deemed, without additional labelling, as being environmentally hazardous.

2.3 Wastes must be transported under the requirements of the appropriate class considering their hazards and the criteria in these Instructions. Wastes not otherwise subject to these Instructions, but covered under the Basel Convention, may be transported under Class 9.

2.4 For packing purposes, substances other than those of Classes 1, 2 and 7, Divisions 5.2 and 6.2 and other than self-reactive substances of Division 4.1 are assigned to three packing groups in accordance with the degree of danger they present.

Packing Group I: Substances presenting high danger

Packing Group II: Substances presenting medium danger

Packing Group III: Substances presenting low danger

The packing group to which a substance is assigned is indicated in the Dangerous Goods List in Part 3, Chapter 2, Table 3-1.

2.5 Dangerous goods are determined to present one or more of the dangers represented by Classes 1 to 9 and divisions and, if applicable, the degree of danger on the basis of the requirements in Part 2, Chapters 1 to 9.

2.6 Dangerous goods presenting a danger of a single class and division are assigned to that class and division and the degree of danger (packing group), if applicable, determined. When an article or substance is specifically listed by name in the Dangerous Goods List (Table 3-1), its class or division, its subsidiary risk(s) and, when applicable, its packing group are taken from this list.

2.7 Where a substance or article is not specifically listed by name in Table 3-1 and there are two or more hazards of Class 3, 4 or 8 or Division 5.1 or 6.1 associated with its air transport in that it meets the definition for two of those classes or divisions as shown in Part 2, Chapters 1 to 9, it must be classified in accordance with the precedence of hazards table (Table 2-1).

3. UN NUMBERS AND PROPER SHIPPING NAMES

3.1 Dangerous goods are assigned to UN numbers and proper shipping names according to their hazard classification and their composition.

3.2 Dangerous goods commonly carried are listed in Table 3-1. Where an article or substance is specifically listed by name, it shall be identified in transport by the proper shipping name in Table 3-1. For dangerous goods not specifically listed by name, “generic” or “not otherwise specified (n.o.s.)” entries are provided (see 3.9) to identify the article or substance in transport. Each entry in Table 3-1 is characterized by a UN number. Table 3-1 also contains relevant information for each entry, such as hazard class, subsidiary risk(s) (if any), packing group (where assigned), packing requirements, passenger and cargo aircraft requirements, etc. Entries in Table 3-1 are of the following four types:

a) Single entries for well-defined substances or articles

e.g. **Acetone** UN 1090

Ethyl nitrite solution UN 1194

b) Generic entries for a well-defined group of substances or articles

e.g. **Adhesives** UN 1133

Perfumery product UN 1266

Carbamate pesticide, solid, toxic UN 2757

Organic peroxide Type B, liquid; UN 3101

c) Specific n.o.s. entries covering a group of substances or articles of a particular chemical or technical nature

e.g. **Nitrates, inorganic, n.o.s.** UN 1477

Alcohols, n.o.s. UN 1987

d) General n.o.s. entries covering a group of substances or articles meeting the criteria of one or more classes or divisions

e.g. **Flammable solid, organic, n.o.s.** UN 1325

Flammable liquid, n.o.s. UN 1993

3.3 All self-reactive substances of Division 4.1 are assigned to one of twenty generic entries in accordance with the classification principles and flow chart described in the UN Recommendations, 2.4.2.3.3.

3.4 All organic peroxides of Division 5.2 are assigned to one of twenty generic entries in accordance with the classification principles and flow chart described in the UN Recommendations, 2.5.3.3.

3.5 A mixture or solution containing a single dangerous substance specifically listed by name in Table 3-1 and one or more substances not subject to these Instructions must be assigned the UN number and proper shipping name of the dangerous substance, unless:

a) the mixture or solution is specifically identified by name in these Instructions; or

b) the entry in these Instructions specifically indicates that it applies only to the pure substance; or

c) the hazard class or division, physical state or packing group of the solution or mixture is different from that of the dangerous substances; or

d) there is significant change in the measures to be taken in emergencies.

3.6 In those other cases, except the one described in a), the mixture or solution must be treated as a dangerous substance not specifically listed by name in Table 3-1.

3.7 For a solution or mixture when the hazard class, the physical state or the packing group is changed in comparison with the listed substance, the appropriate n.o.s. entry must be used including its packaging and labelling provisions.

3.8 A mixture or solution containing one or more substances identified by name in Table 3-1 or classified under an n.o.s. entry and one or more substances not subject to these Instructions is not subject to these Instructions if the hazard characteristics of the mixture or solution are such that they do not meet the criteria (including human experience criteria) for any class.

3.9 Substances or articles which are not specifically listed by name in Table 3-1 must be classified under a "generic" or "n.o.s." entry. The substance or article must be classified according to the class definitions and test criteria in this Part, and is then assigned the generic or "n.o.s." entry in Table 3-1 which most appropriately describes the article or substance. This means that a substance[1] is to be assigned to an entry of type c), as defined in 3.2, only if it cannot be assigned to an entry of type b), and to an entry of type d) if it cannot be assigned to an entry of type b) or c)[1].

4. PRECEDENCE OF HAZARD CHARACTERISTICS

4.1 The precedence of hazards table (Table 2-1) must be used to determine the class of a substance, mixture or solution having more than one risk, when it is not named in Table 3-1. For goods having multiple risks, which are not specifically listed by name in Table 3-1, the most stringent packing group denoted to the respective hazards of the goods takes precedence over other packing groups, irrespective of Table 2-1. The correct packing group to be used is also shown at the intersection of the two lines in Table 2-1. The precedence of hazard characteristics of the following have not been dealt with in Table 2-1, as the primary characteristics always take precedence. The correct packing group to be used is also shown at the intersection of the two lines in Table 2-1:

a) substances and articles of Class 1;

b) gases of Class 2;

c) liquid desensitized explosives of Class 3;

d) self-reactive substances and solid desensitized explosives of Division 4.l;

e) pyrophoric substances of Division 4.2;

f) substances of Division 5.2;

g) substances of Division 6.1 with a Packing Group I inhalation toxicity. Except for substances or preparations meeting the criteria of Class 8 having an inhalation toxicity of dusts and mists (LC_{50}) in the range of Packing Group I, but toxicity through oral ingestion or dermal contact only in the range of Packing Group III or less, which must be allocated to Class 8;

h) substances of Division 6.2; and

i) material of Class 7.

4.2 Apart from radioactive material in excepted packages (where the other hazardous properties take precedence), radioactive material having other hazardous properties must always be classified in Class 7 and the subsidiary risk must also be identified.

4.3 An article which, apart from its other hazards, also meets the criterion for a magnetized material, must be identified in accordance with the provisions of this section and in addition as a magnetized material.

1. See also the "List of n.o.s. and generic proper shipping names" in Attachment 1, Chapter 2.

5. TRANSPORT OF SAMPLES

5.1 When the hazard class of a substance is uncertain and it is being transported for further testing, a tentative hazard class, proper shipping name and identification number must be assigned on the basis of the shipper's knowledge of the substance and application of:

a) the classification criteria of these Instructions; and

b) the precedence of hazards given above.

The most severe packing group possible for the shipping name chosen must be used.

5.2 Where this provision is used, the proper shipping name must be supplemented with the word "sample" (e.g. **Flammable liquid, n.o.s., sample**). In certain instances, where a specific proper shipping name is provided for a sample of a substance considered to meet certain classification criteria (e.g. **Gas sample, non-pressurized, flammable**, UN 3167), that proper shipping name must be used. When an n.o.s. entry is used to transport the sample, the proper shipping name need not be supplemented with the technical name.

5.3 Samples of the substance must be transported in accordance with the requirements applicable to the tentative assigned proper shipping name provided:

a) the substance is not considered to be a substance prohibited for transport by 1;2.1;

b) the substance is not considered to meet the criteria for Class 1 or considered to be an infectious substance or a radioactive material;

c) the substance is in compliance with 4.2.3.2.5 or 5.3.2.6, if it is a self-reactive substance or an organic peroxide, respectively;

d) the sample is transported in a combination packaging with a net mass per package not exceeding 2.5 kg; and

e) the sample is not packed together with other goods.

Table 2-1. Precedence of hazards and packing groups for Classes 3, 4 and 8 and for Divisions 5.1 and 6.1

Class or division and packing group	*Class or division and packing group*																	
	4.2 II	4.2 III	4.3 I	4.3 II	4.3 III	5.1 I	5.1 II	5.1 III	6.1 I (d)	6.1 I (o)	6.1 II	6.1 III	8 I (l)	8 I (s)	8 II (l)	8 II (s)	8 III (l)	8 III (s)
3 I*			4.3, I	4.3,I	4.3,I	—	—	—	3,I	3,I	3,I	3,I	3,I	—	3,I	—	3,I	—
3 II*			4.3,I	4.3,II	4.3,II	—	—	—	3,I	3,I	3,II	3,II	8,I	—	3,II	—	3,II	—
3 III*			4.3,I	4.3,II	4.3,III	—	—	—	6.1,I	6.1,I	6.1,II	3,III**	8,I	—	8,II	—	3,III	—
4.1 II*	4.2,II	4.2,II	4.3,I	4.3,II	4.3,II	5.1,I	4.1,II	4.1,II	6.1,I	6.1,I	4.1,II	4.1,II	—	8,I	—	4.1,II	—	4.1,II
4.1 III*	4.2,II	4.2,III	4.3,I	4.3,II	4.3,III	5.1,I	4.1,II	4.1,III	6.1,I	6.1,I	6.1,II	4.1,III	—	8,I	—	8,II	—	4.1,III
4.2 II			4.3,I	4.3,II	4.3,II	5.1,I	4.2,II	4.2,II	6.1,I	6.1,I	4.2,II	4.2,II	8,I	8,I	4.2,II	4.2,II	4.2,II	4.2,II
4.2 III			4.3,I	4.3,II	4.3,III	5.1,I	5.1,II	4.2,III	6.1,I	6.1,I	6.1,II	4.2,III	8,I	8,I	8,II	8,II	4.2,III	4.2,III
4.3 I						5.1,I	4.3,I	4.3,I	6.1,I	4.3,I	4.3,I	4.3,I	4.3,I	4.3,I	4.3,I	4.3,I	4.3,I	4.3,I
4.3 II						5.1,I	4.3,II	4.3,II	6.1,I	4.3,I	4.3,II	4.3,II	8,I	8,I	4.3,II	4.3,II	4.3,II	4.3,II
4.3 III						5.1,I	5.1,II	4.3,III	6.1,I	6.1,I	6.1,II	4.3,III	8,I	8,I	8,II	8,II	4.3,III	4.3,III
5.1 I									5.1,I	5.1,I	5.1,I	5.1,I	5.1,I	5.1,I	5.1,I	5.1,I	5.1,I	5.1,I
5.1 II									6.1,I	5.1,I	5.1,II	5.1,II	8,I	8,I	5.1,II	5.1,II	5.1,II	5.1,II
5.1 III									6.1,I	6.1,I	6.1,II	5.1,III	8,I	8,I	8,II	8,II	5.1,III	5.1,III
6.1 I (d)													8,I	6.1,I	6.1,I	6.1,I	6.1,I	6.1,I
6.1 I (o)													8,I	6.1,I	6.1,I	6.1,I	6.1,I	6.1,I
6.1 II (i)													8,I	6.1,I	6.1,II	6.1,II	6.1,II	6.1,II
6.1 II (d)													8,I	6.1,I	8,II	6.1,II	6.1,II	6.1,II
6.1 II (o)													8,I	8,I	8,II	6.1,II	6.1,II	6.1,II
6.1 III													8,I	8,I	8,II	8,II	8,III	8,III

(l) = liquid; (s) = solid; (i) = inhalation; (d) = dermal; (o) = oral; — = an impossible combination

* Substances of Division 4.1 other than self-reactive substances, and solid desensitized explosives and substances of Class 3 other than liquid desensitized explosives.
** For pesticides only, the primary risk must be Division 6.1.

Chapter 1

CLASS 1 — EXPLOSIVES

Parts of this Chapter are affected by State Variations BE 2, DQ 2, GB 1, HK 3, US 5; see Table A-1

Note 1.— Class 1 is a restricted class, that is, only those explosive substances and articles that are listed in the Dangerous Goods List may be accepted for transport. However, the appropriate authorities of the States concerned retain the right by mutual agreement to approve transport of explosive substances and articles for special purposes under special conditions. Therefore, entries have been included in the Dangerous Goods List for "Substances, explosive, n.o.s." and "Articles, explosive, n.o.s.". It is intended that these entries be used only when no other method of operation is possible.

Note 2.— General entries, such as "Explosive, blasting, Type A", are used to allow for the transport of new substances. In preparing these requirements, military ammunition and explosives have been taken into consideration to the extent that they are likely to be transported by civil aircraft.

Note 3.— A number of substances and articles which are in Class 1 are described in Attachment 2 to these Instructions. These descriptions are given because a term may not be well known or may be at variance with its usage for regulatory purposes.

Note 4. — Class 1 is unique in that the type of packaging frequently has a decisive effect on the hazard and therefore on the assignment to a particular division. The correct division is determined by use of the procedures provided in this Chapter.

Note 5. — Most of the explosives listed in Table 3-1 are not normally permitted for transport by air. Information concerning these explosives is included in Table 3-1 and in the Supplement to these Instructions to provide guidance for States in those cases where consideration is being given to granting exemptions in accordance with 1;1.1.2.

1.1 DEFINITIONS AND GENERAL PROVISIONS

Class 1 comprises:

a) explosive substances (a substance that is not itself an explosive but which can form an explosive atmosphere of gas, vapour or dust is not included in Class 1), except those that are too dangerous to transport or those where the predominant hazard is appropriate to another class;

b) explosive articles, except devices containing explosive substances in such quantity or of such a character that their inadvertent or accidental ignition or initiation during transport will not cause any effect external to the device either by projection, fire, smoke, heat or loud noise; and

c) substances and articles not mentioned under 1.1 a) and b), which are manufactured with a view to producing a practical, explosive or pyrotechnic effect.

1.2 DEFINITIONS

For the purposes of these Instructions, the following definitions apply:

a) ***Explosive substance*** is a solid or liquid substance (or a mixture of substances) which is in itself capable, by chemical reaction, of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic substances are included even when they do not evolve gases.

b) ***Pyrotechnic substance*** is a substance or a mixture of substances designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonative, self-sustaining, exothermic, chemical reactions.

c) ***Explosive article*** is an article containing one or more explosive substances.

Note.— Explanations for a number of other terms used in connection with explosives can be found in Attachment 2 to these Instructions.

1.3 DIVISIONS

1.3.1 Class 1 is divided into six divisions:

a) Division 1.1 — Substances and articles which have a mass explosion hazard (a mass explosion is one which affects almost the entire load virtually instantaneously).

b) Division 1.2 — Substances and articles which have a projection hazard but not a mass explosion hazard.

c) Division 1.3 — Substances and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.

This division comprises substances and articles which:

i) give rise to considerable radiant heat, or

ii) burn one after another, producing minor blast or projection effects or both.

d) Division 1.4 — Substances and articles which present no significant hazard.

This division comprises substances and articles which present only a small hazard in the event of ignition or initiation during transport. The effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package.

Note.— Substances and articles of this division are in Compatibility Group S if they are so packaged or designed that any hazardous effects arising from accidental functioning are confined within the package, unless the package has been degraded by fire, in which case all blast or projection effects are limited to the extent that they do not significantly hinder fire fighting or other emergency response efforts in the immediate vicinity of the package.

e) Division 1.5 — Very insensitive substances which have a mass explosion hazard.

This division comprises substances which have a mass explosion hazard but are so insensitive that there is very little probability of initiation or of transition from burning to detonation under normal conditions of transport.

Note.— For the normal conditions of transport, see Notes 3 to 5 of the Introductory Notes to Part 4.

f) Division 1.6 — Extremely insensitive articles which do not have a mass explosion hazard.

This division comprises articles which contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation.

Note.— The risk from articles of Division 1.6 is limited to the explosion of a single article.

1.3.2 Any substance or article having or suspected of having explosive characteristics must first be considered for classification in Class 1 in accordance with the procedures in 1.5.1.1 to 1.5.1.3. Goods are not classified in Class 1 when:

a) unless specially authorized, the transport of an explosive substance is prohibited because sensitivity of the substance is excessive;

b) the substance or article comes within the scope of those explosive substances and articles which are specifically excluded from Class 1 by the definition of this class; or

c) the substance or article has no explosive properties.

1.4 COMPATIBILITY GROUPS

1.4.1 Goods of Class 1 are assigned to one of six divisions, depending on the type of hazard they present (see 1.3.1), and to one of thirteen compatibility groups which identify the kinds of explosive substances and articles that are deemed to be compatible. Tables 2-2 and 2-3 show the scheme of classification into compatibility groups, the possible hazard divisions associated with each group, and the consequential classification codes.

1.4.2 The definitions of compatibility groups in Table 2-2 are intended to be mutually exclusive, except for a substance or article which qualifies for Compatibility Group S. Since the criterion of Compatibility Group S is an empirical one, assignment to this group is necessarily linked to the tests for assignment to Division 1.4.

1.5 CLASSIFICATION OF EXPLOSIVES

Note. — For additional information regarding classification of explosives, see UN Recommendations, 2.1.3.1.4, 2.1.3.1.5 and 2.1.3.4.

Table 2-2. Classification codes

Description of substance or article to be classified	*Compatibility group*	*Classification code*
Primary explosive substance	A	1.1A
Article containing a primary explosive substance and not containing two or more effective protective features. Some articles, such as detonators for blasting, detonator assemblies for blasting and primers, and cap-type, are included even though they do not contain primary explosives	B	1.1B 1.2B 1.4B
Propellant explosive substance or other deflagrating explosive substance or article containing such explosive substance	C	1.1C 1.2C 1.3C 1.4C
Secondary detonating explosive substance or black powder or article containing a secondary detonating explosive substance, in each case without means of initiation and without a propelling charge, or article containing a primary explosive substance and containing two or more effective protective features	D	1.1D 1.2D 1.4D 1.5D
Article containing a secondary detonating explosive substance, without means of initiation, with a propelling charge (other than one containing a flammable liquid or gel or hypergolic liquids)	E	1.1E 1.2E 1.4E
Article containing a secondary detonating explosive substance with its own means of initiation, with a propelling charge (other than one containing a flammable liquid or gel or hypergolic liquids) or without a propelling charge	F	1.1F 1.2F 1.3F 1.4F
Pyrotechnic substance, or article containing a pyrotechnic substance, or article containing both an explosive substance and an illuminating, incendiary, tear- or smoke-producing substance (other than a water-activated article or one containing white phosphorus, phosphides, a pyrophoric substance, a flammable liquid or gel, or hypergolic liquids)	G	1.1G 1.2G 1.3G 1.4G
Article containing both an explosive substance and white phosphorus	H	1.2H 1.3H
Article containing both an explosive substance and a flammable liquid or gel	J	1.1J 1.2J 1.3J
Article containing both an explosive substance and a toxic chemical agent	K	1.2K 1.3K
Explosive substance or article containing an explosive substance and presenting a special risk (e.g. due to water activation or presence of hypergolic liquids, phosphides or a pyrophoric substance) and needing isolation of each type	L	1.1L 1.2L 1.3L
Articles containing only extremely insensitive detonating substances	N	1.6N
Substances or articles so packed or designed that any hazardous effects arising from accidental functioning are confined within the package unless the package has been degraded by fire, in which case all blast or projection effects are limited to the extent that they do not significantly hinder or prohibit fire fighting or other emergency response in the immediate vicinity of the package	S	1.4S

Table 2-3. Scheme of classification of explosives, combination of hazard division with compatibility group

	Compatibility Group													
Hazard	A	B	C	D	E	F	G	H	J	K	L	N	S	A-S Σ
1.1	1.1A	1.1B	1.1C	1.1D	1.1E	1.1F	1.1G		1.1J		1.1L			9
1.2		1.2B	1.2C	1.2D	1.2E	1.2F	1.2G	1.2H	1.2J	1.2K	1.2L			10
1.3			1.3C			1.3F	1.3G	1.3H	1.3J	1.3K	1.3L			7
1.4		1.4B	1.4C	1.4D	1.4E	1.4F	1.4G						1.4S	7
1.5				1.5D										
1.6												1.6N		1
1.1-1.6 Σ		3	4	4	3	4	4	2	3	2	3	1	1	35

1.5.1.1 Any substance or article having or suspected of having explosive characteristics must be considered for classification in Class 1 in accordance with the tests, procedures and criteria prescribed in Part I of the *UN Manual of Tests and Criteria*. Substances and articles classified in Class 1 must be assigned to the appropriate division and compatibility group in accordance with the procedures and criteria prescribed in that document.

1.5.1.2 The classification of fireworks must be based on paragraph 2.1.3.5 of the UN Recommendations.

1.5.1.3 Except for substances that are listed by their proper shipping name in the Dangerous Goods List (Table 3-1), goods must not be offered for transport as Class 1 until they have been subjected to the classification procedure prescribed in this Chapter. In addition, the classification procedure must be undertaken before a new product is offered for transport. In this context, a new product is one which, in the opinion of the appropriate national authority, involves any of the following:

a) a new explosive substance or a combination or a mixture of explosive substances which is considered to be significantly different from other combinations or mixtures already classified;

b) a new design of article or an article containing a new explosive substance or a new combination or mixture of explosive substances;

c) a new design of package for an explosive substance or article including a new type of inner packaging.

Note.— The importance of this can be overlooked unless it is realized that a relatively minor change in an inner or outer packaging can be critical and can convert a lesser risk into a mass explosion risk.

1.5.1.4 The producer or other applicant for classification of the product must provide adequate information concerning the names and characteristics of all explosive substances in the product and must furnish the results of all relevant tests which have been done. It is assumed that all the explosive substances in a new article have been properly tested and then approved.

1.5.2 Exclusion from Class 1

1.5.2.1 The appropriate national authority may exclude an article or substance from Class 1 by virtue of test results and the Class 1 definition.

1.5.2.2 Where a substance provisionally accepted into Class 1 is excluded from Class 1 by performing Test Series 6 on a specific type and size of package, this substance, when meeting the classification criteria or definition for another class or division, should be listed in the Dangerous Goods List in that class or division with a special provision restricting it to the type and size of package tested.

1.5.2.3 Where a substance is assigned to Class 1 but is diluted to be excluded from Class 1 by Test Series 6, this diluted substance (hereafter referred to as desensitized explosive) should be listed in the Dangerous Goods List with an indication of the highest concentration which excluded it from Class 1 (see 2;3.1.4 and 2;4.2.4) and if applicable, the concentration below which it is no longer deemed subject to these Instructions. New solid desensitized explosives subject to these Instructions should be listed in Division 4.1, and new liquid desensitized explosives should be listed in Class 3. When the desensitized explosive meets the criteria or definition for another class or division, the corresponding subsidiary risk(s) should be assigned to it.

Chapter 2

CLASS 2 — GASES

Parts of this Chapter are affected by State Variation US 6; see Table A-1

2.1 DEFINITIONS AND GENERAL PROVISIONS

2.1.1 A gas is a substance which:

a) at 50°C has a vapour pressure greater than 300 kPa; or

b) is completely gaseous at 20°C at a standard pressure of 101.3 kPa.

2.1.2 The transport condition of a gas is described according to its physical state as:

a) compressed gas — a gas which when packaged under pressure for transport is entirely gaseous at –50°C; this category includes all gases with a critical temperature less than or equal to –50°C;

b) liquefied gas — a gas which when packaged under pressure for transport is partially liquid at temperatures above –50°C. A distinction is made between:

High pressure liquefied gas: a gas with a critical temperature between –50°C and +65°C, and

Low pressure liquefied gas: a gas with a critical temperature above +65°C;

c) refrigerated liquefied gas — a gas which when packaged for transport is made partially liquid because of its low temperature; or

d) dissolved gas — a gas which when packaged under pressure for transport is dissolved in a liquid phase solvent.

2.1.3 This class comprises compressed gases; liquefied gases; dissolved gases; refrigerated liquefied gases; mixtures of one or more gases with one or more vapours of substances of other classes; articles charged with a gas; and aerosols. (For aerosols, see 1;3.1).

≠ *Note 1.— Carbonated beverages and inflated balls used for sports are not subject to these Instructions.*

Note 2.—"Cryogenic liquid" means the same as "refrigerated liquefied gas".

2.2 DIVISIONS

2.2.1 Substances of Class 2 are assigned to one of three divisions based on the primary hazard of the gas during transport.

*Note.— UN 1950 — **Aerosols,** UN 2037 — **Receptacles, small, containing gas** and UN 2037 — **Gas cartridges** must be regarded as being in Division 2.1 when the criteria in 2.5.1 a) are met.*

a) Division 2.1 — Flammable gases.

Gases which at 20°C and a standard pressure of 101.3 kPa:

i) are ignitable when in a mixture of 13 per cent or less by volume with air; or

ii) have a flammable range with air of at least 12 percentage points regardless of the lower flammable limit. Flammability must be determined by tests or by calculation in accordance with methods adopted by ISO (see ISO Standard 10156/1996). Where insufficient data are available to use these methods, tests by a comparable method recognized by the appropriate national authority must be used.

*Note.— UN 1950 — **Aerosols** and UN 2037 — **Receptacles, small, containing gas** must be regarded as being in Division 2.1 when the criteria in 2.5.2 are met.*

b) Division 2.2 — Non-flammable, non-toxic gases.

Gases which:

i) are asphyxiant — gases which dilute or replace the oxygen normally in the atmosphere; or

≠ ii) are oxidizing — gases which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does. The oxidizing ability must be determined by tests or by calculation in accordance with methods adopted by ISO (see ISO 10156:1996 and ISO 10156-2:2005); or

iii) do not come under the other divisions.

c) Division 2.3 — Toxic gases.

Gases which:

i) are known to be so toxic or corrosive to humans as to pose a hazard to health; or

ii) are presumed to be toxic or corrosive to humans because they have an LC_{50} value equal to or less than 5 000 mL/m^3 (ppm) when tested in accordance with 6.2.1.3.

Note.— Gases meeting the above criteria owing to their corrosivity are to be classified as toxic with a subsidiary corrosive risk.

≠ 2.2.2 Gases of Division 2.2 are not subject to these Instructions if they are transported at a pressure less than 200 kPa at 20°C and are not liquefied or refrigerated liquefied gases.

2.3 HAZARD PRECEDENCE

Gases and gas mixtures with hazards associated with more than one division take the following precedence:

a) Division 2.3 takes precedence over all other divisions;

b) Division 2.1 takes precedence over Division 2.2.

2.4 MIXTURES OF GASES

For the classification of gas mixtures into one of the three divisions (including vapours of substance from other classes), the following principles must be used:

a) Flammability must be determined by tests or by calculation in accordance with methods adopted by ISO (see ISO Standard 10156/1996). Where insufficient data are available to use these methods, tests by a comparable method recognized by the appropriate national authority may be used.

b) The level of toxicity is determined by either tests in accordance with 6.2.1.3 or a calculation method using the following formula:

$$LC_{50}\text{Toxic (mixture)} = \frac{1}{\sum_{i=1}^{n} \frac{f_i}{T_i}}$$

where f_i = mole fraction of the i^{th} component substance of the mixture, and

where T_i = toxicity index of the i^{th} component substance of the mixture (the T_i equals the LC_{50} value when available).

When LC_{50} values are unknown, the toxicity index is determined by using the lowest LC_{50} value of substances of similar physiological and chemical effects, or through testing if this is the only practical possibility.

c) A gas mixture has a subsidiary risk of corrosivity when the mixture is known by human experience to be destructive to the skin, eyes or mucous membranes or when the LC_{50} value of the mixture's corrosive components is equal to or less than 5 000 mL/m^3 (ppm) when the LC_{50} value is calculated by the formula:

$$LC_{50}\text{Corrosive (mixture)} = \frac{1}{\sum_{i=1}^{n} \frac{f_{ci}}{T_{ci}}}$$

where f_{ci} = mole fraction of the i^{th} corrosive component substance of the mixture, and

where T_{ci} = Toxicity index of the i^{th} corrosive component substance of the mixture (the T_{ci} equals the LC_{50} value when available).

≠ d) Oxidizing ability is determined either by tests or by calculation methods adopted by the International Standards Organization (see ISO 10156:1996 and ISO 10156-2:2005).

2.5 AEROSOLS

2.5.1 For aerosols, the division of Class 2 and the subsidiary risks depend on the nature of the contents of the aerosol dispenser. The following provisions must apply:

a) Division 2.1 applies if the contents include 85 per cent by mass or more flammable components and the chemical heat of combustion is 30 kJ/g or more;

b) Division 2.2 applies if the content contains 1 per cent by mass or less flammable components and the heat of combustion is less than 20 kJ/g;

c) otherwise the product must be classified as tested by the tests described in the UN *Manual of Tests and Criteria*, Part III, section 31. Extremely flammable and flammable aerosols must be classified in Division 2.1; non-flammable in Division 2.2;

d) gases of Division 2.3 must not be used as a propellant in an aerosol dispenser;

e) where the contents other than the propellant of aerosol dispensers to be ejected are classified as Division 6.1, Packing Groups II or III or Class 8, Packing Groups II or III, the aerosol must have a subsidiary risk of Division 6.1 or Class 8;

f) aerosols with contents meeting the criteria of Packing Group I for toxicity or corrosivity are prohibited from transport.

2.5.2 Flammable components are flammable liquids, flammable solids or flammable gases and gas mixtures as defined in Notes 1 to 3 of subsections 31.1.3 of Part III of the UN *Manual of Tests and Criteria*. This designation does not cover pyrophoric, self-heating or water-reactive substances. The chemical heat of combustion must be determined by one of the following methods: ASTM D 240, ISO/FDIS 13943: 1999 (E/F) 86.1 to 86.3 or NFPA 30B.

Chapter 3

CLASS 3 — FLAMMABLE LIQUIDS

INTRODUCTORY NOTES

Note 1.— The word "flammable" has the same meaning as "inflammable".

Note 2.— The flash point of a flammable liquid may be altered by the presence of an impurity. The substances listed in Class 3 in the Dangerous Goods List in Part 3 must generally be regarded as chemically pure. Since commercial products may contain added substances or impurities, flash points may vary, and this may have an effect on classification or determination of the packing group for the product. In the event of doubt regarding the classification or packing group of a substance, the flash point of the substance must be determined experimentally.

3.1 DEFINITION AND GENERAL PROVISIONS

3.1.1 Class 3 includes the following substances:

a) Flammable liquids (see 3.1.2 and 3.1.3);

b) Liquid desensitized explosives (see 3.1.4).

3.1.2 Flammable liquids are liquids, or mixtures of liquids, or liquids containing solids in solution or suspension (for example paints, varnishes, lacquers, etc., but not including substances otherwise classified on account of their dangerous characteristics) which give off a flammable vapour at temperatures of not more than 60°C, closed-cup test, or not more than 65.6°C, open-cup test, normally referred to as the flash point. This class also includes:

a) liquids offered for transport at temperatures at or above their flash point; and

b) substances that are transported or offered for transport at elevated temperatures in a liquid state and which give off a flammable vapour at a temperature at or below the maximum transport temperature (i.e. the maximum temperature likely to be encountered by the substance in transport).

Note. — Since the results of open-cup tests and of closed-cup tests are not strictly comparable and even individual results by the same test are often variable, regulations varying from the above figures to make allowance for such differences would be within the spirit of this definition.

3.1.3 Liquids meeting the definition in 3.1.2 above with a flash point of more than 35°C which do not sustain combustion need not be considered as flammable liquids for the purposes of these Instructions. Liquids are considered to be unable to sustain combustion for the purposes of these Instructions (i.e. they do not sustain combustion under defined test conditions) if:

a) they have passed a suitable combustibility test (see Sustained Combustibility Test prescribed in the UN *Manual of Tests and Criteria*, Part III, subsection 32.5.2); or

≠ b) their fire point according to ISO 2592:2000 is greater than 100°C; or

c) they are miscible solutions with a water content of more than 90 per cent by mass.

3.1.4 Liquid desensitized explosives are explosive substances which are dissolved or suspended in water or other liquid substances, to form homogeneous liquid mixture to suppress their explosive properties (see 1.5.2.3). Entries in the Dangerous Goods List (Table 3-1) for liquid desensitized explosives are: UN 1204, UN 2059, UN 3064, UN 3343, UN 3357 and UN 3379.

3.2 ASSIGNMENT OF PACKING GROUPS

3.2.1 Table 2-4 should be used for the determination of the packing group of a liquid that presents a risk due to flammability. For liquids whose only hazard is flammability, the packing group for the material is the packing group shown in Table 2-4. For a liquid possessing an additional hazard(s), the packing group, determined by using Table 2-4, and the packing group based on the severity of the additional hazard(s), must be considered. In such cases, the table of precedence of hazard characteristics appearing in Table 2-1 should be used to determine the correct classification of the liquid.

3.2.2 Viscous substances such as paints, enamels, lacquers, varnishes, adhesives and polishes having a flash point below 23°C may be placed in Packing Group III in conformity with the procedures prescribed in Part III, subsection 32.3, UN *Manual of Tests and Criteria,* on the basis of:

a) the viscosity expressed as the flow time in seconds;

b) the closed-cup flash point;

c) a solvent separation test; and

d) the size of the receptacle.

3.2.3 *Criteria for inclusion in Packing Group III*

Viscous flammable liquids such as paints, enamels, varnishes, adhesives and polishes with a flash point of less than 23°C are included in Packing Group III provided that:

a) less than 3 per cent of the clear solvent layer separates in the solvent separation test;

b) the mixture or any separated solvent does not meet the criteria for Division 6.1 or Class 8;

c) the viscosity and flash point are in accordance with Table 2-5;

d) the capacity of the receptacle used does not exceed 30 L.

3.2.4 Substances classified as flammable liquids due to their being transported or offered for transport at elevated temperatures are included in Packing Group III.

3.3 DETERMINATION OF FLASH POINT

The following is a list of documents describing methods for determining the flash point of substances in Class 3:

France (Association française de normalisation, AFNOR, Tour Europe, 92049 Paris La Défense)

— French Standard NF M 07–019
— French Standards NF M 07–011 / NF T 30–050 / NF T 66–009
— French Standard NF M 07–036

Germany (Deutsches Institut für Normung, Burggrafenstrasse 6, D-10787 Berlin)

— Standard DIN 51755 (flash points below 65°C)
— Standard DIN EN 22719 (flash points above 5°C)
— Standard DIN 53213 (for varnishes, lacquers and similar viscous liquids with flash points below 65°C)

Netherlands

— ASTM D93-90
— ASTM D3278-89
— ISO 1516
— ISO 1523
— ISO 3679
— ISO 3680

Russian Federation (State Committee of the Council of Ministers for Standardization, 113813, GSP, Moscow, M-49 Leninsky Prospect, 9)

— GOST 12.1.044-84

≠ *United Kingdom* (British Standards Institution, Customer Services, 389 Chiswick High Road, London, N7 8LB)

— British Standard BS EN 22719
— British Standard BS 2000 Part 170

United States (American Society for Testing Materials, 1916 Race Street, Philadelphia, PA 19103)

ASTM D 3828-93, Standard Test Methods for Flash Point by Small Scale Closed Tester
ASTM D 56-93, Standard Test Method for Flash Point by Tag Closed Tester
TM 3278-96, Standard Test Methods for Flash Point of Liquids by Setaflash Closed-Cup Apparatus
ASTM D 0093-96, Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester.

Table 2-4. Packing group based on flammability

Packing group	*Flash point (closed-cup)*	*Initial boiling point*
I	—	≤35°C
II	<23°C	>35°C
III	≥23°C, ≤60°C	>35°C

Table 2-5. Viscosity and flashpoints

Flow time t in seconds	*Jet diameter in mm*	*Flash point in °C (closed-cup)*
20 < t ≤ 60	4	above 17
60 < t ≤100	4	above 10
20 < t ≤32	6	above 5
32 < t ≤44	6	above –1
44 < t ≤100	6	above –5
100 < t	6	–5 and below

Chapter 4

CLASS 4 — FLAMMABLE SOLIDS; SUBSTANCES LIABLE TO SPONTANEOUS COMBUSTION; SUBSTANCES WHICH, IN CONTACT WITH WATER, EMIT FLAMMABLE GASES

INTRODUCTORY NOTES

Note 1.— Where the term "water-reactive" is used in these Instructions, it refers to a substance which, in contact with water, emits flammable gas.

Note 2.— Because of the different properties exhibited by the dangerous goods within Divisions 4.1 and 4.2, it is impracticable to establish a single criterion for classification in either of these divisions. Tests and criteria for assignment to the three divisions of Class 4 are addressed in this chapter and in the UN Manual of Tests and Criteria, *Part III, section 33.*

Note 3.— Since organometallic substances can be classified in Divisions 4.2 or 4.3 with additional subsidiary risks, depending on their properties, a specific classification flowchart for these substances is given in 2.4.5 of the UN Recommendations on the Transport of Dangerous Goods*.*

4.1 DEFINITIONS AND GENERAL PROVISIONS

4.1.1 Class 4 is divided into three divisions as follows:

a) Division 4.1 — Flammable solids.

Solids which, under conditions encountered in transport, are readily combustible or may cause or contribute to fire through friction; self-reactive substances which are liable to undergo a strongly exothermic reaction; desensitized explosives which may explode if not diluted sufficiently.

b) Division 4.2 — Substances liable to spontaneous combustion.

Substances which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up in contact with air, and being then liable to catch fire.

c) Division 4.3 — Substances which, in contact with water, emit flammable gases.

Substances which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.

4.1.2 As referenced in this Chapter, test methods and criteria, with advice on application of the tests, are given in the current edition of the UN *Manual of Tests and Criteria*, for the classification of the following types of substances of Class 4:

a) Flammable solids (Division 4.1);

b) Self-reactive substances (Division 4.1);

c) Pyrophoric solids (Division 4.2);

d) Pyrophoric liquids (Division 4.2);

e) Self-heating substances (Division 4.2); and

f) Substances which, in contact with water, emit flammable gases (Division 4.3).

Test methods and criteria for self-reactive substances are given in Part II of the UN *Manual of Tests and Criteria*, and test methods and criteria for the other types of substances of Class 4 are given in Part III, section 33 of the UN *Manual of Tests and Criteria*.

4.2 FLAMMABLE SOLIDS, SELF-REACTIVE SUBSTANCES AND DESENSITIZED EXPLOSIVES

4.2.1 General

Division 4.1 includes the following types of substances:

a) flammable solids (see 4.2.2);

b) self-reactive substances (see 4.2.3); and

c) solid desensitized explosives (see 4.2.4).

4.2.2 Division 4.1 — Flammable solids

4.2.2.1 *Definitions and properties*

4.2.2.1.1 Flammable solids are readily combustible solids and solids which may cause fire through friction.

4.2.2.1.2 Readily combustible solids are powdered, granular or pasty substances which are dangerous if they can be easily ignited by brief contact with an ignition source, such as a burning match, and if the flame spreads rapidly. The danger may not only come from the fire but also from toxic combustion products. Metal powders are especially dangerous because of the difficulty of extinguishing a fire since normal extinguishing agents such as carbon dioxide or water can increase the hazard.

4.2.2.2 *Classification of flammable solids*

4.2.2.2.1 Powdered, granular or pasty substances must be classified as readily combustible solids of Division 4.1 when the time of burning of one or more of the test runs, performed in accordance with the test methods and criteria in the UN *Manual of Tests and Criteria,* Part III, subsection 33.2.1, is less than 45 seconds or the rate of burning is more than 2.2 mm/s. Powders of metals or metal alloys must be classified in Division 4.1 when they can be ignited and the reaction spreads over the whole length of the sample in 10 minutes or less.

4.2.2.2.2 Solids which may cause fire through friction must be classified in Division 4.1 by analogy with existing entries (e.g. matches) until definitive criteria are established.

4.2.2.3 *Assignment of packing groups*

4.2.2.3.1 Packing groups are assigned on the basis of the test methods referred to in 4.2.2.2.1. For readily combustible solids (other than metal powders), Packing Group II must be assigned if the burning time is less than 45 seconds and the flame passes the wetted zone. Packing Group II must be assigned to powders of metal or metal alloys if the zone of reaction spreads over the whole length of the sample in 5 minutes or less.

4.2.2.3.2 Packing groups are assigned on the basis of the test methods referred to in 4.2.2.2.1. For readily combustible solids (other than metal powders), Packing Group III must be assigned if the burning time is less than 45 seconds and the wetted zone stops the flame propagation for at least 4 minutes. Packing Group III must be assigned to metal powders if the reaction spreads over the whole length of the sample in more than 5 minutes but not more than 10 minutes.

4.2.2.3.3 Solids which may cause fire through friction must be assigned to a packing group by analogy with existing entries or in accordance with any appropriate special provision (see Table 3-2).

4.2.3 Division 4.1 — Self-reactive substances

4.2.3.1 *Definitions and properties*

4.2.3.1.1 Definitions

For the purposes of these Instructions:

Self-reactive substances are thermally unstable substances liable to undergo a strongly exothermic decomposition even without the participation of oxygen (air). The following substances must not be considered to be self-reactive substances of Division 4.1 if:

a) they are explosives according to the criteria of Class 1;

b) they are oxidizing substances according to the classification procedure for Division 5.1 (see 5.2.1.1) except that mixtures of oxidizing substances which contain 5.0 per cent or more of combustible organic substances must be subjected to the classification procedure defined in Note 3;

c) they are organic peroxides according to the criteria of Division 5.2;

d) their heat of decomposition is less than 300 J/g; or

e) their self-accelerating decomposition temperature is greater than 75°C for a 50 kg package.

Note 1.— The heat of decomposition can be determined by using any internationally recognized method, e.g. differential scanning calorimetry and adiabatic calorimetry.

Note 2. — Any substance which shows the properties of a self-reactive substance must be classified as such, even if this substance gives a positive test result, according to 4.3.2 for inclusion in Division 4.2.

Note 3.— Mixtures of oxidizing substances meeting the criteria of Division 5.1 which contain 50 per cent or more of combustible organic substances, which do not meet the criteria mentioned in a), c), d) or e) above, must be subjected to the self-reactive substance classification procedure.

A mixture showing the properties of a self-reactive substance, type B to F, must be classified as a self-reactive substance of Division 4.1.

A mixture showing the properties of a self-reactive substance, type G, according to the principle of 2.4.2.3.3.2 (g) of the UN Recommendations must be considered for classification as a substance of Division 5.1 (see 5.2.1.1).

4.2.3.1.2 Properties

The decomposition of self-reactive substances can be initiated by heat, contact with catalytic impurities (e.g. acids, heavy-metal compounds, bases), friction or impact. The rate of decomposition increases with temperature and varies with the substance. Decomposition, particularly if no ignition occurs, may result in the evolution of toxic gases or vapours. For certain self-reactive substances, the temperature must be controlled. Some self-reactive substances may decompose explosively, particularly if confined; this characteristic may be modified by the addition of diluents or by the use of appropriate packagings. Some self-reactive substances burn vigorously. Self-reactive substances include some of the following types of compounds:

a) aliphatic azo compounds (—C—N=N—C—);

b) organic azides (—C—N_3);

c) diazonium salts (—CN_2^+Z);

d) N-nitroso compounds (—N—N=O); and

e) aromatic sulphohydrazides (—SO_2—NH—NH_2).

This list is not exhaustive and substances with other reactive groups and some mixtures of substances may have similar properties.

4.2.3.2 *Classification of self-reactive substances*

4.2.3.2.1 Self-reactive substances are classified according to the degree of danger they present.

4.2.3.2.2 Related substances are specifically listed by name in the Dangerous Goods List (Table 3-1). Related substances are UN 2956, UN 3242 and UN 3251.

4.2.3.2.3 Self-reactive substances permitted for transport are listed in 4.2.3.2.4. For each permitted substance listed, the appropriate generic entry of the Dangerous Goods List (UN 3221 to 3240) is assigned, and appropriate subsidiary risks and remarks providing relevant information are given. The generic entries specify:

— the self-reactive substance type (B to F);

— the physical state (i.e. liquid/solid); and

— when temperature control is required.

4.2.3.2.4 List of currently assigned self-reactive substances in packages

The following table (Table 2-6) is reproduced from 2.4.2.3.2.3 of the UN *Recommendations on the Transport of Dangerous Goods* (Fifteenth revised edition), with irrelevant material removed.

Table 2-6. List of currently assigned self-reactive substances in packages

Note.— Self-reactive substances to be transported must fulfil the classification and the control and emergency temperatures (derived from the self-accelerating decomposition temperature (SADT)) as listed.

Self-reactive substance	*Concentration (%)*	*Control temperature (°C)*	*Emergency temperature (°C)*	*UN generic entry*	*Notes*
Acetone-pyrogallol copolymer 2-diazo-1-naphthol-5-sulphonate	100			3228	
Azodicarbonamide formulation type B, temperature controlled	<100			FORBIDDEN	1, 2
Azodicarbonamide formulation type C	<100			3224	3
Azodicarbonamide formulation type C, temperature controlled	<100			3234	3
Azodicarbonamide formulation type D	<100			3226	4
Azodicarbonamide formulation type D, temperature controlled	<100			3236	4
2,2'-Azodi (2,4-dimethyl-4-methoxyvaleronitrile)	100	–5	+5	3236	
2,2'-Azodi (2,4-dimethyl-valeronitrile)	100	+10	+15	3236	
2,2'-Azodi (ethyl-2-methylpropionate)	100	+20	+25	3235	
1,1'-Azodi (hexahydrobenzonitrile)	100			3226	
2,2'-Azodi (isobutyronitrile)	100	+40	+45	3234	
2,2'-Azodi (isobutyronitrile) as a water-based paste	≤50			3224	
2,2'-Azodi (2-methylbutyronitrile)	100	+35	+40	3236	
Benzene-1,3-disulphonyl hydrazide, as a paste	52			3226	
Benzenesulphonyl hydrazide	100			3226	
4-(Benzyl(ethyl)amino)-3-ethoxybenzenediazonium zinc chloride	100			3226	
4-(Benzyl(methyl)amino)-3-ethoxybenzenediazonium zinc chloride	100	+40	+45	3236	
3-Chloro-4-diethylaminobenzenediazonium zinc chloride	100			3226	
2-Diazo-1-naphthol-4-sulphonyl chloride	100			FORBIDDEN	2
2-Diazo-1-naphthol-5-sulphonyl chloride	100			FORBIDDEN	2
2-Diazo-1-naphthol sulphonic acid ester mixture, type D	<100			3226	7
2,5-Dibutoxy-4-(4-morpholinyl)-benzenediazonium, tetrachlorozincate (2:1)	100			3228	
2,5-Diethoxy-4-morpholinobenzenediazonium tetrafluoroborate	100	+30	+35	3236	
2,5-Diethoxy-4-morpholinobenzenediazonium zinc chloride	67-100	+35	+40	3236	
2,5-Diethoxy-4-morpholinobenzenediazonium zinc chloride	66	+40	+45	3236	
2,5-Diethoxy-4-(4-morpholinyl)-benzenediazonium sulphate	100			3226	
2,5-Diethoxy-4-(phenylsulphonyl) benzenediazonium zinc chloride	67	+40	+45	3236	
Diethylenegycol bis (allyl carbonate) + Di-isopropyl-peroxydicarbonate	≥88 + ≤12	10	0	3237	
2,5-Dimethoxy-4-(4-methylphenylsulphonyl) benzenediazonium zinc chloride	79	+40	+45	3236	
4-(Dimethylamino)-benzenediazonium trichlorozincate (-1)	100			3228	
4-Dimethylamino-6-(2-dimethylaminoethoxy) toluene-2-diazonium zinc chloride	100	+40	+45	3236	
N,N'-Dinitroso-N,N'-dimethyl terephthalamide, as a paste	72			3224	
N,N'-Dinitrosopentamethylenetetramine	82			3224	5
Diphenyloxide-4,4'-disulphonyl hydrazide	100			3226	
4-Dipropylaminobenzenediazonium zinc chloride	100			3226	

Self-reactive substance	*Concentration (%)*	*Control temperature (°C)*	*Emergency temperature (°C)*	*UN generic entry*	*Notes*
2-(n,n-Ethoxycarbonylphenylamino)-3-methoxy-4-(n-methyl-n-cyclohexylamino) benzenediazonium zinc chloride	63-92	+40	+45	3236	
2-(n,n-Ethoxycarbonylphenylamino)-3-methoxy-4-(n-methyl-n-cyclohexylamino) benzenediazonium zinc chloride	62	+35	+40	3236	
N-Formyl-2-(nitromethylene)-1,3-perhydrothiazine	100	+45	+50	3236	
2-(2-Hydroxyethoxy)-1-(pyrrolidin-1-yl) benzene-4-diazonium zinc chloride	100	+45	+50	3236	
3-(2-Hydroxyethoxy)-4-(pyrrolidin-1-yl) benzenediazonium zinc chloride	100	+40	+45	3236	
2-(n,n-Methylaminoethylcarbonyl)-4-(3,4-dimethylphenylsulphonyl) benzenediazonium hydrogen sulphate	96	+45	+50	3236	
4-Methylbenzenesulphonylhydrazide	100			3226	
3-Methyl-4-(pyrrolidin-1-yl) benzenediazonium tetrafluoroborate	95	+45	+50	3234	
4-Nitrosophenol	100	+35	+40	3236	
Self-reactive liquid, sample				3223	6
Self-reactive liquid, sample temperature controlled				3233	6
Self-reactive solid, sample				3224	6
Self-reactive solid, sample temperature controlled				3234	6
Sodium 2-diazo-1-naphthol-4-sulphonate	100			3226	
Sodium 2-diazo-1-naphthol-5-sulphonate	100			3226	
Tetramine palladium (II) nitrate	100	+30	+35	3234	

NOTES:

1. Azodicarbonamide formulations which fulfil the criteria of 2.4.2.3.3.2 (b) of the UN Recommendations.
2. "EXPLOSIVE" subsidiary risk label required and consequently forbidden for transport by air under any circumstance.
3. Azodicarbonamide formulations which fulfil the criteria of 2.4.2.3.3.2 (c) of the UN Recommendations.
4. Azodicarbonamide formulations which fulfil the criteria of 2.4.2.3.3.2 (d) of the UN Recommendations.
5. With a compatible diluent having a boiling point of not less than 150°C.
6. See 4.2.3.2.6.
7. This entry applies to mixtures of esters of 2-diazo-1-naphthol-4-sulphonic acid and 2-diazo-1-naphthol-5-sulphonic acid meeting the criteria of 2.4.2.3.3.2 d) of the UN Recommendations.

4.2.3.2.5 Classification of self-reactive substances not listed in Table 2-6 and assignment to a generic entry must be made by the appropriate authority of the State of Origin on the basis of a test report. Principles applying to the classification of such substances are provided in 2.4.2.3.3 of the UN Recommendations. The applicable classification procedures, test methods and criteria, and an example of a suitable test report, are given in the current edition of the UN *Manual of Tests and Criteria*, Part II. The statement of approval must contain the classification and the relevant transport conditions.

4.2.3.2.6 Samples of self-reactive substances not listed in Table 2-6, for which a complete set of test results is not available and which are to be transported for further testing or evaluation, may be assigned to one of the appropriate entries for self-reactive substances type C provided the following conditions are met:

a) the available data indicate that the sample would be no more dangerous than self-reactive substances type B;

b) the sample is packed in a combination packaging consisting of a plastic IP.2 inner packaging with a capacity not exceeding 0.5 L or 0.5 kg which is placed in a wooden box (4C1), plywood box (4D) or fibreboard box (4G) with the maximum net quantity per package not exceeding 1 L or 1 kg; and

c) the available data indicate that the control temperature, if any, is sufficiently low to prevent any dangerous decomposition and sufficiently high to prevent any dangerous phase separation.

4.2.3.3 *Temperature control requirements*

With the exception of self-reactive solids of type B, which are forbidden for transport by air under any circumstance, self-reactive substances which require temperature control during transport are forbidden for transport by air unless exempted (see 1;1.1.2). Self-reactive substances must be subject to temperature control if their self-accelerating decomposition temperature (SADT) is less than or equal to 55°C. Test methods for determining the SADT are given in the current edition of the UN *Manual of Tests and Criteria*. The test selected must be conducted in a manner which is representative of the package to be transported both in size and material of construction.

4.2.3.4 *Desensitization of self-reactive substances*

4.2.3.4.1 In order to ensure safety in transport, self-reactive substances may be desensitized by the use of a diluent. When a diluent is used, the self-reactive substance must be tested with the diluent present in the concentration and form to be used in transport.

4.2.3.4.2 Diluents, which may allow a self-reactive substance to concentrate to a dangerous extent in the event of leakage from a package, must not be used.

4.2.3.4.3 The diluent used must be compatible with the self-reactive substance. In this regard, compatible diluents are those solids or liquids which have no detrimental influence on the thermal stability and hazard type of the self-reactive substance.

4.2.4 Division 4.1 — Solid desensitized explosives

4.2.4.1 *Definition*

≠ Solid desensitized explosives are explosive substances which are wetted with water or alcohols or are diluted with other substances to form a homogeneous solid mixture to suppress their explosive properties. Entries in the Dangerous Goods List for solid desensitized explosives are UN 1310, 1320, 1321, 1322, 1336, 1337, 1344, 1347, 1348, 1349, 1354, 1355, 1356, 1357, 1517, 1571, 2555, 2556, 2557, 2852, 2907, 3317, 3319, 3344, 3364, 3365, 3366, 3367, 3368, 3369, 3370, 3376, UN 3380 and UN 3474.

4.2.4.2 Substances that:

a) have been provisionally accepted into Class 1 according to Test Series 1 and 2 but exempted from Test Series 6;

b) are not self-reactive substances of Division 4.1;

c) are not substances of Class 5.

are also assigned to Division 4.1. UN 2956, UN 3241, UN 3242 and UN 3251 are such entries.

4.3 SUBSTANCES LIABLE TO SPONTANEOUS COMBUSTION (DIVISION 4.2)

4.3.1 Definitions and properties

4.3.1.1 Division 4.2 includes:

a) pyrophoric substances: substances, including mixtures and solutions (liquid or solid), which even in small quantities ignite within 5 minutes of coming into contact with air. These substances are the most liable to spontaneous combustion and are called pyrophoric substances; and

b) self-heating substances: other substances which in contact with air without energy supply are liable to self-heating. These substances will ignite only when in large amounts (kilograms) and after long periods of time (hours or days) and are called self-heating substances.

4.3.1.2 Self-heating of substances, leading to spontaneous combustion, is caused by reaction of the substance with oxygen (in the air) and the heat developed not being conducted away sufficiently rapidly to the surroundings. Spontaneous combustion occurs when the rate of heat production exceeds the rate of heat loss and the auto-ignition temperature is reached.

4.3.2 Classification in Division 4.2

4.3.2.1 Solids are considered pyrophoric solids which must be classified in Division 4.2 if, in tests performed in accordance with the test method given in the current edition of the UN *Manual of Tests and Criteria*, Part III, subsection 33.3.1, the sample ignites in one of the tests.

4.3.2.2 Liquids are considered pyrophoric liquids which must be classified in Division 4.2 if, in tests performed in accordance with the test method given in the current edition of the UN *Manual of Tests and Criteria*, Part III, subsection 33.3.1.5, the liquid ignites in the first part of the test, or if it ignites or chars the filter paper.

4.3.2.3 *Self-heating substances*

4.3.2.3.1 A substance must be classified as a self-heating substance of Division 4.2 if, in tests performed in accordance with the test method given in the current edition of the UN *Manual of Tests and Criteria*, Part III, subsection 33.3.1.6:

a) a positive result is obtained using a 25 mm sample cube at 140°C;

b) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 100 mm sample cube at 120°C and the substance is to be transported in packages with a volume of more than 3 m^3;

c) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 100 mm sample cube at 100°C and the substance is to be transported in packaging with a volume of more than 450 L;

d) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a positive result is obtained using a 100 mm sample cube at 100°C.

Self-reactive substances, except for type G, which also give a positive result according to this test method must not be classified in Division 4.2 but in Division 4.1 (see 4.2.3.1.1).

4.3.2.3.2 A substance must not be classified in Division 4.2 if:

a) a negative result is obtained in a test using a 100 mm sample cube at 140°C;

b) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 25 mm sample cube at 140°C, a negative result is obtained in a test using a 100 mm sample cube at 120°C and the substance is to be transported in packagings with a volume of not more than 3 cubic metres; or

c) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 25 mm sample cube at 140°C, a negative result is obtained in a test using a 100 mm sample cube at 100°C and the substance is to be transported in packagings with a volume of not more than 450 L.

4.3.3 Assignment of packing groups

4.3.3.1 Packing Group I must be assigned to all pyrophoric liquids and solids.

4.3.3.2 Packing Group II must be assigned to self-heating substances which give positive results in a test using a 25 mm sample cube at 140°C.

4.3.3.3 Packing Group III must be assigned to self-heating substances if:

a) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 25 mm sample cube at 140°C and the substance is to be transported in packagings with a volume of more than 3 cubic metres;

b) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 25 mm sample cube at 140°C, a positive result is obtained in a test using a 100 mm sample cube at 120°C and the substance is to be transported in packagings with a volume of more than 450 L; or

c) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 25 mm sample cube at 140°C and a positive result is obtained in a test using a 100 mm sample cube at 100°C.

4.4 SUBSTANCES WHICH, IN CONTACT WITH WATER, EMIT FLAMMABLE GASES (DIVISION 4.3)

4.4.1 Definitions and properties

4.4.1.1 Division 4.3 — Substances which, in contact with water, emit flammable gases.

4.4.1.2 Certain substances in contact with water emit flammable gases which can form explosive mixtures with air. Such mixtures are easily ignited by all ordinary sources of ignition, for example, naked lights, sparking handtools or unprotected light bulbs. The resulting blast wave and flames may endanger people and the environment. The test method referred to in 4.4.2

must be used to determine whether the reaction of a substance with water leads to the development of a dangerous amount of gases which may be flammable. It must not be applied to pyrophoric substances.

4.4.2 Classification in Division 4.3

Substances which, in contact with water, emit flammable gases must be classified in Division 4.3 if, in tests performed in accordance with the test method given in the UN *Manual of Tests and Criteria*, Part III, subsection 33.4.1:

a) spontaneous ignition takes place in any step of the test procedure; or

b) there is an evolution of a flammable gas at a rate greater than 1 L/kg of the substance per hour.

4.4.3 Assignment of packing groups

4.4.3.1 Packing Group I must be assigned to any substance which reacts vigorously with water at ambient temperatures and demonstrates generally a tendency for the gas produced to ignite spontaneously, or which reacts readily with water at ambient temperatures such that the rate of evolution of flammable gas is equal to or greater than 10 L/kg of substance over any one minute.

4.4.3.2 Packing Group II must be assigned to any substance which reacts readily with water at ambient temperatures such that the maximum rate of evolution of flammable gas is equal to or greater than 20 L/kg of substance per hour, and which does not meet the criteria for Packing Group I.

4.4.3.3 Packing Group III must be assigned to any substance which reacts slowly with water at ambient temperatures such that the maximum rate of evolution of flammable gas is equal to or greater than 1 L/kg of substance per hour, and which does not meet the criteria for Packing Groups I or II.

4.5 CLASSIFICATION OF ORGANOMETALLIC SUBSTANCES

Depending on their properties, organometallic substances may be classified in Divisions 4.2 or 4.3, as appropriate, in accordance with the flowchart scheme given in Figure 2.4.2 of the UN *Recommendations on the Transport of Dangerous Goods.*

Chapter 5

CLASS 5 — OXIDIZING SUBSTANCES; ORGANIC PEROXIDES

INTRODUCTORY NOTE

Because of the different properties exhibited by dangerous goods within Divisions 5.1 and 5.2, it is impracticable to establish a single criterion for classification in either division. Tests and criteria for assignment to the two divisions of Class 5 are addressed in this Chapter and in the UN *Manual of Tests and Criteria*.

5.1 DEFINITIONS AND GENERAL PROVISIONS

Class 5 is divided into two divisions as follows:

a) Division 5.1 — Oxidizing substances

Substances which, in themselves are not necessarily combustible, may generally, by yielding oxygen, cause or contribute to the combustion of other material. Such substances may be contained in an article.

b) Division 5.2 — Organic peroxides

Organic substances which contain the bivalent —0—0— structure and may be considered derivatives of hydrogen peroxide, where one or both of the hydrogen atoms have been replaced by organic radicals. Organic peroxides are thermally unstable substances, which may undergo exothermic, self-accelerating decomposition. In addition, they may have one or more of the following properties:

i) be liable to explosive decomposition;

ii) burn rapidly;

iii) be sensitive to impact or friction;

iv) react dangerously with other substances;

v) cause damage to the eyes.

5.2 OXIDIZING SUBSTANCES (DIVISION 5.1)

5.2.1 Classification in Division 5.1

5.2.1.1 Oxidizing substances are classified in Division 5.1 in accordance with the test methods, procedures and criteria in 5.2.2, 5.2.3 and the UN *Manual of Tests and Criteria,* Part III, section 34. In the event of divergence between test results and known experience, the appropriate authority of the State of Origin must be consulted to establish the appropriate classification and packing group.

Note.— Where substances of this division are listed in the Dangerous Goods List in 3;2, reclassification of those substances in accordance with these criteria need only be undertaken when this is necessary for safety.

5.2.2 Oxidizing solids

5.2.2.1 *Criteria for classification in Division 5.1*

5.2.2.1.1 Tests are performed to measure the potential for a solid substance to increase the burning rate or burning intensity of a combustible substance when the two are thoroughly mixed. The procedure is given in the UN *Manual of Tests and Criteria*, Part III, subsection 34.4.1. Tests are conducted on the substance to be evaluated mixed with dry fibrous cellulose in mixing ratios of 1:1 and 4:1, by mass, of sample to cellulose. The burning characteristics of the mixtures are compared with the standard 3:7

mixture, by mass, of potassium bromate to cellulose. If the burning time is equal to or less than this standard mixture, the burning times should be compared with those from the Packing Group I or II reference standards, 3:2 and 2:3 ratios, by mass, of potassium bromate to cellulose, respectively.

5.2.2.1.2 The classification test results are assessed on the basis of:

a) the comparison of the mean burning time with those of the reference mixtures; and

b) whether the mixture of substance and cellulose ignites and burns.

5.2.2.1.3 A solid substance is classified in Division 5.1 if the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning time equal to or less than the mean burning time of a 3:7 mixture (by mass) of potassium bromate and cellulose.

5.2.2.1.4 Assignment of packing groups

Solid oxidizing substances are assigned to a packing group according to the test procedure in the UN *Manual of Tests and Criteria*, Part III, section 34.4.1, in accordance with the following criteria:

a) Packing Group I: any substance which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning time less than the mean burning time of a 3:2 mixture, by mass, of potassium bromate and cellulose;

b) Packing Group II: any substance which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning time equal to or less than the mean burning time of a 2:3 mixture (by mass) of potassium bromate and cellulose and the criteria for Packing Group I are not met;

c) Packing Group III: any substance which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning time equal to or less than the mean burning time of a 3:7 mixture (by mass) of potassium bromate and cellulose and the criteria for Packing Groups I and II are not met;

d) Not Division 5.1: any substance which, in both the 4:1 and 1:1 sample-to-cellulose ratio (by mass) tested, does not ignite and burn, or exhibits mean burning times greater than that of a 3:7 mixture (by mass) of potassium bromate and cellulose.

5.2.3 Oxidizing liquids

5.2.3.1 *Criteria for classification in Division 5.1*

5.2.3.1.1 A test is performed to determine the potential for a liquid substance to increase the burning rate or burning intensity of a combustible substance or for spontaneous ignition to occur when the two are thoroughly mixed. The procedure is given in the UN *Manual of Tests and Criteria*, Part III, subsection 34.4.2. It measures the pressure rise time during combustion. Whether a liquid is an oxidizing substance of Division 5.1 and, if so, whether Packing Group I, II or III must be assigned, is decided on the basis of the test result (see also precedence of hazards characteristics).

5.2.3.1.2 The classification test results are assessed on the basis of:

a) whether the mixture of substance and cellulose spontaneously ignites;

b) the comparison of the mean time taken for the pressure to rise from 690 kPa to 2 070 kPa gauge with those of the reference substances.

5.2.3.1.3 A liquid substance is classified in Division 5.1 if the 1:1 mixture, by mass, of substance and cellulose tested, exhibits a mean pressure rise time less than or equal to the mean pressure rise time of a 1:1 mixture, by mass, of 65 per cent aqueous nitric acid and cellulose.

5.2.3.2 *Assignment of packing groups*

Liquid oxidizing substances are assigned to a packing group according to the test procedure in the UN *Manual of Tests and Criteria*, Part III, section 34.4.2, in accordance with the following criteria:

Packing Group I: any substance which, in the 1:1 mixture, by mass, of substance and cellulose tested, spontaneously ignites; or the mean pressure rise time of a 1:1 mixture, by mass, of substance and cellulose is less than that of a 1:1 mixture, by mass, of 50 per cent perchloric acid and cellulose.

Packing Group II: any substance which, in the 1:1 mixture, by mass, of substance and cellulose tested, exhibits a mean pressure rise time less than or equal to the mean pressure rise time of a 1:1 mixture, by mass, of 40 per cent aqueous sodium chlorate solution and cellulose; and the criteria for Packing Group I are not met.

Packing Group III: any substance which, in the 1:1 mixture, by mass, of substance and cellulose tested, exhibits a mean pressure rise time less than or equal to the mean pressure rise time of a 1:1 mixture, by mass, of 65 per cent aqueous nitric acid and cellulose; and the criteria for Packing Groups I and II are not met.

Not Division 5.1: any substance which, in the 1:1 mixture, by mass, of substance and cellulose tested, exhibits a pressure rise of less than 2 070 kPa gauge; or exhibits a mean pressure rise time greater than the mean pressure rise time of a 1:1 mixture, by mass, of 65 per cent aqueous nitric acid and cellulose.

5.3 ORGANIC PEROXIDES (DIVISION 5.2)

5.3.1 Properties

5.3.1.1 Organic peroxides are liable to exothermic decomposition which can be started by heat, contact with impurities (e.g. acids, heavy metal compounds, amines), friction or impact. The rate of decomposition increases with temperature and varies with the peroxide formulation. Decomposition may result in the evolution of harmful or flammable gases or vapours. For certain organic peroxides the temperature must be controlled during transport. Some organic peroxides decompose explosively, particularly if confined. This characteristic may be modified by the addition of diluents or by the use of appropriate packagings. Many organic peroxides burn vigorously.

5.3.1.2 Contact of organic peroxides with the eyes should be avoided. Some organic peroxides will cause serious injury to the cornea, even after brief contact, or will be corrosive to the skin.

5.3.2 Classification of organic peroxides

5.3.2.1 Any organic peroxide must be considered for classification in Division 5.2 unless the organic peroxide formulation contains:

a) not more than 1.0 per cent available oxygen from the organic peroxides when containing not more than 1.0 per cent hydrogen peroxide; or

b) not more than 0.5 per cent available oxygen from the organic peroxides when containing more than 1.0 per cent but not more than 7.0 per cent hydrogen peroxide.

Note.— The available oxygen content (per cent) of an organic peroxide formulation is given by the formula

$$16 \times \Sigma \, (n_i \times c_i / m_i)$$

where n_i *= number of peroxygen groups per molecule of organic peroxide i;*

c_i *= concentration (mass in percentage) of organic peroxide i; and*

m_i *= molecular mass of organic peroxide i.*

5.3.2.2 Organic peroxides are classified according to the degree of danger they present.

≠ 5.3.2.3 Organic peroxides permitted for transport are listed in 5.3.2.4. For each permitted substance, Table 2-7 assigns the appropriate generic entry in the Dangerous Goods List (UN 3103 to 3120) and provides relevant information. The generic entries specify:

a) organic peroxide type (B to F);

b) physical state (liquid or solid); and

c) temperature control, when required (see 5.3.3).

5.3.2.3.1 Mixtures of the listed formulations may be classified as the same type of organic peroxide as that of the most dangerous component and be transported under the conditions of transport given for this type. However, as two stable components can form a thermally less stable mixture, the self-accelerating decomposition temperature (SADT) of the mixture must be determined and, if necessary, temperature control applied as required by 5.3.3.

5.3.2.4 *List of currently assigned organic peroxides*

≠ The following table (Table 2-7) is reproduced from 2.5.3.2.4 of the UN *Recommendations on the Transport of Dangerous Goods* (Fifteenth revised edition), with irrelevant material removed.

5.3.2.5 Classification of organic peroxides not listed in 5.3.2.4 and assignment to a generic entry must be made by the appropriate authority of the State of Origin on the basis of a test report. Principles applying to the classification of such substances are provided in 2.5.3.3 of the UN Recommendations. The applicable classification procedures, test methods and criteria, and an example of a suitable test report, are given in the current edition of the UN *Manual of Tests and Criteria*, Part II. The statement of approval must contain the classification and the relevant transport conditions.

5.3.2.6 Samples of new formulations of organic peroxides not listed in 5.3.2.4 for which complete test data are not available and which are to be transported for further testing or evaluation may be assigned to one of the appropriate entries for **Organic peroxide Type C** provided that the following conditions are met:

a) the available data indicate that the sample would be no more dangerous than organic peroxide type B;

b) it is packed in a combination packaging consisting of a plastic IP.2 inner packaging with a capacity not exceeding 0.5 L or 0.5 kg which is placed in a wooden box (4C1), plywood box (4D) or fibreboard box (4G) with the maximum net quantity per package not exceeding 1 L or 1 kg; and

c) the available data indicate that the control temperature, if any, is sufficiently low to prevent any dangerous decomposition and sufficiently high to prevent any dangerous phase separation.

5.3.3 Temperature control requirements

5.3.3.1 An organic peroxide formulation must be regarded as possessing explosive properties when, in laboratory testing, the formulation is liable to detonate, to deflagrate rapidly or to show a violent effect when heated under confinement. With the exception of organic peroxides of type B, which are forbidden for transport by air under any circumstance, organic peroxides requiring temperature control during transport are forbidden for transport by air unless exempted (see 1;1.1.2).

5.3.3.2 The following organic peroxides must be subjected to temperature control during carriage:

a) organic peroxides types B and C with an SADT ≤50°C;

b) organic peroxides type D showing a medium effect when heated under confinement with an SADT ≤50°C or showing a low or no effect when heated under confinement with an SADT ≤45°C; and

c) organic peroxides types E and F with an SADT ≤45°C.

5.3.3.3 Test methods for determining the SADT are given in the UN *Manual of Tests and Criteria*, Part III, section 28. The test selected must be conducted in a manner which is representative of the package to be transported.

5.3.3.4 Test methods for determining the flammability are given in the UN *Manual of Tests and Criteria*, Part III, subsection 32.4.

5.3.4 Desensitization of organic peroxides

5.3.4.1 In order to ensure safety during transport, organic peroxides are, in many cases, desensitized by organic liquids or solids, inorganic solids or water. Where a percentage of a substance is stipulated, this refers to the percentage by mass, rounded to the nearest whole number. In general, desensitization should be such that in case of spillage or fire, the organic peroxide may not concentrate to a dangerous extent.

5.3.4.2 Unless otherwise stated for the individual organic peroxide formulation, the following definitions apply for diluents used for desensitization:

a) *Diluents type A* are organic liquids which are compatible with the organic peroxide and which have a boiling point of not less than 150°C. Type A diluents may be used for desensitizing all organic peroxides;

b) *Diluents type B* are organic liquids which are compatible with the organic peroxide and which have a boiling point of less than 150°C but not less than 60°C and a flash point of not less than 5°C. Type B diluents may be used for desensitization of all provided that the boiling point of the liquid is at least 60°C higher than the SADT in a 50 kg package.

5.3.4.3 Diluents, other than type A or type B, may be added to organic peroxide formulations as listed in Table 2-7 provided that they are compatible. However, replacement of all or part of a type A or type B diluent by another diluent with differing properties requires that the organic peroxide formulation be reassessed in accordance with the normal acceptance procedure for Division 5.2.

5.3.4.4 Water may only be used for the desensitization of organic peroxides which are shown in Table 2-7 or in the statement of approval according to 5.3.2.5 with the approval of the appropriate authority of the State of Manufacture or when the organic peroxide formulation is specified as being with water or as a stable dispersion in water.

5.3.4.5 Organic and inorganic solids may be used for desensitization of organic peroxides provided that they are compatible.

5.3.4.6 Compatible liquids and solids are those which have no detrimental influence on the thermal stability and hazard type of the organic peroxide formulation.

Table 2-7. List of currently assigned organic peroxides in packages

Note.— Peroxides to be transported must fulfil the classification and the control and emergency temperatures (derived from the self-accelerating decomposition temperature (SADT)) as listed.

	Organic peroxide	*Concentration (per cent)*	*Diluent type A (per cent)*	*Diluent type B (per cent) (Note 1)*	*Inert solid (per cent)*	*Water (per cent)*	*Control tempera-ture (°C)*	*Emergency tempera-ture (°C)*	*UN generic entry*	*Notes*
	Acetyl acetone peroxide	≤42	≥48			≥8			3105	2
	Acetyl acetone peroxide	≤32 as a paste							3106	20
	Acetyl cyclohexanesulphonyl peroxide	≤82				≥12	–10	0	FORBIDDEN	3
	Acetyl cyclohexanesulphonyl peroxide	≤32		≥68			–10	0	3115	
	tert-Amyl hydroperoxide	≤88	≥6			≥6			3107	
	tert-Amyl peroxyacetate	≤62	≥38						3105	
	tert-Amyl peroxybenzoate	≤100							3103	
	tert-Amyl peroxy-2-ethylhexanoate	≤100					+20	+25	3115	
	tert-Amyl peroxy-2-ethylhexyl carbonate	≤100							3105	
	tert-Amylperoxy isopropyl carbonate	≤77	≥23						3103	
	tert-Amyl peroxyneodecanoate	≤77		≥23			0	+10	3115	
+	tert-Amyl peroxyneodecanoate	≤47	≥53				0	+10	3119	
	tert-Amyl peroxypivalate	≤77		≥23			+10	+15	3113	
	tert-Amylperoxy-3,5,5-trimethylhexanoate	≤100							FORBIDDEN	3
	tert-Butyl cumyl peroxide	>42-100							3107	
	tert-Butyl cumyl peroxide	≤52			≥48				3108	
	n-Butyl-4,4-di-(tert-butylperoxy) valerate	>52-100							3103	
	n-Butyl-4,4-di-(tert-butylperoxy) valerate	≤52			≥48				3108	
	tert-Butyl hydroperoxide	>79-90				≥10			3103	13
	tert-Butyl hydroperoxide	≤80	≥20						3105	4,13
	tert-Butyl hydroperoxide	≤79				>14			3107	13,23
	tert-Butyl hydroperoxide	≤72				≥28			3109	13
	tert-Butyl hydroperoxide + Di-tert-butylperoxide	<82 + >9				≥7			3103	13
	tert-Butyl monoperoxymaleate	>52-100							FORBIDDEN	3
	tert-Butyl monoperoxymaleate	≤52	≥48						3103	
	tert-Butyl monoperoxymaleate	≤52			≥48				3108	
	tert-Butyl monoperoxymaleate	≤52 as a paste							3108	
	tert-Butyl peroxyacetate	>52-77	≥23						FORBIDDEN	3
	tert-Butyl peroxyacetate	>32-52	≥48						3103	
	tert-Butyl peroxyacetate	≤32		≥68					3109	
	tert-Butyl peroxybenzoate	>77-100							3103	
	tert-Butyl peroxybenzoate	>52-77	≥23						3105	
	tert-Butyl peroxybenzoate	≤52			≥48				3106	
	tert-Butyl peroxybutyl fumarate	≤52	≥48						3105	
	tert-Butyl peroxycrotonate	≤77	≥23						3105	
	tert-Butyl peroxydiethylacetate	≤100					+20	+25	3113	

	Organic peroxide	Concentration (per cent)	Diluent type A (per cent)	Diluent type B (per cent) (Note 1)	Inert solid (per cent)	Water (per cent)	Control tempera-ture (°C)	Emergency tempera-ture (°C)	UN generic entry	Notes
	tert-Butyl peroxy-2-ethylhexanoate	>52-100					+20	+25	3113	
	tert-Butyl peroxy-2-ethylhexanoate	>32-52		≥48			+30	+35	3117	
	tert-Butyl peroxy-2-ethylhexanoate	≤52			≥48		+20	+25	3118	
	tert-Butyl peroxy-2-ethylhexanoate	≤32		≥68			+40	+45	3119	
	tert-Butyl peroxy-2-ethylhexanoate + 2,2-Di-(tert-butylperoxy) butane	≤12 + ≤14	≥14		≥60				3106	
	tert-Butyl peroxy-2-ethylhexanoate + 2,2-Di-(tert-butylperoxy) butane	≤31 + ≤36	≥14	≥33			+35	+40	3115	
	tert-Butyl peroxy-2-ethylhexylcarbonate	≤100							3105	
	tert-Butyl peroxyisobutyrate	>52-77		≥23			+15	+20	FORBIDDEN	3
	tert-Butyl peroxyisobutyrate	≤52		≥48			+15	+20	3115	
	tert-Butylperoxy isopropylcarbonate	≤77	≥23						3103	
	1-(2-tert-Butylperoxy isopropyl)-3-isopropenylbenzene	≤77	≥23						3105	
	1-(2-tert-Butylperoxy isopropyl)-3-isopropenylbenzene	≤42			≥58				3108	
	tert-Butyl peroxy-2-methylbenzoate	≤100							3103	
	tert-Butyl peroxyneodecanoate	>77-100					–5	+5	3115	
	tert-Butyl peroxyneodecanoate	≤77		≥23			0	+10	3115	
	tert-Butyl peroxyneodecanoate	≤52 as a stable dispersion in water					0	+10	3119	
	tert-Butyl peroxyneodecanoate	≤42 as a stable dispersion in water (frozen)					0	+10	3118	
	tert-Butyl peroxyneodecanoate	≤32	≥68				0	+10	3119	
	tert-Butyl peroxyneoheptanoate	≤77	≥23				0	+10	3115	
	tert-Butyl peroxyneoheptanoate	≤42 as a stable dispersion in water					0	+10	3117	
	tert-Butyl peroxypivalate	>67-77	≥23				0	+10	3113	
	tert-Butyl peroxypivalate	>27-67		≥33			0	+10	3115	
	tert-Butyl peroxypivalate	≤27		≥73			+30	+35	3119	
	tert-Butylperoxy stearylcarbonate	≤100							3106	
	tert-Butyl peroxy-3,5,5- trimethylhexanoate	>32-100							3105	
+	tert-Butyl peroxy-3,5,5- trimethylhexanoate	≤42			≥58				3106	
	tert-Butyl peroxy-3,5,5- trimethylhexanoate	≤32		≥68					3109	
	3-Chloroperoxybenzoic acid	>57-86			≥14				FORBIDDEN	3
	3-Chloroperoxybenzoic acid	≤57			≥3	≥40			3106	
	3-Chloroperoxybenzoic acid	≤77			≥6	≥17			3106	
	Cumyl hydroperoxide	>90-98	≤10						3107	13
	Cumyl hydroperoxide	≤90	≤10						3109	13,18
	Cumyl peroxyneodecanoate	≤77		≥23			–10	0	3115	

	Organic peroxide	*Concentration (per cent)*	*Diluent type A (per cent)*	*Diluent type B (per cent) (Note 1)*	*Inert solid (per cent)*	*Water (per cent)*	*Control tempera-ture (°C)*	*Emergency tempera-ture (°C)*	*UN generic entry*	*Notes*
+	Cumyl peroxyneodecanoate	≤87	≥13				–10	0	3115	
	Cumyl peroxyneodecanoate	≤52 as a stable dispersion in water					–10	0	3119	
	Cumyl peroxyneoheptanoate	≤77	≥23				–10	0	3115	
	Cumyl peroxypivalate	≤77		≥23			–5	+5	3115	
	Cyclohexanone peroxide(s)	≤91				≥9			3104	13
	Cyclohexanone peroxide(s)	≤72	≥28						3105	5
	Cyclohexanone peroxide(s)	≤72 as a paste							3106	5,20
	Cyclohexanone peroxide(s)	≤32			≥68				Exempt	29
	Diacetone alcohol peroxides	≤57		≥26		≥8	+40	+45	3115	6
	Diacetyl peroxide	≤27		≥73			+20	+25	3115	7,13
	Di-tert-amyl peroxide	≤100							3107	
	1,1-Di-(tert-amylperoxy) cyclohexane	≤82	≥18						3103	
	Dibenzoyl peroxide	>51-100			≤48				FORBIDDEN	3
	Dibenzoyl peroxide	>77-94				≥6			FORBIDDEN	3
	Dibenzoyl peroxide	≤77				≥23			3104	
	Dibenzoyl peroxide	≤62			≥28	≥10			3106	
	Dibenzoyl peroxide	>52-62 as a paste							3106	20
	Dibenzoyl peroxide	>35-52			≥48				3106	
	Dibenzoyl peroxide	>36-42	≥18			≤40			3107	
	Dibenzoyl peroxide	≤56.5 as a paste				≥15			3108	
	Dibenzoyl peroxide	≤52 as a paste							3108	20
	Dibenzoyl peroxide	≤42 as a stable dispersion in water							3109	
	Dibenzoyl peroxide	≤35			≥65				Exempt	29
	Di-(4-tert-butylcyclohexyl) peroxydicarbonate	≤100					+30	+35	3114	
	Di-(4-tert-butylcyclohexyl) peroxydicarbonate	≤42 as a stable dispersion in water					+30	+35	3119	
	Di-tert-butyl peroxide	>52-100							3107	
	Di-tert-butyl peroxide	≤52	≥48						3109	25
	Di-tert-butyl peroxyazelate	≤52	≥48						3105	
+	2,2-Di-(tert-amylperoxy)butane	≤57	≥43						3105	
	2,2-Di-(tert-butylperoxy)butane	≤52	≥48						3103	
	1,6-Di-(tert-butylperoxycarbonyloxy) hexane	≤72	≥28						3103	
	1,1-Di-(tert-butylperoxy)cyclohexane	>80-100							FORBIDDEN	3
	1,1-Di-(tert-butylperoxy)cyclohexane	>52-80	≥20						3103	
+	1,1-Di-(tert-butylperoxy)cyclohexane	≤72		≥28					3103	30
	1,1-Di-(tert-butylperoxy)cyclohexane	>42-52	≥48						3105	

	Organic peroxide	Concentration (per cent)	Diluent type A (per cent)	Diluent type B (per cent) (Note 1)	Inert solid (per cent)	Water (per cent)	Control tempera-ture (°C)	Emergency tempera-ture (°C)	UN generic entry	Notes
	1,1-Di-(tert-butylperoxy)cyclohexane	≤42	≥13		≥45				3106	
	1,1-Di-(tert-butylperoxy)cyclohexane	≤42	≥58						3109	
	1,1-Di-(tert-butylperoxy)cyclohexane	≤27	≥25						3107	21
	1,1-Di-(tert-butylperoxy)cyclohexane	≤13	≥13	≥74					3109	
+	1,1-Di-(tert-butylperoxy)cyclohexane + tert-butyl peroxy-2-ethylhexanoate	≤43+≤16	≥41						3105	
+	1,1-Di-(tert-butylperoxy)-3,3,5-trimethylcyclohexane	≤90		≥10					3103	30
	Di-n-butyl peroxydicarbonate	>27-52		≥48			–15	–5	3115	
	Di-n-butyl peroxydicarbonate	≤42 as a stable dispersion in water (frozen)					–15	–5	3118	
	Di-n-butyl peroxydicarbonate	≤27		≥73			–10	0	3117	
	Di-sec-butyl peroxydicarbonate	>52-100					–20	–10	3113	
	Di-sec-butyl peroxydicarbonate	≤52		≥48			–15	–5	3115	
	Di-(2-tert-butylperoxyisopropyl) benzene(s)	>42-100			≤57				3106	
	Di-(2-tert-butylperoxyisopropyl) benzene(s)	≤42			≥58				Exempt	29
	Di-(tert-butylperoxy)phthalate	>42-52	≥48						3105	
	Di-(tert-butylperoxy)phthalate	≤52 as a paste							3106	20
	Di-(tert-butylperoxy)phthalate	≤42	≥58						3107	
	2,2-Di-(tert-butylperoxy)propane	≤52	≥48						3105	
	2,2-Di-(tert-butylperoxy)propane	≤42	≥13		≥45				3106	
	1,1-Di-(tert-butylperoxy)-3,3,5-trimethylcyclohexane	>90-100							FORBIDDEN	3
	1,1-Di-(tert-butylperoxy)-3,3,5-trimethylcyclohexane	>57-90	≥10						3103	
	1,1-Di-(tert-butylperoxy)-3,3,5-trimethylcyclohexane	≤77		≥23					3103	
	1,1-Di-(tert-butylperoxy)-3,3,5-trimethylcyclohexane	≤57			≥43				3110	
	1,1-Di-(tert-butylperoxy)-3,3,5-trimethylcyclohexane	≤57	≥43						3107	
	1,1-Di-(tert-butylperoxy)-3,3,5-trimethylcyclohexane	≤32	≥26	≥42					3107	
	Dicetyl peroxydicarbonate	≤100					+30	+35	3116	
	Dicetyl peroxydicarbonate	≤42 as a stable dispersion in water					+30	+35	3119	
	Di-4-chlorobenzoyl peroxide	≤77				≥23			FORBIDDEN	3
	Di-4-chlorobenzoyl peroxide	≤52 as a paste							3106	20
	Di-4-chlorobenzoyl peroxide	≤32			≥68				Exempt	29
≠	Dicumyl peroxide	>52-100							3110	12

	Organic peroxide	*Concentration (per cent)*	*Diluent type A (per cent)*	*Diluent type B (per cent) (Note 1)*	*Inert solid (per cent)*	*Water (per cent)*	*Control tempera-ture (°C)*	*Emergency tempera-ture (°C)*	*UN generic entry*	*Notes*
	Dicumyl peroxide	≤52			≥48				Exempt	29
	Dicyclohexyl peroxydicarbonate	>91-100					+10	+15	FORBIDDEN	3
	Dicyclohexyl peroxydicarbonate	≤91				≥9	+10	+15	3114	
	Dicyclohexyl peroxydicarbonate	≤42 as a stable dispersion in water					+15	+20	3119	
	Didecanoyl peroxide	≤100					+30	+35	3114	
	2,2-Di-(4,4-di(tert-butylperoxy)cyclohexyl) propane	≤42			≥58				3106	
	2,2-Di-(4,4-Di-(tert-butylperoxy)cyclohexyl) propane	≤22		≥78					3107	
	Di-2,4-dichlorobenzoyl peroxide	≤77				≥23			FORBIDDEN	3
	Di-2,4-dichlorobenzoyl peroxide	≤52 as a paste with silicon oil							3106	
+	Di-2,4-dichlorobenzoyl peroxide	≤52 as a paste					+20	+25	3118	
	Di-(2-ethoxyethyl) peroxydicarbonate	≤52		≥48			–10	0	3115	
	Di-(2-ethylhexyl)peroxydicarbonate	>77-100					–20	–10	3113	
	Di-(2-ethylhexyl)peroxydicarbonate	≤77		≥23			–15	–5	3115	
≠	Di-(2-ethylhexyl)peroxydicarbonate	≤62 as a stable dispersion in water					–15	–5	3119	
>										
	Di-(2-ethylhexyl)peroxydicarbonate	≤52 as a stable dispersion in water (frozen)					–15	–5	3120	
	2,2-Dihydroperoxypropane	≤27			≥73				FORBIDDEN	3
	Di-(1-hydroxycyclohexyl)peroxide	≤100							3106	
	Diisobutyryl peroxide	>32-52		≥48			–20	–10	FORBIDDEN	3
	Diisobutyryl peroxide	≤32		≥68			–20	–10	3115	
	Diisopropylbenzene dihydroperoxide	≤82	≥5			≥5			3106	24
	Diisopropyl peroxydicarbonate	>52-100					–15	–5	FORBIDDEN	3
	Diisopropyl peroxydicarbonate	≤52		≥48			–20	–10	3115	
	Diisopropyl peroxydicarbonate	≤28	≥72				–15	–5	3115	
	Dilauroyl peroxide	≤100							3106	
	Dilauroyl peroxide	≤42 as a stable dispersion in water							3109	
	Di-(3-methoxybutyl) peroxydicarbonate	≤52		≥48			–5	5	3115	
	Di-(2-methylbenzoyl) peroxide	≤87				≥13	+30	+35	FORBIDDEN	3
	Di-(3-methylbenzoyl) peroxide + Benzoyl (3-methylbenzoyl) peroxide + dibenzoyl peroxide	≤20+≤18+≤4		≥58			35	40	3115	
	Di-(4-methylbenzoyl) peroxide	≤52 as a paste with silicon oil							3106	
	2,5-Dimethyl-2,5-di-(benzoylperoxy)hexane	>82-100							FORBIDDEN	3

Organic peroxide	*Concentration (per cent)*	*Diluent type A (per cent)*	*Diluent type B (per cent) (Note 1)*	*Inert solid (per cent)*	*Water (per cent)*	*Control tempera-ture (°C)*	*Emergency tempera-ture (°C)*	*UN generic entry*	*Notes*
2,5-Dimethyl-2,5-di-(benzoylperoxy)hexane	≤82			≥18				3106	
2,5-Dimethyl-2,5-di-(benzoylperoxy)hexane	≤82				≥18			3104	
2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexane	>52-100							3105	
2,5-Dimethyl-2,5-di-(tert-butylperoxy) hexane	≤77			≥23				3108	
2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexane	≤52	≥48						3109	
2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexane	≤47 as a paste							3108	
2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexyne-3	>86-100							FORBIDDEN	3
2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexyne-3	>52-86	≥14						3103	26
2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexyne-3	≤52			≥48				3106	
2,5-Dimethyl-2,5-di-(2-ethylhexanoylperoxy)hexane	≤100					+20	+25	3113	
2,5-Dimethyl-2,5-dihydroperoxyhexane	≤82				≥18			3104	
2,5-Dimethyl-2,5-di-(3,5,5-trimethylhexanoylperoxy)hexane	≤77	≥23						3105	
1,1-Dimethyl-3-hydroxybutyl peroxyneoheptanoate	≤52	≥48				0	+10	3117	
Dimyristyl peroxydicarbonate	≤100					+20	+25	3116	
Dimyristyl peroxydicarbonate	≤42 as a stable dispersion in water					+20	+25	3119	
Di-(2-neodecanoylperoxyisopropyl) benzene	≤52	≥48				–10	0	3115	
Di-n-nonanoyl peroxide	≤100					0	+10	3116	
Di-n-octanoyl peroxide	≤100					+10	+15	3114	
Di-(2-phenoxyethyl)peroxydicarbonate	>85-100							FORBIDDEN	3
Di-(2-phenoxyethyl)peroxydicarbonate	≤85				≥15			3106	
Dipropionyl peroxide	≤27		≥73			+15	+20	3117	
Di-n-propyl peroxydicarbonate	≤100					–25	–15	3113	
Di-n-propyl peroxydicarbonate	≤77	≥23				–20	–10	3113	
Disuccinic acid peroxide	>72-100							FORBIDDEN	3,17
Disuccinic acid peroxide	≤72				≥28	+10	+15	3116	
Di-(3,5,5-trimethylhexanoyl) peroxide	>38-82	≥18				0	+10	3115	
Di-(3,5,5-trimethylhexanoyl) peroxide	≤52 as a stable dispersion in water					+10	+15	3119	
Di-(3,5,5-trimethylhexanoyl) peroxide	≤38	≥62				+20	+25	3119	
Ethyl 3,3-di-(tert-amylperoxy)butyrate	≤67	≥33						3105	
Ethyl 3,3-di-(tert-butylperoxy)butyrate	>77-100							3103	
Ethyl 3,3-di-(tert-butylperoxy)butyrate	≤77	≥23						3105	
Ethyl 3,3-di-(tert-butylperoxy)butyrate	≤52			≥48				3106	
1-(2-Ethylhexanoylperoxy)-1,3-dimethylbutyl peroxypivalate	≤52	≥45	≥10			-20	-10	3115	

	Organic peroxide	*Concentration (per cent)*	*Diluent type A (per cent)*	*Diluent type B (per cent) (Note 1)*	*Inert solid (per cent)*	*Water (per cent)*	*Control tempera-ture (°C)*	*Emergency tempera-ture (°C)*	*UN generic entry*	*Notes*
	tert-Hexyl Peroxyneodecanoate	≤71	≥29				0	+10	3115	
	tert-Hexyl Peroxypivalate	≤72		≥28			+10	+15	3115	
+	3-Hydroxy-1,1-dimethylbutyl peroxyneodecanoate	≤77	≥23				–5	+5	3115	
+	3-Hydroxy-1,1-dimethylbutyl peroxyneodecanoate	≤52 as a stable dispersion in water					–5	+5	3119	
+	3-Hydroxy-1,1-dimethylbutyl peroxyneodecanoate	≤52	≥48				–5	+5	3117	
	Isopropyl sec-butyl peroxydicarbonate +di-sec-butyl peroxydicarbonate +di-isopropyl peroxydicarbonate	≤32 + ≤15-18 + ≤12-15	≥38				–20	–10	3115	
	Isopropyl sec-butyl peroxydicarbonate +di-sec-butyl peroxydicarbonate +di-isopropyl peroxydicarbonate	≤52 + ≤28 + ≤22					–20	–10	FORBIDDEN	3
	Isopropylcumyl hydroperoxide	≤72	≥28						3109	13
	p-Menthyl hydroperoxide	>72-100							3105	13
	p-Menthyl hydroperoxide	≤72	≥28						3109	27
	Methylcyclohexanone peroxide(s)	≤67		≥33			+35	+40	3115	
	Methyl ethyl ketone peroxide(s)	see remark 8)	≥48						FORBIDDEN	3,8,13
	Methyl ethyl ketone peroxide(s)	see remark 9)	≥55						3105	9
	Methyl ethyl ketone peroxide(s)	see remark 10)	≥60						3107	10
	Methyl isobutyl ketone peroxide(s)	≤62	≥19						3105	22
+	Methyl isopropyl ketone peroxide(s)	see remark 31)	≥70						3109	31
	Organic peroxide, liquid, sample								3103	11
	Organic peroxide, liquid, sample, temperature controlled								3113	11
	Organic peroxide, solid, sample								3104	11
	Organic peroxide, solid, sample, temperature controlled								3114	11
+	3,3,5,7,7-pentamethyl-1,2,4-trioxepane	≤100							3107	
	Peroxyacetic acid, type D, stabilized	≤43							3105	13,14, 19
	Peroxyacetic acid, type E, stabilized	≤43							3107	13,15, 19
	Peroxyacetic acid, type F, stabilized	≤43							3109	13,16, 19
	Peroxylauric acid	≤100					+35	+40	3118	
	Pinanyl hydroperoxide	>56-100							3105	13
	Pinanyl hydroperoxide	≤56	≥44						3109	
	Polyether poly-tert-butylperoxycarbonate	≤52		≥23					3107	
	1,1,3,3-Tetramethylbutyl hydroperoxide	≤100							3105	
	1,1,3,3-Tetramethylbutylperoxy-2 ethylhexanoate	≤100					+15	+20	3115	
	1,1,3,3-Tetramethylbutyl peroxyneodecanoate	≤72		≥28			–5	+5	3115	

Organic peroxide	*Concentration (per cent)*	*Diluent type A (per cent)*	*Diluent type B (per cent) (Note 1)*	*Inert solid (per cent)*	*Water (per cent)*	*Control tempera-ture (°C)*	*Emergency tempera-ture (°C)*	*UN generic entry*	*Notes*
1,1,3,3-Tetramethylbutyl peroxyneodecanoate	≤52 as a stable dispersion in water					–5	+5	3119	
1,1,3,3-Tetramethylbutylperoxypivalate	≤77	≥23				0	+10	3315	
3,6,9-Triethyl-3,6,9-trimethyl -1,4,7-triperoxonane	≤42	≥58						3105	28

Notes:

1. Diluent type B may always be replaced by diluent type A. Boiling point diluent type B should be at least 60°C higher than the SADT of the organic peroxide.
2. Available oxygen ≤4.7 per cent.
3. "EXPLOSIVE" subsidiary risk label required and consequently forbidden for transport by air under any circumstance.
4. Diluent may be replaced by Di-tert-butyl peroxide.
5. Available oxygen ≤9 per cent.
6. With ≤9 per cent hydrogen peroxide; available oxygen ≤10 per cent.
7. Only non-metallic packagings allowed.
8. Available oxygen >10 per cent and ≤10.7 per cent, with or without water.
9. Available oxygen ≤10 per cent, with or without water.
10. Available oxygen ≤8.2 per cent, with or without water.
11. See 5.3.2.6.
13. "CORROSIVE" subsidiary risk label required (see Figure 5-22).
14. Peroxyacetic acid formulations which fulfil the criteria of 5.3.2.5.
15. Peroxyacetic acid formulations which fulfil the criteria of 5.3.2.5.
16. Peroxyacetic acid formulations which fulfil the criteria of 5.3.2.5.
17. Addition of water to this organic peroxide will decrease its thermal stability.
18. No "CORROSIVE" subsidiary risk label required for concentrations below 80 per cent.
19. Mixtures with hydrogen peroxide, water and acid(s).
20. With diluent type A, with or without water.
21. With ≥25 per cent diluent type A by mass, and in addition ethylbenzene.
22. With ≥19 per cent diluent type A by mass, and in addition methyl isobutyl ketone.
23. With <6 per cent di-tert-butyl peroxide.
24. With ≤8 per cent 1-isopropylhydroperoxy-4-isopropylhydroxybenzene.
25. Diluent type B with boiling point >110°C.
26. With <0.5 per cent hydroperoxides content.
27. For concentrations more than 56 per cent, "CORROSIVE" subsidiary risk label required (see Figure 5-22).
28. Available active oxygen ≤7.6 per cent in diluent type A having a 95 per cent boil-off point in the range of 220-260°C.
29. Not subject to the requirements of these Instructions for Division 5.2.

\+ 30. Diluent type B with boiling point >130°C.

\+ 31. Active oxygen ≤6.7 per cent.

Chapter 6

CLASS 6 — TOXIC AND INFECTIOUS SUBSTANCES

INTRODUCTORY NOTE

Note.— Toxins from plant, animal or bacterial sources which do not contain any infectious substances or toxins that are not contained in substances which are infectious substances should be considered for classification in Division 6.1 and assignment to UN 3172.

6.1 DEFINITIONS

Class 6 is divided into two divisions as follows:

a) Division 6.1 — Toxic substances.

Substances liable either to cause death or injury or to harm human health if swallowed, if inhaled or by skin contact.

Note.— In these Instructions "poisonous" has the same meaning as "toxic".

b) Division 6.2 — Infectious substances.

Substances known to contain, or reasonably expected to contain, pathogens. Pathogens are defined as micro-organisms (including bacteria, viruses, rickettsiae, parasites, fungi) and other agents such as prions, which can cause disease in humans or animals.

6.2 DIVISION 6.1 — TOXIC SUBSTANCES

6.2.1 Definitions

For the purposes of these Instructions:

6.2.1.1 *LD_{50} (median lethal dose) for acute oral toxicity* is the statistically derived single dose of a substance that can be expected to cause death within 14 days in 50 per cent of young adult albino rats when administered by the oral route. The LD_{50} value is expressed in terms of mass of test substance per mass of test animal (mg/kg).

6.2.1.2 *LD_{50} for acute dermal toxicity* is that dose of the substance which, administered by continuous contact for 24 hours with the bare skin of albino rabbits, is most likely to cause death within 14 days in half of the animals tested. The number of animals tested must be sufficient to give a statistically significant result and be in conformity with good pharmacological practices. The result is expressed in mg/kg body mass.

6.2.1.3 *LC_{50} for acute toxicity on inhalation* is that concentration of vapour, mist or dust which, administered by continuous inhalation for one hour to both male and female young adult albino rats, is most likely to cause death within 14 days in half of the animals tested. A solid substance should be tested if at least 10 per cent (by mass) of its total mass is likely to be dust in a respirable range, e.g. the aerodynamic diameter of that particle-fraction is 10 µm or less. A liquid substance should be tested if a mist is likely to be generated in a leakage of the transport containment. Both for solid and liquid substances more than 90 per cent (by mass) of a specimen prepared for inhalation toxicity should be in the respirable range as defined above. The result is expressed in mg/L of air for dusts and mists or in mL/m^3 of air (parts per million) for vapours.

6.2.2 Assignment of packing groups

6.2.2.1 Substances of Division 6.1, including pesticides, are allocated among the three packing groups, according to the degree of their toxic hazards in transport as follows:

a) Packing Group I — Substances and preparations presenting a very severe toxicity risk;

b) Packing Group II — Substances and preparations presenting a serious toxicity risk;

c) Packing Group III — Substances and preparations presenting a relatively low toxicity risk.

6.2.2.2 In making this grouping, account must be taken of human experience in instances of accidental poisoning, and of special properties possessed by any individual substance, such as liquid state, high volatility, any special likelihood of penetration, and special biological effects.

6.2.2.3 In the absence of human experience, the grouping must be based on the available data from animal experiments. Three possible routes of administrations must be examined. These routes are exposure through:

a) oral ingestion;

b) dermal contact; and

c) inhalation of dusts, mists, or vapours.

6.2.2.3.1 Appropriate animal tests for the various routes of exposure are described in 6.2.1. When a substance exhibits a different order of toxicity by two or more of these routes of administration, the highest degree of danger must be assigned.

6.2.2.4 The criteria to be applied for grouping a substance according to the toxicity it exhibits by all three routes of administration are presented in the following paragraphs.

6.2.2.4.1 The grouping criteria for the oral and dermal routes as well as for inhalation of dusts and mists are as shown in Table 2-8.

Note. — Substances meeting the criteria of Class 8 and with an inhalation toxicity of dusts and mists (LC_{50}) leading to Packing Group I are only accepted for an allocation to Division 6.1 if the toxicity through oral ingestion or dermal contact is at least in the range of Packing Group I or II. Otherwise, an allocation to Class 8 is made when appropriate (see 8.2.3).

6.2.2.4.2 The criteria for inhalation toxicity of dusts and mists in 6.2.2.4.1 are based on LC_{50} data relating to 1-hour exposures, and where such information is available, it must be used. However, where only LC_{50} data relating to 4-hour exposures to dusts and mists are available, such figures can be multiplied by four and the product substituted in the above criteria, i.e. LC_{50} (4 h) × 4 is considered the equivalent of LC_{50} (1 h).

6.2.2.4.3 Liquids having toxic vapours must be assigned to the packing groups shown in Table 2-9, where V is that saturated vapour concentration in the air of the substance in mL/m^3 at 20°C and standard atmospheric pressure.

6.2.2.4.4 In Figure 2-1, the criteria according to 6.2.2.4.3 are expressed in graphical form, as an aid to easy classification. However, because of approximations inherent in the use of graphs, substances on or near packing group borderlines must be checked using numerical criteria.

Table 2-8. Grouping criteria for administration through oral ingestion, dermal contact and inhalation of dusts and mists

Packing group	*Oral toxicity LD_{50} (mg/kg)*	*Dermal toxicity LD_{50} (mg/kg)*	*Inhalation toxicity by dusts and mists LC_{50} (mg/L)*
I	≤5.0	≤50	≤0.2
II	>5.0 and ≤50	>50 and ≤200	>0.2 and ≤2.0
III[a]	>50 and ≤300	>200 and ≤1 000	>2.0 and ≤4.0

a. Tear gas substances must be included in Packing Group II even if their toxicity data correspond to Packing Group III values.

Table 2-9. Criteria for inhalation

Packing Group I	$V \geq 10\ LC_{50}$ and $LC_{50} \leq 1\ 000\ mL/m^3$
Packing Group II	$V \geq LC_{50}$ and $LC_{50} \leq 3\ 000\ mL/m^3$ and not meeting the criteria for Packing Group I
Packing Group III	$V \geq 0.2\ LC_{50}$ and $LC_{50} \leq 5\ 000\ mL/m^3$ and not meeting the criteria for Packing Groups I and II

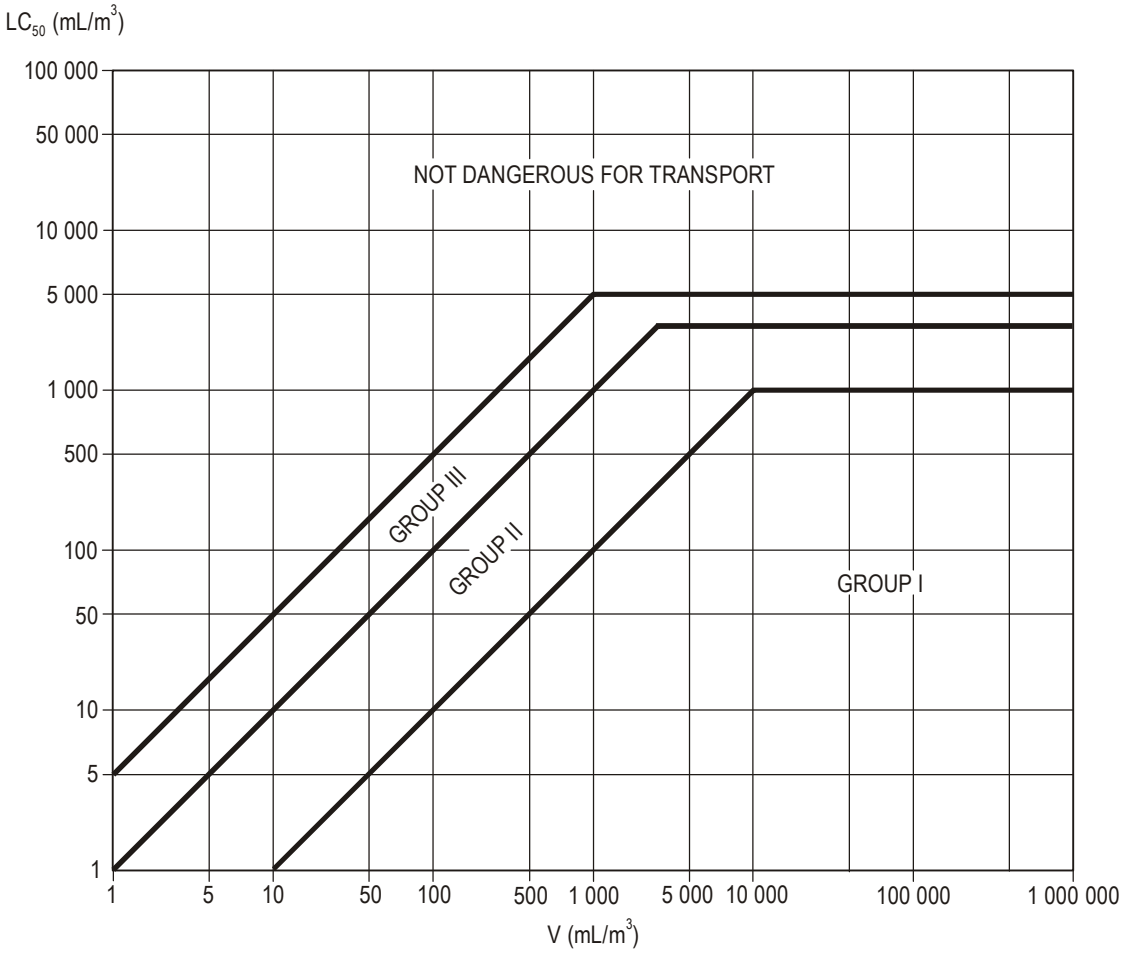

Figure 2-1. Criteria for inhalation of vapours

6.2.2.4.5 The criteria for inhalation toxicity of vapours in 6.2.2.4.3 are based on LC_{50} data relating to 1-hour exposures, and where such information is available, it must be used. However, where only LC_{50} data relating to 4-hour exposures to the vapours are available, such figures can be multiplied by two and the product substituted in the above criteria, i.e. LC_{50} (4 h) × 2 is considered the equivalent of LC_{50} (1 h).

6.2.2.4.6 Mixtures of liquids that are toxic by inhalation must be assigned to packing groups according to 6.2.2.4.7 or 6.2.2.4.8.

6.2.2.4.7 If LC_{50} data is available for each of the toxic substances comprising a mixture, the packing group may be determined as follows:

a) Estimate the LC_{50} of the mixture using the formula:

$$LC_{50}\ (\text{mixture}) = \frac{1}{\sum_{i=1}^{n} \frac{f_i}{LC_{50_i}}}$$

where f_i = mole fraction of the i^{th} component substance of the liquid, and

where LC_{50i} = mean lethal concentration of the i^{th} component substance in mL/m^3.

b) Estimate the volatility of each component substance using the formula:

$$V_i = P_i \times \frac{106}{101.3} \text{ mL/m}^3$$

where P_i = partial pressure of the i^{th} component substance in kPa at 20°C and one atmosphere pressure.

c) Calculate the ratio of the volatility to the LC_{50} using the formula:

$$R = \sum_{i=1}^{n} \frac{V_i}{LC_{50_i}}$$

d) Using the calculated values LC_{50} (mixture) and R, the packing group for the mixture is determined:

Packing Group I: R ≥ 10 and LC_{50} (mixture) ≤ 1 000 mL/m^3

Packing Group II: R ≥ 1 and LC_{50} (mixture) ≤ 3 000 mL/m^3 and not meeting criteria for Group I

Packing Group III: R ≥ 1/5 and LC_{50} (mixture) ≤ 5 000 mL/m^3 and not meeting criteria for Group I or II.

6.2.2.4.8 In the absence of LC_{50} data on the toxic constituent substances, the mixture may be assigned a packing group based on the following simplified threshold toxicity tests. When these threshold tests are used, the most restrictive packing group must be determined and used for transporting the mixture.

a) A mixture is assigned to Packing Group I only if it meets both of the following criteria:

i) A sample of the liquid mixture is vaporized and diluted with air to create a test atmosphere of 1 000 mL/m^3 vaporized mixture in air. Ten albino rats (5 male and 5 female) are exposed to the test atmosphere for 1 hour and observed for 14 days. If 5 or more of the animals die within the 14-day observation period, the mixture is presumed to have an LC_{50} equal to or less than 1 000 mL/m^3.

ii) A sample of the vapour in equilibrium with the liquid mixture at 20°C is diluted with 9 equal volumes of air to form a test atmosphere. Ten albino rats (5 male and 5 female) are exposed to the test atmosphere for 1 hour and observed for 14 days. If 5 or more of the animals die within the 14-day observation period, the mixture is presumed to have a volatility equal to or greater than 10 times the mixture LC_{50}.

b) A mixture is assigned to Packing Group II only if it meets both of the following criteria, and the mixture does not meet the criteria for Packing Group I:

i) A sample of the liquid mixture is vaporized and diluted with air to create a test atmosphere of 3 000 mL/m^3 vaporized mixture in air. Ten albino rats (5 male and 5 female) are exposed to the test atmosphere for 1 hour and observed for 14 days. If 5 or more of the animals die within the 14-day observation period, the mixture is presumed to have an LC_{50} equal to or less than 3 000 mL/m^3.

ii) A sample of the vapour in equilibrium with the liquid mixture at 20°C is used to form a test atmosphere. Ten albino rats (5 male and 5 female) are exposed to the test atmosphere for 1 hour and observed for 14 days. If 5 or more of the animals die within the 14-day observation period, the mixture is presumed to have a volatility equal to or greater than the mixture LC_{50}.

c) A mixture is assigned to Packing Group III only if it meets both of the following criteria, and the mixture does not meet the criteria for Packing Groups I or II:

i) A sample of the liquid mixture is vaporized and diluted with air to create a test atmosphere of 5 000 mL/m^3 vaporized mixture in air. Ten albino rats (5 male and 5 female) are exposed to the test atmosphere for 1 hour and observed for 14 days. If 5 or more of the animals die within the 14-day observation period, the mixture is presumed to have an LC_{50} equal to or less than 5 000 mL/m^3.

ii) The vapour pressure of the liquid mixture is measured and if the vapour pressure is equal to or greater than 1 000 mL/m^3, the mixture is presumed to have a volatility equal to or greater than 1/5 the mixture LC_{50}.

6.2.3 Methods for determining oral and dermal toxicity of mixtures

6.2.3.1 When classifying and assigning the appropriate packing group to mixtures in Division 6.1, in accordance with the oral and dermal toxicity criteria in Table 2-8, it is necessary to determine the acute LD_{50} of the mixture.

6.2.3.2 If a mixture contains only one active substance, and the LD_{50} of that constituent is known, in the absence of reliable acute oral and dermal toxicity data on the actual mixture to be transported, the oral or dermal LD_{50} may be obtained by the following method:

LD_{50} value of preparation =

$$\frac{LD_{50} \text{ value of active substance} \times 100}{\text{percentage of active substance by mass}}$$

6.2.3.3 If a mixture contains more than one active constituent, there are three possible approaches that may be used to determine the oral or dermal LD_{50} of the mixture. The preferred method is to obtain reliable acute oral and dermal toxicity data on the actual mixture to be transported. If reliable and accurate data are not available, then either of the following methods may be performed:

a) classify the formulation according to the most hazardous constituent of the mixture as if that constituent were present in the same concentration as the total concentration of all active constituents; or

b) apply the formula:

$$\frac{C_A}{T_A} + \frac{C_B}{T_B} + \frac{C_Z}{T_Z} = \frac{100}{T_M}$$

where:

C = the per cent concentration of constituent A, B ... Z in the mixture

T = the oral LD_{50} values of constituent A, B ... Z

T_M = the oral LD_{50} value of the mixture.

Note.— This formula can also be used for dermal toxicities provided that this information is available on the same species for all constituents. The use of this formula does not take into account any potentiation or protective phenomena.

6.2.4 Classification of pesticides

6.2.4.1 All active pesticide substances and their preparations for which the LC_{50} and/or LD_{50} values are known and which are classified in Division 6.1 must be classified under appropriate packing groups in accordance with the criteria given in 6.2.2. Substances and preparations which are characterized by subsidiary risks must be classified according to the precedence of hazards table (Table 2-1) with the assignment of appropriate packing groups.

6.2.4.2 If the oral or dermal LD_{50} value for a pesticide preparation is not known, but the LD_{50} value of its active substance(s) is known, the LD_{50} value for the preparation may be obtained by applying the procedures in 6.2.3.

Note.— LD_{50} toxicity data for a number of common pesticides may be obtained from the most current edition of the document The WHO Recommended Classification of Pesticides by Hazard and Guidelines to Classification *available from the International Programme on Chemical Safety, World Health Organization (WHO), 1211 Geneva 27, Switzerland. While that document may be used as a source of LD_{50} data for pesticides, its classification system should not be used for purposes of transport classification of, or assignment of packing groups to, pesticides which must be in accordance with these Instructions.*

6.2.4.3 The proper shipping name used in the transport of the pesticide must be selected on the basis of the active ingredient, of the physical state of the pesticide and any subsidiary risks it may exhibit.

6.3 DIVISION 6.2 — INFECTIOUS SUBSTANCES

6.3.1 Definitions

For the purposes of these Instructions:

6.3.1.1 *Infectious substances* are substances which are known to contain, or are reasonably expected to contain, pathogens. Pathogens are defined as micro-organisms (including bacteria, viruses, rickettsiae, parasites, fungi) and other agents such as prions, which can cause disease in humans or animals.

6.3.1.2 *Biological products* are those products derived from living organisms which are manufactured and distributed in accordance with the requirements of appropriate national authorities, which may have special licensing requirements, and are used either for prevention, treatment or diagnosis of disease in humans or animals, or for development, experimental or investigational purposes related thereto. They include, but are not limited to, finished or unfinished products such as vaccines.

6.3.1.3 *Cultures* are the result of a process by which pathogens are intentionally propagated. This definition does not include patient specimens as defined in 6.3.1.4.

6.3.1.4 *Patient specimens* are those collected directly from humans or animals, including, but not limited to, excreta, secreta, blood and its components, tissue and tissue fluid swabs, and body parts being transported for purposes such as research, diagnosis, investigational activities, and disease treatment and prevention.

6.3.1.5 *Medical or clinical wastes* are wastes derived from the medical treatment of animals or humans or from bio-research.

6.3.2 Classification of infectious substances

6.3.2.1 Infectious substances must be classified in Division 6.2 and assigned to UN 2814, UN 2900, UN 3291 or UN 3373 as appropriate.

6.3.2.2 Infectious substances are divided into the following categories:

6.3.2.2.1 *Category A:* An infectious substance which is transported in a form that, when exposure to it occurs, is capable of causing permanent disability, life-threatening or fatal disease in otherwise healthy humans or animals. Indicative examples of substances that meet these criteria are given in Table 2-10.

Note. — An exposure occurs when an infectious substance is released outside of the protective packaging resulting in physical contact with humans or animals.

a) Infectious substances meeting these criteria which cause disease in humans or in both humans and animals must be assigned to UN 2814. Infectious substances which cause disease only in animals must be assigned to UN 2900.

b) Assignments to UN 2814 or UN 2900 must be based on the known medical history and symptoms of the source human or animal, endemic local conditions, or professional judgement concerning individual circumstances of the source human or animal.

Note 1.— The proper shipping name for UN 2814 is **Infectious substance, affecting humans.** *The proper shipping name for UN 2900 is* **Infectious substance, affecting animals** *only*.

Note 2.— Table 2-10 is not exhaustive. Infectious substances, including new or emerging pathogens, which do not appear in Table 2-10 but which meet the same criteria must be assigned to Category A. In addition, if there is doubt as to whether or not a substance meets the criteria it must be included in Category A.

Note 3.— In Table 2-10, the micro-organisms written in italics are bacteria, mycoplasma, rickettsiae or fungi.

6.3.2.2.2 *Category B:* An infectious substance which does not meet the criteria for inclusion in Category A. Infectious substances in Category B must be assigned to UN 3373.

Note.— The proper shipping name of UN 3373 is ***Biological substances, Category B***.

6.3.2.3 *Exceptions*

6.3.2.3.1 Substances which do not contain infectious substances or substances which are unlikely to cause disease in humans or animals are not subject to these Instructions unless they meet the criteria for inclusion in another class.

6.3.2.3.2 Substances containing micro-organisms which are non-pathogenic to humans or animals are not subject to these Instructions unless they meet the criteria for inclusion in another class.

6.3.2.3.3 Substances in a form that any present pathogens have been neutralized or inactivated such that they no longer pose a health risk are not subject to these Instructions unless they meet the criteria for inclusion in another class.

6.3.2.3.4 Environmental samples (including food and water samples) which are not considered to pose a significant risk of infection are not subject to these Instructions unless they meet the criteria for inclusion in another class.

6.3.2.3.5 Dried blood spots, collected by applying a drop of blood onto absorbent material, or faecal occult blood screening tests and blood or blood components that have been collected for the purposes of transfusion or for the preparation of blood products to be used for transfusion or transplantation and any tissues or organs intended for use in transplantation are not subject to these Instructions.

6.3.2.3.6 Patient specimens for which there is minimal likelihood that pathogens are present are not subject to these Instructions if the specimen is transported in a packaging which will prevent any leakage and which is marked with the words “Exempt human specimen” or “Exempt animal specimen”, as appropriate. The packaging must meet the following conditions:

a) The packaging must consist of three components:

i) a leakproof primary receptacle(s);

Table 2-10. Indicative examples of infectious substances included in Category A in any form unless otherwise indicated (6.3.2.2.1 a))

UN Number and Proper Shipping Name	Micro-organism
UN 2814 **Infectious substances affecting humans**	*Bacillus anthracis (cultures only)* *Brucella abortus (cultures only)* *Brucella melitensis (cultures only)* *Brucella suis (cultures only)* *Burkholderia mallei – Pseudomonas mallei* – Glanders *(cultures only)* *Burkholderia pseudomallei – Pseudomonas pseudomallei (cultures only)* *Chlamydia psittaci* – avian strains (cultures only) *Clostridium botulinum (cultures only)* *Coccidioides immitis (cultures only)* *Coxiella burnetii (cultures only)* Crimean-Congo hemorrhagic fever virus Dengue virus (cultures only) Eastern equine encephalitis virus (cultures only) *Escherichia coli*, verotoxigenic (cultures only) Ebola virus Flexal virus *Francisella tularensis (cultures only)* Guanarito virus Hantaan virus Hantaviruses causing haemorrhagic fever with renal syndrome Hendra virus Hepatitis B virus (cultures only) Herpes B virus (cultures only) Highly pathogenic avian influenza virus (cultures only) Human immunodeficiency virus (cultures only) Japanese Encephalitis virus (cultures only) Junin virus Kyasanur Forest disease virus Lassa virus Machupo virus Marburg virus Monkeypox virus *Mycobacterium tuberculosis (cultures only)* Nipah virus Omsk hemorrhagic fever virus Poliovirus (cultures only) Rabies virus (cultures only) *Rickettsia prowazekii (cultures only)* *Rickettsia rickettsii* (cultures only) Rift Valley fever virus (cultures only) Russian spring-summer encephalitis virus (cultures only) Sabia virus *Shigella dysenteriae type 1 (cultures only)* Tick-borne encephalitis virus (cultures only) Variola virus Venezuelan equine encephalitis virus (cultures only) West Nile virus (cultures only) Yellow fever virus (cultures only) *Yersinia pestis* (cultures only)
UN 2900 **Infectious substances affecting animals only**	African swine fever virus (cultures only) Avian paramyxovirus Type 1 – Velogenic Newcastle disease virus (cultures only) Classical swine fever virus (cultures only) Foot and mouth disease virus (cultures only) Goatpox virus (cultures only) Lumpy skin disease virus (cultures only) *Mycoplasma mycoides* – Contagious bovine pleuropneumonia (cultures only) Peste des petits ruminants virus (cultures only) Rinderpest virus (cultures only) Sheep-pox virus (cultures only) Swine vesicular disease virus (cultures only) Vesicular stomatitis virus (cultures only)

ii) a leakproof secondary packaging; and

iii) an outer packaging of adequate strength for its capacity, mass and intended use, and with at least one surface having minimum dimensions of 100 mm × 100 mm;

b) For liquids, absorbent material in sufficient quantity to absorb the entire contents must be placed between the primary receptacle(s) and the secondary packaging so that, during transport, any release or leak of a liquid substance will not reach the outer packaging and will not compromise the integrity of the cushioning material;

c) When multiple fragile primary receptacles are placed in a single secondary packaging, they must be either individually wrapped or separated to prevent contact between them.

≠ *Note.— In determining whether a patient specimen has a minimum likelihood that pathogens are present, an element of professional judgement is required to determine if a substance is exempt under this paragraph. That judgement should be based on the known medical history, symptoms and individual circumstances of the source, human or animal, and endemic local conditions. Examples of specimens which may be transported under this paragraph include blood or urine tests to monitor cholesterol levels, blood glucose levels, hormone levels, or prostate specific antibodies (PSA); tests required to monitor organ function such as heart, liver or kidney function for humans or animals with non-infectious diseases, or therapeutic drug monitoring; tests conducted for insurance or employment purposes and are intended to determine the presence of drugs or alcohol; pregnancy tests; biopsies to detect cancer; and antibody detection in humans or animals in the absence of any concern for infection (e.g. evaluation of vaccine induced immunity, diagnosis of autoimmune disease, etc.).*

6.3.3 Biological products

For the purposes of these Instructions, biological products are divided into the following groups:

a) Those which are manufactured and packaged in accordance with the requirements of appropriate national authorities and transported for the purposes of final packaging or distribution, and use for personal health care by medical professionals or individuals. Substances in this group are not subject to these Instructions.

b) Those which do not fall under paragraph a) and are known or reasonably believed to contain infectious substances and which meet the criteria for inclusion in Category A or Category B. Substances in this group must be assigned to UN 2814, UN 2900 or UN 3373, as appropriate.

Note.— Some licensed biological products may present a biohazard only in certain parts of the world. In that case, appropriate national authorities may require these biological products to be in compliance with local requirements for infectious substances or may impose other restrictions.

6.3.4 Genetically modified micro-organisms and organisms

Genetically modified micro-organisms not meeting the definition of infectious substances must be classified according to Chapter 9.

6.3.5 Medical or clinical wastes

6.3.5.1 Medical or clinical wastes containing Category A infectious substances must be assigned to UN 2814 or UN 2900 as appropriate. Medical or clinical wastes containing infectious substances in Category B must be assigned to UN 3291.

≠ 6.3.5.2 Medical or clinical wastes that are reasonably believed to have a low probability of containing infectious substances must be assigned to UN 3291. For the assignment, international, regional or national waste catalogues may be taken into account.

≠ *Note.— The proper shipping name for UN 3291 is* ***Clinical waste, unspecified, n.o.s****. or* ***Biomedical waste, n.o.s.*** *or* ***Medical waste, n.o.s.*** *or* ***Regulated medical waste, n.o.s.***

6.3.5.3 Decontaminated medical or clinical wastes that previously contained infectious substances are not subject to these Instructions unless they meet the criteria for inclusion in another class.

6.3.6 Infected animals

6.3.6.1 A live animal that has been intentionally infected and is known or suspected to contain an infectious substance must not be transported by air unless the infectious substance contained cannot be consigned by any other means. Infected animals may only be transported under terms and conditions approved by the appropriate national authority.

6.3.6.2 Unless an infectious substance cannot be consigned by any other means, live animals must not be used to consign such a substance.

≠ 6.3.6.3 Animal material affected by pathogens of Category A or which would be assigned to Category A in cultures only, must be assigned to UN 2814 or UN 2900 as appropriate.

6.3.7 Patient specimens

Patient specimens must be assigned to UN 2814, UN 2900 or UN 3373 as appropriate except if they comply with 6.3.2.3.

≠

Chapter 7

CLASS 7 — RADIOACTIVE MATERIAL

Parts of this Chapter are affected by State Variations BE 4, CA 1, CA 3, CA 4, CH 4 DE 3, DK 1, DQ 1, JP 26, RU 1; see Table A-1

Note.— For Class 7, the type of packaging may have a decisive effect on classification.

7.1 DEFINITIONS

7.1.1 *Radioactive material*. Any material containing radionuclides where both the activity concentration and the total activity in the consignment exceed the values specified in 7.2.2.1 to 7.2.2.6.

7.1.2 Contamination

Contamination. The presence of a radioactive substance on a surface in quantities in excess of 0.4 Bq/cm^2 for beta and gamma emitters and low toxicity alpha emitters, or 0.04 Bq/cm^2 for all other alpha emitters.

Non-fixed contamination. Contamination that can be removed from a surface during routine conditions of transport.

Fixed contamination. Contamination other than non-fixed contamination.

7.1.3 Definitions of specific terms

A_1 and *A_2:*

A_1. The activity value of special form radioactive material, which is listed in Table 2-15 or derived in 7.2.2.2 and is used to determine the activity limits for the requirements of these Instructions.

A_2. The activity value of radioactive material, other than special form radioactive material, which is listed in Table 2-15 or derived in 7.2.2.2 and is used to determine the activity limits for the requirements of these Instructions.

Fissile material. Uranium-233, uranium-235, plutonium-239, plutonium-241, or any combination of these radionuclides. Excepted from this definition are:

a) natural uranium or depleted uranium which is unirradiated; and

b) natural uranium or depleted uranium which has been irradiated in thermal reactors only.

Freight container in the case of radioactive material transport. An article of transport equipment designed to facilitate the transport of packaged goods by one or more modes of transport without intermediate reloading, which is of a permanent enclosed character, rigid and strong enough for repeated use, and must be fitted with devices facilitating its handling, particularly in transfer between aircraft and from one mode of transport to another. A small freight container is that which has either an overall outer dimension less than 1.5 m, or an internal volume of not more than 3 m^3. Any other freight container is considered to be a large freight container. For the transport of Class 7 material, a freight container may be used as a packaging.

Low dispersible radioactive material. A solid radioactive material or a solid radioactive material in a sealed capsule, that has limited dispersibility and is not in powder form.

Low specific activity (LSA) material. Radioactive material which by its nature has a limited specific activity, or radioactive material for which limits of estimated average specific activity apply. External shielding materials surrounding the LSA material must not be considered in determining the estimated average specific activity.

Low toxicity alpha emitters. Natural uranium; depleted uranium; natural thorium; uranium-235 or uranium-238; thorium-232; thorium-228 and thorium-230 when contained in ores or physical and chemical concentrates; or alpha emitters with a half-life of less than 10 days.

Packaging in the case of radioactive material. The assembly of components necessary to enclose the radioactive contents completely. It may, in particular, consist of one or more receptacles, absorbent materials, spacing structures, radiation shielding and service equipment for filling, emptying, venting and pressure relief; devices for cooling, absorbing mechanical shocks, handling and tie-down, thermal insulation; and service devices integral to the package. The packaging may be a box, drum or similar receptacle, or may also be a freight container.

Note.— For packagings for other dangerous goods, see definitions under 1;3.1.1.

Special form radioactive material. Either:

a) an indispersible solid radioactive material; or

b) a sealed capsule containing radioactive material.

Specific activity of a radionuclide. The activity per unit mass of that nuclide. The specific activity of a material must mean the activity per unit mass of the material in which the radionuclides are essentially uniformly distributed.

Surface contaminated object (SCO). A solid object which is not itself radioactive but which has radioactive material distributed on its surfaces.

Transport index (TI) assigned to a package, overpack or freight container, or to unpackaged LSA-I or SCO-I. A number which is used to provide control over radiation exposure.

Unirradiated thorium. Thorium containing not more than 10^{-7} g of uranium-233 per gram of thorium-232.

Unirradiated uranium. Uranium containing not more than 2×10^3 Bq of plutonium per gram of uranium-235, not more than 9×10^6 Bq of fission products per gram of uranium-235 and not more than 5×10^{-3} g of uranium-236 per gram of uranium-235.

Uranium — natural, depleted, enriched:

Natural uranium. Uranium (which may be chemically separated) containing the naturally occurring distribution of uranium isotopes (approximately 99.28 per cent uranium-238, and 0.72 per cent uranium-235 by mass).

Depleted uranium. Uranium containing a lesser mass percentage of uranium-235 than in natural uranium.

Enriched uranium. Uranium containing a greater mass percentage of uranium-235 than 0.72 per cent. In all cases, a very small mass percentage of uranium-234 is present.

7.2 CLASSIFICATION

7.2.1 General provisions

7.2.1.1 Radioactive material must be assigned to one of the UN numbers specified in Table 2-11 depending on the activity level of the radionuclides contained in a package, the fissile or non-fissile properties of these radionuclides, the type of package to be presented for transport and the nature or form of the contents of the package, or special arrangements governing the transport operation, in accordance with the provisions laid down in 7.2.2 to 7.2.5.

Table 2-11. Assignment of UN numbers

UN number	*Name*
Excepted packages (1;6.1.5)	
UN 2908	**Radioactive material, excepted package — empty packaging**
UN 2909	**Radioactive material, excepted package — articles manufactured from natural uranium** or **depleted uranium** or **natural thorium**
UN 2910	**Radioactive material, excepted package — limited quantity of material**
UN 2911	**Radioactive material, excepted package — instruments** or **articles**
Low specific activity radioactive material (7.2.3.1)	
UN 2912	**Radioactive material, low specific activity (LSA-I)**, non-fissile or fissile excepted
UN 3321	**Radioactive material, low specific activity (LSA-II)**, non-fissile or fissile excepted
UN 3322	**Radioactive material, low specific activity (LSA-III)**, non-fissile or fissile excepted
UN 3324	**Radioactive material, low specific activity (LSA-II) fissile**
UN 3325	**Radioactive material, low specific activity (LSA-III) fissile**

Surface contaminated objects (7.2.3.2)	
UN 2913	**Radioactive material, surface contaminated objects (SCO-I** or **SCO-II)**, non-fissile or fissile excepted
UN 3326	**Radioactive material, surface contaminated objects (SCO-I** or **SCO-II), fissile**
Type A packages (7.2.4.4)	
UN 2915	**Radioactive material, Type A package**, non-special form, non-fissile or fissile excepted
UN 3327	**Radioactive material, Type A package, fissile**, non-special form
UN 3332	**Radioactive material, Type A package, special form**, non-fissile or fissile excepted
UN 3333	**Radioactive material, Type A package, special form, fissile**
Type B(U) package (7.2.4.6)	
UN 2916	**Radioactive material, Type B(U) package**, non-fissile or fissile excepted
UN 3328	**Radioactive material, Type B(U) package, fissile**
Type B(M) package (7.2.4.6)	
UN 2917	**Radioactive material, Type B(M) package**, non-fissile or fissile excepted
UN 3329	**Radioactive material, Type B(M) package, fissile**
Type C package (7.2.4.6)	
UN 3323	**Radioactive material, Type C package**, non-fissile or fissile excepted
UN 3330	**Radioactive material, Type C package, fissile**
Special arrangement (7.2.5)	
UN 2919	**Radioactive material, transported under special arrangement**, non-fissile or fissile excepted
UN 3331	**Radioactive material, transported under special arrangement, fissile**
Uranium hexafluoride (7.2.4.5)	
UN 2977	**Radioactive material, uranium hexafluoride, fissile**
UN 2978	**Radioactive material, uranium hexafluoride**, non-fissile or fissile excepted

7.2.2 Determination of activity level

7.2.2.1 The following basic values for individual radionuclides are given in Table 2-12:

a) A_1 and A_2 in TBq;

b) activity concentration for exempt material in Bq/g; and

c) activity limits for exempt consignments in Bq.

7.2.2.2 For individual radionuclides which are not listed in Table 2-12, determination of the basic radionuclide values referred to in 7.2.2.1 requires multilateral approval. It is permissible to use the A_2 value calculated using a dose coefficient for the appropriate lung absorption type as recommended by the International Commission on Radiological Protection, if the chemical forms of each radionuclide under both normal and accident conditions of transport are taken into consideration. Alternatively, the radionuclide values in Table 2-13 may be used without obtaining competent authority approval.

7.2.2.3 In the calculations of A_1 and A_2 for a radionuclide not in Table 2-12, a single radioactive decay chain in which the radionuclides are present in their naturally occurring proportions, and in which no daughter nuclide has a half-life either longer than 10 days or longer than that of the parent nuclide, must be considered as a single radionuclide; and the activity to be taken into account and the A_1 or A_2 value to be applied must be that corresponding to the parent nuclide of that chain. In the case of radioactive decay chains in which any daughter nuclide has a half-life either longer than 10 days or greater than that of the parent nuclide, the parent and such daughter nuclides must be considered as mixtures of different nuclides.

7.2.2.4 For mixtures of radionuclides, the determination of the basic radionuclide values referred to in 7.2.2.1 may be determined as follows:

$$X_m = \frac{1}{\sum_i \frac{f(i)}{X(i)}}$$

where,

f(i) is the fraction of activity or activity concentration of radionuclide i in the mixture;

X(i) is the appropriate value of A_1 or A_2 or the activity concentration for exempt material or the activity limit for an exempt consignment as appropriate for the radionuclide i; and

X_m is the derived value of A_1 or A_2 or the activity concentration for exempt material or the activity limit for an exempt consignment in the case of a mixture.

7.2.2.5 When the identity of each radionuclide is known but the individual activities of some of the radionuclides are not known, the radionuclides may be grouped and the lowest radionuclide value, as appropriate, for the radionuclides in each group may be used in applying the formulas in 7.2.2.4 and 7.2.4.4. Groups may be based on the total alpha activity and the total beta/gamma activity when these are known, using the lowest radionuclide values for the alpha emitters or beta/gamma emitters, respectively.

7.2.2.6 For individual radionuclides or for mixtures of radionuclides for which relevant data are not available, the values shown in Table 2-13 must be used.

Table 2-12. Basic radionuclides values for individual radionuclides

Radionuclide (atomic number)	*A_1 (TBq)*	*A_2 (TBq)*	*Activity concentration for exempt material (Bq/g)*	*Activity limit for an exempt consignment (Bq)*
Actinium (89)				
Ac-225 (a)	8×10^{-1}	6×10^{-3}	1×10^{1}	1×10^{4}
Ac-227 (a)	9×10^{-1}	9×10^{-5}	1×10^{-1}	1×10^{3}
Ac-228	6×10^{-1}	5×10^{-1}	1×10^{1}	1×10^{6}
Silver (47)				
Ag-105	2×10^{0}	2×10^{0}	1×10^{2}	1×10^{6}
Ag-108m (a)	7×10^{-1}	7×10^{-1}	1×10^{1} (b)	1×10^{6} (b)
Ag-110m (a)	4×10^{-1}	4×10^{-1}	1×10^{1}	1×10^{6}
Ag-111	2×10^{0}	6×10^{-1}	1×10^{3}	1×10^{6}
Aluminium (13)				
Al-26	1×10^{-1}	1×10^{-1}	1×10^{1}	1×10^{5}
Americium (95)				
Am-241	1×10^{1}	1×10^{-3}	1×10^{0}	1×10^{4}
Am-242m (a)	1×10^{1}	1×10^{-3}	1×10^{0} (b)	1×10^{4} (b)
Am-243 (a)	5×10^{0}	1×10^{-3}	1×10^{0} (b)	1×10^{3} (b)
Argon (18)				
Ar-37	4×10^{1}	4×10^{1}	1×10^{6}	1×10^{8}
Ar-39	4×10^{1}	2×10^{1}	1×10^{7}	1×10^{4}
Ar-41	3×10^{-1}	3×10^{-1}	1×10^{2}	1×10^{9}
Arsenic (33)				
As-72	3×10^{-1}	3×10^{-1}	1×10^{1}	1×10^{5}
As-73	4×10^{1}	4×10^{1}	1×10^{3}	1×10^{7}
As-74	1×10^{0}	9×10^{-1}	1×10^{1}	1×10^{6}
As-76	3×10^{-1}	3×10^{-1}	1×10^{2}	1×10^{5}
As-77	2×10^{1}	7×10^{-1}	1×10^{3}	1×10^{6}
Astatine (85)				
At-211 (a)	2×10^{1}	5×10^{-1}	1×10^{3}	1×10^{7}

Radionuclide (atomic number)	*A_1 (TBq)*	*A_2 (TBq)*	*Activity concentration for exempt material (Bq/g)*	*Activity limit for an exempt consignment (Bq)*
Gold (79)				
Au-193	7×10^{0}	2×10^{0}	1×10^{2}	1×10^{7}
Au-194	1×10^{0}	1×10^{0}	1×10^{1}	1×10^{6}
Au-195	1×10^{1}	6×10^{0}	1×10^{2}	1×10^{7}
Au-198	1×10^{0}	6×10^{-1}	1×10^{2}	1×10^{6}
Au-199	1×10^{1}	6×10^{-1}	1×10^{2}	1×10^{6}
Barium (56)				
Ba-131 (a)	2×10^{0}	2×10^{0}	1×10^{2}	1×10^{6}
Ba-133	3×10^{0}	3×10^{0}	1×10^{2}	1×10^{6}
Ba-133m	2×10^{1}	6×10^{-1}	1×10^{2}	1×10^{6}
Ba-140 (a)	5×10^{-1}	3×10^{-1}	1×10^{1} (b)	1×10^{5} (b)
Beryllium (4)				
Be-7	2×10^{1}	2×10^{1}	1×10^{3}	1×10^{7}
Be-10	4×10^{1}	6×10^{-1}	1×10^{4}	1×10^{6}
Bismuth (83)				
Bi-205	7×10^{-1}	7×10^{-1}	1×10^{1}	1×10^{6}
Bi-206	3×10^{-1}	3×10^{-1}	1×10^{1}	1×10^{5}
Bi-207	7×10^{-1}	7×10^{-1}	1×10^{1}	1×10^{6}
Bi-210	1×10^{0}	6×10^{-1}	1×10^{3}	1×10^{6}
Bi-210m(a)	6×10^{-1}	2×10^{-2}	1×10^{1}	1×10^{5}
Bi-212 (a)	7×10^{-1}	6×10^{-1}	1×10^{1} (b)	1×10^{5} (b)
Berkelium (97)				
Bk-247	8×10^{0}	8×10^{-4}	1×10^{0}	1×10^{4}
Bk-249 (a)	4×10^{1}	3×10^{-1}	1×10^{3}	1×10^{6}
Bromine (35)				
Br-76	4×10^{-1}	4×10^{-1}	1×10^{1}	1×10^{5}
Br-77	3×10^{0}	3×10^{0}	1×10^{2}	1×10^{6}
Br-82	4×10^{-1}	4×10^{-1}	1×10^{1}	1×10^{6}
Carbon (6)				
C-11	1×10^{0}	6×10^{-1}	1×10^{1}	1×10^{6}
C-14	4×10^{1}	3×10^{0}	1×10^{4}	1×10^{7}
Calcium (20)				
Ca-41	Unlimited	Unlimited	1×10^{5}	1×10^{7}
Ca-45	4×10^{1}	1×10^{0}	1×10^{4}	1×10^{7}
Ca-47 (a)	3×10^{0}	3×10^{-1}	1×10^{1}	1×10^{6}
Cadmium (48)				
Cd-109	3×10^{1}	2×10^{0}	1×10^{4}	1×10^{6}
Cd-113m	4×10^{1}	5×10^{-1}	1×10^{3}	1×10^{6}
Cd-115 (a)	3×10^{0}	4×10^{-1}	1×10^{2}	1×10^{6}
Cd-115m	5×10^{-1}	5×10^{-1}	1×10^{3}	1×10^{6}
Cerium (58)				
Ce-139	7×10^{0}	2×10^{0}	1×10^{2}	1×10^{6}
Ce-141	2×10^{1}	6×10^{-1}	1×10^{2}	1×10^{7}
Ce-143	9×10^{-1}	6×10^{-1}	1×10^{2}	1×10^{6}
Ce-144 (a)	2×10^{-1}	2×10^{-1}	1×10^{2} (b)	1×10^{5} (b)

Radionuclide (atomic number)	*A_1 (TBq)*	*A_2 (TBq)*	*Activity concentration for exempt material (Bq/g)*	*Activity limit for an exempt consignment (Bq)*
Californium (98)				
Cf-248	4×10^{1}	6×10^{-3}	1×10^{1}	1×10^{4}
Cf-249	3×10^{0}	8×10^{-4}	1×10^{0}	1×10^{3}
Cf-250	2×10^{1}	2×10^{-3}	1×10^{1}	1×10^{4}
Cf-251	7×10^{0}	7×10^{-4}	1×10^{0}	1×10^{3}
Cf-252	1×10^{-1}	3×10^{-3}	1×10^{1}	1×10^{4}
Cf-253 (a)	4×10^{1}	4×10^{-2}	1×10^{2}	1×10^{5}
Cf-254	1×10^{-3}	1×10^{-3}	1×10^{0}	1×10^{3}
Chlorine (17)				
Cl-36	1×10^{1}	6×10^{-1}	1×10^{4}	1×10^{6}
Cl-38	2×10^{-1}	2×10^{-1}	1×10^{1}	1×10^{5}
Curium (96)				
Cm-240	4×10^{1}	2×10^{-2}	1×10^{2}	1×10^{5}
Cm-241	2×10^{0}	1×10^{0}	1×10^{2}	1×10^{6}
Cm-242	4×10^{1}	1×10^{-2}	1×10^{2}	1×10^{5}
Cm-243	9×10^{0}	1×10^{-3}	1×10^{0}	1×10^{4}
Cm-244	2×10^{1}	2×10^{-3}	1×10^{1}	1×10^{4}
Cm-245	9×10^{0}	9×10^{-4}	1×10^{0}	1×10^{3}
Cm-246	9×10^{0}	9×10^{-4}	1×10^{0}	1×10^{3}
Cm-247 (a)	3×10^{0}	1×10^{-3}	1×10^{0}	1×10^{4}
Cm-248	2×10^{-2}	3×10^{-4}	1×10^{0}	1×10^{3}
Cobalt (27)				
Co-55	5×10^{-1}	5×10^{-1}	1×10^{1}	1×10^{6}
Co-56	3×10^{-1}	3×10^{-1}	1×10^{1}	1×10^{5}
Co-57	1×10^{1}	1×10^{1}	1×10^{2}	1×10^{6}
Co-58	1×10^{0}	1×10^{0}	1×10^{1}	1×10^{6}
Co-58m	4×10^{1}	4×10^{1}	1×10^{4}	1×10^{7}
Co-60	4×10^{-1}	4×10^{-1}	1×10^{1}	1×10^{5}
Chromium (24)				
Cr-51	3×10^{1}	3×10^{1}	1×10^{3}	1×10^{7}
Caesium (55)				
Cs-129	4×10^{0}	4×10^{0}	1×10^{2}	1×10^{5}
Cs-131	3×10^{1}	3×10^{1}	1×10^{3}	1×10^{6}
Cs-132	1×10^{0}	1×10^{0}	1×10^{1}	1×10^{5}
Cs-134	7×10^{-1}	7×10^{-1}	1×10^{1}	1×10^{4}
Cs-134m	4×10^{1}	6×10^{-1}	1×10^{3}	1×10^{5}
Cs-135	4×10^{1}	1×10^{0}	1×10^{4}	1×10^{7}
Cs-136	5×10^{-1}	5×10^{-1}	1×10^{1}	1×10^{5}
Cs-137 (a)	2×10^{0}	6×10^{-1}	1×10^{1} (b)	1×10^{4} (b)
Copper (29)				
Cu-64	6×10^{0}	1×10^{0}	1×10^{2}	1×10^{6}
Cu-67	1×10^{1}	7×10^{-1}	1×10^{2}	1×10^{6}
Dysprosium (66)				
Dy-159	2×10^{1}	2×10^{1}	1×10^{3}	1×10^{7}
Dy-165	9×10^{-1}	6×10^{-1}	1×10^{3}	1×10^{6}

Radionuclide (atomic number)	*A_1 (TBq)*	*A_2 (TBq)*	*Activity concentration for exempt material (Bq/g)*	*Activity limit for an exempt consignment (Bq)*
Dy-166 (a)	9×10^{-1}	3×10^{-1}	1×10^{3}	1×10^{6}
Erbium (68)				
Er-169	4×10^{1}	1×10^{0}	1×10^{4}	1×10^{7}
Er-171	8×10^{-1}	5×10^{-1}	1×10^{2}	1×10^{6}
Europium (63)				
Eu-147	2×10^{0}	2×10^{0}	1×10^{2}	1×10^{6}
Eu-148	5×10^{-1}	5×10^{-1}	1×10^{1}	1×10^{6}
Eu-149	2×10^{1}	2×10^{1}	1×10^{2}	1×10^{7}
Eu-150 (short-lived)	2×10^{0}	7×10^{-1}	1×10^{3}	1×10^{6}
Eu-150 (long-lived)	7×10^{-1}	7×10^{-1}	1×10^{1}	1×10^{6}
Eu-152	1×10^{0}	1×10^{0}	1×10^{1}	1×10^{6}
Eu-152m	8×10^{-1}	8×10^{-1}	1×10^{2}	1×10^{6}
Eu-154	9×10^{-1}	6×10^{-1}	1×10^{1}	1×10^{6}
Eu-155	2×10^{1}	3×10^{0}	1×10^{2}	1×10^{7}
Eu-156	7×10^{-1}	7×10^{-1}	1×10^{1}	1×10^{6}
Fluorine (9)				
F-18	1×10^{0}	6×10^{-1}	1×10^{1}	1×10^{6}
Iron (26)				
Fe-52 (a)	3×10^{-1}	3×10^{-1}	1×10^{1}	1×10^{6}
Fe-55	4×10^{1}	4×10^{1}	1×10^{4}	1×10^{6}
Fe-59	9×10^{-1}	9×10^{-1}	1×10^{1}	1×10^{6}
Fe-60 (a)	4×10^{1}	2×10^{-1}	1×10^{2}	1×10^{5}
Gallium (31)				
Ga-67	7×10^{0}	3×10^{0}	1×10^{2}	1×10^{6}
Ga-68	5×10^{-1}	5×10^{-1}	1×10^{1}	1×10^{5}
Ga-72	4×10^{-1}	4×10^{-1}	1×10^{1}	1×10^{5}
Gadolinium (64)				
Gd-146 (a)	5×10^{-1}	5×10^{-1}	1×10^{1}	1×10^{6}
Gd-148	2×10^{1}	2×10^{-3}	1×10^{1}	1×10^{4}
Gd-153	1×10^{1}	9×10^{0}	1×10^{2}	1×10^{7}
Gd-159	3×10^{0}	6×10^{-1}	1×10^{3}	1×10^{6}
Germanium (32)				
Ge-68 (a)	5×10^{-1}	5×10^{-1}	1×10^{1}	1×10^{5}
Ge-71	4×10^{1}	4×10^{1}	1×10^{4}	1×10^{8}
Ge-77	3×10^{-1}	3×10^{-1}	1×10^{1}	1×10^{5}
Hafnium (72)				
Hf-172 (a)	6×10^{-1}	6×10^{-1}	1×10^{1}	1×10^{6}
Hf-175	3×10^{0}	3×10^{0}	1×10^{2}	1×10^{6}
Hf-181	2×10^{0}	5×10^{-1}	1×10^{1}	1×10^{6}
Hf-182	Unlimited	Unlimited	1×10^{2}	1×10^{6}
Mercury (80)				
Hg-194 (a)	1×10^{0}	1×10^{0}	1×10^{1}	1×10^{6}
Hg-195m (a)	3×10^{0}	7×10^{-1}	1×10^{2}	1×10^{6}
Hg-197	2×10^{1}	1×10^{1}	1×10^{2}	1×10^{7}
Hg-197m	1×10^{1}	4×10^{-1}	1×10^{2}	1×10^{6}

Radionuclide (atomic number)	*A_1 (TBq)*	*A_2 (TBq)*	*Activity concentration for exempt material (Bq/g)*	*Activity limit for an exempt consignment (Bq)*
Hg-203	5×10^{0}	1×10^{0}	1×10^{2}	1×10^{5}
Holmium (67)				
Ho-166	4×10^{-1}	4×10^{-1}	1×10^{3}	1×10^{5}
Ho-166m	6×10^{-1}	5×10^{-1}	1×10^{1}	1×10^{6}
Iodine (53)				
I-123	6×10^{0}	3×10^{0}	1×10^{2}	1×10^{7}
I-124	1×10^{0}	1×10^{0}	1×10^{1}	1×10^{6}
I-125	2×10^{1}	3×10^{0}	1×10^{3}	1×10^{6}
I-126	2×10^{0}	1×10^{0}	1×10^{2}	1×10^{6}
I-129	Unlimited	Unlimited	1×10^{2}	1×10^{5}
I-131	3×10^{0}	7×10^{-1}	1×10^{2}	1×10^{6}
I-132	4×10^{-1}	4×10^{-1}	1×10^{1}	1×10^{5}
I-133	7×10^{-1}	6×10^{-1}	1×10^{1}	1×10^{6}
I-134	3×10^{-1}	3×10^{-1}	1×10^{1}	1×10^{5}
I-135 (a)	6×10^{-1}	6×10^{-1}	1×10^{1}	1×10^{6}
Indium (49)				
In-111	3×10^{0}	3×10^{0}	1×10^{2}	1×10^{6}
In-113m	4×10^{0}	2×10^{0}	1×10^{2}	1×10^{6}
In-114m (a)	1×10^{1}	5×10^{-1}	1×10^{2}	1×10^{6}
In-115m	7×10^{0}	1×10^{0}	1×10^{2}	1×10^{6}
Iridium (77)				
Ir-189 (a)	1×10^{1}	1×10^{1}	1×10^{2}	1×10^{7}
Ir-190	7×10^{-1}	7×10^{-1}	1×10^{1}	1×10^{6}
Ir-192	1×10^{0}(c)	6×10^{-1}	1×10^{1}	1×10^{4}
Ir-194	3×10^{-1}	3×10^{-1}	1×10^{2}	1×10^{5}
Potassium (19)				
K-40	9×10^{-1}	9×10^{-1}	1×10^{2}	1×10^{6}
K-42	2×10^{-1}	2×10^{-1}	1×10^{2}	1×10^{6}
K-43	7×10^{-1}	6×10^{-1}	1×10^{1}	1×10^{6}
Krypton (36)				
Kr-81	4×10^{1}	4×10^{1}	1×10^{4}	1×10^{7}
Kr-85	1×10^{1}	1×10^{1}	1×10^{5}	1×10^{4}
Kr-85m	8×10^{0}	3×10^{0}	1×10^{3}	1×10^{10}
Kr-87	2×10^{-1}	2×10^{-1}	1×10^{2}	1×10^{9}
Lanthanum (57)				
La-137	3×10^{1}	6×10^{0}	1×10^{3}	1×10^{7}
La-140	4×10^{-1}	4×10^{-1}	1×10^{1}	1×10^{5}
Lutetium (71)				
Lu-172	6×10^{-1}	6×10^{-1}	1×10^{1}	1×10^{6}
Lu-173	8×10^{0}	8×10^{0}	1×10^{2}	1×10^{7}
Lu-174	9×10^{0}	9×10^{0}	1×10^{2}	1×10^{7}
Lu-174m	2×10^{1}	1×10^{1}	1×10^{2}	1×10^{7}
Lu-177	3×10^{1}	7×10^{-1}	1×10^{3}	1×10^{7}
Magnesium (12)				
Mg-28 (a)	3×10^{-1}	3×10^{-1}	1×10^{1}	1×10^{5}

Radionuclide (atomic number)	*A_1 (TBq)*	*A_2 (TBq)*	*Activity concentration for exempt material (Bq/g)*	*Activity limit for an exempt consignment (Bq)*
Manganese (25)				
Mn-52	3×10^{-1}	3×10^{-1}	1×10^{1}	1×10^{5}
Mn-53	Unlimited	Unlimited	1×10^{4}	1×10^{9}
Mn-54	1×10^{0}	1×10^{0}	1×10^{1}	1×10^{6}
Mn-56	3×10^{-1}	3×10^{-1}	1×10^{1}	1×10^{5}
Molybdenum (42)				
Mo-93	4×10^{1}	2×10^{1}	1×10^{3}	1×10^{8}
Mo-99 (a)	1×10^{0}	6×10^{-1}	1×10^{2}	1×10^{6}
Nitrogen (7)				
N-13	9×10^{-1}	6×10^{-1}	1×10^{2}	1×10^{9}
Sodium (11)				
Na-22	5×10^{-1}	5×10^{-1}	1×10^{1}	1×10^{6}
Na-24	2×10^{-1}	2×10^{-1}	1×10^{1}	1×10^{5}
Niobium (41)				
Nb-93m	4×10^{1}	3×10^{1}	1×10^{4}	1×10^{7}
Nb-94	7×10^{-1}	7×10^{-1}	1×10^{1}	1×10^{6}
Nb-95	1×10^{0}	1×10^{0}	1×10^{1}	1×10^{6}
Nb-97	9×10^{-1}	6×10^{-1}	1×10^{1}	1×10^{6}
Neodymium (60)				
Nd-147	6×10^{0}	6×10^{-1}	1×10^{2}	1×10^{6}
Nd-149	6×10^{-1}	5×10^{-1}	1×10^{2}	1×10^{6}
Nickel (28)				
Ni-59	Unlimited	Unlimited	1×10^{4}	1×10^{8}
Ni-63	4×10^{1}	3×10^{1}	1×10^{5}	1×10^{8}
Ni-65	4×10^{-1}	4×10^{-1}	1×10^{1}	1×10^{6}
Neptunium (93)				
Np-235	4×10^{1}	4×10^{1}	1×10^{3}	1×10^{7}
Np-236 (short-lived)	2×10^{1}	2×10^{0}	1×10^{3}	1×10^{7}
Np-236 (long-lived)	9×10^{0}	2×10^{-2}	1×10^{2}	1×10^{5}
Np-237	2×10^{1}	2×10^{-3}	1×10^{0} (b)	1×10^{3} (b)
Np-239	7×10^{0}	4×10^{-1}	1×10^{2}	1×10^{7}
Osmium (76)				
Os-185	1×10^{0}	1×10^{0}	1×10^{1}	1×10^{6}
Os-191	1×10^{1}	2×10^{0}	1×10^{2}	1×10^{7}
Os-191m	4×10^{1}	3×10^{1}	1×10^{3}	1×10^{7}
Os-193	2×10^{0}	6×10^{-1}	1×10^{2}	1×10^{6}
Os-194 (a)	3×10^{-1}	3×10^{-1}	1×10^{2}	1×10^{5}
Phosphorus (15)				
P-32	5×10^{-1}	5×10^{-1}	1×10^{3}	1×10^{5}
P-33	4×10^{1}	1×10^{0}	1×10^{5}	1×10^{8}
Protactinium (91)				
Pa-230 (a)	2×10^{0}	7×10^{-2}	1×10^{1}	1×10^{6}
Pa-231	4×10^{0}	4×10^{-4}	1×10^{0}	1×10^{3}
Pa-233	5×10^{0}	7×10^{-1}	1×10^{2}	1×10^{7}
Lead (82)				

Radionuclide (atomic number)	*A_1 (TBq)*	*A_2 (TBq)*	*Activity concentration for exempt material (Bq/g)*	*Activity limit for an exempt consignment (Bq)*
Pb-201	1×10^{0}	1×10^{0}	1×10^{1}	1×10^{6}
Pb-202	4×10^{1}	2×10^{1}	1×10^{3}	1×10^{6}
Pb-203	4×10^{0}	3×10^{0}	1×10^{2}	1×10^{6}
Pb-205	Unlimited	Unlimited	1×10^{4}	1×10^{7}
Pb-210 (a)	1×10^{0}	5×10^{-2}	1×10^{1} (b)	1×10^{4} (b)
Pb-212 (a)	7×10^{-1}	2×10^{-1}	1×10^{1} (b)	1×10^{5} (b)
Palladium (46)				
Pd-103 (a)	4×10^{1}	4×10^{1}	1×10^{3}	1×10^{8}
Pd-107	Unlimited	Unlimited	1×10^{5}	1×10^{8}
Pd-109	2×10^{0}	5×10^{-1}	1×10^{3}	1×10^{6}
Promethium (61)				
Pm-143	3×10^{0}	3×10^{0}	1×10^{2}	1×10^{6}
Pm-144	7×10^{-1}	7×10^{-1}	1×10^{1}	1×10^{6}
Pm-145	3×10^{1}	1×10^{1}	1×10^{3}	1×10^{7}
Pm-147	4×10^{1}	2×10^{0}	1×10^{4}	1×10^{7}
Pm-148m (a)	8×10^{-1}	7×10^{-1}	1×10^{1}	1×10^{6}
Pm-149	2×10^{0}	6×10^{-1}	1×10^{3}	1×10^{6}
Pm-151	2×10^{0}	6×10^{-1}	1×10^{2}	1×10^{6}
Polonium (84)				
Po-210	4×10^{1}	2×10^{-2}	1×10^{1}	1×10^{4}
Praseodymium (59)				
Pr-142	4×10^{-1}	4×10^{-1}	1×10^{2}	1×10^{5}
Pr-143	3×10^{0}	6×10^{-1}	1×10^{4}	1×10^{6}
Platinum (78)				
Pt-188 (a)	1×10^{0}	8×10^{-1}	1×10^{1}	1×10^{6}
Pt-191	4×10^{0}	3×10^{0}	1×10^{2}	1×10^{6}
Pt-193	4×10^{1}	4×10^{1}	1×10^{4}	1×10^{7}
Pt-193m	4×10^{1}	5×10^{-1}	1×10^{3}	1×10^{7}
Pt-195m	1×10^{1}	5×10^{-1}	1×10^{2}	1×10^{6}
Pt-197	2×10^{1}	6×10^{-1}	1×10^{3}	1×10^{6}
Pt-197m	1×10^{1}	6×10^{-1}	1×10^{2}	1×10^{6}
Plutonium (94)				
Pu-236	3×10^{1}	3×10^{-3}	1×10^{1}	1×10^{4}
Pu-237	2×10^{1}	2×10^{1}	1×10^{3}	1×10^{7}
Pu-238	1×10^{1}	1×10^{-3}	1×10^{0}	1×10^{4}
Pu-239	1×10^{1}	1×10^{-3}	1×10^{0}	1×10^{4}
Pu-240	1×10^{1}	1×10^{-3}	1×10^{0}	1×10^{3}
Pu-241 (a)	4×10^{1}	6×10^{-2}	1×10^{2}	1×10^{5}
Pu-242	1×10^{1}	1×10^{-3}	1×10^{0}	1×10^{4}
Pu-244 (a)	4×10^{-1}	1×10^{-3}	1×10^{0}	$1 \times 1\ 10^{4}$
Radium (88)				
Ra-223 (a)	4×10^{-1}	7×10^{-3}	1×10^{2} (b)	1×10^{5} (b)
Ra-224 (a)	4×10^{-1}	2×10^{-2}	1×10^{1}(b)	1×10^{5} (b)
Ra-225 (a)	2×10^{-1}	4×10^{-3}	1×10^{2}	1×10^{5}
Ra-226 (a)	2×10^{-1}	3×10^{-3}	1×10^{1} (b)	1×10^{4} (b)

Radionuclide (atomic number)	*A_1 (TBq)*	*A_2 (TBq)*	*Activity concentration for exempt material (Bq/g)*	*Activity limit for an exempt consignment (Bq)*
Ra-228 (a)	6×10^{-1}	2×10^{-2}	1×10^{1} (b)	1×10^{5} (b)
Rubidium (37)				
Rb-81	2×10^{0}	8×10^{-1}	1×10^{1}	1×10^{6}
Rb-83 (a)	2×10^{0}	2×10^{0}	1×10^{2}	1×10^{6}
Rb-84	1×10^{0}	1×10^{0}	1×10^{1}	1×10^{6}
Rb-86	5×10^{-1}	5×10^{-1}	1×10^{2}	1×10^{5}
Rb-87	Unlimited	Unlimited	1×10^{4}	1×10^{7}
Rb(nat)	Unlimited	Unlimited	1×10^{4}	1×10^{7}
Rhenium (75)				
Re-184	1×10^{0}	1×10^{0}	1×10^{1}	1×10^{6}
Re-184m	3×10^{0}	1×10^{0}	1×10^{2}	1×10^{6}
Re-186	2×10^{0}	6×10^{-1}	1×10^{3}	1×10^{6}
Re-187	Unlimited	Unlimited	1×10^{6}	1×10^{9}
Re-188	4×10^{-1}	4×10^{-1}	1×10^{2}	1×10^{5}
Re-189 (a)	3×10^{0}	6×10^{-1}	1×10^{2}	1×10^{6}
Re(nat)	Unlimited	Unlimited	1×10^{6}	1×10^{9}
Rhodium (45)				
Rh-99	2×10^{0}	2×10^{0}	1×10^{1}	1×10^{6}
Rh-101	4×10^{0}	3×10^{0}	1×10^{2}	1×10^{7}
Rh-102	5×10^{-1}	5×10^{-1}	1×10^{1}	1×10^{6}
Rh-102m	2×10^{0}	2×10^{0}	1×10^{2}	1×10^{6}
Rh-103m	4×10^{1}	4×10^{1}	1×10^{4}	1×10^{8}
Rh-105	1×10^{1}	8×10^{-1}	1×10^{2}	1×10^{7}
Radon (86)				
Rn-222 (a)	3×10^{-1}	4×10^{-3}	1×10^{1} (b)	1×10^{8} (b)
Ruthenium (44)				
Ru-97	5×10^{0}	5×10^{0}	1×10^{2}	1×10^{7}
Ru-103 (a)	2×10^{0}	2×10^{0}	1×10^{2}	1×10^{6}
Ru-105	1×10^{0}	6×10^{-1}	1×10^{1}	1×10^{6}
Ru-106 (a)	2×10^{-1}	2×10^{-1}	1×10^{2} (b)	1×10^{5} (b)
Sulphur (16)				
S-35	4×10^{1}	3×10^{0}	1×10^{5}	1×10^{8}
Antimony (51)				
Sb-122	4×10^{-1}	4×10^{-1}	1×10^{2}	1×10^{4}
Sb-124	6×10^{-1}	6×10^{-1}	1×10^{1}	1×10^{6}
Sb-125	2×10^{0}	1×10^{0}	1×10^{2}	1×10^{6}
Sb-126	4×10^{-1}	4×10^{-1}	1×10^{1}	1×10^{5}
Scandium (21)				
Sc-44	5×10^{-1}	5×10^{-1}	1×10^{1}	1×10^{5}
Sc-46	5×10^{-1}	5×10^{-1}	1×10^{1}	1×10^{6}
Sc-47	1×10^{1}	7×10^{-1}	1×10^{2}	1×10^{6}
Sc-48	3×10^{-1}	3×10^{-1}	1×10^{1}	1×10^{5}
Selenium (34)				
Se-75	3×10^{0}	3×10^{0}	1×10^{2}	1×10^{6}
Se-79	4×10^{1}	2×10^{0}	1×10^{4}	1×10^{7}

Radionuclide (atomic number)	*A_1 (TBq)*	*A_2 (TBq)*	*Activity concentration for exempt material (Bq/g)*	*Activity limit for an exempt consignment (Bq)*
Silicon (14)				
Si-31	6×10^{-1}	6×10^{-1}	1×10^{3}	1×10^{6}
Si-32	4×10^{1}	5×10^{-1}	1×10^{3}	1×10^{6}
Samarium (62)				
Sm-145	1×10^{1}	1×10^{1}	1×10^{2}	1×10^{7}
Sm-147	Unlimited	Unlimited	1×10^{1}	1×10^{4}
Sm-151	4×10^{1}	1×10^{1}	1×10^{4}	1×10^{8}
Sm-153	9×10^{0}	6×10^{-1}	1×10^{2}	1×10^{6}
Tin (50)				
Sn-113 (a)	4×10^{0}	2×10^{0}	1×10^{3}	1×10^{7}
Sn-117m	7×10^{0}	4×10^{-1}	1×10^{2}	1×10^{6}
Sn-119m	4×10^{1}	3×10^{1}	1×10^{3}	1×10^{7}
Sn-121m (a)	4×10^{1}	9×10^{-1}	1×10^{3}	1×10^{7}
Sn-123	8×10^{-1}	6×10^{-1}	1×10^{3}	1×10^{6}
Sn-125	4×10^{-1}	4×10^{-1}	1×10^{2}	1×10^{5}
Sn-126 (a)	6×10^{-1}	4×10^{-1}	1×10^{1}	1×10^{5}
Strontium (38)				
Sr-82 (a)	2×10^{-1}	2×10^{-1}	1×10^{1}	1×10^{5}
Sr-85	2×10^{0}	2×10^{0}	1×10^{2}	1×10^{6}
Sr-85m	5×10^{0}	5×10^{0}	1×10^{2}	1×10^{7}
Sr-87m	3×10^{0}	3×10^{0}	1×10^{2}	1×10^{6}
Sr-89	6×10^{-1}	6×10^{-1}	1×10^{3}	1×10^{6}
Sr-90 (a)	3×10^{-1}	3×10^{-1}	1×10^{2} (b)	1×10^{4} (b)
Sr-91 (a)	3×10^{-1}	3×10^{-1}	1×10^{1}	1×10^{5}
Sr-92 (a)	1×10^{0}	3×10^{-1}	1×10^{1}	1×10^{6}
Tritium (1)				
T(H-3)	4×10^{1}	4×10^{1}	1×10^{6}	1×10^{9}
Tantalum (73)				
Ta-178 (long-lived)	1×10^{0}	8×10^{-1}	1×10^{1}	1×10^{6}
Ta-179	3×10^{1}	3×10^{1}	1×10^{3}	1×10^{7}
Ta-182	9×10^{-1}	5×10^{-1}	1×10^{1}	1×10^{4}
Terbium (65)				
Tb-157	4×10^{1}	4×10^{1}	1×10^{4}	1×10^{7}
Tb-158	1×10^{0}	1×10^{0}	1×10^{1}	1×10^{6}
Tb-160	1×10^{0}	6×10^{-1}	1×10^{1}	1×10^{6}
Technetium (43)				
Tc-95m (a)	2×10^{0}	2×10^{0}	1×10^{1}	1×10^{6}
Tc-96	4×10^{-1}	4×10^{-1}	1×10^{1}	1×10^{6}
Tc-96m (a)	4×10^{-1}	4×10^{-1}	1×10^{3}	1×10^{7}
Tc-97	Unlimited	Unlimited	1×10^{3}	1×10^{8}
Tc-97m	4×10^{1}	1×10^{0}	1×10^{3}	1×10^{7}
Tc-98	8×10^{-1}	7×10^{-1}	1×10^{1}	1×10^{6}
Tc-99	4×10^{1}	9×10^{-1}	1×10^{4}	1×10^{7}
Tc-99m	1×10^{1}	4×10^{0}	1×10^{2}	1×10^{7}
Tellurium (52)				

Radionuclide (atomic number)	*A_1 (TBq)*	*A_2 (TBq)*	*Activity concentration for exempt material (Bq/g)*	*Activity limit for an exempt consignment (Bq)*
Te-121	2×10^{0}	2×10^{0}	1×10^{1}	1×10^{6}
Te-121m	5×10^{0}	3×10^{0}	1×10^{2}	1×10^{6}
Te-123m	8×10^{0}	1×10^{0}	1×10^{2}	1×10^{7}
Te-125m	2×10^{1}	9×10^{-1}	1×10^{3}	1×10^{7}
Te-127	2×10^{1}	7×10^{-1}	1×10^{3}	1×10^{6}
Te-127m (a)	2×10^{1}	5×10^{-1}	1×10^{3}	1×10^{7}
Te-129	7×10^{-1}	6×10^{-1}	1×10^{2}	1×10^{6}
Te-129m (a)	8×10^{-1}	4×10^{-1}	1×10^{3}	1×10^{6}
Te-131m (a)	7×10^{-1}	5×10^{-1}	1×10^{1}	1×10^{6}
Te-132 (a)	5×10^{-1}	4×10^{-1}	1×10^{2}	1×10^{7}
Thorium (90)				
Th-227	1×10^{1}	5×10^{-3}	1×10^{1}	1×10^{4}
Th-228 (a)	5×10^{-1}	1×10^{-3}	1×10^{0} (b)	1×10^{4} (b)
Th-229	5×10^{0}	5×10^{-4}	1×10^{0} (b)	1×10^{3} (b)
Th-230	1×10^{1}	1×10^{-3}	1×10^{0}	1×10^{4}
Th-231	4×10^{1}	2×10^{-2}	1×10^{3}	1×10^{7}
Th-232	Unlimited	Unlimited	1×10^{1}	1×10^{4}
Th-234 (a)	3×10^{-1}	3×10^{-1}	1×10^{3} (b)	1×10^{5} (b)
Th(nat)	Unlimited	Unlimited	1×10^{0} (b)	1×10^{3} (b)
Titanium (22)				
Ti-44 (a)	5×10^{-1}	4×10^{-1}	1×10^{1}	1×10^{5}
Thallium (81)				
Tl-200	9×10^{-1}	9×10^{-1}	1×10^{1}	1×10^{6}
Tl-201	1×10^{1}	4×10^{0}	1×10^{2}	1×10^{6}
Tl-202	2×10^{0}	2×10^{0}	1×10^{2}	1×10^{6}
Tl-204	1×10^{1}	7×10^{-1}	1×10^{4}	1×10^{4}
Thulium (69)				
Tm-167	7×10^{0}	8×10^{-1}	1×10^{2}	1×10^{6}
Tm-170	3×10^{0}	6×10^{-1}	1×10^{3}	1×10^{6}
Tm-171	4×10^{1}	4×10^{1}	1×10^{4}	1×10^{8}
Uranium (92)				
U-230 (fast lung absorption) (a)(d)	4×10^{1}	1×10^{-1}	1×10^{1} (b)	1×10^{5} (b)
U-230 (medium lung absorption)(a)(e)	4×10^{1}	4×10^{-3}	1×10^{1}	1×10^{4}
U-230 (slow lung absorption) (a)(f)	3×10^{1}	3×10^{-3}	1×10^{1}	1×10^{4}
U-232 (fast lung absorption) (d)	4×10^{1}	1×10^{-2}	1×10^{0} (b)	1×10^{3} (b)
U-232 (medium lung absorption) (e)	4×10^{1}	7×10^{-3}	1×10^{1}	1×10^{4}
U-232 (slow lung absorption) (f)	1×10^{1}	1×10^{-3}	1×10^{1}	1×10^{4}
U-233 (fast lung absorption) (d)	4×10^{1}	9×10^{-2}	1×10^{1}	1×10^{4}
U-233 (medium lung absorption) (e)	4×10^{1}	2×10^{-2}	1×10^{2}	1×10^{5}
U-233 (slow lung absorption) (f)	4×10^{1}	6×10^{-3}	1×10^{1}	1×10^{5}
U-234 (fast lung absorption) (d)	4×10^{1}	9×10^{-2}	1×10^{1}	1×10^{4}
U-234 (medium lung absorption) (e)	4×10^{1}	2×10^{-2}	1×10^{2}	1×10^{5}
U-234 (slow lung absorption) (f)	4×10^{1}	6×10^{-3}	1×10^{1}	1×10^{5}
U-235 (all lung absorption types) (a),(d),(e),(f)	Unlimited	Unlimited	1×10^{1} (b)	1×10^{4} (b)

Radionuclide (atomic number)	*A_1 (TBq)*	*A_2 (TBq)*	*Activity concentration for exempt material (Bq/g)*	*Activity limit for an exempt consignment (Bq)*
U-236 (fast lung absorption) (d)	Unlimited	Unlimited	1×10^{1}	1×10^{4}
U-236 (medium lung absorption) (e)	4×10^{1}	2×10^{-2}	1×10^{2}	1×10^{5}
U-236 (slow lung absorption) (f)	4×10^{1}	6×10^{-3}	1×10^{1}	1×10^{4}
U-238 (all lung absorption types) (d),(e),(f)	Unlimited	Unlimited	1×10^{1} (b)	1×10^{4} (b)
U (nat)	Unlimited	Unlimited	1×10^{0} (b)	1×10^{3} (b)
U (enriched to 20% or less) (g)	Unlimited	Unlimited	1×10^{0}	1×10^{3}
U (dep)	Unlimited	Unlimited	1×10^{0}	1×10^{3}
Vanadium (23)				
V-48	4×10^{-1}	4×10^{-1}	1×10^{1}	1×10^{5}
V-49	4×10^{1}	4×10^{1}	1×10^{4}	1×10^{7}
Tungsten (74)				
W-178 (a)	9×10^{0}	5×10^{0}	1×10^{1}	1×10^{6}
W-181	3×10^{1}	3×10^{1}	1×10^{3}	1×10^{7}
W-185	4×10^{1}	8×10^{-1}	1×10^{4}	1×10^{7}
W-187	2×10^{0}	6×10^{-1}	1×10^{2}	1×10^{6}
W-188 (a)	4×10^{-1}	3×10^{-1}	1×10^{2}	1×10^{5}
Xenon (54)				
Xe-122 (a)	4×10^{-1}	4×10^{-1}	1×10^{2}	1×10^{9}
Xe-123	2×10^{0}	7×10^{-1}	1×10^{2}	1×10^{9}
Xe-127	4×10^{0}	2×10^{0}	1×10^{3}	1×10^{5}
Xe-131m	4×10^{1}	4×10^{1}	1×10^{4}	1×10^{4}
Xe-133	2×10^{1}	1×10^{1}	1×10^{3}	1×10^{4}
Xe-135	3×10^{0}	2×10^{0}	1×10^{3}	1×10^{10}
Yttrium (39)				
Y-87 (a)	1×10^{0}	1×10^{0}	1×10^{1}	1×10^{6}
Y-88	4×10^{-1}	4×10^{-1}	1×10^{1}	1×10^{6}
Y-90	3×10^{-1}	3×10^{-1}	1×10^{3}	1×10^{5}
Y-91	6×10^{-1}	6×10^{-1}	1×10^{3}	1×10^{6}
Y-91m	2×10^{0}	2×10^{0}	1×10^{2}	1×10^{6}
Y-92	2×10^{-1}	2×10^{-1}	1×10^{2}	1×10^{5}
Y-93	3×10^{-1}	3×10^{-1}	1×10^{2}	1×10^{5}
Ytterbium (70)				
Yb-169	4×10^{0}	1×10^{0}	1×10^{2}	1×10^{7}
Yb-175	3×10^{1}	9×10^{-1}	1×10^{3}	1×10^{7}
Zinc (30)				
Zn-65	2×10^{0}	2×10^{0}	1×10^{1}	1×10^{6}
Zn-69	3×10^{0}	6×10^{-1}	1×10^{4}	1×10^{6}
Zn-69m (a)	3×10^{0}	6×10^{-1}	1×10^{2}	1×10^{6}
Zirconium (40)				
Zr-88	3×10^{0}	3×10^{0}	1×10^{2}	1×10^{6}
Zr-93	Unlimited	Unlimited	1×10^{3} (b)	1×10^{7} (b)
Zr-95 (a)	2×10^{0}	8×10^{-1}	1×10^{1}	1×10^{6}
Zr-97 (a)	4×10^{-1}	4×10^{-1}	1×10^{1} (b)	1×10^{5} (b)

(a) A_1 and/or A_2 values for these parent radionuclides include contributions from daughter radionuclides with half-lives less than 10 days, as listed in the following:

Mg-28	Al-28
Ar-42	K-42
Ca-47	Sc-47
Ti-44	Sc-44
Fe-52	Mn-52m
Fe-60	Co-60m
Zn-69m	Zn-69
Ge-68	Ga-68
Rb-83	Kr-83m
Sr-82	Rb-82
Sr-90	Y-90
Sr-91	Y-91m
Sr-92	Y-92
Y-87	Sr-87m
Zr-95	Nb-95m
Zr-97	Nb-97m, Nb-97
Mo-99	Tc-99m
Tc-95m	Tc-95
Tc-96m	Tc-96
Ru-103	Rh-103m
Ru-106	Rh-106
Pd-103	Rh-103m
Ag-108m	Ag-108
Ag-110m	Ag-110
Cd-115	In-115m
In-114m	In-114
Sn-113	In-113m
Sn-121m	Sn-121
Sn-126	Sb-126m
Te-118	Sb-118
Te-127m	Te-127
Te-129m	Te-129
Te-131m	Te-131
Te-132	I-132
I-135	Xe-135m
Xe-122	I-122
Cs-137	Ba-137
Ba-131	Cs-131
Ba-140	La-140
Ce-144	Pr-144m, Pr-144
Pm-148m	Pm-148
Gd-146	Eu-146
Dy-166	Ho-166
Hf-172	Lu-172
W-178	Ta-178
W-188	Re-188
Re-189	Os-189m
Os-194	Ir-194
Ir-189	Os-189m
Pt-188	Ir-188
Hg-194	Au-194
Hg-195m	Hg-195
Pb-210	Bi-210
Pb-212	Bi-212, Tl-208, Po-212
Bi-210m	Tl-206
Bi-212	Tl-208, Po-212
At-211	Po-211
Rn-222	Po-218, Pb-214, At-218, Bi-214, Po-214
Ra-223	Rn-219, Po-215, Pb-211, Bi-211, Po-211, Tl-207
Ra-224	Rn-220, Po-216, Pb-212, Bi-212, Tl-208, Po-212
Ra-225	Ac-225, Fr-221, At-217, Bi-213, Tl-209, Po-213, Pb-209
Ra-226	Rn-222, Po-218, Pb-214, At-218, Bi-214, Po-214
Ra-228	Ac-228
Ac-225	Fr-221, At-217, Bi-213, Tl-209, Po-213, Pb-209
Ac-227	Fr-223
Th-228	Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208, Po-212
Th-234	Pa-234m, Pa-234

Pa-230	Ac-226, Th-226, Fr-222, Ra-222, Rn-218, Po-214
U-230	Th-226, Ra-222, Rn-218, Po-214
U-235	Th-231
Pu-241	U-237
Pu-244	U-240, Np-240m
Am-242m	Am-242, Np-238
Am-243	Np-239
Cm-247	Pu-243
Bk-249	Am-245
Cf-253	Cm-249

(b) Parent nuclides and their progeny included in secular equilibrium are listed in the following:

Sr-90	Y-90
Zr-93	Nb-93m
Zr-97	Nb-97
Ru-106	Rh-106
Ag-108m	Ag-108
Cs-137	Ba-137m
Ce-144	Pr-144
Ba-140	La-140
Bi-212	Tl-208 (0.36), Po-212 (0.64)
Pb-210	Bi-210, Po-210
Pb-212	Bi-212, Tl-208 (0.36), Po-212 (0.64)
Rn-222	Po-218, Pb-214, Bi-214, Po-214
Ra-223	Rn-219, Po-215, Pb-211, Bi-211, Tl-207
Ra-224	Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)
Ra-226	Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210
Ra-228	Ac-228
Th-228	Ra-224, Rn-220, Po-216, Pb212, Bi-212, Tl208 (0.36), Po-212 (0.64)
Th-229	Ra-225, Ac-225, Fr-221, At-217, Bi-213, Po-213, Pb-209
Th-nat	Ra-228, Ac-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)
Th-234	Pa-234m
U-230	Th-226, Ra-222, Rn-218, Po-214
U-232	Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)
U-235	Th-231
U-238	Th-234, Pa-234m
U-nat	Th-234, Pa-234m, U-234, Th-230, Ra-226, Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210
Np-237	Pa-233
Am-242m	Am-242
Am-243	Np-239

(c) The quantity may be determined from a measurement of the rate of decay or a measurement of the radiation level at a prescribed distance from the source.

(d) These values apply only to compounds of uranium that take the chemical form of UF6, UO2F2 and UO2(NO3)2 in both normal and accident conditions of transport.

(e) These values apply only to compounds of uranium that take the chemical form of UO3, UF4, UCl4 and hexavalent compounds in both normal and accident conditions of transport.

(f) These values apply to all compounds of uranium other than those specified in (d) and (e) above.

(g) These values apply to unirradiated uranium only.

Table 2-13. Basic radionuclide values for unknown radionuclides or mixtures

Radioactive contents	*A_1 (Tbq)*	*A_2 (Tbq)*	*Activity concentration for exempt material (Bq/g)*	*Activity limit for an exempt consignment (Bq)*
Only beta- or gamma-emitting nuclides are known to be present	0.1	0.02	1×10^{1}	1×10^{4}
Alpha-emitting nuclides but no neutron emitters are known to be present	0.2	9×10^{-5}	1×10^{-1}	1×10^{3}
Neutron-emitting nuclides are known to be present or no relevant data are available	0.001	9×10^{-5}	1×10^{-1}	1×10^{3}

7.2.3 Determination of other material characteristics

7.2.3.1 *Low specific activity (LSA) material*

7.2.3.1.1 (Reserved)

7.2.3.1.2 LSA material must be in one of three groups:

a) LSA-I

i) uranium and thorium ores and concentrates of such ores, and other ores containing naturally occurring radionuclides which are intended to be processed for the use of these radionuclides;

ii) natural uranium, depleted uranium, natural thorium, or their compounds or mixtures, providing they are unirradiated and in solid or liquid form;

iii) radioactive material for which the A_2 value is unlimited, excluding material classified as fissile according to 7.2.3.5; or

iv) other radioactive material in which the activity is distributed throughout and the estimated average specific activity does not exceed 30 times the values for activity concentration specified in 7.2.2.1 to 7.2.2.6, excluding material classified as fissile according to 7.2.3.5.

b) LSA-II

i) water with tritium concentration up to 0.8 TBq/L; or

ii) other material in which the activity is distributed throughout and the estimated average specific activity does not exceed 10^{-4} A_2/g for solids and gases, and 10^{-5} A_2/g for liquids.

c) LSA-III — solids (e.g. consolidated wastes, activated materials), excluding powders, in which:

i) the radioactive material is distributed throughout a solid or a collection of solid objects, or is essentially uniformly distributed in a solid compact binding agent (such as concrete, bitumen, ceramic, etc.);

ii) the radioactive material is relatively insoluble, or it is intrinsically contained in a relatively insoluble matrix, so that, even under loss of packaging, the loss of radioactive material per package by leaching when placed in water for seven days would not exceed 0.1 A_2; and

iii) the estimated average specific activity of the solid, excluding any shielding material, does not exceed 2×10^{-3} A_2/g.

7.2.3.1.3 LSA-III material must be a solid of such a nature that if the entire contents of a package were subjected to the test specified in 7.2.3.1.4, the activity in the water would not exceed 0.1 A_2.

7.2.3.1.4 LSA-III material must be tested as follows:

A solid material sample representing the entire contents of the package must be immersed for 7 days in water at ambient temperature. The volume of water to be used in the test must be sufficient to ensure that at the end of the 7-day test period, the free volume of the unabsorbed and unreacted water remaining must be at least 10 per cent of the volume of the solid

test sample itself. The water must have an initial pH of 6-8 and a maximum conductivity of 1 mS/m at 20°C. The total activity of the free volume of water must be measured following the 7-day immersion of the test sample.

7.2.3.1.5 Demonstration of compliance with the performance standards in 7.2.3.1.4 must be in accordance with 6;7.11.1 and 6;7.11.2.

7.2.3.2 S*urface contaminated object (SCO)*

7.2.3.2.1 SCO is classified in one of two groups:

a) SCO-I: A solid object on which:

i) the non-fixed contamination on the accessible surface averaged over 300 cm^2 (or the area of the surface if less than 300 cm^2) does not exceed 4 Bq/cm^2 for beta and gamma emitters and low toxicity alpha emitters, or 0.4 Bq/cm^2 for all other alpha emitters; and

ii) the fixed contamination on the accessible surface averaged over 300 cm^2 (or the area of the surface if less than 300 cm^2) does not exceed 4×10^4 Bq/cm^2 for beta and gamma emitters and low toxicity alpha emitters, or 4×10^3 Bq/cm^2 for all other alpha emitters; and

iii) the non-fixed contamination plus the fixed contamination on the inaccessible surface averaged over 300 cm^2 (or the area of the surface if less than 300 cm^2) does not exceed 4×10^4 Bq/cm^2 for beta and gamma emitters and low toxicity alpha emitters, or 4×10^3 Bq/cm^2 for all other alpha emitters;

b) SCO-II: A solid object on which either the fixed or non-fixed contamination on the surface exceeds the applicable limits specified for SCO-I in a) above and on which:

i) the non-fixed contamination on the accessible surface averaged over 300 cm^2 (or the area of the surface if less than 300 cm^2) does not exceed 400 Bq/cm^2 for beta and gamma emitters and low toxicity alpha emitters, or 40 Bq/cm^2 for all other alpha emitters; and

ii) the fixed contamination on the accessible surface, averaged over 300 cm^2 (or the area of the surface if less than 300 cm^2) does not exceed 8×10^5 Bq/cm^2 for beta and gamma emitters and low toxicity alpha emitters, or 8×10^4 Bq/cm^2 for all other alpha emitters; and

iii) the non-fixed contamination plus the fixed contamination on the inaccessible surface averaged over 300 cm^2 (or the area of the surface if less than 300 cm^2) does not exceed 8×10^5 Bq/cm^2 for beta and gamma emitters and low toxicity alpha emitters, or 8×10^4 Bq/cm^2 for all other alpha emitters.

7.2.3.3 *Special form radioactive material*

7.2.3.3.1 Special form radioactive material must have at least one dimension not less than 5 mm. When a sealed capsule constitutes part of the special form radioactive material, the capsule must be so manufactured that it can be opened only by destroying it. The design for special form radioactive material requires unilateral approval.

7.2.3.3.2 Special form radioactive material must be of such a nature or must be so designed that if it is subjected to the tests specified in 7.2.3.3.4 to 7.2.3.3.8, it must meet the following requirements:

a) it would not break or shatter under the impact, percussion and bending tests specified in 7.2.3.3.5 a), b), c) or 7.2.3.3.6 a), as applicable;

b) it would not melt or disperse in the applicable heat test specified in 7.2.3.3.5 d) or 7.2.3.3.6 b), as applicable; and

c) the activity in the water from the leaching tests specified in 7.2.3.3.7 and 7.2.3.3.8 would not exceed 2 kBq; or alternatively for sealed sources, the leakage rate for the volumetric leakage assessment test specified in ISO 9978:1992 “Radiation Protection — Sealed Radioactive Sources — Leakage Test Methods”, would not exceed the applicable acceptance threshold acceptable to the competent authority.

7.2.3.3.3 Demonstration of compliance with the performance standards in 7.2.3.3.2 must be in accordance with 6;7.11.1 and 6;7.11.2.

7.2.3.3.4 Specimens that comprise or simulate special form radioactive material must be subjected to the impact test, the percussion test, the bending test, and the heat test specified in 7.2.3.3.5 or alternative tests as authorized in 7.2.3.3.6. A different specimen may be used for each of the tests. Following each test, a leaching assessment or volumetric leakage test must be performed on the specimen by a method no less sensitive than the methods given in 7.2.3.3.7 for indispersible solid material or 7.2.3.3.8 for encapsulated material.

7.2.3.3.5 The relevant test methods are:

a) Impact test: The specimen must drop onto the target from a height of 9 m. The target must be as defined in 6;7.13;

b) Percussion test: The specimen must be placed on a sheet of lead which is supported by a smooth, solid surface and struck by the flat face of a mild steel bar so as to cause an impact equivalent to that resulting from a free drop of 1.4 kg through 1 m. The lower part of the bar must be 25 mm in diameter with the edges rounded off to a radius of (3.0 ± 0.3) mm. The lead, of hardness number 3.5 to 4.5 on the Vickers scale and not more than 25 mm thick, must cover an area greater than that covered by the specimen. A fresh surface of lead must be used for each impact. The bar must strike the specimen so as to cause maximum damage.

c) Bending test: The test must apply only to long, slender sources with both a minimum length of 10 cm and a length to minimum width ratio of not less than 10. The specimen must be rigidly clamped in a horizontal position so that one-half of its length protrudes from the face of the clamp. The orientation of the specimen must be such that the specimen will suffer maximum damage when its free end is struck by the flat face of a steel bar. The bar must strike the specimen so as to cause an impact equivalent to that resulting from a free vertical drop of 1.4 kg through 1 m. The lower part of the bar must be 25 mm in diameter with the edges rounded off to a radius of (3.0 ± 0.3) mm.

d) Heat test: The specimen must be heated in air to a temperature of 800°C and held at that temperature for a period of 10 minutes and must then be allowed to cool.

7.2.3.3.6 Specimens that comprise or simulate radioactive material enclosed in a sealed capsule may be excepted from:

a) the tests prescribed in 7.2.3.3.5 a) and b) provided the mass of the special form radioactive material is:

   i) less than 200 g and the specimens are alternatively subjected to the Class 4 impact test prescribed in ISO 2919:1999 “Radiation protection — Sealed radioactive sources — General requirements and classification”; or

   ii) less than 500 g and the specimens are alternatively subjected to the Class 5 impact test prescribed in ISO 2919:1999 “Radiation protection — Sealed radioactive sources — General requirements and classification; and

b) the test prescribed in 7.2.3.3.5 d) provided the specimens are alternatively subjected to the Class 6 temperature test specified in ISO 2919:1999 “Radiation protection — Sealed radioactive sources — General requirements and classification”.

7.2.3.3.7 For specimens which comprise or simulate indispersible solid material, a leaching assessment must be performed as follows:

a) The specimen must be immersed for 7 days in water at ambient temperature. The volume of water to be used in the test must be sufficient to ensure that at the end of the 7-day test period, the free volume of the unabsorbed and unreacted water remaining must be at least 10 per cent of the volume of the solid test sample itself. The water must have an initial pH of 6-8 and a maximum conductivity of 1 mS/m at 20°C;

b) The water with the specimen must then be heated to a temperature of (50 ± 5)°C and maintained at this temperature for 4 hours;

c) The activity of the water must then be determined;

d) The specimen must then be kept for at least 7 days in still air at not less than 30°C and relative humidity not less than 90 per cent;

e) The specimen must then be immersed in water of the same specification as in a) above and the water with the specimen heated to (50 ± 5)°C and maintained at this temperature for 4 hours;

f) The activity of the water must then be determined.

7.2.3.3.8 For specimens which comprise or simulate radioactive material enclosed in a sealed capsule, either a leaching assessment or a volumetric leakage assessment must be performed as follows:

a) The leaching assessment must consist of the following steps:

   i) the specimen must be immersed in water at ambient temperature. The water must have an initial pH of 6-8 with a maximum conductivity of 1 mS/m at 20°C;

   ii) the water and specimen must be heated to a temperature of (50 ± 5)°C and maintained at this temperature for 4 hours;

   iii) the activity of the water must then be determined;

   iv) the specimen must then be kept for at least 7 days in still air at not less than 30°C and relative humidity of not less than 90 per cent;

   v) the process in i), ii) and iii) must be repeated;

b) The alternative volumetric leakage assessment must comprise any of the tests prescribed in ISO 9978:1992 “Radiation protection — Sealed radioactive sources — Leakage test methods”, which are acceptable to the competent authority.

7.2.3.4 *Low dispersible radioactive material*

7.2.3.4.1 The design for low dispersible radioactive material requires multilateral approval. Low dispersible radioactive material must be such that the total amount of this radioactive material in a package must meet the following requirements:

a) The radiation level at 3 m from the unshielded radioactive material does not exceed 10 mSv/h;

b) If subjected to the tests specified in 6;7.19.3 and 6;7.19.4, the airborne release in gaseous and particulate forms of up to 100 μm aerodynamic equivalent diameter would not exceed 100 A_2. A separate specimen may be used for each test; and

c) If subjected to the test specified in 7.2.3.1.4, the activity in the water would not exceed 100 A_2. In the application of this test, the damaging effects of the tests specified in b) above must be taken into account.

7.2.3.4.2 Low dispersible material must be tested as follows:

A specimen that comprises or simulates low dispersible radioactive material must be subjected to the enhanced thermal test specified in 6;7.19.3 and the impact test specified in 6;7.19.4. A different specimen may be used for each of the tests. Following each test, the specimen must be subjected to the leach test specified in 7.2.3.1.4. After each test, it must be determined if the applicable requirements of 7.2.3.4.1 have been met.

7.2.3.4.3 Demonstration of compliance with the performance standards in 7.2.3.4.1 and 7.2.3.4.2 must be in accordance with 6;7.11.1 and 6;7.11.2.

7.2.3.5 *Fissile material*

7.2.3.5.1 Packages containing fissile radionuclides must be classified under the relevant entry of Table 2-11 for fissile material unless one of the conditions a) to d) of this paragraph is met. Only one type of exception is allowed per consignment.

a) A mass limit per consignment such that:

$$\frac{\text{mass of uranium - 235(g)}}{X} + \frac{\text{mass of other fissile material (g)}}{Y} < 1$$

where X and Y are the mass limits defined in Table 2-14, provided that the smallest external dimension of each package is not less than 10 cm and that either:

i) each individual package contains not more than 15 g of fissile material; for unpackaged material, this quantity limitation must apply to the consignment being carried in or on the conveyance;

ii) the fissile material is a homogeneous hydrogenous solution or mixture where the ratio of fissile nuclides to hydrogen is less than 5 per cent by mass; or

iii) there are not more than 5 g of fissile material in any 10 L volume of material.

Table 2-14. Consignment mass limits for exceptions from the requirements for packages containing fissile material

Fissile material	*Fissile material mass (g) mixed with substances having an average hydrogen density less than or equal to water*	*Fissile material mass (g) mixed with substances having an average hydrogen density greater than water*
Uranium 235 (X)	400	290
Other fissile material (Y)	250	180

Neither beryllium nor deuterium must be present in quantities exceeding 1 per cent of the applicable consignment mass limits provided in Table 2-14, except for deuterium in natural concentration in hydrogen.

b) Uranium enriched in uranium-235 to a maximum of 1 per cent by mass, and with a total plutonium and uranium-233 content not exceeding 1 per cent of the mass of uranium-235, provided that the fissile material is distributed essentially homogeneously throughout the material. In addition, if uranium-235 is present in metallic, oxide or carbide forms, it must not form a lattice arrangement;

c) Liquid solutions of uranyl nitrate enriched in uranium-235 to a maximum of 2 per cent by mass, with a total plutonium and uranium-233 content not exceeding 0.002 per cent of the mass of uranium, and with a minimum nitrogen to uranium atomic ratio (N/U) of 2;

d) Packages containing, individually, a total plutonium mass not more than 1 kg, of which not more than 20 per cent by mass may consist of plutonium-239, plutonium-241 or any combination of those radionuclides.

7.2.4 Classification of packages

7.2.4.1 The quantity of radioactive material in a package must not exceed the relevant limits for the package type as specified below.

7.2.4.1.1 *Classification as excepted packages*

7.2.4.1.1.1 Packages may be classified as excepted packages if:

a) they are empty packagings having contained radioactive material;

b) they contain instruments or articles in limited quantities;

c) they contain articles manufactured of natural uranium, depleted uranium or natural thorium; or

d) they contain radioactive material in limited quantities.

7.2.4.1.1.2 A package containing radioactive material may be classified as an excepted package provided that the radiation level at any point on its external surface does not exceed 5 μSv/h.

7.2.4.1.1.3 Radioactive material which is enclosed in or is included as a component part of an instrument or other manufactured article may be classified under UN 2911 — **Radioactive material, excepted package — instruments** or **articles**, provided that:

a) the radiation level at 10 cm from any point on the external surface of any unpackaged instrument or article is not greater than 0.1 mSv/h; and

b) each instrument or article bears the marking “RADIOACTIVE” except:

i) radioluminescent time-pieces or devices;

ii) consumer products that either have received regulatory approval according to 1;6.1.4 b) or do not individually exceed the activity limit for an exempt consignment in Table 2-12 (column 5), provided such products are transported in a package that bears the marking “RADIOACTIVE” on an internal surface in such a manner that warning of the presence of radioactive material is visible on opening the package;

c) the active material is completely enclosed by non-active components (a device performing the sole function of containing radioactive material must not be considered to be an instrument or manufactured article); and

d) the limits specified in columns 2 and 3 of Table 2-15 are met for each individual item and each package, respectively.

7.2.4.1.1.4 Radioactive material with an activity not exceeding the limit specified in column 4 of Table 2-15 may be classified under UN 2910 — **Radioactive material, excepted package — limited quantity of material**, provided that:

a) the package retains its radioactive contents under routine conditions of transport; and

b) the package bears the marking “RADIOACTIVE” on an internal surface in such a manner that a warning of the presence of radioactive material is visible on opening the package.

7.2.4.1.1.5 An empty packaging which had previously contained radioactive material with an activity not exceeding the limit specified in column 4 of Table 2-15 may be classified under UN 2908 — **Radioactive material, excepted package — empty packaging**, provided that:

a) it is in a well-maintained condition and securely closed;

b) the outer surface of any uranium or thorium in its structure is covered with an inactive sheath made of metal or some other substantial material;

c) the level of internal non-fixed contamination, when averaged over any 300 cm^2, does not exceed:

(i) 400 Bq/cm^2 for beta and gamma emitters and low toxicity alpha emitters; and

(ii) 40 Bq/cm^2 for all other alpha emitters; and

d) any labels which may have been displayed on it in conformity with 5;3.2.6 are no longer visible.

7.2.4.1.2 Articles manufactured of natural uranium, depleted uranium or natural thorium and articles in which the sole radioactive material is unirradiated natural uranium, unirradiated depleted uranium or unirradiated natural thorium may be classified under UN 2909, **Radioactive material, excepted package — articles manufactured from natural uranium** or **depleted uranium** or **natural thorium**, provided that the outer surface of the uranium or thorium is enclosed in an inactive sheath made of metal or some other substantial material.

Table 2-15. Activity limits for excepted packages

Physical state of contents	*Instruments or article*		*Materials*
	*Item limits**	*Package limits**	*Package limits**
Solids			
Special form	10^{-2} A_1	A_1	10^{-3} A_1
Other form	10^{-2} A_2	A_2	10^{-3} A_2
Liquids	10^{-3} A_2	10^{-1} A_2	10^{-4} A_2
Gases			
Tritium	2×10^{-2} A_2	2×10^{-1} A_2	2×10^{-2} A_2
Special form	10^{-3} A_1	10^{-2} A_1	10^{-3} A_1
Other forms	10^{-3} A_2	10^{-2} A_2	10^{-3} A_2

* For mixtures of radionuclides, see 7.2.2.4 to 7.2.2.6.

7.2.4.2 *Classification as low specific activity (LSA) material*

7.2.4.2.1 Radioactive material may only be classified as LSA material if the conditions of 7.2.3.1 and 4;9.2.1 are met.

7.2.4.3 *Classification as surface contaminated object (SCO)*

7.2.4.3.1 Radioactive material may be classified as SCO if the conditions of 7.2.3.2.1 and 4;9.2.1 are met.

7.2.4.4 *Classification of Type A packages*

7.2.4.4.1 Packages containing radioactive material may be classified as Type A packages provided that the following conditions are met:

7.2.4.4.1.1 Type A packages must not contain activities greater than the following:

a) for special form radioactive material — A_1; or

b) for all other radioactive material — A_2.

7.2.4.4.1.2 For mixtures of radionuclides whose identities and respective activities are known, the following condition must apply to the radioactive contents of a Type A package:

$$\sum_i \frac{B(i)}{A_1(i)} + \sum_j \frac{C(j)}{A_2(j)} \leq 1$$

where

B(i) is the activity of radionuclide i as special form radioactive material;

$A_1(i)$ is the A_1 value for radionuclide i;

C(j) is the activity of radionuclide j as other than special form radioactive material;

$A_2(j)$ is the A_2 value for radio-nuclide j.

7.2.4.5 *Classification of uranium hexafluoride*

7.2.4.5.1 Uranium hexafluoride must only be assigned to UN 2977 — **Radioactive material, uranium hexafluoride, fissile** or UN 2978 — **Radioactive material, uranium hexafluoride**, non-fissile or fissile excepted.

7.2.4.5.2 Packages containing uranium hexafluoride must not contain:

a) a mass of uranium hexafluoride different from that authorized for the package design;

b) a mass of uranium hexafluoride greater than a value that would lead to an ullage smaller than 5 per cent at the maximum temperature of the package as specified for the plant systems where the package will be used; or

c) uranium hexafluoride other than in solid form or at an internal pressure above atmospheric pressure when presented for transport.

7.2.4.6 *Classification as Type B(U), Type B(M) or Type C packages*

7.2.4.6.1 Packages not otherwise classified in 7.2.4 (7.2.4.1.1 to 7.2.4.5) must be classified in accordance with the competent authority approval certificate for the package issued by the country of origin of design.

7.2.4.6.2 A package may only be classified as a Type B(U) package if it does not contain:

a) activities greater than those authorized for the package design;

b) radionuclides different from those authorized for the package design; or

c) contents in a form or a physical or chemical state different from those authorized for the package design;

as specified in their certificates of approval.

7.2.4.6.3 A package may only be classified as a Type B(M) package if it does not contain:

a) activities greater than those authorized for the package design;

b) radionuclides different from those authorized for the package design; or

c) contents in a form or a physical or chemical state different from those authorized for the package design;

as specified in their certificates of approval.

7.2.4.6.4 A package may only be classified as a Type C package if it does not contain:

a) activities greater than those authorized for the package design;

b) radionuclides different from those authorized for the package design; or

c) contents in a form or physical or chemical state different from those authorized for the package design;

as specified in their certificates of approval.

7.2.5 Special arrangements

Radioactive material must be classified as transported under special arrangement when it is intended to be transported in accordance with 1;6.4.

Chapter 8

CLASS 8 — CORROSIVE SUBSTANCES

8.1 DEFINITION OF CLASS 8

Class 8 substances (corrosive substances) are substances which, by chemical action, will cause severe damage when in contact with living tissue or, in the case of leakage, will materially damage, or even destroy, other goods or the means of transport.

8.2 ASSIGNMENT OF PACKING GROUPS

8.2.1 Substances and preparations of Class 8 are divided among the three packing groups according to their degree of hazard in transport as follows:

a) Packing Group I: Very dangerous substances and preparations;

b) Packing Group II : Substances and preparations presenting medium danger;

c) Packing Group III: Substances and preparations presenting minor danger.

8.2.2 Allocation of substances in Class 8 to the packing groups referred to in the introduction to Part 3, Chapter 1 has been on the basis of experience, taking into account such additional factors as inhalation risk and reactivity with water, including the formation of hazardous decomposition products. New substances, including mixtures, can be assigned to packing groups on the basis of the length of time of contact necessary to produce full thickness destruction of human skin. Liquids, and solids which may become liquid during transport, which are judged not to cause full thickness destruction of human skin must still be considered for their potential to cause corrosion to certain metal surfaces in accordance with the criteria in 8.2.5 c) ii).

8.2.3 A substance or preparation meeting the criteria of Class 8 having an inhalation toxicity of dusts and mists (LC_{50}) in the range of Packing Group I, but toxicity through oral ingestion or dermal contact only in the range of Packing Group III or less, must be allocated to Class 8.

8.2.4 In assigning the packing group to a substance in accordance with 8.2.2, account must be taken of human experience in instances of accidental exposure. In the absence of human experience, the packing group must be based on data obtained from experiments in accordance with OECD Guidelines for Testing of Chemicals No. 404, *Acute Dermal Irritation/Corrosion*, 1992.

8.2.5 Packing groups are assigned to corrosive substances in accordance with the following criteria:

a) *Packing Group I* is assigned to substances that cause full thickness destruction of intact skin tissue within an observation period of up to 60 minutes starting after an exposure time of 3 minutes or less.

b) *Packing Group II* is assigned to substances that cause full thickness destruction of intact skin tissue within an observation period of up to 14 days starting after an exposure time of more than 3 minutes but not more than 60 minutes.

c) *Packing Group III* is assigned to substances that:

i) cause full thickness destruction of intact skin tissue within an observation period of up to 14 days starting after an exposure time of more than 60 minutes but not more than 4 hours;

≠ ii) are judged not to cause full thickness destruction of intact skin tissue but which exhibit a corrosion rate on either steel or aluminium surfaces exceeding 6.25 mm a year at a test temperature of 55°C when tested on both materials. For the purposes of testing steel, type S235JR+CR (1.0037 resp. St 37-2), S275J2G3+CR (1.0144 resp. St 44-3), ISO 3574, Unified Numbering System (UNS) G10200 or SAE 1020, and for testing aluminium, non-clad types 7075-T6 or AZ5GU-T6, must be used. An acceptable test is prescribed in the UN *Manual of Tests and Criteria*, Part III, Section 37.

\+ *Note.— Where an initial test on either steel or aluminium indicates the substance being tested is corrosive, the follow up test on the other metal is not required.*

Chapter 9

CLASS 9 — MISCELLANEOUS DANGEROUS SUBSTANCES AND ARTICLES

9.1 DEFINITION

9.1.1 *Class 9 substances and articles (miscellaneous dangerous substances and articles)* are substances and articles which, during air transport, present a danger not covered by other classes.

9.1.2 *Genetically modified micro-organisms (GMMOs) and genetically modified organisms (GMOs)* are micro-organisms and organisms in which genetic material has been purposely altered through genetic engineering in a way that does not occur naturally.

9.2 ASSIGNMENT TO CLASS 9

9.2.1 Class 9 includes, inter alia:

≠ a) Environmentally hazardous substances (aquatic environment) are those that meet the criteria in 2.9.3 of the UN Model Regulations or that meet criteria in international regulations or national regulations established by the national authority in a country of origin, transit or destination.

Substances or mixtures dangerous to the aquatic environment not otherwise classified under these Instructions, but classified by the shipper as dangerous goods (see Special Provision A97), must be assigned to Packing Group III and designated:

UN 3077 Environmentally hazardous substance, solid, n.o.s.; or
UN 3082 Environmentally hazardous substance, liquid, n.o.s.

b) Elevated temperature substances (i.e. substances that are transported or offered for transport at temperatures equal to or exceeding 100°C in a liquid state or at temperatures equal to or exceeding 240°C in a solid state (these substances may only be carried under 1;1.1).

c) GMMOs or GMOs which do not meet the definition of infectious substances (see 6.3) but which are capable of altering animals, plants or microbiological substances in a way not normally the result of natural reproduction. They must be assigned to UN 3245. GMMOs or GMOs are not subject to these Instructions when authorized for use by the appropriate national authorities of the States of Origin, transit and destination.

d) Magnetized material: Any material which, when packed for air transport, has a magnetic field strength of 0.159 A/m or more at a distance of 2.1 m from any point on the surface of the assembled package (see also Packing Instruction 902).

Note.— Masses of ferro-magnetic metals such as automobiles, automobile parts, metal fencing, piping and metal construction material, even if not meeting the definition of magnetized material may be subject to the operator's special stowage requirements since they may affect aircraft instruments, particularly the compasses. Additionally, packages or items of material which individually do not meet the definition of magnetized material but cumulatively may do so, may also be subject to the operator's special stowage requirements.

e) Aviation regulated solid or liquid: Any material which has narcotic, noxious or other properties such that, in the event of spillage or leakage on an aircraft, extreme annoyance or discomfort could be caused to crew members so as to prevent the correct performance of assigned duties.

Some examples of articles in Class 9 are:

— Engines, internal combustion;

— Life-saving appliances, self-inflating;

— Battery-powered equipment or vehicle.

Some examples of substances in Class 9 are:

— Blue, brown or white asbestos;

— Carbon dioxide, solid (dry ice);

>

— Zinc dithionite.

———————

Part 3

DANGEROUS GOODS LIST, SPECIAL PROVISIONS AND LIMITED AND EXCEPTED QUANTITIES

Chapter 1

GENERAL

Parts of this Chapter are affected by State Variations US 3, US 7, ZA 1; see Table A-1

1.1 GENERAL

1.1.1 The Dangerous Goods List (Table 3-1) in this Chapter lists the dangerous goods most commonly carried but is not exhaustive. It is intended that the list cover, as far as practicable, all dangerous substances of commercial importance.

1.1.2 Where an article or substance is specifically listed by name in the Dangerous Goods List, it must be transported in accordance with the provisions in the List which are appropriate for that article or substance. A "generic" or "not otherwise specified" entry may be used to permit the transport of substances or articles which do not appear specifically by name in the Dangerous Goods List. Such a substance or article may be transported only after its dangerous properties have been determined. The substance or article must then be classified according to the class definitions and test criteria and the name in the Dangerous Goods List which most appropriately describes the substance must be used. The classification must be made by the appropriate national authority when so required or may otherwise be made by the shipper. Once the class of the substance or article has been so established, all conditions for dispatch and transport, as provided in these Instructions must be met. Any substance or article having or suspected of having explosive characteristics must first be considered for inclusion in Class 1.

1.1.3 The List also includes a number of specific articles and substances whose transport by air is forbidden (see Part 1, Chapter 2).

1.1.4 Where precautionary measures are laid down in the Dangerous Goods List in respect of a given substance or article (e.g. that it must be "stabilized" or "with x% water or phlegmatizer") such substance or article may not normally be carried when these measures have not been taken, unless the item in question is listed elsewhere (e.g. Class 1) without any indication of, or with different, precautionary measures.

1.1.5 Where there is any doubt as to whether a non-listed article or substance is permitted for transport by air, or under what conditions, the shipper and/or operator must consult an appropriate specialized agency.

1.2 PROPER SHIPPING NAME

Note.— For proper shipping names used for the transport of samples, see Part 2, Introductory Chapter, paragraph 5.

1.2.1 The proper shipping name is that portion of the entry most accurately describing the goods in the Dangerous Goods List, which is shown in boldface characters (plus any numbers, Greek letters, "sec", "tert", and the letters m, n, o, p, which form an integral part of the name). Portions of an entry appearing in lightface type need not be considered as part of the proper shipping name but may be used.

1.2.2 Proper shipping names may be used in the singular or plural as appropriate. In addition, when qualifying words are used as part of the proper shipping name, their sequence on documentation or package markings is optional. For instance, **"Dimethylamine solution"** may alternatively be shown as **"Solution of Dimethylamine"**. However, the entry in column 1 reflects the preferred sequence. Alternative spelling reflecting common usage around the world is acceptable for words such as **"caesium"** for **"cesium"**, **"sulfur"** for **"sulphur"**, **"aluminum"** for **"aluminium"**, etc. However, the spelling appearing in Table 3-1 is preferred.

≠ 1.2.3 Many substances have an entry for both the liquid and solid state (see definitions for liquid and solid in 1;3.1.1) or for the solid and solution. These are allocated separate UN numbers.

1.2.4 Unless it is already included in bold letters in the name indicated in the Dangerous Goods List, the qualifying word **"molten"** must be added as part of the proper shipping name when a substance, which is a solid in accordance with the definition in 1;3.1, is offered for transport in the molten state (e.g. **Alkylphenol, solid, n.o.s., molten**).

1.2.5 Except for self-reactive substances and organic peroxides and unless it is already included in boldface characters in the name indicated in column 1 of the Dangerous Goods List, the word "**stabilized**" must be added as part of the proper shipping name of a substance which without stabilization would be forbidden from transport in accordance with 1;2.1 due to it being liable to react dangerously under conditions normally encountered in transport (e.g. **"Toxic liquid, organic, n.o.s., stabilized"**).

1.2.6 Hydrates may be transported under the proper shipping name for the anhydrous substance.

1.2.7 Generic or "not otherwise specified" (n.o.s.) names

1.2.7.1 Generic and "not otherwise specified" proper shipping names, indicated by the inclusion of an asterisk in column 1 of the Dangerous Goods List, must be supplemented with the technical or chemical group names unless a national law or international convention prohibits their disclosure if it is a controlled substance. For explosives of Class 1, the dangerous goods description may be supplemented by additional descriptive text to indicate commercial or military names. Technical and chemical group names must be entered in brackets immediately following the proper shipping name. An appropriate modifier, such as "contains" or "containing" or other qualifying words such as "mixture", "solution", etc. and the percentage of the technical constituent may be used. For example: "UN 1993 **Flammable liquid, n.o.s.** (contains xylene and benzene), 3, PG II".

1.2.7.1.1 The technical name must be a recognized chemical or other name currently used in scientific and technical handbooks, journals and texts. Trade names must not be used for this purpose. In the case of pesticides, only ISO common name(s), other name(s) in the World Health Organization (WHO) *Recommended Classification of Pesticides by Hazard and Guidelines to Classification,* or the name(s) of the active substance(s) may be used.

1.2.7.1.2 When a mixture of dangerous goods is described by one of the "n.o.s." or "generic" entries where an asterisk is indicated in column 1 of the Dangerous Goods List, not more than the two constituents which most predominantly contribute to the hazard or hazards of a mixture need to be shown, excluding controlled substances when their disclosure is prohibited by national law or international convention. If a package containing a mixture is labelled with any subsidiary risk label, one of the two technical names as shown in parentheses must be the name of the constituent which compels the use of the subsidiary risk label.

Examples illustrating the selection of the proper shipping name supplemented with the technical name of the dangerous goods for such n.o.s. entries are:

UN 3394 **Organometallic substance, liquid, pyrophoric, water-reactive** (Trimethylgallium)
UN 2902 **Pesticide, liquid, toxic, n.o.s.** (Drazoxolon)**.**

Note. — As an aid to choosing the most appropriate n.o.s. or generic name, all the n.o.s. entries and the main generic entries of Table 3-1 are listed in Attachment 1, Chapter 2.

1.3 MIXTURES AND SOLUTIONS CONTAINING ONE DANGEROUS SUBSTANCE

1.3.1 A mixture or solution containing a dangerous substance identified by name in the Dangerous Goods List and one or more substances not subject to these Instructions must be treated according to the requirements for the dangerous substance provided that the packaging is appropriate to the physical state of the mixture or solution, unless:

a) the mixture or solution is specifically identified by name in these Instructions; or

b) the entry in these Instructions specifically indicates that it applies only to the pure substance; or

c) the hazard class, physical state or packing group of the solution or mixture is different from that of the dangerous substance; or

d) there is significant change in the measures to be taken in emergencies.

1.3.2 For solutions and mixtures treated according to the provisions given for the dangerous substance, the qualifying word **"solution"** or **"mixture"**, as appropriate, must be added as part of the proper shipping name, e.g. **"Acetone solution"**. In addition, the concentration of the solution or mixture may also be indicated, e.g. **"Acetone 75% solution"**.

1.3.3 A mixture or solution containing one or more substances identified by name in Table 3-1 or classified under an n.o.s. entry and one or more substances not subject to these Instructions is not subject to these Instructions if the hazard characteristics of the mixture or solution are such that they do not meet the criteria (including human experience criteria) for any class.

1.4 MIXTURES AND SOLUTIONS CONTAINING TWO OR MORE DANGEROUS GOODS

1.4.1 (Reserved)

Note. — Classification *of mixtures or solutions containing two or more dangerous goods should be based on the properties of the mixture or solution, not the individual substances. In some instances, it may be appropriate to select the UN number of a substance specifically listed by name in Table 3-1. For example, it may be more appropriate for mixtures or solutions containing a substance specifically listed by name in Table 3-1 and traces or small quantities of one or more other dangerous goods to be assigned the UN number and proper shipping name of the predominant substance.*

Chapter 2

ARRANGEMENT OF THE DANGEROUS GOODS LIST (TABLE 3-1)

Parts of this Chapter are affected by State Variations AU 1, AU 2, AU 3, BE 3, CA 7, CA 8, CA 10, CA 11, CA 13, GB 3, IR 3, JP 21, NL 1, US 2, US 3, US 6, US 15, ZA 1; see Table A-1

2.1 ARRANGEMENT OF THE DANGEROUS GOODS LIST (TABLE 3-1)

≠ 2.1.1 The Dangerous Goods List (Table 3-1) is divided into 13 columns as follows:

≠ Column 1 "Name" — this column contains the alphabetically arranged list of dangerous goods, identified by their proper shipping names in boldface characters (see 1.2). Also included, in lightface type, are:

a) other names by which certain articles and substances may be known; in such cases a cross reference to the proper shipping name is given;

b) names of articles and substances which are forbidden for carriage by air under any circumstances; and

c) names of articles and substances which are subject to additional considerations under special provisions.

An explanation of some of the terms used appears in Attachment 2.

Entries in this column have been arranged in alphabetical order; where names comprise more than one word, they have been alphabetized as if they were a single word. In deciding the correct order, numbers and the terms n.o.s., alpha-, beta-, meta-, omega-, sec-, tert-, a-, b-, m-, N-, n-, O-, o- and p- have been ignored. Similarly, the word "see" and any words following it have been ignored.

Unless otherwise indicated, for an entry in the dangerous goods list, the word "solution" in a proper shipping name means one or more named dangerous goods dissolved in a liquid that is not otherwise subject to these Instructions.

Column 2 "UN No." — this column contains the serial number assigned to the article or substance under the United Nations classification system. Some entries in the list have not been assigned such a number and for these, a temporary identification number (ID) in the 8000 series has been allocated and is indicated where appropriate. Numbers in the 8000 series must be identified with the "ID" prefix instead of the "UN" prefix used when identifying all other numbers for marking and documentation in these Technical Instructions. When the word "Forbidden" appears across this column and column 3, it means that the dangerous goods covered by that particular entry meet the description of dangerous goods forbidden on aircraft under any circumstances, as provided in 1;2.1. It must be noted, however, that all dangerous goods meeting this description have not been included in the Dangerous Goods List.

Column 3 "Class or division" — this column contains the class or division and in the case of Class 1, the compatibility group assigned to the article or substance according to the classification system described in Part 2; Introductory Chapter.

Column 4 "Subsidiary risk" — this column contains the class or division number of any important subsidiary risks which have been identified by applying the classification found in Part 2; Chapters 1 to 9. Requirements for the labelling of dangerous goods which have subsidiary risks are given in 5;3.2.

Column 5 "Labels" — this column specifies the class hazard label followed by the subsidiary risk label(s) (after the symbol "&") to be applied to each outside packaging and overpack. Subsidiary risk labels are not shown for all n.o.s. or generic articles and substances which possess more than one hazard. When such an article or substance has more than one hazard and no subsidiary risk label is indicated in column 5 of Table 3-1, subsidiary risk labels must be applied in accordance with 5;3.2.2 and 5;3.2.3. For magnetized material the required handling label is also shown. In the instances where no label is required the word "None" will appear.

Column 6 "State variations" — this column contains references to entries in Attachment 3, which shows State variations from these Instructions (these appear under the designator and name of the State).

Column 7 "Special provisions" — this column contains a number referring to the appropriate entries in Table 3-2. Special provisions apply to all the packing groups permitted for a particular substance or article unless the wording makes it otherwise apparent.

Column 8 "UN packing group" — this column contains the UN packing group number (i.e. I, II or III) assigned to the article or substance. If more than one packing group is indicated for the entry, the packing group of the substance or formulation to be transported should be determined, based on its properties, through application of the hazard grouping criteria as provided in Chapters 1 to 10 of this part.

+ Column 9 "Excepted Quantities" — this provides an alphanumeric code described in 5.1.2 which indicates the maximum quantity per inner and outer packaging for transporting dangerous goods as excepted quantities in accordance with Part 3, Chapter 5.

Column 10 "Passenger aircraft — Packing instruction" — this column refers to the relevant packing instructions listed in Part 4 for transport of the article or substance on a passenger aircraft. For some entries an alternative packing instruction is shown prefixed with the letter "Y". Such packing instructions are for limited quantities of dangerous goods.

Column 11 "Passenger aircraft — Maximum net quantity per package" — this column shows the maximum net quantity (mass or volume) of the article or substance allowed in each package for transport on a passenger aircraft. The mass quoted is the net mass unless otherwise indicated by a letter "G". Where a maximum net quantity appears beside a packing instruction prefixed by the letter "Y", this indicates it is the maximum net quantity permitted in a packaging containing limited quantities of dangerous goods. The maximum quantity per package may be further limited by the type of packaging used.

Column 12 "Cargo aircraft — Packing instruction" — this gives information similar to that in column 10, but for articles or substances which may be transported on a cargo aircraft only.

Column 13 "Cargo aircraft — Maximum net quantity per package" — this gives information similar to that in column 11, but for articles or substances which may be transported on a cargo aircraft only. The mass quoted is the net mass unless otherwise indicated by a letter "G". The maximum quantity per package may be further limited by the type of packaging used. The maximum net quantities indicated do not apply to transport in portable tanks, as permitted in the Supplement to these Instructions, Part S-4, Chapter 12, with the approval of the appropriate authority of the State of Origin.

Note 1.— Where an article or substance may not be carried on a passenger aircraft, the word "Forbidden" is written across columns 10 and 11. Where an article or substance may not be carried on any aircraft, the word "Forbidden" is written across columns 12 and 13 as well as across columns 10 and 11.

Note 2.— Where an article or substance is packed according to the packing instruction and maximum net quantity per package given in columns 10 and 11, it may also be carried on a cargo aircraft. In such circumstances, the package must not bear the "Cargo aircraft only" label referred to in 5;3.2.11 a).

2.1.2 The following abbreviations or symbols are used in Table 3-1 and have the meanings shown:

Abbreviation	*Column*	*Meaning*
n.o.s.	1	Not otherwise specified
L	11 and 13	Litre(s)
kg	11 and 13	Kilogram(s)
G	11 and 13	Gross mass of package as prepared for transport
*	1	Entry which requires the addition of a technical name according to 1.2.7
†	1	Entry for which there is an explanation in Attachment 2
≠		this symbol indicates changed text
+		this symbol indicates new or relocated text
>		this symbol indicates deleted text

Table 3-1. Dangerous Goods List

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
A												
Accumulators, electric, see **Batteries**, etc. (UN Nos. 2794, 2795, 2800, 3028, 3292)												
Acetal	1088	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Acetaldehyde	1089	3		Liquid flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	I	E0	FORBIDDEN		304	30 L
Acetaldehyde ammonia	1841	9		Miscellaneous		A48	III	E1	906	200 kg	906	200 kg
Acetaldehyde oxime	2332	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Acetic acid, glacial	2789	8	3	Corrosive & Liquid flammable			II	E2	809 Y809	1 L 0.5 L	813	30 L
Acetic acid solution, more than 80% acid, by mass	2789	8	3	Corrosive & Liquid flammable			II	E2	809 Y809	1 L 0.5 L	813	30 L
Acetic acid solution, more than 10% but less than 50% acid, by mass	2790	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
Acetic acid solution, not less than 50% but not more than 80% acid, by mass	2790	8		Corrosive			II	E2	809 Y809	1 L 0.5 L	813	30 L
Acetic anhydride	1715	8	3	Corrosive & Liquid flammable			II	E2	809 Y809	1 L 0.5 L	813	30 L
Acetoin, see **Acetyl methyl carbinol**												
Acetone	1090	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Acetone cyanohydrin, stabilized	1541	6.1			AU 1 CA 7 GB 3 IR 3 NL 1 US 3 US 4	A2			FORBIDDEN		FORBIDDEN	
Acetone oils	1091	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Acetonitrile	1648	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Acetyl bromide	1716	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
Acetyl chloride	1717	3	8	Liquid flammable & Corrosive			II	E2	306 Y306	1 L 0.5 L	308	5 L
Acetyl cyclohexanesulphonyl peroxide, more than 82%, wetted with less than 12% water	FORBIDDEN											
Acetylene, dissolved	1001	2.1		Gas flammable	AU 1 CA 7 GB 3 NL 1 US 3	A1		E0	FORBIDDEN		200	15 kg
Acetylene (liquefied)	FORBIDDEN											
Acetylene silver nitrate	FORBIDDEN											
Acetylene, solvent free	3374	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	15 kg
Acetylene tetrabromide, see **Tetrabromoethane**												
Acetylene tetrachloride, see **1,1,2,2-Tetrachloroethane**												
Acetyl iodide	1898	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
Acetyl methyl carbinol	2621	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Acid butyl phosphate, see **Butyl acid phosphate**												
Acid mixture, hydrofluoric and sulphuric, see **Hydrofluoric acid and sulphuric acid mixture**												
Acid mixture, nitrating acid, see **Nitrating acid mixture**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Acid mixture, spent, nitrating acid, see **Nitrating acid mixture, spent**												
Acraldehyde, inhibited, see **Acrolein, stabilized**												
Acridine	2713	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Acrolein dimer, stabilized	2607	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Acrolein, stabilized	1092	6.1	3						FORBIDDEN		FORBIDDEN	
Acrylamide, solid	2074	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Acrylamide solution	3426	6.1		Toxic		A3	III	E1	611 Y611	60 L 2 L	618	220 L
Acrylic acid, stabilized	2218	8	3	Corrosive & Liquid flammable			II	E2	808 Y808	1 L 0.5 L	812	30 L
Acrylonitrile, stabilized	1093	3	6.1	Liquid flammable & Toxic			I	E0	FORBIDDEN		303	30 L
Actinolite, see **White asbestos**, etc.												
Activated carbon, see **Carbon, activated**												
Activated charcoal, see **Carbon, activated**												
Actuating cartridge, explosive, see **Cartridges, power device** (UN Nos. 0275, 0276, 0323, 0381)												
Adhesives containing flammable liquid	1133	3		Liquid flammable		A3	I	E3	302	1 L	303	30 L
							II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Adiponitrile	2205	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
Aeroplane flares, see **Flares, aerial**												
Aerosols, flammable	1950	2.1		Gas flammable		A145 A153		E0	203 Y203	75 kg 30 kg G	203	150 kg
Aerosols, flammable, containing substances in Division 6.1, Packing Group II	1950	2.1	6.1						FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Aerosols, flammable, containing substances in Division 6.1, Packing Group III and substances in Class 8, Packing Group III	1950	2.1	6.1 8	Gas flammable & Toxic & Corrosive		A145 A153		E0	203 Y203	75 kg 30 kg G	203	150 kg
Aerosols, flammable, containing toxic gas	1950	2.3	2.1						FORBIDDEN		FORBIDDEN	
Aerosols, flammable, corrosive, containing substances in Class 8, Packing Group II	1950	2.1	8						FORBIDDEN		FORBIDDEN	
Aerosols, flammable, corrosive, containing substances in Class 8, Packing Group III	1950	2.1	8	Gas flammable & Corrosive		A145 A153		E0	203 Y203	75 kg 30 kg G	203	150 kg
Aerosols, flammable (engine starting fluid)	1950	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1 A145 A153		E0	FORBIDDEN		203	150 kg
Aerosols, flammable, toxic, containing substances in Division 6.1, Packing Group III	1950	2.1	6.1	Gas flammable & Toxic		A145 A153		E0	203 Y203	75 kg 30 kg G	203	150 kg
Aerosols, non-flammable	1950	2.2		Gas non-flammable		A98 A145 A153		E0	203 or 204 Y203 or Y204	75 kg 30 kg G	203 or 204	150 kg
Aerosols, non-flammable, containing substances in Class 8, Packing Group II	1950	2.2	8						FORBIDDEN		FORBIDDEN	
Aerosols, non-flammable, containing substances in Division 6.1, Packing Group III and substances in Class 8, Packing Group III	1950	2.2	6.1 8	Gas non-flammable & Toxic & Corrosive		A145 A153		E0	203 Y203	75 kg 30 kg G	203	150 kg
Aerosols, non-flammable, containing substances in Division 6.1, Packing Group II (other than tear gas devices)	1950	2.2	6.1						FORBIDDEN		FORBIDDEN	
Aerosols, non-flammable, containing toxic gas	1950	2.3							FORBIDDEN		FORBIDDEN	
Aerosols, non-flammable, corrosive, containing substances in Class 8, Packing Group III	1950	2.2	8	Gas non-flammable & Corrosive		A145 A153		E0	203 Y203	75 kg 30 kg G	203	150 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Aerosols, non-flammable, (tear gas devices)	1950	2.2	6.1	Gas non-flammable & Toxic	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1 A145 A153		E0	FORBIDDEN		212	50 kg
Aerosols, non-flammable, toxic, containing substances in Division 6.1, Packing Group III	1950	2.2	6.1	Gas non-flammable & Toxic		A145 A153		E0	203 Y203	75 kg 30 kg G	203	150 kg
Aerosols, oxidizing	1950	2.2	5.1	Gas non-flammable & Oxidizer		A145 A153		E0	203	75 kg	203	150 kg
Agent, blasting type B †	0331	1.5D							FORBIDDEN		FORBIDDEN	
Agent, blasting type E †	0332	1.5D							FORBIDDEN		FORBIDDEN	
Air bag inflators †	0503	1.4G		Explosive 1.4		A32 A56		E0	FORBIDDEN		135	75 kg
Air bag inflators †	3268	9		Miscellaneous	BE 3 US 16	A32 A115 A119	III	E0	917	25 kg	917	100 kg
Air bag modules †	0503	1.4G		Explosive 1.4		A32 A56		E0	FORBIDDEN		135	75 kg
Air bag modules †	3268	9		Miscellaneous	BE 3 US 16	A32 A115 A119	III	E0	917	25 kg	917	100 kg
Air, compressed	1002	2.2		Gas non-flammable		A124		E1	200	75 kg	200	150 kg
Aircraft, see **Vehicle (flammable gas powered)** or **Vehicle (flammable liquid powered)**												
Aircraft engines (including turbines) †, see **Engines, internal combustion** (UN No. 3166)												
Aircraft evacuation slides, see **Life-saving appliances, self-inflating**												
Aircraft hydraulic power unit fuel tank (containing a mixture of anhydrous hydrazine and methyl hydrazine) (M86 fuel)	3165	3	6.1 8	Liquid flammable & Toxic & Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1 A48	I	E0	FORBIDDEN		301	42 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft: Packing instruction	Passenger aircraft: Max. net quantity per package	Cargo aircraft: Packing instruction	Cargo aircraft: Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Aircraft survival kits, see **Life-saving appliances, self-inflating**												
Air, refrigerated liquid	1003	2.2	5.1	Gas non-flammable & Oxidizer	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		202	150 kg
Alcoholates solution, n.o.s.*, in alcohol	3274	3	8	Liquid flammable & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L
Alcohol, denatured, see **Alcohols, n.o.s.** or **Alcohols, flammable, toxic, n.o.s.**												
Alcoholic beverages containing more than 70% alcohol by volume	3065	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Alcoholic beverages containing more than 24% but not more than 70% alcohol by volume	3065	3		Liquid flammable		A9 A58	III	E1	309 Y309	60 L 10 L	310	220 L
Alcohol, industrial, see **Alcohols, n.o.s.** or **Alcohols, toxic, flammable, n.o.s.**												
≠ **Alcohols, n.o.s.***	1987	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Alcohols, flammable, toxic, n.o.s.*	1986	3	6.1	Liquid flammable & Toxic		A3	I	E0	FORBIDDEN		303	30 L
							II	E2	305 Y305	1 L 1 L	307	60 L
							III	E1	309 Y309	60 L 2 L	310	220 L
Aldehyde, see **Acetaldehyde**												
Aldehydes, n.o.s.*	1989	3		Liquid flammable		A3	I	E3	302	1 L	303	30 L
							II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Aldehydes, flammable, toxic, n.o.s.*	1988	3	6.1	Liquid flammable & Toxic		A3	I	E0	FORBIDDEN		303	30 L
							II	E2	305 Y305	1 L 1 L	307	60 L
							III	E1	309 Y309	60 L 2 L	310	220 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Aldol	2839	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Alkali metal alcoholates, self-heating, corrosive, n.o.s.*	3206	4.2	8	Spontaneous combustion & Corrosive		A3 A84	II III	E2 E1	416 422	15 kg 25 kg	418 421	50 kg 100 kg
Alkali metal alloy, liquid, n.o.s.	1421	4.3		Danger if wet		A84	I	E0	FORBIDDEN		409	1 L
Alkali metal amalgam, liquid	1389	4.3		Danger if wet		A84	I	E0	FORBIDDEN		409	1 L
Alkali metal amalgam, solid	3401	4.3		Danger if wet		A84	I	E0	FORBIDDEN		412	15 kg
Alkali metal amides	1390	4.3		Danger if wet		A84	II	E2	416 Y416	15 kg 5 kg	418	50 kg
Alkali metal dispersion	1391	4.3		Danger if wet		A84 A147	I	E0	FORBIDDEN		409	1 L
Alkaline corrosive battery fluid, see **Battery fluid, alkali**												
Alkaline earth metal alcoholates, n.o.s.*	3205	4.2		Spontaneous combustion		A3 A85	II III	E2 E1	416 422	15 kg 25 kg	418 421	50 kg 100 kg
Alkaline earth metal alloy, n.o.s.	1393	4.3		Danger if wet		A85	II	E2	415 Y415	15 kg 5 kg	417	50 kg
Alkaline earth metal amalgam, liquid	1392	4.3		Danger if wet		A85	I	E0	FORBIDDEN		409	1 L
Alkaline earth metal amalgam, solid	3402	4.3		Danger if wet		A85	I	E0	FORBIDDEN		412	15 kg
Alkaline earth metal dispersion	1391	4.3		Danger if wet		A85 A147	I	E0	FORBIDDEN		409	1 L
Alkaloid salts, liquid, n.o.s.*	3140	6.1		Toxic		A3 A4 A6	I II	E5 E4	603 609 Y609	1 L 5 L 1 L	604 611	30 L 60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Alkaloid salts, solid, n.o.s.*	1544	6.1		Toxic		A3 A5 A6	I II	E5 E4	606 613 Y613	5 kg 25 kg 1 kg	607 615	50 kg 100 kg
							III	E1	619 Y619	100 kg 10 kg	619	200 kg
Alkaloids, liquid, n.o.s.*	3140	6.1		Toxic		A3 A4 A6	I II	E5 E4	603 609 Y609	1 L 5 L 1 L	604 611	30 L 60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Alkaloids, solid, n.o.s.*	1544	6.1		Toxic		A3 A5 A6	I II	E5 E4	606 613 Y613	5 kg 25 kg 1 kg	607 615	50 kg 100 kg
							III	E1	619 Y619	100 kg 10 kg	619	200 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Alkyl aluminium halides, see **Aluminium alkyl halides**												
Alkylphenols, liquid, n.o.s. (including C_2-C_{12} homologues)	3145	8		Corrosive		A3	I	E0	807	0.5 L	809	2.5 L
							II	E2	808	1 L	812	30 L
									Y808	0.5 L		
							III	E1	818	5 L	820	60 L
									Y818	1 L		
Alkylphenols, solid, n.o.s. (including C_2-C_{12} homologues)	2430	8		Corrosive		A3	I	E0	810	1 kg	811	25 kg
							II	E2	814	15 kg	816	50 kg
									Y814	1 kg		
							III	E1	822	25 kg	823	100 kg
									Y822	5 kg		
Alkylsulphonic acids, liquid with more than 5% free sulphuric acid	2584	8		Corrosive			II	E2	808	1 L	812	30 L
									Y808	0.5 L		
Alkylsulphonic acids, liquid with not more than 5% free sulphuric acid	2586	8		Corrosive			III	E1	818	5 L	820	60 L
									Y818	1 L		
Alkylsulphonic acids, solid with more than 5% free sulphuric acid	2583	8		Corrosive			II	E2	814	15 kg	816	50 kg
									Y814	5 kg		
Alkylsulphonic acids, solid with not more than 5% free sulphuric acid	2585	8		Corrosive			III	E1	822	25 kg	823	100 kg
									Y822	5 kg		
Alkylsulphuric acids*	2571	8		Corrosive			II	E2	808	1 L	812	30 L
									Y808	0.5 L		
Allene, see **Propadiene, stabilized**												
Allyl acetate	2333	3	6.1	Liquid flammable & Toxic			II	E2	305	1 L	307	60 L
									Y305	1 L		
Allyl alcohol	1098	6.1	3						FORBIDDEN		FORBIDDEN	
Allylamine	2334	6.1	3						FORBIDDEN		FORBIDDEN	
Allyl bromide	1099	3	6.1	Liquid flammable & Toxic			I	E0	FORBIDDEN		303	30 L
Allyl chloride	1100	3	6.1	Liquid flammable & Toxic			I	E0	FORBIDDEN		303	30 L
Allyl chlorocarbonate, see **Allyl chloroformate**												
Allyl chloroformate	1722	6.1	3 8						FORBIDDEN		FORBIDDEN	
Allyl ethyl ether	2335	3	6.1	Liquid flammable & Toxic			II	E2	305	1 L	307	60 L
									Y305	1 L		

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Allyl formate	2336	3	6.1	Liquid flammable & Toxic			I	E0	FORBIDDEN		303	30 L
Allyl glycidyl ether	2219	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Allyl iodide	1723	3	8	Liquid flammable & Corrosive			II	E2	306 Y306	1 L 0.5 L	304	5 L
Allyl isothiocyanate, stabilized	1545	6.1	3	Toxic & Liquid flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		612	60 L
Allyltrichlorosilane, stabilized	1724	8	3	Corrosive & Liquid flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
Aluminium borohydride	2870	4.2	4.3						FORBIDDEN		FORBIDDEN	
Aluminium borohydride in devices	2870	4.2	4.3						FORBIDDEN		FORBIDDEN	
Aluminium bromide, anhydrous	1725	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
Aluminium bromide solution	2580	8		Corrosive		A3	III	E1	818 Y818	5 L 1 L	820	60 L
Aluminium carbide	1394	4.3		Danger if wet			II	E2	416 Y416	15 kg 5 kg	418	50 kg
Aluminium chloride, anhydrous	1726	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
Aluminium chloride solution	2581	8		Corrosive		A3	III	E1	818 Y818	5 L 1 L	820	60 L
Aluminium dross, see **Aluminium remelting by-products** or **Aluminium smelting by-products**												
Aluminium dross, wet or hot	FORBIDDEN											
Aluminium ferrosilicon powder	1395	4.3	6.1	Danger if wet & Toxic			II	E2	415 Y415	15 kg 1 kg	417	50 kg
Aluminium hydride	2463	4.3		Danger if wet			I	E0	FORBIDDEN		412	15 kg
Aluminium nitrate	1438	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
Aluminium phosphide	1397	4.3	6.1	Danger if wet & Toxic			I	E0	FORBIDDEN		412	15 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Aluminium phosphide pesticide	3048	6.1		Toxic		A128	I	E0	FORBIDDEN		616	15 kg
Aluminium powder, coated †	1309	4.1		Solid flammable		A3	II	E2	415 Y415	15 kg 5 kg	417	50 kg
							III	E1	419 Y419	25 kg 10 kg	420	100 kg
Aluminium powder, uncoated †	1396	4.3		Danger if wet		A3	II	E2	415 Y415	15 kg 5 kg	417	50 kg
							III	E1	419 Y419	25 kg 10 kg	420	100 kg
Aluminium remelting by-products	3170	4.3		Danger if wet		A3 A102	II	E2	415 Y415	15 kg 5 kg	417	50 kg
							III	E1	419 Y419	25 kg 10 kg	420	100 kg
Aluminium resinate	2715	4.1		Solid flammable			III	E1	419 Y419	25 kg 10 kg	420	100 kg
Aluminium silicon powder, uncoated	1398	4.3		Danger if wet		A3 A53	III	E1	419 Y419	25 kg 10 kg	420	100 kg
Aluminium smelting by-products	3170	4.3		Danger if wet		A3 A102	II	E2	415 Y415	15 kg 5 kg	417	50 kg
							III	E1	419 Y419	25 kg 10 kg	420	100 kg
Amatols, see **Explosive, blasting, type B**												
Amines, flammable, corrosive, n.o.s.*	2733	3	8	Liquid flammable & Corrosive		A3	I	E0	302	0.5 L	303	2.5 L
							II	E2	305 Y305	1 L 0.5 L	307	5 L
							III	E1	309 Y309	5 L 1 L	310	60 L
Amines, liquid, corrosive, n.o.s.*	2735	8		Corrosive		A3	I	E0	807	0.5 L	809	2.5 L
							II	E2	808 Y808	1 L 0.5 L	812	30 L
							III	E1	818 Y818	5 L 1 L	820	60 L
Amines, liquid, corrosive, flammable, n.o.s.*	2734	8	3	Corrosive & Liquid flammable			I	E0	807	0.5 L	809	2.5 L
							II	E2	808 Y808	1 L 0.5 L	812	30 L
Amines, solid, corrosive, n.o.s.*	3259	8		Corrosive		A3	I	E0	810	1 kg	811	25 kg
							II	E2	814 Y814	15 kg 5 kg	816	50 kg
							III	E1	822 Y822	25 kg 5 kg	823	100 kg
Aminobenzene, see **Aniline**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
2-Aminobenzotrifluoruride, see **2-Trifluoromethylaniline**												
3-Aminobenzotrifluoruride, see **3-Trifluoromethylaniline**												
Aminobutane, see **n-Butylamine**												
2-Amino-4-chlorophenol	2673	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
2-Amino-5-diethylaminopentane	2946	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
2-Amino-4,6-dinitrophenol, wetted with not less than 20% water by mass	3317	4.1		Solid flammable	BE 3	A40	I	E0	416	1 kg	412	15 kg
2-(2-Aminoethoxy)ethanol	3055	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
N-Aminoethylpiperazine	2815	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
1-Amino-2-nitrobenzene, see **Nitroanilines**												
1-Amino-3-nitrobenzene, see **Nitroanilines**												
1-Amino-4-nitrobenzene, see **Nitroanilines**												
Aminophenols (o-,m-,p-)	2512	6.1		Toxic		A113	III	E1	619 Y619	100 kg 10 kg	619	200 kg
Aminopyridines (o-,m-,p-)	2671	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Ammonia, anhydrous	1005	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Ammonia solution, relative density between 0.880 and 0.957 at 15ºC in water, with more than 10% but not more than 35% ammonia	2672	8		Corrosive		A64	III	E1	819 Y819	5 L 1 L	813	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Ammonia solution, relative density less than 0.880 at 15ºC in water, with more than 50% ammonia	3318	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Ammonia solution, relative density less than 0.880 at 15ºC in water, with more than 35% but not more than 50% ammonia	2073	2.2		Gas non-flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Ammonium arsenate	1546	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Ammonium azide	FORBIDDEN											
Ammonium bichromate, see **Ammonium dichromate**												
Ammonium bifluoride, solid, see **Ammonium hydrogendifluoride, solid**												
Ammonium bifluoride solution, see **Ammonium hydrogendifluoride, solution**												
Ammonium bisulphate, see **Ammonium hydrogen sulphate**												
Ammonium bisulphite solution, see **Bisulphites, aqueous solution, n.o.s.**												
Ammonium bromate	FORBIDDEN											
Ammonium chlorate	FORBIDDEN											
Ammonium dichromate	1439	5.1		Oxidizer	US 4		II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Ammonium dinitro-o-cresolate, solid	1843	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Ammonium dinitro-o-cresolate solution	3424	6.1		Toxic		A3	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Ammonium fluoride	2505	6.1		Toxic	US 4		III	E1	619 Y619	100 kg 10 kg	619	200 kg
Ammonium fluorosilicate	2854	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Ammonium fulminate	FORBIDDEN											
Ammonium hexafluorosilicate, see **Ammonium fluorosilicate**												
Ammonium hydrogendifluoride, solid	1727	8		Corrosive	US 4		II	E2	815 Y815	15 kg 5 kg	817	50 kg
Ammonium hydrogendifluoride solution	2817	8	6.1	Corrosive & Toxic		A3	II	E2	809 Y809	1 L 0.5 L	813	30 L
							III	E1	819 Y819	5 L 1 L	821	60 L
Ammonium hydrogen sulphate	2506	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
Ammonium hydrosulphide solution, see **Ammonium sulphide solution**												
Ammonium metavanadate	2859	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Ammonium nitrate with more than 0.2% combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance	0222	1.1D							FORBIDDEN		FORBIDDEN	
Ammonium nitrate with not more than 0.2% combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance	1942	5.1		Oxidizer		A64	III	E1	516 Y516	25 kg 10 kg	518	100 kg
Ammonium nitrate based fertilizer	2067	5.1		Oxidizer		A64 A79 A89	III	E1	516 Y516	25 kg 10 kg	518	100 kg
Ammonium nitrate emulsion intermediate for blasting explosives	3375	5.1							FORBIDDEN		FORBIDDEN	
Ammonium nitrate explosives, see **Explosive, blasting, type B**												
Ammonium nitrate fertilizers	2071	9		Miscellaneous		A89 A90			909 Y909	200 kg 30 kg G	909	200 kg
Ammonium nitrate gel intermediate for blasting explosives	3375	5.1							FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Ammonium nitrate, liquid (hot concentrated solution)	2426	5.1				A129			FORBIDDEN		FORBIDDEN	
Ammonium nitrate suspension intermediate for blasting explosives	3375	5.1							FORBIDDEN		FORBIDDEN	
Ammonium nitrite	FORBIDDEN											
Ammonium perchlorate	0402	1.1D				A22			FORBIDDEN		FORBIDDEN	
Ammonium perchlorate	1442	5.1		Oxidizer		A22	II	E2	509 Y509	5 kg 2.5 kg	512	25 kg
Ammonium permanganate	FORBIDDEN											
Ammonium persulphate	1444	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
Ammonium picrate dry or wetted with less than 10% water, by mass	0004	1.1D							FORBIDDEN		FORBIDDEN	
Ammonium picrate, wetted with not less than 10% water, by mass	1310	4.1		Solid flammable	BE 3	A40	I	E0	416	0.5 kg	416	0.5 kg
Ammonium polysulphide solution	2818	8	6.1	Corrosive & Toxic		A3	II	E2	808 Y808	1 L 0.5 L	812	30 L
							III	E1	818 Y818	5 L 1 L	820	60 L
Ammonium polyvanadate	2861	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Ammonium silicofluoride, see **Ammonium fluorosilicate**												
Ammonium sulphide solution	2683	8	3 6.1	Corrosive & Liquid flammable & Toxic			II	E2	808 Y808	1 L 0.5 L	812	30 L
Ammunition, blank, see **Cartridges for weapons, blank**												
Ammunition, fixed, semi-fixed or separate loading, see **Cartridges for weapons**, etc.												
Ammunition, illuminating with or without burster, expelling charge or propelling charge †	0171	1.2G							FORBIDDEN		FORBIDDEN	
Ammunition, illuminating with or without burster, expelling charge or propelling charge †	0254	1.3G							FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Ammunition, illuminating with or without burster, expelling charge or propelling charge †	0297	1.4G		Explosive 1.4				E0	FORBIDDEN		130	75 kg
Ammunition, incendiary, liquid or gel, with burster, expelling charge or propelling charge †	0247	1.3J							FORBIDDEN		FORBIDDEN	
Ammunition, incendiary with or without burster, expelling charge or propelling charge †	0009	1.2G							FORBIDDEN		FORBIDDEN	
Ammunition, incendiary with or without burster, expelling charge or propelling charge †	0010	1.3G							FORBIDDEN		FORBIDDEN	
Ammunition, incendiary with or without burster, expelling charge or propelling charge †	0300	1.4G		Explosive 1.4				E0	FORBIDDEN		130	75 kg
Ammunition, incendiary (water-activated contrivances), see **Contrivances, water-activated**, etc. (UN Nos. 0248, 0249)												
Ammunition, incendiary, white phosphorus with burster, expelling charge or propelling charge †	0243	1.2H							FORBIDDEN		FORBIDDEN	
Ammunition, incendiary, white phosphorus with burster, expelling charge or propelling charge †	0244	1.3H							FORBIDDEN		FORBIDDEN	
Ammunition, industrial, see **Cartridges, oil well** or **Cartridges, power device**												
Ammunition, lachrymatory, see **Ammunition, tear-producing**, etc.												
Ammunition, practice †	0362	1.4G		Explosive 1.4				E0	FORBIDDEN		130	75 kg
Ammunition, practice †	0488	1.3G							FORBIDDEN		FORBIDDEN	
Ammunition, proof †	0363	1.4G		Explosive 1.4				E0	FORBIDDEN		130	75 kg
Ammunition, smoke with or without burster, expelling charge or propelling charge †	0015	1.2G				A132			FORBIDDEN		FORBIDDEN	
Ammunition, smoke with or without burster, expelling charge or propelling charge †	0016	1.3G				A132			FORBIDDEN		FORBIDDEN	
Ammunition, smoke with or without burster, expelling charge or propelling charge †	0303	1.4G		Explosive 1.4		A132		E0	FORBIDDEN		130	75 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Ammunition, smoke (water-activated contrivances), white phosphorus, with burster, expelling charge or propelling charge, see **Contrivances, water-activated**, etc. (UN No. 0248)												
Ammunition, smoke (water-activated contrivances), without white phosphorus or phosphides, with burster, expelling charge or propelling charge, see **Contrivances, water-activated**, etc. (UN No. 0249)												
Ammunition, smoke, white phosphorus with burster, expelling charge or propelling charge †	0245	1.2H							FORBIDDEN		FORBIDDEN	
Ammunition, smoke, white phosphorus with burster, expelling charge or propelling charge †	0246	1.3H							FORBIDDEN		FORBIDDEN	
Ammunition, sporting, see **Cartridges for weapons, inert projectile or cartridges, small arms** (UN Nos. 0012, 0328, 0339, 0417)												
Ammunition, tear-producing with burster, expelling charge or propelling charge †	0018	1.2G	6.1 8						FORBIDDEN		FORBIDDEN	
Ammunition, tear-producing with burster, expelling charge or propelling charge †	0019	1.3G	6.1 8						FORBIDDEN		FORBIDDEN	
Ammunition, tear-producing with burster, expelling charge or propelling charge †	0301	1.4G	6.1 8	Explosive 1.4 & Toxic & Corrosive				E0	FORBIDDEN		130	75 kg
Ammunition, tear-producing, non-explosive without burster or expelling charge, non-fuzed	2017	6.1	8	Toxic & Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		600	50 kg
Ammunition, toxic* with burster, expelling charge or propelling charge †	0020	1.2K	6.1						FORBIDDEN		FORBIDDEN	
Ammunition, toxic* with burster, expelling charge or propelling charge †	0021	1.3K	6.1						FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Ammunition, toxic, non-explosive without burster or expelling charge, non-fuzed	2016	6.1		Toxic	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		600	100 kg
Ammunition, toxic (water-activated contrivances), see **Contrivances, water-activated**, etc. (UN Nos. 0248, 0249)												
Amorces, (caps, toy), see **Fireworks** (UN Nos. 0333, 0336, 0337)												
Amosite, see **Brown asbestos**												
Amyl acetates	1104	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Amyl acid phosphate	2819	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
Amyl aldehyde, see **Valeraldehyde**												
Amylamine	1106	3	8	Liquid flammable & Corrosive		A3	II	E2	305 Y305	1 L 0.5 L	307	5 L
							III	E1	309 Y309	5 L 1 L	310	60 L
Amyl butyrates	2620	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Amyl chloride	1107	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
n-Amylene	1108	3		Liquid flammable			I	E3	302	1 L	303	30 L
Amyl formates	1109	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Amyl mercaptan	1111	3		Liquid flammable			II	E2	306 Y306	5 L 1 L	308	60 L
n-Amyl methyl ketone	1110	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Amyl nitrate	1112	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Amyl nitrite	1113	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
tert-Amylperoxy-3,5,5-trimethylhexanoate	FORBIDDEN											

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Amyltrichlorosilane	1728	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
Anaesthetic ether, see **Diethyl ether**												
Aniline	1547	6.1		Toxic		A113	II	E4	609 Y609	5 L 1 L	611	60 L
Aniline chloride, see **Aniline hydrochloride**												
Aniline hydrochloride	1548	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Aniline oil, see **Aniline**												
Aniline salt, see **Aniline hydrochloride**												
≠ **Anisidines**	2431	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
> **Anisole**	2222	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Anisoyl chloride	1729	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
Anthophyllite, see **White asbestos**, etc.												
Antimonious chloride, see **Antimony trichloride**												
Antimony compound, inorganic, liquid, n.o.s.	3141	6.1		Toxic		A12	III	E1	611 Y611	60 L 2 L	618	220 L
Antimony compound, inorganic, solid, n.o.s.	1549	6.1		Toxic		A12	III	E1	619 Y619	100 kg 10 kg	619	200 kg
Antimony hydride, see **Stibine**												
Antimony lactate	1550	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Antimony (III) lactate, see **Antimony lactate**												
Antimony pentachloride, liquid	1730	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft: Packing instruction	Passenger aircraft: Max. net quantity per package	Cargo aircraft: Packing instruction	Cargo aircraft: Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Antimony pentachloride solution	1731	8		Corrosive		A3	II	E2	808 Y808	1 L 0.5 L	812	30 L
								III	E1	818 Y818	5 L 1 L	820	60 L
	Antimony pentafluoride	1732	8	6.1	Corrosive & Toxic	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
	Antimony perchloride, liquid, see **Antimony pentachloride, liquid**												
	Antimony potassium tartrate	1551	6.1		Toxic	US 4		III	E1	619 Y619	100 kg 10 kg	619	200 kg
	Antimony powder	2871	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
	Antimony sulphide and a chlorate, mixture of	FORBIDDEN											
≠	**Antimony trichloride**	1733	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
>	Antu, see **Naphthylthiourea**												
≠	**Argon, compressed**	1006	2.2		Gas non-flammable		A69		E1	200	75 kg	200	150 kg
	Argon, refrigerated liquid	1951	2.2		Gas non-flammable				E1	202	50 kg	202	500 kg
	Arsenates, n.o.s., see **Arsenic compound, liquid, n.o.s.** or **Arsenic compound, solid, n.o.s.**												
	Arsenic	1558	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg
	Arsenic acid, liquid	1553	6.1		Toxic	US 4		I	E5	603	1 L	604	30 L
	Arsenic acid, solid	1554	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg
	Arsenical dust †	1562	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
	Arsenical flue dust, see **Arsenical dust**												
	Arsenical pesticide, liquid, flammable, toxic*, flash point less than 23ºC	2760	3	6.1	Liquid flammable & Toxic		A4	I	E0	FORBIDDEN		303	30 L
								II	E2	305 Y305	1 L 1 L	307	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Arsenical pesticide, liquid, toxic*	2994	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609	5 L	611	60 L
									Y609	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		
Arsenical pesticide, liquid, toxic, flammable*, flash point not less than 23ºC	2993	6.1	3	Toxic & Liquid flammable		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609	5 L	611	60 L
									Y609	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		
Arsenical pesticide, solid, toxic*	2759	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613	25 kg	615	100 kg
									Y613	1 kg		
							III	E1	619	100 kg	619	200 kg
									Y619	10 kg		
Arsenic bromide	1555	6.1		Toxic			II	E4	613	25 kg	615	100 kg
									Y613	1 kg		
Arsenic (III) bromide, see **Arsenic bromide**												
Arsenic chloride, see **Arsenic trichloride**												
Arsenic compound, liquid, n.o.s., inorganic, including: Arsenates, n.o.s.; Arsenites, n.o.s.; and Arsenic sulphides	1556	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609	5 L	611	60 L
						A6			Y609	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		
Arsenic compound, solid, n.o.s., inorganic, including: Arsenates, n.o.s.; Arsenites, n.o.s.; and Arsenic sulphides	1557	6.1		Toxic	US 4	A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613	25 kg	615	100 kg
						A6			Y613	1 kg		
							III	E1	619	100 kg	619	200 kg
									Y619	10 kg		
Arsenic (III) oxide, see **Arsenic trioxide**												
Arsenic (V) oxide, see **Arsenic pentoxide**												
Arsenic pentoxide	1559	6.1		Toxic	US 4		II	E4	613	25 kg	615	100 kg
									Y613	1 kg		
Arsenic sulphide and a chlorate, mixture of	FORBIDDEN											

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Arsenic sulphides, see **Arsenic compound, liquid, n.o.s.** or **Arsenic compound, solid, n.o.s.**												
Arsenic trichloride	1560	6.1			US 4				FORBIDDEN		FORBIDDEN	
Arsenic trioxide	1561	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg
Arsenious chloride, see **Arsenic trichloride**												
Arsenites, n.o.s., see **Arsenic compound, liquid, n.o.s.** or **Arsenic compound, solid, n.o.s.**												
Arsenous chloride, see **Arsenic trichloride**												
Arsine	2188	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Articles, EEI †	0486	1.6N							FORBIDDEN		FORBIDDEN	
Articles, explosive, n.o.s.*	0349	1.4S		Explosive 1.4		A62		E0	101	25 kg	101	100 kg
Articles, explosive, n.o.s.*	0350	1.4B							FORBIDDEN		FORBIDDEN	
Articles, explosive, n.o.s.*	0351	1.4C		Explosive 1.4		A62		E0	FORBIDDEN		101	75 kg
Articles, explosive, n.o.s.*	0352	1.4D		Explosive 1.4		A62		E0	FORBIDDEN		101	75 kg
Articles, explosive, n.o.s.*	0353	1.4G		Explosive 1.4		A62		E0	FORBIDDEN		101	75 kg
Articles, explosive, n.o.s.*	0354	1.1L							FORBIDDEN		FORBIDDEN	
Articles, explosive, n.o.s.*	0355	1.2L							FORBIDDEN		FORBIDDEN	
Articles, explosive, n.o.s.*	0356	1.3L							FORBIDDEN		FORBIDDEN	
Articles, explosive, n.o.s.*	0462	1.1C							FORBIDDEN		FORBIDDEN	
Articles, explosive, n.o.s.*	0463	1.1D							FORBIDDEN		FORBIDDEN	
Articles, explosive, n.o.s.*	0464	1.1E							FORBIDDEN		FORBIDDEN	
Articles, explosive, n.o.s.*	0465	1.1F							FORBIDDEN		FORBIDDEN	
Articles, explosive, n.o.s.*	0466	1.2C							FORBIDDEN		FORBIDDEN	
Articles, explosive, n.o.s.*	0467	1.2D							FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Articles, explosive, n.o.s.*	0468	1.2E							FORBIDDEN		FORBIDDEN	
Articles, explosive, n.o.s.*	0469	1.2F							FORBIDDEN		FORBIDDEN	
Articles, explosive, n.o.s.*	0470	1.3C							FORBIDDEN		FORBIDDEN	
Articles, explosive, n.o.s.*	0471	1.4E		Explosive 1.4		A62		E0	FORBIDDEN		101	75 kg
Articles, explosive, n.o.s.*	0472	1.4F							FORBIDDEN		FORBIDDEN	
Articles, explosive, extremely insensitive †	0486	1.6N							FORBIDDEN		FORBIDDEN	
Articles, pressurized, hydraulic containing non-flammable gas	3164	2.2		Gas non-flammable		A48 A114		E0	208	No limit	208	No limit
Articles, pressurized, pneumatic containing non-flammable gas	3164	2.2		Gas non-flammable		A48 A114		E0	208	No limit	208	No limit
Articles, pyrophoric †	0380	1.2L							FORBIDDEN		FORBIDDEN	
Articles, pyrotechnic for technical purposes †	0428	1.1G							FORBIDDEN		FORBIDDEN	
Articles, pyrotechnic for technical purposes †	0429	1.2G							FORBIDDEN		FORBIDDEN	
Articles, pyrotechnic for technical purposes †	0430	1.3G							FORBIDDEN		FORBIDDEN	
Articles, pyrotechnic for technical purposes †	0431	1.4G		Explosive 1.4				E0	FORBIDDEN		135	75 kg
Articles, pyrotechnic for technical purposes †	0432	1.4S		Explosive 1.4				E0	135	25 kg	135	100 kg
Arylsulphonic acids, liquid with more than 5% free sulphuric acid	2584	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
Arylsulphonic acids, liquid with not more than 5% free sulphuric acid	2586	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
Arylsulphonic acids, solid with more than 5% free sulphuric acid	2583	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
Arylsulphonic acids, solid with not more than 5% free sulphuric acid	2585	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg
Asbestos †, see **Blue asbestos** or **Brown asbestos**												
Ascaridole	FORBIDDEN											
Aviation regulated liquid, n.o.s.*	3334	9		Miscellaneous		A27 A48		E0	906	No limit	906	No limit

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Aviation regulated solid, n.o.s.*	3335	9		Miscellaneous		A27 A48		E0	906	No limit	906	No limit
Azaurolic acid (salt of) (dry)	FORBIDDEN											
Azidodithiocarbonic acid	FORBIDDEN											
Azidoethyl nitrate	FORBIDDEN											
Azido guanidine picrate (dry)	FORBIDDEN											
5-Azido-1-hydroxy tetrazole	FORBIDDEN											
Azido hydroxy tetrazole (mercury and silver salts)	FORBIDDEN											
3-Azido-1,2-propylene glycol dinitrate	FORBIDDEN											
Azodicarbonamide	3242	4.1				A60			FORBIDDEN		FORBIDDEN	
Azodicarbonamide formulation type B, temperature controlled	FORBIDDEN											
Azotetrazole (dry)	FORBIDDEN											
B												
Bag charges, see **Charges, propelling, for cannon**												
Ballistite, see **Powder, smokeless**												
Bangalore torpedoes, see **Mines** with bursting charge (UN Nos. 0136, 0137, 0138, 0294)												
Barium	1400	4.3		Danger if wet			II	E2	415 Y415	15 kg 5 kg	417	50 kg
Barium alloys, pyrophoric	1854	4.2							FORBIDDEN		FORBIDDEN	
Barium azide, dry or wetted with less than 50% water, by mass	0224	1.1A	6.1						FORBIDDEN		FORBIDDEN	
Barium azide, wetted with not less than 50% water, by mass	1571	4.1	6.1	Solid flammable & Toxic	BE 3	A40	I	E0	FORBIDDEN		416	0.5 kg
Barium binoxide, see **Barium peroxide**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Barium bromate	2719	5.1	6.1	Oxidizer & Toxic			II	E2	508 Y508	5 kg 1 kg	511	25 kg
Barium chlorate, solid	1445	5.1	6.1	Oxidizer & Toxic			II	E2	509 Y509	5 kg 1 kg	512	25 kg
Barium chlorate solution	3405	5.1	6.1	Oxidizer & Toxic		A3	II	E2	501 Y501	1 L 0.5 L	506	5 L
							III	E1	514 Y514	2.5 L 1 L	515	30 L
Barium compound, n.o.s.	1564	6.1		Toxic		A3 A82	II	E4	613 Y613	25 kg 1 kg	615	100 kg
							III	E1	619 Y619	100 kg 10 kg	619	200 kg
Barium cyanide	1565	6.1		Toxic	US 4		I	E5	606	5 kg	607	50 kg
Barium dioxide, see **Barium peroxide**												
Barium hypochlorite with more than 22% available chlorine	2741	5.1	6.1	Oxidizer & Toxic			II	E2	509 Y509	5 kg 1 kg	512	25 kg
Barium nitrate	1446	5.1	6.1	Oxidizer & Toxic			II	E2	508 Y508	5 kg 1 kg	511	25 kg
Barium oxide	1884	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Barium perchlorate, solid	1447	5.1	6.1	Oxidizer & Toxic			II	E2	508 Y508	5 kg 1 kg	511	25 kg
Barium perchlorate solution	3406	5.1	6.1	Oxidizer & Toxic		A3	II	E2	501 Y501	1 L 0.5 L	506	5 L
							III	E1	514 Y514	2.5 L 1 L	515	30 L
Barium permanganate	1448	5.1	6.1	Oxidizer & Toxic			II	E2	508 Y508	5 kg 1 kg	511	25 kg
Barium peroxide	1449	5.1	6.1	Oxidizer & Toxic			II	E2	509 Y509	5 kg 1 kg	512	25 kg
Barium selenate, see **Selenates**												
Barium selenite, see **Selenites**												
Barium superoxide, see **Barium peroxide**												
Batteries, containing sodium †	3292	4.3		Danger if wet		A94	II	E0	FORBIDDEN		433	No limit

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Batteries, dry, containing potassium hydroxide solid, electric storage †	3028	8		Corrosive				E0	802	25 kg G	802	230 kg G
	Batteries, electric storage, see Special Provision A123												
≠	**Batteries, wet, filled with acid**, electric storage †	2794	8		Corrosive		A51 A164		E0	800	30 kg G	800	No limit
≠	**Batteries, wet, filled with alkali**, electric storage †	2795	8		Corrosive		A51 A164		E0	800	30 kg G	800	No limit
≠	**Batteries, wet, non-spillable**, electric storage	2800	8		Corrosive		A48 A67 A164		E0	806	No limit	806	No limit
	Battery fluid, acid	2796	8		Corrosive			II	E2	809 Y809	1 L 0.5 L	813	30 L
	Battery fluid, alkali	2797	8		Corrosive			II	E2	809 Y809	1 L 0.5 L	813	30 L
	Battery, lithium, see **Lithium batteries**, etc.												
≠	**Battery-powered equipment**	3171	9		Miscellaneous		A21 A67 A87 A94 A164		E0	900	No limit	900	No limit
≠	**Battery-powered vehicle**	3171	9		Miscellaneous		A21 A67 A87 A94 A164		E0	900	No limit	900	No limit
	Benzaldehyde	1990	9		Miscellaneous			III	E1	907 Y907	100 L 30 kg G	907	220 L
	Benzene	1114	3		Liquid flammable	US 4		II	E2	305 Y305	5 L 1 L	307	60 L
	Benzene diazonium chloride (dry)	FORBIDDEN											
	Benzene diazonium nitrate (dry)	FORBIDDEN											
	Benzenesulphonyl chloride	2225	8		Corrosive	US 4		III	E1	818 Y818	5 L 1 L	820	60 L
	Benzenethiol, see **Phenyl mercaptan**												
	Benzene triozonide	FORBIDDEN											

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Benzidine	1885	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg
Benzol, see **Benzene**												
Benzolene, see **Petroleum distillates, n.o.s.**												
Benzonitrile	2224	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Benzoquinone	2587	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg
Benzosulphochloride, see **Benzenesulphonyl chloride**												
Benzotrichloride	2226	8		Corrosive	US 4		II	E2	808 Y808	1 L 0.5 L	812	30 L
Benzotrifluoride	2338	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Benzoxidiazoles (dry)	FORBIDDEN											
Benzoyl azide	FORBIDDEN											
Benzoyl chloride	1736	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
Benzyl bromide	1737	6.1	8	Toxic & Corrosive			II	E4	610	1 L	612	30 L
Benzyl chloride	1738	6.1	8	Toxic & Corrosive			II	E4	610	1 L	612	30 L
Benzyl chlorocarbonate, see **Benzyl chloroformate**												
Benzyl chloroformate	1739	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	I	E0	FORBIDDEN		809	2.5 L
Benzyl cyanide, see **Phenylacetonitrile, liquid**												
Benzyldimethylamine	2619	8	3	Corrosive & Liquid flammable			II	E2	808 Y808	1 L 0.5 L	812	30 L
Benzylidene chloride	1886	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Benzyl iodide	2653	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Beryllium compound, n.o.s.	1566	6.1		Toxic	US 4	A3	II	E4	613 Y613	25 kg 1 kg	615	100 kg
							III	E1	619 Y619	100 kg 10 kg	619	200 kg
Beryllium nitrate	2464	5.1	6.1	Oxidizer & Toxic	US 4		II	E2	508 Y508	5 kg 1 kg	511	25 kg
Beryllium powder	1567	6.1	4.1	Toxic & Solid flammable	US 4		II	E4	613 Y613	15 kg 1 kg	615	50 kg
Beverage extract (concentrate), see **Corrosive liquid, acidic, inorganic, n.o.s.**												
Bicyclo [2.2.1] hepta-2-5-diene, stabilized	2251	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Bifluorides, n.o.s., see **Hydrogendifluorides, n.o.s.**												
Biological substance, Category B	3373	6.2		None	GB 5			E0	See 650		See 650	
Biomedical waste, n.o.s.	3291	6.2		Infectious		A117	II	E0	622	No limit	622	No limit
Biphenyl triozonide	FORBIDDEN											
Bipyridilium pesticide, liquid, toxic*	3016	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Bipyridilium pesticide, liquid, toxic, flammable*, flash point not less than 23ºC	3015	6.1	3	Toxic & Liquid flammable		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Bipyridilium pesticide, solid, toxic*	2781	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613 Y613	25 kg 1 kg	615	100 kg
							III	E1	619 Y619	100 kg 10 kg	619	200 kg
Bipyridilium pesticide, toxic, liquid, flammable*, flash point less than 23ºC	2782	3	6.1	Liquid flammable & Toxic		A4	I	E0	FORBIDDEN		303	30 L
							II	E2	305 Y305	1 L 1 L	307	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Bisulphates, aqueous solution	2837	8		Corrosive		A3	II	E2	809 Y809	1 L 0.5 L	813	30 L
							III	E1	819 Y819	5 L 1 L	821	60 L
Bisulphites, aqueous solution, n.o.s.*	2693	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
Black powder, granular or as a meal †	0027	1.1D							FORBIDDEN		FORBIDDEN	
Black powder, compressed †	0028	1.1D							FORBIDDEN		FORBIDDEN	
Black powder in pellets †	0028	1.1D							FORBIDDEN		FORBIDDEN	
Blasting cap assemblies, see **Detonator assemblies, non-electric,** for blasting												
Blasting caps, electric, see **Detonators, electric,** for blasting												
Blasting caps, non-electric, see **Detonators, non-electric,** for blasting												
Bleaching powder, see **Calcium hypochlorite mixture, dry,** etc.												
Blue asbestos (crocidolite) †	2212	9				A61			FORBIDDEN		FORBIDDEN	
Bombs with bursting charge †	0033	1.1F							FORBIDDEN		FORBIDDEN	
Bombs with bursting charge †	0034	1.1D							FORBIDDEN		FORBIDDEN	
Bombs with bursting charge †	0035	1.2D							FORBIDDEN		FORBIDDEN	
Bombs with bursting charge †	0291	1.2F							FORBIDDEN		FORBIDDEN	
Bombs, illuminating, see **Ammunition, illuminating,** etc. (UN No. 0254)												
Bombs, photo-flash †	0037	1.1F							FORBIDDEN		FORBIDDEN	
Bombs, photo-flash †	0038	1.1D							FORBIDDEN		FORBIDDEN	
Bombs, photo-flash †	0039	1.2G							FORBIDDEN		FORBIDDEN	
Bombs, photo-flash †	0299	1.3G							FORBIDDEN		FORBIDDEN	
Bombs, smoke, non-explosive with corrosive liquid, without initiating device	2028	8		Corrosive			II	E0	FORBIDDEN		801	50 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Bombs, target identification, see **Ammunition, illuminating,** etc.												
Bombs with flammable liquid with bursting charge †	0399	1.1J							FORBIDDEN		FORBIDDEN	
Bombs with flammable liquid with bursting charge †	0400	1.2J							FORBIDDEN		FORBIDDEN	
Boosters without detonator †	0042	1.1D							FORBIDDEN		FORBIDDEN	
Boosters without detonator †	0283	1.2D							FORBIDDEN		FORBIDDEN	
Boosters with detonator †	0225	1.1B							FORBIDDEN		FORBIDDEN	
Boosters with detonator †	0268	1.2B							FORBIDDEN		FORBIDDEN	
Borate and chlorate mixture, see **Chlorate and borate mixture**												
Borneol	1312	4.1		Solid flammable			III	E1	419 Y419	25 kg 10 kg	420	100 kg
Boron tribromide	2692	8			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Boron trichloride	1741	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Boron trifluoride	1008	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Boron trifluoride acetic acid complex, liquid	1742	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
Boron trifluoride acetic acid complex, solid	3419	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
Boron trifluoride diethyl etherate	2604	8	3	Corrosive & Liquid flammable			I	E0	807	0.5 L	809	2.5 L
Boron trifluoride dihydrate	2851	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Boron trifluoride dimethyl etherate	2965	4.3	3 8	Danger if wet & Liquid flammable & Corrosive			I	E0	FORBIDDEN		408	1 L
Boron trifluoride propionic acid complex, liquid	1743	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
Boron trifluoride propionic acid complex, solid	3420	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
Bromates, inorganic, n.o.s.	1450	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Bromates, inorganic, aqueous solution, n.o.s.	3213	5.1		Oxidizer		A3	II	E2	503 Y503	1 L 0.5 L	505	5 L
							III	E1	514 Y514	2.5 L 1 L	515	30 L
Bromine	1744	8	6.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Bromine azide	FORBIDDEN											
Bromine chloride	2901	2.3	5.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Bromine pentafluoride	1745	5.1	6.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Bromine solution	1744	8	6.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Bromine trifluoride	1746	5.1	6.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Bromoacetic acid, solid	3425	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	822	50 kg
Bromoacetic acid solution	1938	8		Corrosive		A3	II	E2	808 Y808	1 L 0.5 L	812	30 L
							III	E1	818 Y818	5 L 1 L	820	60 L
Bromoacetone	1569	6.1	3		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
omega-Bromoacetone, see **Phenacyl bromide**												
Bromoacetyl bromide	2513	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
Bromobenzene	2514	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Bromobenzyl cyanides, liquid	1694	6.1		Toxic	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1 A29	I	E0	FORBIDDEN		605	30 L
Bromobenzyl cyanides, solid	3449	6.1		Toxic		A29	I	E5	606	5 kg	607	50 kg
1-Bromobutane	1126	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
2-Bromobutane	2339	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Bromochloromethane	1887	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
1-Bromo-3-chloropropane	2688	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
4-Bromo-1,2-dinitrobenzene	FORBIDDEN											
1-Bromo-2,3-epoxypropane, see **Epibromohydrin**												
Bromoethane, see **Ethyl bromide**												
2-Bromoethyl ethyl ether	2340	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Bromoform	2515	6.1		Toxic	US 4		III	E1	611 Y611	60 L 2 L	618	220 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Bromomethane, see **Methyl bromide**												
1-Bromo-3-methylbutane	2341	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Bromomethylpropanes	2342	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
2-Bromo-2-nitropropane-1,3-diol	3241	4.1		Solid flammable		A20	III	E1	434 Y434	25 kg 10 kg	434	50 kg
2-Bromopentane	2343	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Bromopropanes	2344	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
3-Bromopropyne	2345	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Bromosilane	FORBIDDEN											
Bromotrifluoroethylene	2419	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Bromotrifluoromethane	1009	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Brown asbestos (amosite, mysorite) †	2212	9				A61			FORBIDDEN		FORBIDDEN	
Brucine	1570	6.1		Toxic	US 4	A6	I	E5	606	5 kg	607	50 kg
Bursters, explosive †	0043	1.1D							FORBIDDEN		FORBIDDEN	
Butadienes and hydrocarbon mixture, stabilized, containing more than 40% butadienes	1010	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Butadienes, stabilized	1010	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Butane	1011	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Butane, butane mixtures and mixtures having similar properties in cartridges each not exceeding 500 grams, see **Receptacles**, etc.												
Butanedione	2346	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Butane-1-thiol, see **Butyl mercaptan**												
1,2,4-Butanetriol trinitrate	FORBIDDEN											
1-Butanol, see **Butanols**												
Butan-2-ol, see **Butanols**												
Butanols	1120	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Butanol, secondary, see **Butanols**												
Butanol, tertiary, see **Butanols**												
Butanone, see **Ethyl methyl ketone**												
2-Butenal, see **Crotonaldehyde, stabilized**												
Butene, see **Butylene**												
But-1-ene-3-one, see **Methyl vinyl ketone, stabilized**												
1,2-Buteneoxide, see **1,2-Butylene oxide, stabilized**												
2-Buten-1-ol, see **Methallyl alcohol**												
tert-Butoxycarbonyl azide	FORBIDDEN											

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Butyl acetates	1123	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Butyl acetate, secondary, see **Butyl acetates**												
Butyl acid phosphate	1718	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
Butyl acrylates, stabilized	2348	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Butyl alcohols, see **Butanols**												
n-Butylamine	1125	3	8	Liquid flammable & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L
N-Butylaniline	2738	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
sec-Butyl benzene, see **Butylbenzenes**												
Butylbenzenes	2709	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
n-Butyl bromide, see **1-Bromobutane**												
n-Butyl chloride, see **Chlorobutanes**												
n-Butyl chloroformate	2743	6.1	3 8						FORBIDDEN		FORBIDDEN	
tert-Butylcyclohexyl chloroformate	2747	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
Butylene	1012	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
1,2-Butylene oxide, stabilized	3022	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Butyl ethers, see **Dibutyl ethers**												
Butyl ethyl ether, see **Ethyl butyl ether**												

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
n-Butyl formate	1128	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
tert-Butyl hydroperoxide, more than 90% with water	FORBIDDEN											
tert-Butyl hypochlorite	3255	4.2	8						FORBIDDEN		FORBIDDEN	
N,n-Butylimidazole	2690	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
N-n-Butyliminazole, see **N,n-Butylimidazole**												
n-Butyl isocyanate	2485	6.1	3		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
tert-Butyl isocyanate	2484	6.1	3						FORBIDDEN		FORBIDDEN	
Butyl lithium, see **Lithium alkyls**												
Butyl mercaptan	2347	3		Liquid flammable			II	E2	306 Y306	5 L 1 L	308	60 L
n-Butyl methacrylate, stabilized	2227	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Butyl methyl ether	2350	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
tert-Butyl monoperoxymaleate, more than 52%	FORBIDDEN											
tert-Butyl monoperoxyphthalate	FORBIDDEN											
Butyl nitrites	2351	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
tert-Butyl peroxyacetate, more than 52% and not more than 77%, when with not less than 23% diluent type A	FORBIDDEN											
tert-Butyl peroxyisobutyrate, more than 52% and not more than 77%, when with not less than 23% diluent Type A	FORBIDDEN											
Butylphenols, liquid, see **Alkylphenols, liquid, n.o.s.**												

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Butylphenols, solid, see **Alkylphenols, solid, n.o.s.**												
Butyl propionates	1914	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
p-tert-Butyltoluene, see **Butyltoluenes**												
Butyltoluenes	2667	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
Butyltrichlorosilane	1747	8	3	Corrosive & Liquid flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
5-tert-Butyl-2,4,6-trinitro-m-xylene	2956	4.1							FORBIDDEN		FORBIDDEN	
Butyl vinyl ether, stabilized	2352	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
But-1-yne, see **Ethyl acetylene**												
1,4-Butynediol	2716	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
2-Butyne-1,4-diol, see **1,4-Butynediol**												
Butyraldehyde	1129	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Butyraldoxime	2840	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Butyric acid	2820	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
Butyric anhydride	2739	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
Butyrone, see **Dipropyl ketone**												
Butyronitrile	2411	3	6.1	Liquid flammable & Toxic			II	E2	305 Y305	1 L 1 L	307	60 L
Butyroyl chloride, see **Butyryl chloride**												
Butyryl chloride	2353	3	8	Liquid flammable & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
C												
Cable cutters, explosive, see **Cutters, cable, explosive**												
Cacodylic acid	1572	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg
Cadmium compound	2570	6.1		Toxic	US 4	A3 A5	I II	E5 E4	606 613 Y613	5 kg 25 kg 1 kg	607 615	50 kg 100 kg
							III	E1	619 Y619	100 kg 10 kg	619	200 kg
Caesium	1407	4.3		Danger if wet			I	E0	FORBIDDEN		412	15 kg
Caesium hydroxide	2682	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
Caesium hydroxide solution	2681	8		Corrosive		A3	II	E2	809 Y809	1 L 0.5 L	813	30 L
							III	E1	819 Y819	5 L 1 L	821	60 L
Caesium nitrate	1451	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
Caffeine, see **Alkaloids**, etc.												
Cajeputene, see **Dipentene**												
Calcium	1401	4.3		Danger if wet			II	E2	415 Y415	15 kg 5 kg	417	50 kg
Calcium alloys, pyrophoric	1855	4.2							FORBIDDEN		FORBIDDEN	
Calcium arsenate	1573	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg
Calcium arsenate and calcium arsenite mixture, solid	1574	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Calcium bisulphite solution, see **Bisulphites, aqueous solution, n.o.s.**												
Calcium carbide	1402	4.3		Danger if wet	US 4		I	E0	FORBIDDEN		412	15 kg
							II	E2	416 Y416	15 kg 5 kg	418	50 kg
Calcium chlorate	1452	5.1		Oxidizer			II	E2	509 Y509	5 kg 2.5 kg	512	25 kg

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Calcium chlorate, aqueous solution	2429	5.1		Oxidizer		A3	II	E2	501 Y501	1 L 0.5 L	506	5 L
							III	E1	506 Y506	2.5 L 1 L	507	30 L
Calcium chlorite	1453	5.1		Oxidizer			II	E2	509 Y509	5 kg 2.5 kg	512	25 kg
Calcium cyanamide with more than 0.1% of calcium carbide	1403	4.3		Danger if wet		A71	III	E1	419 Y419	25 kg 10 kg	420	100 kg
Calcium cyanide	1575	6.1		Toxic	US 4		I	E5	606	5 kg	607	50 kg
Calcium dithionite	1923	4.2		Spontaneous combustion			II	E2	416	15 kg	418	50 kg
Calcium hydride	1404	4.3		Danger if wet			I	E0	FORBIDDEN		412	15 kg
Calcium hydrosulphite	1923	4.2		Spontaneous combustion			II	E2	416	15 kg	418	50 kg
Calcium hypochlorite, dry	1748	5.1		Oxidizer	US 4	A135 A136	II	E2	509 Y509	5 kg 2.5 kg	512	25 kg
							III	E1	517 Y517	25 kg 10 kg	519	100 kg
Calcium hypochlorite, hydrated with not less than 5.5% but not more than 16% water	2880	5.1		Oxidizer	US 4	A3 A8 A135 A136	II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
							III	E1	516 Y516	25 kg 10 kg	518	100 kg
Calcium hypochlorite, hydrated mixture with not less than 5.5% but not more than 16% water	2880	5.1		Oxidizer	US 4	A3 A8 A135 A136	II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
							III	E1	516 Y516	25 kg 10 kg	518	100 kg
Calcium hypochlorite mixture, dry with more than 39% available chlorine (8.8% available oxygen)	1748	5.1		Oxidizer	US 4	A138	II	E2	509 Y509	5 kg 2.5 kg	512	25 kg
							III	E1	517 Y517	25 kg 10 kg	519	100 kg
Calcium hypochlorite mixture, dry with more than 10% but not more than 39% available chlorine	2208	5.1		Oxidizer	US 4	A135 A136	III	E1	517 Y517	25 kg 10 kg	519	100 kg
Calcium manganese silicon	2844	4.3		Danger if wet			III	E1	419 Y419	25 kg 10 kg	420	100 kg
Calcium nitrate	1454	5.1		Oxidizer		A83	III	E1	516 Y516	25 kg 10 kg	518	100 kg
Calcium oxide	1910	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg
Calcium perchlorate	1455	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Calcium permanganate	1456	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Calcium peroxide	1457	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Calcium phosphide	1360	4.3	6.1	Danger if wet & Toxic			I	E0	FORBIDDEN		412	15 kg
Calcium, pyrophoric	1855	4.2							FORBIDDEN		FORBIDDEN	
Calcium resinate	1313	4.1		Solid flammable			III	E1	422 Y422	25 kg 10 kg	421	100 kg
Calcium resinate, fused	1314	4.1		Solid flammable			III	E1	422 Y422	25 kg 10 kg	421	100 kg
Calcium selenate, see **Selenates**												
Calcium silicide	1405	4.3		Danger if wet		A3	II	E2	415 Y415	15 kg 5 kg	417	50 kg
							III	E1	419 Y419	25 kg 10 kg	420	100 kg
Calcium silicon, see **Calcium silicide**												
Calcium superoxide, see **Calcium peroxide**												
Camphanone, see **Camphor**, synthetic												
Camphor, synthetic	2717	4.1		Solid flammable			III	E1	419 Y419	25 kg 10 kg	420	100 kg
Camphor oil	1130	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Camping gas, see **Receptacles, small**, **containing gas, or gas cartridges,** etc.												
Caproic acid	2829	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
Caps, toy †, see **Fireworks** (UN Nos. 0333, 0336, 0337)												
Carbamate pesticide, liquid, flammable, toxic*, flash point less than 23ºC	2758	3	6.1	Liquid flammable & Toxic		A4	I	E0	FORBIDDEN		303	30 L
							II	E2	305 Y305	1 L 1 L	307	60 L

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1	2	3	4	5	6	7	8	9	10	11	12	13
Carbamate pesticide, liquid, toxic*	2992	6.1		Toxic		A3 A4	I II III	E5 E4 E1	603 609 Y609 611 Y611	1 L 5 L 1 L 60 L 2 L	604 611 618	30 L 60 L 220 L
Carbamate pesticide, liquid, toxic, flammable*, flash point not less than 23ºC	2991	6.1	3	Toxic & Liquid flammable		A3 A4	I II III	E5 E4 E1	603 609 Y609 611 Y611	1 L 5 L 1 L 60 L 2 L	604 611 618	30 L 60 L 220 L
Carbamate pesticide, solid, toxic*	2757	6.1		Toxic		A3 A5	I II III	E5 E4 E1	606 613 Y613 619 Y619	5 kg 25 kg 1 kg 100 kg 10 kg	607 615 619	50 kg 100 kg 200 kg
Carbolic acid, see **Phenol, solid** or **Phenol, molten**												
Carbolic acid solution, see **Phenol solution**												
Carbon, animal or vegetable origin	1361	4.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2 A3			FORBIDDEN		FORBIDDEN	
Carbon, activated	1362	4.2		Spontaneous combustion		A3	III	E1	426	0.5 kg	426	0.5 kg
Carbon bisulphide, see **Carbon disulphide**												
Carbon black (animal or vegetable origin), see **Carbon**												
Carbon dioxide	1013	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Carbon dioxide and ethylene oxide mixture, see **Ethylene oxide and carbon dioxide mixture**, etc.												
Carbon dioxide, refrigerated liquid	2187	2.2		Gas non-flammable				E1	202	50 kg	202	500 kg
Carbon dioxide, solid	1845	9		Miscellaneous		A48 A151	III	E0	904	200 kg	904	200 kg
Carbon disulphide	1131	3	6.1						FORBIDDEN		FORBIDDEN	

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Carbonic anhydride, see **Carbon dioxide**, etc.												
Carbon monoxide, compressed	1016	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Carbon oxysulphide, see **Carbonyl sulphide**												
Carbon tetrabromide	2516	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Carbon tetrachloride	1846	6.1		Toxic	US 4		II	E4	610 Y610	5 L 1 L	612	60 L
Carbonyl chloride, see **Phosgene**												
Carbonyl fluoride	2417	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Carbonyl sulphide	2204	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Cartridge cases, empty, primed, see **Cases, cartridge, empty, with primer**												
Cartridges, actuating, for fire extinguisher or apparatus valve, † see **Cartridges, power device** (UN Nos. 0275, 0276, 0323, 0381)												
Cartridges, explosive, see **Charges, demolition**												
Cartridges, flash †	0049	1.1G							FORBIDDEN		FORBIDDEN	
Cartridges, flash †	0050	1.3G		Explosive				E0	FORBIDDEN		135	75 kg
Cartridges for weapons with bursting charge †	0005	1.1F							FORBIDDEN		FORBIDDEN	

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Cartridges for weapons with bursting charge †	0006	1.1E							FORBIDDEN		FORBIDDEN	
Cartridges for weapons with bursting charge †	0007	1.2F							FORBIDDEN		FORBIDDEN	
Cartridges for weapons with bursting charge †	0321	1.2E							FORBIDDEN		FORBIDDEN	
Cartridges for weapons with bursting charge †	0348	1.4F							FORBIDDEN		FORBIDDEN	
Cartridges for weapons with bursting charge †	0412	1.4E		Explosive 1.4				E0	FORBIDDEN		130	75 kg
Cartridges for weapons, blank †	0014	1.4S		Explosive 1.4				E0	130	25 kg	130	100 kg
Cartridges for weapons, blank †	0326	1.1C							FORBIDDEN		FORBIDDEN	
Cartridges for weapons, blank †	0327	1.3C							FORBIDDEN		FORBIDDEN	
Cartridges for weapons, blank †	0338	1.4C		Explosive 1.4				E0	FORBIDDEN		130	75 kg
Cartridges for weapons, blank †	0413	1.2C							FORBIDDEN		FORBIDDEN	
Cartridges for weapons, inert projectile †	0012	1.4S		Explosive 1.4				E0	130	25 kg	130	100 kg
Cartridges for weapons, inert projectile †	0328	1.2C							FORBIDDEN		FORBIDDEN	
Cartridges for weapons, inert projectile †	0339	1.4C		Explosive 1.4				E0	FORBIDDEN		130	75 kg
Cartridges for weapons, inert projectile †	0417	1.3C							FORBIDDEN		FORBIDDEN	
Cartridges, illuminating, see **Ammunition, illuminating**, etc.												
Cartridges, oil well †	0277	1.3C							FORBIDDEN		FORBIDDEN	
Cartridges, oil well †	0278	1.4C		Explosive 1.4				E0	FORBIDDEN		134	75 kg
Cartridges, power device †	0275	1.3C		Explosive				E0	FORBIDDEN		134	75 kg
Cartridges, power device †	0276	1.4C		Explosive 1.4				E0	FORBIDDEN		134	75 kg
Cartridges, power device †	0323	1.4S		Explosive 1.4				E0	134	25 kg	134	100 kg
Cartridges, power device †	0381	1.2C							FORBIDDEN		FORBIDDEN	
Cartridges, signal †	0054	1.3G		Explosive				E0	FORBIDDEN		135	75 kg
Cartridges, signal †	0312	1.4G		Explosive 1.4				E0	FORBIDDEN		135	75 kg
Cartridges, signal †	0405	1.4S		Explosive 1.4				E0	135	25 kg	135	100 kg

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1	2	3	4	5	6	7	8	9	10	11	12	13
Cartridges, small arms †	0012	1.4S		Explosive 1.4				E0	130	25 kg	130	100 kg
Cartridges, small arms †	0339	1.4C		Explosive 1.4				E0	FORBIDDEN		130	75 kg
Cartridges, small arms †	0417	1.3C							FORBIDDEN		FORBIDDEN	
Cartridges, small arms, blank †	0014	1.4S		Explosive 1.4				E0	130	25 kg	130	100 kg
Cartridges, small arms, blank †	0327	1.3C							FORBIDDEN		FORBIDDEN	
Cartridges, small arms, blank †	0338	1.4C		Explosive 1.4				E0	FORBIDDEN		130	75 kg
Cartridges, starter, jet engine, see **Cartridges, power device**												
Cases, cartridge, empty, with primer †	0055	1.4S		Explosive 1.4				E0	136	25 kg	136	100 kg
Cases, cartridge, empty, with primer †	0379	1.4C		Explosive 1.4				E0	FORBIDDEN		136	75 kg
Cases, combustible, empty, without primer †	0446	1.4C		Explosive 1.4				E0	FORBIDDEN		136	75 kg
Cases, combustible, empty, without primer †	0447	1.3C							FORBIDDEN		FORBIDDEN	
Casinghead gasoline, see **Natural gasoline**												
Castor beans	2969	9		Miscellaneous		A31 A48	II	E2	906	No limit	906	No limit
Castor flake	2969	9		Miscellaneous		A31 A48	II	E2	906	No limit	906	No limit
Castor meal	2969	9		Miscellaneous		A31 A48	II	E2	906	No limit	906	No limit
Castor pomace	2969	9		Miscellaneous		A31 A48	II	E2	906	No limit	906	No limit
Caustic alkali liquid, n.o.s.*	1719	8		Corrosive		A3	II	E2	809 Y809	1 L 0.5 L	813	30 L
							III	E1	819 Y819	5 L 1 L	821	60 L
Caustic potash, see **Potassium hydroxide solution**												
Caustic soda, see **Sodium hydroxide solution**												
Caustic soda liquor, see **Sodium hydroxide solution**												
Cells, containing sodium †	3292	4.3		Danger if wet		A94	II	E0	433	25 kg G	433	No limit

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Celluloid, in blocks, rods, rolls, sheets, tubes, etc. (except scrap)	2000	4.1		Solid flammable		A3 A48	III	E1	407	25 kg	407	100 kg
Celluloid, scrap	2002	4.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2 A3			FORBIDDEN		FORBIDDEN	
Cement, see **Adhesives** containing flammable liquid												
Cerium, slabs, ingots or rods	1333	4.1		Solid flammable			II	E2	415 Y415	15 kg 5 kg	417	50 kg
Cerium, turnings or gritty powder	3078	4.3		Danger if wet			II	E2	415 Y415	15 kg 5 kg	417	50 kg
Cer mischmetall, see **Ferrocerium**												
Charcoal, activated, see **Carbon, activated**												
Charcoal, non-activated, see **Carbon**												
Charcoal screenings, wet	FORBIDDEN											
Charcoal, wet	FORBIDDEN											
Charges, bursting, plastics bonded	0457	1.1D							FORBIDDEN		FORBIDDEN	
Charges, bursting, plastics bonded	0458	1.2D							FORBIDDEN		FORBIDDEN	
Charges, bursting, plastics bonded	0459	1.4D		Explosive 1.4				E0	FORBIDDEN		130	75 kg
Charges, bursting, plastics bonded	0460	1.4S		Explosive 1.4				E0	130	25 kg	130	100 kg
Charges, demolition †	0048	1.1D							FORBIDDEN		FORBIDDEN	
Charges, depth †	0056	1.1D							FORBIDDEN		FORBIDDEN	
Charges, expelling, explosive, for fire extinguishers, see **Cartridges, power device**												
Charges, explosive, commercial without detonator †	0442	1.1D							FORBIDDEN		FORBIDDEN	

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Charges, explosive, commercial without detonator †	0443	1.2D							FORBIDDEN		FORBIDDEN	
	Charges, explosive, commercial without detonator †	0444	1.4D		Explosive 1.4				E0	FORBIDDEN		137	75 kg
	Charges, explosive, commercial without detonator †	0445	1.4S		Explosive 1.4				E0	137	25 kg	137	100 kg
	Charges, propelling †	0271	1.1C							FORBIDDEN		FORBIDDEN	
	Charges, propelling †	0272	1.3C							FORBIDDEN		FORBIDDEN	
	Charges, propelling †	0415	1.2C							FORBIDDEN		FORBIDDEN	
	Charges, propelling †	0491	1.4C		Explosive 1.4				E0	FORBIDDEN		143	75 kg
	Charges, propelling, for cannon †	0242	1.3C							FORBIDDEN		FORBIDDEN	
	Charges, propelling, for cannon †	0279	1.1C							FORBIDDEN		FORBIDDEN	
	Charges, propelling, for cannon †	0414	1.2C							FORBIDDEN		FORBIDDEN	
	Charges, shaped without detonator †	0059	1.1D			AU 2 CA 7 GB 3 IR 3 NL 1 US 3	A109			FORBIDDEN		FORBIDDEN	
	Charges, shaped without detonator †	0439	1.2D							FORBIDDEN		FORBIDDEN	
	Charges, shaped without detonator †	0440	1.4D		Explosive 1.4	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		137	75 kg
	Charges, shaped without detonator †	0441	1.4S		Explosive 1.4				E0	137	25 kg	137	100 kg
	Charges, shaped, flexible, linear †	0237	1.4D		Explosive 1.4				E0	FORBIDDEN		138	75 kg
	Charges, shaped, flexible, linear †	0288	1.1D							FORBIDDEN		FORBIDDEN	
	Charges, supplementary, explosive †	0060	1.1D							FORBIDDEN		FORBIDDEN	
≠	**Chemical kit**	3316	9		Miscellaneous		A44 A163		E0	915 Y915	10 kg 1 kg	915	10 kg
	Chemical sample, toxic	3315	6.1				A106			FORBIDDEN		FORBIDDEN	
	Chile saltpetre, see **Sodium nitrate**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Chloral, anhydrous, stabilized	2075	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Chlorate and borate mixture	1458	5.1		Oxidizer		A3	II	E2	509 Y509	5 kg 2.5 kg	512	25 kg
							III	E1	517 Y517	25 kg 10 kg	519	100 kg
Chlorate and magnesium chloride mixture, solid	1459	5.1		Oxidizer		A3	II	E2	509 Y509	5 kg 2.5 kg	512	25 kg
							III	E1	517 Y517	25 kg 10 kg	519	100 kg
Chlorate and magnesium chloride mixture solution	3407	5.1		Oxidizer		A3	II	E2	501 Y501	1 L 0.5 L	506	5 L
							III	E1	514 Y514	2.5 L 1 L	515	30 L
Chlorates, inorganic, n.o.s.	1461	5.1		Oxidizer			II	E2	509 Y509	5 kg 2.5 kg	512	25 kg
Chlorates, inorganic, aqueous solution, n.o.s.	3210	5.1		Oxidizer		A3	II	E2	501 Y501	1 L 0.5 L	506	5 L
							III	E1	506 Y506	2.5 L 1 L	507	30 L
Chloric acid, aqueous solution with not more than 10% chloric acid	2626	5.1			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
≠ **Chlorine**	1017	2.3	5.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Chlorine azide	FORBIDDEN											
Chlorine dioxide	FORBIDDEN											
Chlorine pentafluoride	2548	2.3	5.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Chlorine trifluoride	1749	2.3	5.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Chlorites, inorganic, n.o.s.	1462	5.1		Oxidizer			II	E2	509 Y509	5 kg 2.5 kg	512	25 kg
Chlorite solution	1908	8		Corrosive		A3	II	E2	809 Y809	1 L 0.5 L	813	30 L
							III	E1	819 Y819	5 L 1 L	821	60 L
Chloroacetaldehyde, see **2-Chloroethanal**												
Chloroacetic acid, molten	3250	6.1	8						FORBIDDEN		FORBIDDEN	
Chloroacetic acid, solid	1751	6.1	8	Toxic & Corrosive			II	E4	614 Y614	15 kg 1 kg	616	50 kg
Chloroacetic acid solution	1750	6.1	8	Toxic & Corrosive			II	E4	610 Y610	1 L 0.5 L	612	30 L
Chloroacetone, stabilized	1695	6.1	3 8						FORBIDDEN		FORBIDDEN	
Chloroacetone (unstabilized)	FORBIDDEN											
Chloroacetonitrile	2668	6.1	3		AU 1 CA 7 GB 3 NL 1 US 3				FORBIDDEN		FORBIDDEN	
Chloroacetophenone, liquid	3416	6.1		Toxic	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		612	60 L
Chloroacetophenone, solid	1697	6.1		Toxic	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		616	100 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Chloroacetyl chloride	1752	6.1	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Chloroanilines, liquid	2019	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Chloroanilines, solid	2018	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Chloroanisidines	2233	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Chlorobenzene	1134	3		Liquid flammable	US 4		III	E1	309 Y309	60 L 10 L	310	220 L
Chlorobenzotrifluorides	2234	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Chlorobenzyl chlorides, liquid	2235	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
Chlorobenzyl chlorides, solid	3427	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
1-Chloro-3-bromopropane, see **1-Bromo-3-chloropropane**												
1-Chlorobutane, see **Chlorobutanes**												
2-Chlorobutane, see **Chlorobutanes**												
Chlorobutanes	1127	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Chlorocresols, solid	3437	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Chlorocresols solution	2669	6.1		Toxic		A3	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Chlorodifluorobromomethane	1974	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
1-Chloro-1,1-difluoroethane	2517	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Chlorodifluoromethane	1018	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Chlorodifluoromethane and chloropentafluoroethane mixture with fixed boiling point, with approximately 49% chlorodifluoromethane	1973	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
3-Chloro-1,2-dihydroxypropane, see **Glycerol alpha-monochlorohydrin**												
Chlorodimethyl ether, see **Methyl chloromethyl ether**												
Chlorodinitrobenzenes, liquid	1577	6.1		Toxic		A113	II	E4	609 Y609	5 L 1 L	611	60 L
Chlorodinitrobenzenes, solid	3441	6.1		Toxic		A113	II	E4	613 Y613	25 kg 1 kg	615	100 kg
2-Chloroethanal	2232	6.1							FORBIDDEN		FORBIDDEN	
Chloroethane, see **Ethyl chloride**												
Chloroethane nitrile, see **Chloroacetonitrile**												
2-Chloroethanol, see **Ethylene chlorohydrin**												
Chloroform	1888	6.1		Toxic	US 4		III	E1	610 Y610	60 L 2 L	612	220 L
Chloroformates, toxic, corrosive, n.o.s.*	3277	6.1	8	Toxic & Corrosive			II	E4	609 Y609	1 L 0.5 L	611	30 L
Chloroformates, toxic, corrosive, flammable, n.o.s.	2742	6.1	3 8	Toxic & Liquid flammable & Corrosive			II	E4	609 Y609	1 L 0.5 L	611	30 L
Chloromethane, see **Methyl chloride**												
1-Chloro-3-methylbutane, see **Amyl chloride**												
2-Chloro-2-methylbutane, see **Amyl chloride**												
Chloromethyl chloroformate	2745	6.1	8	Toxic & Corrosive			II	E4	609 Y609	1 L 0.5 L	611	30 L
Chloromethyl cyanide, see **Chloroacetonitrile**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Chloromethyl ethyl ether	2354	3	6.1	Liquid flammable & Toxic			II	E2	305 Y305	1 L 1 L	307	60 L
Chloromethyl methyl ether, see **Methyl chloromethyl ether**												
3-Chloro-4-methylphenyl isocyanate, liquid	2236	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
3-Chloro-4-methylphenyl isocyanate, solid	3428	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
3-Chloro-2-methylprop-1-ene, see **Methylallyl chloride**												
Chloronitroanilines	2237	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Chloronitrobenzenes, liquid	3409	6.1		Toxic		A113	II	E4	609 Y609	5 L 1 L	611	60 L
Chloronitrobenzenes, solid	1578	6.1		Toxic		A113	II	E4	613 Y613	25 kg 1 kg	615	100 kg
Chloronitrotoluenes, liquid	2433	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
Chloronitrotoluenes, solid	3457	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Chloropentafluoroethane	1020	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
3-Chloroperoxybenzoic acid, more than 57% and not more than 86%, when with 14% or more inert solid	FORBIDDEN											
Chlorophenolates, liquid	2904	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
Chlorophenolates, solid	2905	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg
Chlorophenols, liquid	2021	6.1		Toxic	US 4		III	E1	611 Y611	60 L 2 L	618	220 L
Chlorophenols, solid	2020	6.1		Toxic	US 4	A25	III	E1	619 Y619	100 kg 10 kg	619	200 kg
Chlorophenyltrichlorosilane	1753	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
Chloropicrin	1580	6.1							FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Chloropicrin and methyl bromide mixture with more than 2% chloropicrin	1581	2.3			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Chloropicrin and methyl chloride mixture	1582	2.3			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Chloropicrin mixture, n.o.s.	1583	6.1			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2 A3 A137			FORBIDDEN		FORBIDDEN	
Chloroplatinic acid, solid	2507	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg
Chloroprene, stabilized	1991	3	6.1	Liquid flammable & Toxic			I	E0	FORBIDDEN		303	30 L
Chloroprene, uninhibited	FORBIDDEN											
1-Chloropropane	1278	3		Liquid flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		308	60 L
2-Chloropropane	2356	3		Liquid flammable			I	E3	306	1 L	304	30 L
3-Chloro-propanediol-1,2, see **Glycerol alpha-monochlorohydrin**												
3-Chloropropanol-1	2849	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
2-Chloropropene	2456	3		Liquid flammable			I	E3	306	1 L	304	30 L
3-Chloropropene, see **Allyl chloride**												
3-Chloroprop-1-ene, see **Allyl chloride**												
2-Chloropropionic acid	2511	8		Corrosive		A3	III	E1	818 Y818	5 L 1 L	820	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
2-Chloropyridine	2822	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Chlorosilanes, corrosive, n.o.s.	2987	8		Corrosive			II	E2	808	1 L	812	30 L
Chlorosilanes, corrosive, flammable, n.o.s.	2986	8	3	Corrosive & Liquid flammable			II	E2	808	1 L	812	30 L
Chlorosilanes, flammable, corrosive, n.o.s.	2985	3	8	Liquid flammable & Corrosive			II	E2	305	1 L	307	5 L
Chlorosilanes, toxic, corrosive, n.o.s.	3361	6.1	8	Toxic & Corrosive			II	E4	609	1 L	611	30 L
Chlorosilanes, toxic, corrosive, flammable, n.o.s.	3362	6.1	3 8	Toxic & Liquid flammable & Corrosive			II	E4	609	1 L	611	30 L
Chlorosilanes, water-reactive, flammable, corrosive, n.o.s.	2988	4.3	3 8	Danger if wet & Liquid flammable & Corrosive			I	E0	FORBIDDEN		408	1 L
Chlorosulphonic acid (with or without sulphur trioxide)	1754	8							FORBIDDEN		FORBIDDEN	
1-Chloro-1,2,2,2-tetrafluoroethane	1021	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Chlorotoluenes	2238	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
4-Chloro-o-toluidine hydrochloride, solid	1579	6.1		Toxic	US 4		III	E1	619 Y619	100 kg 10 kg	619	200 kg
4-Chloro-o-toluidine hydrochloride solution	3410	6.1		Toxic		A3	III	E1	611 Y611	60 L 2 L	618	220 L
Chlorotoluidines, liquid	3429	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
Chlorotoluidines, solid	2239	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
1-Chloro-2,2,2-trifluoroethane	1983	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Chlorotrifluoroethylene, see **Trifluorochloroethylene, inhibited**												
Chlorotrifluoromethane	1022	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Chlorotrifluoromethane and trifluoromethane azeotropic mixture with approximately 60% chlorotrifluoromethane	2599	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Chromic acid, solid, see **Chromium trioxide, anhydrous**												

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Chromic acid solution	1755	8		Corrosive		A3	II	E2	808 Y808	1 L 0.5 L	812	30 L
							III	E1	818 Y818	5 L 1 L	820	60 L
Chromic anhydride, solid, see **Chromium trioxide, anhydrous**												
Chromic fluoride, solid	1756	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
Chromic fluoride solution	1757	8		Corrosive		A3	II	E2	808 Y808	1 L 0.5 L	812	30 L
							III	E1	818 Y818	5 L 1 L	820	60 L
Chromic nitrate, see **Chromium nitrate**												
Chromic trioxide, see **Chromium trioxide, anhydrous**												
Chromium (VI) dichloride dioxide, see **Chromium oxychloride**												
Chromium (III) fluoride, solid, see **Chromic fluoride, solid**												
Chromium nitrate	2720	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
Chromium (III) nitrate, see **Chromium nitrate**												
Chromium oxychloride	1758	8		Corrosive			I	E0	807	0.5 L	809	2.5 L
Chromium trioxide, anhydrous	1463	5.1	6.1 8	Oxidizer & Toxic & Corrosive	US 4		II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Chromosulphuric acid	2240	8		Corrosive			I	E0	807	0.5 L	809	2.5 L
Chrysotile, see **White asbestos**, etc.												
Cigar and cigarette lighter fluid, see **Flammable liquid, n.o.s.**												
Cigar and cigarette lighters, charged with fuel, see **Lighters** (cigarettes), etc.												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Cinene, see **Dipentene**												
Cinnamene, see **Styrene monomer, stabilized**												
Cinnamol, see **Styrene monomer, stabilized**												
Clinical waste, unspecified, n.o.s.	3291	6.2		Infectious		A117	II	E0	622	No limit	622	No limit
Coal briquettes, hot	FORBIDDEN											
Coal gas, compressed †	1023	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Coal tar distillates, flammable	1136	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Coal tar naphtha, see **Petroleum distillates, n.o.s.** or **Petroleum products, n.o.s.**												
Coal tar oil, see **Coal tar distillates, flammable**												
Coating solution, (includes surface treatments or coatings used for industrial or other purposes such as vehicle undercoating, drum or barrel lining) †	1139	3		Liquid flammable		A3	I	E3	302	1 L	303	30 L
							II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Cobalt naphthenates, powder	2001	4.1		Solid flammable			III	E1	419 Y419	25 kg 10 kg	420	100 kg
Cobalt resinate, precipitated	1318	4.1		Solid flammable			III	E1	422 Y422	25 kg 10 kg	421	100 kg
Cocculus, see **Toxins, extracted from living sources, n.o.s.**												
Coke, hot	FORBIDDEN											

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Collodion cottons, see **Nitrocellulose,** etc. (UN Nos. 0340, 0341, 0342, 2059, 2555, 2556, 2557)												
	Cologne spirits, see **Perfumery products** etc.												
	Components, explosive train, n.o.s.* †	0382	1.2B							FORBIDDEN		FORBIDDEN	
	Components, explosive train, n.o.s.* †	0383	1.4B		Explosive 1.4		A62		E0	FORBIDDEN		101	75 kg
	Components, explosive train, n.o.s.* †	0384	1.4S		Explosive 1.4		A62		E0	101	25 kg	101	100 kg
	Components, explosive train, n.o.s.* †	0461	1.1B							FORBIDDEN		FORBIDDEN	
	Composition B, see **Hexolite**, etc.												
	Compressed gas, n.o.s.*	1956	2.2		Gas non-flammable		A124		E1	200	75 kg	200	150 kg
	Compressed gas, flammable, n.o.s.*	1954	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
≠	**Compressed gas, oxidizing, n.o.s.***	3156	2.2	5.1	Gas non-flammable & Oxidizer	US 18			E0	200	75 kg	200	150 kg
	Compressed gas, toxic, n.o.s.*	1955	2.3			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
	Compressed gas, toxic, corrosive, n.o.s.*	3304	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
	Compressed gas, toxic, flammable, n.o.s.*	1953	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Compressed gas, toxic, flammable, corrosive, n.o.s.*	3305	2.3	2.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Compressed gas, toxic, oxidizing, n.o.s.*	3303	2.3	5.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Compressed gas, toxic, oxidizing, corrosive, n.o.s.*	3306	2.3	5.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Consumer commodity †	8000	9		Miscellaneous		A112		E2	910	30 kg G	910	30 kg G
Contrivances, water-activated* with burster, expelling charge or propelling charge †	0248	1.2L							FORBIDDEN		FORBIDDEN	
Contrivances, water-activated* with burster, expelling charge or propelling charge †	0249	1.3L							FORBIDDEN		FORBIDDEN	
Copper acetoarsenite	1585	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg
Copper acetylide	FORBIDDEN											
Copper amine azide	FORBIDDEN											
Copper arsenite	1586	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Copper (II) arsenite, see **Copper arsenite**												
Copper based pesticide, liquid, flammable, toxic*, flash point less than 23ºC	2776	3	6.1	Liquid flammable & Toxic		A4	I	E0	FORBIDDEN		303	30 L
							II	E2	305 Y305	1 L 1 L	307	60 L
Copper based pesticide, liquid, toxic*	3010	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Copper based pesticide, liquid, toxic, flammable*, flash point not less than 23ºC	3009	6.1	3	Toxic & Liquid flammable		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609	5 L	611	60 L
									Y609	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		
Copper based pesticide, solid, toxic*	2775	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613	25 kg	615	100 kg
									Y613	1 kg		
							III	E1	619	100 kg	619	200 kg
									Y619	10 kg		
Copper chlorate	2721	5.1		Oxidizer			II	E2	508	5 kg	511	25 kg
									Y508	2.5 kg		
Copper (II) chlorate, see **Copper chlorate**												
Copper chloride	2802	8		Corrosive	US 4		III	E1	822	25 kg	823	100 kg
									Y822	5 kg		
Copper cyanide	1587	6.1		Toxic	US 4		II	E4	613	25 kg	615	100 kg
									Y613	1 kg		
Copper selenate, see **Selenates**												
Copper selenite, see **Selenites**												
Copper tetramine nitrate	FORBIDDEN											
Copra †	1363	4.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Cord, detonating, flexible †	0065	1.1D			AU 2 CA 7 GB 3 IR 3 NL 1 US 3	A109			FORBIDDEN		FORBIDDEN	
Cord, detonating, flexible †	0289	1.4D		Explosive 1.4	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		139	75 kg
Cord, detonating, metal clad †	0102	1.2D							FORBIDDEN		FORBIDDEN	
Cord, detonating, metal clad †	0290	1.1D							FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Cord, detonating, mild effect, metal clad	0104	1.4D		Explosive 1.4				E0	FORBIDDEN		139	75 kg
Cord, igniter †	0066	1.4G		Explosive 1.4	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		140	75 kg
Cordite, see **Powder, smokeless**												
Corrosive liquid, n.o.s.*	1760	8		Corrosive		A3	I	E0	807	0.5 L	809	2.5 L
							II	E2	808	1 L	812	30 L
									Y808	0.5 L		
							III	E1	818	5 L	820	60 L
									Y818	1 L		
Corrosive liquid, acidic, inorganic, n.o.s.*	3264	8		Corrosive		A3	I	E0	807	0.5 L	809	2.5 L
							II	E2	808	1 L	812	30 L
									Y808	0.5 L		
							III	E1	818	5 L	820	60 L
									Y818	1 L		
Corrosive liquid, acidic, organic, n.o.s.*	3265	8		Corrosive		A3	I	E0	807	0.5 L	809	2.5 L
							II	E2	808	1 L	812	30 L
									Y808	0.5 L		
							III	E1	818	5 L	820	60 L
									Y818	1 L		
Corrosive liquid, basic, inorganic, n.o.s.*	3266	8		Corrosive		A3	I	E0	807	0.5 L	809	2.5 L
							II	E2	808	1 L	812	30 L
									Y808	0.5 L		
							III	E1	818	5 L	820	60 L
									Y818	1 L		
Corrosive liquid, basic, organic, n.o.s.*	3267	8		Corrosive		A3	I	E0	807	0.5 L	809	2.5 L
							II	E2	808	1 L	812	30 L
									Y808	0.5 L		
							III	E1	818	5 L	820	60 L
									Y818	1 L		
Corrosive liquid, flammable, n.o.s.*	2920	8	3	Corrosive & Liquid flammable			I	E0	807	0.5 L	809	2.5 L
							II	E2	808	1 L	812	30 L
									Y808	0.5 L		
Corrosive liquid, oxidizing, n.o.s.*	3093	8	5.1	Corrosive & Oxidizer			I	E0	FORBIDDEN		809	2.5 L
							II	E2	809	1 L	813	30 L
									Y809	0.5 L		
Corrosive liquid, self-heating, n.o.s.*	3301	8	4.2	Corrosive & Spontaneous combustion			I	E0	807	0.5 L	809	2.5 L
							II	E2	808	1 L	812	30 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Corrosive liquid, toxic, n.o.s.*	2922	8	6.1	Corrosive & Toxic		A3	I	E0	807	0.5 L	809	2.5 L
							II	E2	808	1 L	812	30 L
									Y808	0.5 L		
							III	E1	818	5 L	820	60 L
									Y818	1 L		
Corrosive liquid, water-reactive, n.o.s.*	3094	8	4.3	Corrosive & Danger if wet			I	E0	FORBIDDEN		809	1 L
							II	E2	809	1 L	813	5 L
Corrosive solid, n.o.s.*	1759	8		Corrosive		A3	I	E0	810	1 kg	811	25 kg
							II	E2	814	15 kg	816	50 kg
									Y814	5 kg		
							III	E1	822	25 kg	823	100 kg
									Y822	5 kg		
Corrosive solid, acidic, inorganic, n.o.s.*	3260	8		Corrosive		A3	I	E0	810	1 kg	811	25 kg
							II	E2	814	15 kg	816	50 kg
									Y814	5 kg		
							III	E1	822	25 kg	823	100 kg
									Y822	5 kg		
Corrosive solid, acidic, organic, n.o.s.*	3261	8		Corrosive		A3	I	E0	810	1 kg	811	25 kg
							II	E2	814	15 kg	816	50 kg
									Y814	5 kg		
							III	E1	822	25 kg	823	100 kg
									Y822	5 kg		
Corrosive solid, basic, inorganic, n.o.s.*	3262	8		Corrosive		A3	I	E0	810	1 kg	811	25 kg
							II	E2	814	15 kg	816	50 kg
									Y814	5 kg		
							III	E1	822	25 kg	823	100 kg
									Y822	5 kg		
Corrosive solid, basic, organic, n.o.s.*	3263	8		Corrosive		A3	I	E0	810	1 kg	811	25 kg
							II	E2	814	15 kg	816	50 kg
									Y814	5 kg		
							III	E1	822	25 kg	823	100 kg
									Y822	5 kg		
Corrosive solid, flammable, n.o.s.*	2921	8	4.1	Corrosive & Solid flammable			I	E0	810	1 kg	811	25 kg
							II	E2	814	15 kg	816	50 kg
									Y814	5 kg		
Corrosive solid, oxidizing, n.o.s.*	3084	8	5.1	Corrosive & Oxidizer			I	E0	810	1 kg	811	15 kg
							II	E2	814	15 kg	816	50 kg
									Y814	5 kg		
Corrosive solid, self-heating, n.o.s.*	3095	8	4.2	Corrosive & Spontaneous combustion			I	E0	810	1 kg	811	25 kg
							II	E2	814	15 kg	816	50 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Corrosive solid, toxic, n.o.s.*	2923	8	6.1	Corrosive & Toxic		A3	I	E0	810	1 kg	811	25 kg
							II	E2	814	15 kg	816	50 kg
									Y814	5 kg		
							III	E1	822	25 kg	823	100 kg
									Y822	5 kg		
Corrosive solid, water-reactive, n.o.s.*	3096	8	4.3	Corrosive & Danger if wet			I	E0	810	1 kg	811	25 kg
							II	E2	814	15 kg	816	50 kg
									Y814	5 kg		
Cosmetics, n.o.s., see **Consumer commodity**												
Cosmetics, corrosive, liquid, n.o.s., see **Corrosive liquid, n.o.s.**												
Cosmetics, corrosive, solid, n.o.s., see **Corrosive solid, n.o.s.**												
Cosmetics, flammable, liquid, n.o.s., see **Flammable liquid, n.o.s.** or **Perfumery products**												
Cosmetics, flammable, solid, n.o.s., see **Flammable solid, inorganic, n.o.s.** or **organic, n.o.s.**												
Cosmetics, oxidizing material, n.o.s., see **Oxidizing liquid** or **solid, n.o.s.**												
Cotton waste, oily	1364	4.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Cotton, wet	1365	4.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Coumarin derivative pesticide, liquid, flammable, toxic*, flash point less than 23ºC	3024	3	6.1	Liquid flammable & Toxic		A4	I	E0	FORBIDDEN		303	30 L
							II	E2	305	1 L	307	60 L
									Y305	1 L		

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Coumarin derivative pesticide, liquid, toxic*	3026	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609	5 L	611	60 L
									Y609	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		
Coumarin derivative pesticide, liquid, toxic, flammable*, flash point not less than 23ºC	3025	6.1	3	Toxic & Liquid flammable		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609	5 L	611	60 L
									Y609	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		
Coumarin derivative pesticide, solid, toxic*	3027	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613	25 kg	615	100 kg
									Y613	1 kg		
							III	E1	619	100 kg	619	200 kg
									Y619	10 kg		
Creosote, see **Toxic liquid, organic, n.o.s.**												
Creosote salts, see **Naphthalene**, etc.												
Cresols, liquid	2076	6.1	8	Toxic & Corrosive			II	E4	609	1 L	611	30 L
									Y609	0.5 L		
Cresols, solid	3455	6.1	8	Toxic & Corrosive			II	E4	613	15 kg	615	50 kg
									Y613	1 kg		
Cresylic acid	2022	6.1	8	Toxic & Corrosive			II	E4	609	1 L	611	30 L
									Y609	0.5 L		
Crocidolite, see **Blue asbestos**												
Crotonaldehyde	1143	6.1	3		AU 1 CA 7 GB 3 IR 3 NL 1 US 3 US 4	A2			FORBIDDEN		FORBIDDEN	
Crotonaldehyde, stabilized	1143	6.1	3		AU 1 CA 7 GB 3 IR 3 NL 1 US 3 US 4	A2			FORBIDDEN		FORBIDDEN	
Crotonic acid, liquid	3472	8		Corrosive			III	E1	818	5 L	820	60 L
									Y818	1 L		

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Crotonic acid, solid	2823	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg
Crotonic aldehyde, stabilized, see **Crotonaldehyde, stabilized**												
Crotonylene	1144	3		Liquid flammable			I	E3	302	1 L	303	30 L
Crude naphtha, see **Petroleum distillates, n.o.s.**												
Cumene, see **Isopropylbenzene**												
Cupric cyanide, see **Copper cyanide**												
Cupriethylenediamine solution	1761	8	6.1	Corrosive & Toxic		A3	II	E2	808 Y808	1 L 0.5 L	812	30 L
							III	E1	818 Y818	5 L 1 L	820	60 L
Cutters, cable, explosive †	0070	1.4S		Explosive 1.4				E0	134	25 kg	134	100 kg
Cyanides, inorganic, solid, n.o.s.*	1588	6.1		Toxic	US 4	A3	I	E5	606	5 kg	607	50 kg
						A13	II	E4	613 Y613	25 kg 1 kg	615	100 kg
							III	E1	619 Y619	100 kg 10 kg	619	200 kg
Cyanide solution, n.o.s.	1935	6.1		Toxic		A3	I	E5	610	1 L	605	30 L
							II	E4	617 Y617	5 L 1 L	612	60 L
							III	E1	612 Y612	60 L 2 L	620	220 L
Cyanides, organic, flammable, toxic, n.o.s., see **Nitriles, flammable, toxic, n.o.s.**												
Cyanides, organic, toxic, n.o.s., see **Nitriles, toxic, n.o.s.**												
Cyanides, organic, toxic, flammable, n.o.s., see **Nitriles, toxic, flammable, n.o.s.**												
Cyanoacetonitrile, see **Malononitrile**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Cyanogen	1026	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Cyanogen bromide	1889	6.1	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Cyanogen chloride, stabilized	1589	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Cyanuric chloride	2670	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
Cyanuric triazide	FORBIDDEN											
Cyclobutane	2601	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Cyclobutyl chloroformate	2744	6.1	3 8	Toxic & Liquid flammable & Corrosive			II	E4	609 Y609	1 L 0.5 L	611	30 L
1,5,9-Cyclododecatriene	2518	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
Cycloheptane	2241	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Cycloheptatriene	2603	3	6.1	Liquid flammable & Toxic			II	E2	305 Y305	1 L 1 L	307	60 L
1,3,5-Cycloheptatriene, see **Cycloheptatriene**												
Cycloheptene	2242	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
1,4-Cyclohexadienedione, see **Benzoquinone**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Cyclohexane	1145	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Cyclohexanethiol, see **Cyclohexyl mercaptan**												
Cyclohexanone	1915	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Cyclohexene	2256	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Cyclohexenyltrichlorosilane	1762	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
Cyclohexyl acetate	2243	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Cyclohexylamine	2357	8	3	Corrosive & Liquid flammable			II	E2	808 Y808	1 L 0.5 L	812	30 L
Cyclohexyl isocyanate	2488	6.1	3						FORBIDDEN		FORBIDDEN	
Cyclohexyl mercaptan	3054	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Cyclohexyltrichlorosilane	1763	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
Cyclonite and cyclotetramethylenetetranitramine mixture, desensitized with not less than 10% phlegmatizer, by mass	0391	1.1D							FORBIDDEN		FORBIDDEN	
Cyclonite and cyclotetramethylenetetranitramine mixture, wetted with not less than 15% water, by mass	0391	1.1D							FORBIDDEN		FORBIDDEN	
Cyclonite, desensitized	0483	1.1D							FORBIDDEN		FORBIDDEN	
Cyclonite, wetted with not less than 15% water, by mass	0072	1.1D							FORBIDDEN		FORBIDDEN	
Cyclooctadiene phosphines	2940	4.2		Spontaneous combustion			II	E2	415	15 kg	417	50 kg
Cyclooctadienes	2520	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Cyclooctatetraene	2358	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Cyclopentane	1146	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Cyclopentanol	2244	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Cyclopentanone	2245	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Cyclopentene	2246	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Cyclopropane	1027	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Cyclotetramethylene-tetranitramine, desensitized	0484	1.1D							FORBIDDEN		FORBIDDEN	
Cyclotetramethylenetetranitramine (dry or unphlegmatized) (HMX)	FORBIDDEN											
Cyclotetramethylene-tetranitramine, wetted with not less than 15% water, by mass	0226	1.1D							FORBIDDEN		FORBIDDEN	
Cyclotrimethylenetrinitramine and cyclotetramethylenetetranitramine mixture, desensitized with not less than 10% phlegmatizer, by mass	0391	1.1D							FORBIDDEN		FORBIDDEN	
Cyclotrimethylenetrinitramine and cyclotetramethylenetetranitramine mixture, wetted with not less than 15% water, by mass	0391	1.1D							FORBIDDEN		FORBIDDEN	
Cyclotrimethylenetrinitramine, desensitized	0483	1.1D							FORBIDDEN		FORBIDDEN	
Cyclotrimethylenetrinitramine, wetted with not less than 15% water, by mass	0072	1.1D							FORBIDDEN		FORBIDDEN	
Cymenes	2046	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Cymol, see **Cymenes**												
D												
Dangerous goods in apparatus	3363	9		Miscellaneous		A48 A107		E0	see 916		see 916	
Dangerous goods in machinery	3363	9		Miscellaneous		A48 A107		E0	see 916		see 916	
Deanol, see **Dimethylethanolamine**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Decaborane	1868	4.1	6.1	Solid flammable & Toxic	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		418	50 kg
Decahydronaphthalene	1147	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Decalin, see **Decahydronaphthalene**												
n-Decane	2247	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Deflagrating metal salts of aromatic nitro-derivatives, n.o.s.	0132	1.3C							FORBIDDEN		FORBIDDEN	
Depth charges, see **Charges, depth**												
Desensitized explosive, liquid, n.o.s.*	3379	3				A133			FORBIDDEN		FORBIDDEN	
Desensitized explosive, solid, n.o.s.*	3380	4.1				A133			FORBIDDEN		FORBIDDEN	
Detonating relays, see **Detonators, non-electric** or **Detonator assemblies, non-electric**												
Detonator assemblies, non-electric for blasting †	0360	1.1B							FORBIDDEN		FORBIDDEN	
Detonator assemblies, non-electric for blasting †	0361	1.4B		Explosive 1.4				E0	FORBIDDEN		131	75 kg
Detonator assemblies, non-electric for blasting †	0500	1.4S		Explosive 1.4				E0	131	25 kg	131	100 kg
Detonators, electric for blasting †	0030	1.1B							FORBIDDEN		FORBIDDEN	
Detonators, electric for blasting †	0255	1.4B		Explosive 1.4				E0	FORBIDDEN		131	75 kg
Detonators, electric for blasting †	0456	1.4S		Explosive 1.4				E0	131	25 kg	131	100 kg
Detonators for ammunition †	0073	1.1B							FORBIDDEN		FORBIDDEN	
Detonators for ammunition †	0364	1.2B							FORBIDDEN		FORBIDDEN	
Detonators for ammunition †	0365	1.4B		Explosive 1.4				E0	FORBIDDEN		133	75 kg
Detonators for ammunition †	0366	1.4S		Explosive 1.4				E0	133	25 kg	133	100 kg
Detonators, non-electric for blasting †	0029	1.1B							FORBIDDEN		FORBIDDEN	
Detonators, non-electric for blasting †	0267	1.4B		Explosive 1.4				E0	FORBIDDEN		131	75 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Detonators, non-electric for blasting †	0455	1.4S		Explosive 1.4				E0	131	25 kg	131	100 kg
Deuterium, compressed	1957	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Devices, small, hydrocarbon gas powered with release device	3150	2.1		Gas flammable				E0	201	1 kg	201	15 kg
Diacetone alcohol	1148	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Diacetone alcohol peroxides, more than 57% in solution with more than 9% hydrogen peroxide, less than 26% diacetone alcohol and less than 9% water; total active oxygen content more than 10% by mass	FORBIDDEN											
Diallylamine	2359	3	6.1 8	Liquid flammable & Toxic & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L
Diallyl ether	2360	3	6.1	Liquid flammable & Toxic			II	E2	306 Y306	1 L 1 L	308	60 L
4,4'-Diaminodiphenylmethane	2651	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
1,2-Diaminoethane, see **Ethylenediamine**												
Diaminopropylamine, see **3,3'-Iminodipropylamine**												
Di-n-amylamine	2841	3	6.1	Liquid flammable & Toxic			III	E1	309 Y309	60 L 2 L	310	220 L
p-Diazidobenzene	FORBIDDEN											
1,2-Diazidoethane	FORBIDDEN											
1,1'-Diazoaminonaphthalene	FORBIDDEN											
Diazoaminotetrazole (dry)	FORBIDDEN											

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Diazodinitrophenol (dry)	FORBIDDEN											
Diazodinitrophenol, wetted with not less than 40% water, or mixture of alcohol and water, by mass	0074	1.1A							FORBIDDEN		FORBIDDEN	
Diazodiphenylmethane	FORBIDDEN											
2-Diazo-1-naphthol-4-sulphonylchloride	FORBIDDEN											
2-Diazo-1-naphthol-5-sulphonylchloride	FORBIDDEN											
Diazonium nitrates (dry)	FORBIDDEN											
Diazonium perchlorates (dry)	FORBIDDEN											
1,3-Diazopropane	FORBIDDEN											
Dibenzopyridine, see **Acridine**												
Dibenzoyl peroxide, more than 77% and not more than 94%, when with 6% or more water	FORBIDDEN											
Dibenzoyl peroxide, more than 51%, when with not more than 48% inert solid	FORBIDDEN											
Dibenzyldichlorosilane	2434	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
Dibenzyl peroxydicarbonate, more than 87% with water	FORBIDDEN											
Dibenzyl peroxydicarbonate, not more than 87% when with 13% or more water	FORBIDDEN											
Diborane	1911	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Dibromoacetylene	FORBIDDEN											

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
1,2-Dibromobutan-3-one	2648	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
1,2-Dibromo-3-chloropropane, see **Dibromochloropropanes**												
Dibromochloropropanes	2872	6.1		Toxic	US 4	A3	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Dibromodifluoromethane	1941	9		Miscellaneous			III	E1	907 Y907	100 L 30 kg G	907	220 L
Dibromomethane	2664	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
Di-n-butylamine	2248	8	3	Corrosive & Liquid flammable			II	E2	808 Y808	1 L 0.5 L	812	30 L
Dibutylaminoethanol	2873	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
2-Dibutylaminoethanol, see **Dibutylaminoethanol**												
N,N-Di-n-butylaminoethanol, see **Dibutylaminoethanol**												
Dibutyl ethers	1149	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
1,1-Di-(tert-butylperoxy)-3,3,5-trimethylcyclohexane, more than 90%	FORBIDDEN											
2,2-Di-(tert-butylperoxy) butane, more than 55% in solution	FORBIDDEN											
1,1-Di-(tert-butylperoxy) cyclohexane, more than 80%	FORBIDDEN											
Di-n-butyl peroxydicarbonate, more than 52% in solution	FORBIDDEN											
Di-(tert-butylperoxy) phthalate, more than 55% in solution	FORBIDDEN											
N,N'-Dichlorazodicarbonamidine (salts of) (dry)	FORBIDDEN											
Dichloroacetic acid	1764	8		Corrosive			II	E2	809 Y809	1 L 0.5 L	813	30 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
1,3-Dichloroacetone	2649	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Dichloroacetyl chloride	1765	8		Corrosive			II	E2	809 Y809	1 L 0.5 L	813	30 L
Dichloroacetylene	FORBIDDEN											
Dichloroanilines, liquid	1590	6.1		Toxic		A113	II	E4	609 Y609	5 L 1 L	611	60 L
Dichloroanilines, solid	3442	6.1		Toxic		A113	II	E4	613 Y613	25 kg 1 kg	615	100 kg
o-Dichlorobenzene	1591	6.1		Toxic	US 4	A113	III	E1	611 Y611	60 L 2 L	618	220 L
Di-4-chlorobenzoyl peroxide, not more than 77%, when with 23% or more water	FORBIDDEN											
2,2'-Dichlorodiethyl ether	1916	6.1	3	Toxic & Liquid flammable	US 4		II	E4	610 Y610	5 L 1 L	612	60 L
Dichlorodifluoromethane	1028	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Dichlorodifluoromethane and difluoroethane azeotropic mixture with approximately 74% dichlorodifluoromethane	2602	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Dichlorodifluoromethane and ethylene oxide mixture, see **Ethylene oxide and dichlorodifluoromethane mixture**, etc.												
Dichlorodimethyl ether, symmetrical	2249	6.1	3						FORBIDDEN		FORBIDDEN	
1,1-Dichloroethane	2362	3		Liquid flammable	US 4		II	E2	305 Y305	5 L 1 L	307	60 L
1,2-Dichloroethane, see **Ethylene dichloride**												
1,2-Dichloroethylene	1150	3		Liquid flammable	US 4		II	E2	305 Y305	5 L 1 L	307	60 L
Di(2-chloroethyl) ether, see **2,2'-Dichlorodiethyl ether**												
Dichloroethyl sulphide	FORBIDDEN											
Dichlorofluoromethane	1029	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
alpha-Dichlorohydrin, see **1,3-Dichloropropanol-2**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Dichloroisocyanuric acid, dry	2465	5.1		Oxidizer		A28	II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Dichloroisocyanuric acid salts	2465	5.1		Oxidizer		A28	II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Dichloroisopropyl ether	2490	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Dichloromethane	1593	6.1		Toxic			III	E1	605 Y605	60 L 2 L	612	220 L
1,1-Dichloro-1-nitroethane	2650	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Dichloropentanes	1152	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Dichlorophenol, see **Chlorophenols**, liquid or solid, etc.												
Dichlorophenyl isocyanates	2250	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Dichlorophenyltrichlorosilane	1766	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
1,2-Dichloropropane	1279	3		Liquid flammable			II	E2	306 Y306	5 L 1 L	308	60 L
1,3-Dichloropropanol-2	2750	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
1,3-Dichloro-2-propanone, see **1,3-Dichloroacetone**												
Dichloropropenes	2047	3		Liquid flammable	US 4	A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Dichlorosilane	2189	2.3	2.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Dichloro-s-triazine -2,4,6-trione, see **Dichloroisocyanuric acid, dry** or **Dichloroisocyanuric acid, salts**												
1,2-Dichloro-1,1,2,2-tetrafluoroethane	1958	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Dichlorovinylchloroarsine	FORBIDDEN											
1,4-Dicyanobutane, see **Adiponitrile**												
Dicycloheptadiene, see **Bicyclo [2.2.1] hepta-2,5-diene, stabilized** or **2.5-Nonbornadiene, stabilized**												
Dicyclohexylamine	2565	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
Dicyclohexylamine nitrite, see **Dicyclohexylammonium nitrite**												
Dicyclohexylammonium nitrite	2687	4.1		Solid flammable			III	E1	419 Y419	25 kg 10 kg	420	100 kg
Dicyclohexyl peroxydicarbonate, more than 91%	FORBIDDEN											
Dicyclopentadiene	2048	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
2,2-Di-(4,4-di-tert-butylperoxy-cyclohexyl) propane, more than 42% with inert solid	FORBIDDEN											
Di-2,4-dichlorobenzoyl peroxide, not more than 77% when with 23% or more water	FORBIDDEN											
1,2-Di-(dimethylamino) ethane	2372	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Didymium nitrate	1465	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
Diesel fuel	1202	3		Liquid flammable		A3	III	E1	309 Y309	60 L 10 L	310	220 L
Diethanol nitrosamine dinitrate (dry)	FORBIDDEN											
1,1-Diethoxyethane, see **Acetal**												
1,2-Diethoxyethane, see **Ethylene glycol diethyl ether**												
Diethoxymethane	2373	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
3,3-Diethoxypropene	2374	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Diethylamine	1154	3	8	Liquid flammable & Corrosive	US 4		II	E2	306 Y306	1 L 0.5 L	308	5 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
2-Diethylaminoethanol	2686	8	3	Corrosive & Liquid flammable			II	E2	808 Y808	1 L 0.5 L	812	30 L
2-Diethylaminoethanol, see **Diethylaminoethanol**												
3-Diethylaminopropylamine	2684	3	8	Liquid flammable & Corrosive			III	E1	309 Y309	5 L 1 L	310	60 L
N,N-Diethylaniline	2432	6.1		Toxic		A113	III	E1	611 Y611	60 L 2 L	618	220 L
Diethylbenzene	2049	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Diethylcarbinol, see **Amyl alcohols**												
Diethyl carbonate	2366	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Diethyldichlorosilane	1767	8	3	Corrosive & Liquid flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
Diethylenediamine, see **Piperazine**												
Diethyleneglycol dinitrate, desensitized with not less than 25% non-volatile, water-insoluble phlegmatizer, by mass	0075	1.1D							FORBIDDEN		FORBIDDEN	
Diethyleneglycol dinitrate (dry)	FORBIDDEN											
Diethylenetriamine	2079	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
N,N-Diethylethanolamine, see **2-Diethylaminoethanol**												
Diethyl ether	1155	3		Liquid flammable			I	E3	302	1 L	303	30 L
N,N-Diethylethylenediamine	2685	8	3	Corrosive & Liquid flammable			II	E2	808 Y808	1 L 0.5 L	812	30 L
Diethylgold bromide	FORBIDDEN											
Di-(2-ethylhexyl) phosphoric acid, see **Diisooctyl acid phosphate**												
Diethyl ketone	1156	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Diethyl peroxydicarbonate, more than 27% in solution	FORBIDDEN											
Diethyl sulphate	1594	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Diethyl sulphide	2375	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Diethylthiophosphoryl chloride	2751	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
2,4-Difluoroaniline, see **Fluoroanilines**												
Difluorochloroethane, see **1-Chloro-1,1-difluoroethane**												
1,1-Difluoroethane	1030	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
1,1-Difluoroethylene	1959	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Difluoromethane	3252	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Difluoromethane, pentafluoroethane, and 1,1,1,2-tetrafluoroethane azeotropic mixture with approximately 23% difluoromethane and 25% pentafluoroethane, see **Refrigerant gas R 407C**												
Difluoromethane, pentafluoroethane, and 1,1,1,2-tetrafluoroethane azeotropic mixture with approximately 20% difluoromethane and 40% pentafluoroethane, see **Refrigerant gas R 407A**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Difluoromethane, pentafluoroethane, and 1,1,1,2-tetrafluoroethane azeotropic mixture with approximately 10% difluoromethane and 70% pentafluoroethane, see **Refrigerant gas R 407B**												
Difluorophosphoric acid, anhydrous	1768	8		Corrosive			II	E2	809 Y809	1 L 0.5 L	813	30 L
2,2-Dihydroperoxypropane, not more than 27% when with 73% or more inert solid	FORBIDDEN											
2,3-Dihydropyran	2376	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
1,8-Dihydroxy-2,4,5,7-tetranitro-anthraquinone (chrysamminic acid)	FORBIDDEN											
Di-(1-hydroxytetrazole) (dry)	FORBIDDEN											
Diiodoacetylene	FORBIDDEN											
Diisobutylamine	2361	3	8	Liquid flammable & Corrosive			III	E1	309 Y309	5 L 1 L	310	60 L
alpha-Diisobutylene, see **Diisobutylene, isomeric compounds**												
beta-Diisobutylene, see **Diisobutylene, isomeric compounds**												
Diisobutylene, isomeric compounds	2050	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Diisobutyl ketone	1157	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Diisobutyryl peroxide, more than 32% and not more than 52%, when with 48% or more diluent Type A or B	FORBIDDEN											
Diisooctyl acid phosphate	1902	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
Diisopropylamine	1158	3	8	Liquid flammable & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L
Diisopropyl ether	1159	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Diisopropyl peroxydicarbonate, more than 52%	FORBIDDEN											
Diketene, stabilized	2521	6.1	3						FORBIDDEN		FORBIDDEN	
1,2-Dimethoxyethane	2252	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
1,1-Dimethoxyethane	2377	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Dimethoxystrychnine, see **Brucine**												
Dimethylamine, anhydrous	1032	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Dimethylamine, aqueous solution	1160	3	8	Liquid flammable & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L
2-Dimethylaminoacetonitrile	2378	3	6.1	Liquid flammable & Toxic			II	E2	305 Y305	1 L 1 L	307	60 L
2-Dimethylaminoethanol	2051	8	3	Corrosive & Liquid flammable			II	E2	808 Y808	1 L 0.5 L	812	30 L
2-Dimethylaminoethyl acrylate	3302	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
2-Dimethylaminoethyl methacrylate	2522	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
N,N-Dimethylaniline	2253	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Dimethylarsenic acid, see **Cacodylic acid**												
Di-(2-methylbenzoyl) peroxide, not more than 87% when with 13% or more water	FORBIDDEN											
N,N-Dimethylbenzylamine, see **Benzyldimethylamine**												
2,3-Dimethylbutane	2457	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
1,3-Dimethylbutylamine	2379	3	8	Liquid flammable & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L
Dimethylcarbamoyl chloride	2262	8		Corrosive	US 4		II	E2	808 Y808	1 L 0.5 L	812	30 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Dimethyl carbonate	1161	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Dimethylcyclohexanes	2263	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
N,N-Dimethylcyclohexylamine	2264	8	3	Corrosive & Liquid flammable			II	E2	808 Y808	1 L 0.5 L	812	30 L
2,5-Dimethyl-2,5-di-(benzoylperoxy) hexane, more than 82%	FORBIDDEN											
2,5-Dimethyl-2,5-di-(tert-butylperoxy) hexyne-3, more than 86%	FORBIDDEN											
Dimethyldichlorosilane	1162	3	8	Liquid flammable & Corrosive			II	E2	305	1 L	307	5 L
Dimethyldiethoxysilane	2380	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
2,5-Dimethyl-2,5-dihydroperoxy hexane, more than 82% with water	FORBIDDEN											
Dimethyldioxanes	2707	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Dimethyl disulphide	2381	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Dimethylethanolamine, see **2-Dimethylaminoethanol**												
Dimethyl ether	1033	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
N,N-Dimethylformamide	2265	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
1,1-Dimethylhydrazine, see **Dimethylhydrazine, unsymmetrical**												
Dimethylhydrazine, symmetrical	2382	6.1	3		US 4				FORBIDDEN		FORBIDDEN	
Dimethylhydrazine, unsymmetrical	1163	6.1	3 8						FORBIDDEN		FORBIDDEN	
N,N-Dimethyl-4-nitrosoaniline, see **p-Nitrosodimethylaniline**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
2,2-Dimethylpropane	2044	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Dimethyl-N-propylamine	2266	3	8	Liquid flammable & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L
Dimethyl sulphate	1595	6.1	8						FORBIDDEN		FORBIDDEN	
Dimethyl sulphide	1164	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Dimethyl thiophosphoryl chloride	2267	6.1	8	Toxic & Corrosive			II	E4	609 Y609	1 L 0.5 L	611	30 L
Di-(1-naphthoyl) peroxide	FORBIDDEN											
DINGU	0489	1.1D							FORBIDDEN		FORBIDDEN	
Dinitroanilines	1596	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Dinitrobenzenes, liquid	1597	6.1		Toxic	US 4	A3	II	E4	609 Y609	5 L 1L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	200 L
Dinitrobenzenes, solid	3443	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Dinitrochlorobenzenes, see **Chlorodinitrobenzenes**												
≠ **Dinitro-o-cresol**	1598	6.1		Toxic	US 4	A6	II	E4	613 Y613	25 kg 1 kg	615	100 kg
>												
Dinitro-7,8-dimethylglycoluril (dry)	FORBIDDEN											
1,3-Dinitro-5,5-dimethyl hydantoin	FORBIDDEN											
1,3-Dinitro-4,5-dinitrosobenzene	FORBIDDEN											
1,2-Dinitroethane	FORBIDDEN											
1,1-Dinitroethane (dry)	FORBIDDEN											

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Dinitrogen tetroxide	1067	2.3	5.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Dinitroglycoluril	0489	1.1D							FORBIDDEN		FORBIDDEN	
Dinitromethane	FORBIDDEN											
Dinitrophenol, dry or wetted with less than 15% water, by mass	0076	1.1D	6.1						FORBIDDEN		FORBIDDEN	
Dinitrophenolates, alkali metals, dry or wetted with less than 15% water, by mass	0077	1.3C	6.1						FORBIDDEN		FORBIDDEN	
Dinitrophenolates, wetted with not less than 15% water, by mass	1321	4.1	6.1	Solid flammable & Toxic	BE 3	A40	I	E0	416	1 kg	412	15 kg
Dinitrophenol solution	1599	6.1		Toxic	US 4	A3	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Dinitrophenol, wetted with not less than 15% water, by mass	1320	4.1	6.1	Solid flammable & Toxic	BE 3 US 4	A40	I	E0	416	1 kg	412	15 kg
Dinitropropylene glycol	FORBIDDEN											
Dinitroresorcinol, dry or wetted with less than 15% water, by mass	0078	1.1D							FORBIDDEN		FORBIDDEN	
2,4-Dinitroresorcinol (heavy metal salts of) (dry)	FORBIDDEN											
4,6-Dinitroresorcinol (heavy metal salts of) (dry)	FORBIDDEN											
Dinitroresorcinol, wetted with not less than 15% water, by mass	1322	4.1		Solid flammable	BE 3	A40	I	E0	416	1 kg	412	15 kg
3,5-Dinitrosalicylic acid (lead salt) (dry)	FORBIDDEN											
Dinitrosobenzene	0406	1.3C							FORBIDDEN		FORBIDDEN	
Dinitrosobenzylamidine and salts of (dry)	FORBIDDEN											
2,2-Dinitrostilbene	FORBIDDEN											

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
1,4-Dinitro-1,1,4,4-tetramethylol-butane tetranitrate (dry)	FORBIDDEN											
Dinitrotoluene mixed with sodium chlorate, see **Explosive, blasting, type C**												
Dinitrotoluenes, liquid	2038	6.1		Toxic	US 4		II	E4	609 Y609	5 L 1 L	611	60 L
Dinitrotoluenes, molten	1600	6.1							FORBIDDEN		FORBIDDEN	
Dinitrotoluenes, solid	3454	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg
2,4-Dinitro-1,3,5-trimethylbenzene	FORBIDDEN											
Di-(beta-nitroxyethyl) ammonium nitrate	FORBIDDEN											
a,a'-Di-(nitroxy) methylether	FORBIDDEN											
1,9-Dinitroxy pentamethylene-2,4,6,8-tetramine (dry)	FORBIDDEN											
Dioxane	1165	3		Liquid flammable	US 4		II	E2	305 Y305	5 L 1 L	307	60 L
Dioxolane	1166	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Dipentene	2052	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Di-(2-phenoxyethyl) peroxydicarbonate, more than 85%	FORBIDDEN											
Diphenylamine chloroarsine	1698	6.1							FORBIDDEN		FORBIDDEN	
Diphenylchloroarsine, liquid	1699	6.1							FORBIDDEN		FORBIDDEN	
Diphenylchloroarsine, solid	3450	6.1		Toxic			I	E0	FORBIDDEN		608	50 kg
Diphenyldichlorosilane	1769	8		Toxic	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
Diphenylmethyl bromide	1770	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
Dipicrylamine	0079	1.1D							FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Dipicryl sulphide, dry or wetted with less than 10% water, by mass	0401	1.1D							FORBIDDEN		FORBIDDEN	
Dipicryl sulphide, wetted with not less than 10% water, by mass	2852	4.1		Solid flammable	BE 3	A40	I	E0	FORBIDDEN		416	0.5 kg
Dipropionyl peroxide, more than 28% in solution	FORBIDDEN											
Dipropylamine	2383	3	8	Liquid flammable & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L
Dipropylene triamine, see **3,3'-Iminodipropylamine**												
Di-n-propyl ether	2384	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Dipropyl ketone	2710	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Disinfectant, liquid, corrosive, n.o.s.*	1903	8		Corrosive		A3	I II III	E0 E2 E1	807 808 Y808 818 Y818	0.5 L 1 L 0.5 L 5 L 1 L	809 812 820	2.5 L 30 L 60 L
Disinfectant, liquid, toxic, n.o.s.*	3142	6.1		Toxic		A3 A4	I II III	E5 E4 E1	603 609 Y609 611 Y611	1 L 5 L 1 L 60 L 2 L	604 611 618	30 L 60 L 220 L
Disinfectant, solid, toxic, n.o.s.*	1601	6.1		Toxic		A3 A5	I II III	E5 E4 E1	606 613 Y613 619 Y619	5 kg 25 kg 1 kg 100 kg 10 kg	607 615 619	50 kg 100 kg 200 kg
Disodium trioxosilicate	3253	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg
Divinyl ether, stabilized	1167	3		Liquid flammable			I	E3	306	1 L	308	30 L
Dodecyltrichlorosilane	1771	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
Drugs, n.o.s., see **Consumer commodity**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Drugs, corrosive, liquid, n.o.s., see **Corrosive liquid, n.o.s.**												
Drugs, corrosive, solid, n.o.s., see **Corrosive solid, n.o.s.**												
Drugs, flammable, liquid, n.o.s., see **Flammable liquid, n.o.s.**												
Drugs, flammable, solid, n.o.s., see **Flammable solid, inorganic, n.o.s.** or **organic, n.o.s.**												
Drugs, oxidizing substance, n.o.s., see **Oxidizing liquid** or **solid, n.o.s.**												
Drugs, toxic, liquid, n.o.s., see **Toxic liquid, organic, n.o.s.**												
Drugs, toxic, solid, n.o.s., see **Toxic solid, organic, n.o.s.**												
Dry ice	1845	9		Miscellaneous		A48 A151	III	E0	904	200 kg	904	200 kg
Dye and dye intermediate, n.o.s., flammable liquid, see **Flammable liquid, n.o.s.**												
Dye intermediate, liquid, corrosive, n.o.s.* †	2801	8		Corrosive		A3	I II III	E0 E2 E1	807 808 Y808 818 Y818	0.5 L 1 L 0.5 L 5 L 1 L	809 812 820	2.5 L 30 L 60 L
Dye intermediate, liquid, toxic, n.o.s.* †	1602	6.1		Toxic		A3 A4	I II III	E5 E4 E1	603 609 Y609 611 Y611	1 L 5 L 1 L 60 L 2 L	604 611 618	30 L 60 L 220 L
Dye intermediate, solid, corrosive, n.o.s.* †	3147	8		Corrosive		A3	I II III	E0 E2 E1	810 814 Y814 822 Y822	1 kg 15 kg 5 kg 25 kg 5 kg	811 816 823	25 kg 50 kg 100 kg
Dye intermediate, solid, toxic, n.o.s.* †	3143	6.1		Toxic		A3 A5	I II III	E5 E4 E1	606 613 Y613 619 Y619	5 kg 25 kg 1 kg 100 kg 10 kg	607 615 619	50 kg 100 kg 200 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Dye, liquid, corrosive, n.o.s.*	2801	8		Corrosive		A3	I	E0	807	0.5 L	809	2.5 L
							II	E2	808	1 L	812	30 L
									Y808	0.5 L		
							III	E1	818	5 L	820	60 L
									Y818	1 L		
Dye, liquid, toxic, n.o.s.*	1602	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609	5 L	611	60 L
							III	E1	611	60 L	618	220 L
Dye, solid, corrosive, n.o.s.*	3147	8		Corrosive		A3	I	E0	810	1 kg	811	25 kg
							II	E2	814	15 kg	816	50 kg
									Y814	5 kg		
							III	E1	822	25 kg	823	100 kg
									Y822	5 kg		
Dye, solid, toxic, n.o.s.*	3143	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613	25 kg	615	100 kg
									Y613	1 kg		
							III	E1	619	100 kg	619	200 kg
									Y619	10 kg		
Dynamite, see **Explosive, blasting, type A**												
E												
Electric storage batteries, see **Batteries**, etc.												
Electric storage batteries, see **Batteries**, etc. (UN Nos. 2794, 2795, 2800, 3028)												
Electrolyte (acid or alkaline) for batteries †, see **Battery fluid, acid** or **Battery fluid, alkali**												
Electron tubes containing mercury, see **Mercury** contained in manufactured articles												
Elevated temperature liquid, n.o.s., at or above 100°C and below its flash point (including molten metals, molten salts, etc.)	3257	9							FORBIDDEN		FORBIDDEN	
Elevated temperature liquid, flammable, n.o.s., with flash point above 60°C, at or above its flash point	3256	3							FORBIDDEN		FORBIDDEN	
Elevated temperature solid, n.o.s., at or above 240°C	3258	9							FORBIDDEN		FORBIDDEN	

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Engines, internal combustion, flammable gas powered	3166	9		Miscellaneous		A67 A70 A87 A134		E0	FORBIDDEN		900	No limit
	Engines, internal combustion, flammable liquid powered	3166	9		Miscellaneous		A67 A70 A87 A134		E0	900	No limit	900	No limit
	Engines, rocket, see **Rocket motors**, etc.												
≠	**Environmentally hazardous substance, liquid, n.o.s.***	3082	9		Miscellaneous	CA 13 DE 5 US 4	A97 A158	III	E1	914 Y914	450 L 30 kg G	914	450 L
≠	**Environmentally hazardous substance, solid, n.o.s.***	3077	9		Miscellaneous	CA 13 DE 5 US 4	A97 A158	III	E1	911 Y911	400 kg 30 kg G	911	400 kg
	Epibromohydrin	2558	6.1	3						FORBIDDEN		FORBIDDEN	
	Epichlorohydrin	2023	6.1	3	Toxic & Liquid flammable	US 4	A113	II	E4	609 Y609	5 L 1 L	611	60 L
	1,2-Epoxybutane, stabilized, see **1,2-Butylene oxide, stabilized**												
	Epoxyethane, see **Ethylene oxide**												
	1,2-Epoxy-3-ethoxypropane	2752	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
	2,3-Epoxy-1-propanal, see **Glycidaldehyde**												
	2,3-Epoxypropyl ethyl ether, see **1,2-Epoxy-3-ethoxypropane**												
	Esters, n.o.s.*	3272	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
								III	E1	309 Y309	60 L 10 L	310	220 L
	Ethane	1035	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
	Ethane, refrigerated liquid	1961	2.1							FORBIDDEN		FORBIDDEN	

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft: Packing instruction	Passenger aircraft: Max. net quantity per package	Cargo aircraft: Packing instruction	Cargo aircraft: Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Ethanethiol, see **Ethyl mercaptan**												
≠	**Ethanol**	1170	3		Liquid flammable		A3 A58	II III	E2 E1	305 Y305 309 Y309	5 L 1 L 60 L 10 L	307 310	60 L 220 L
	Ethanolamine	2491	8		Corrosive		A3	III	E1	818 Y818	5 L 1 L	820	60 L
	Ethanol amine dinitrate	FORBIDDEN											
	Ethanolamine solution	2491	8		Corrosive		A3	III	E1	818 Y818	5 L 1 L	820	60 L
+	**Ethanol and gasoline mixture**, with more than 10% ethanol	3475	3		Liquid flammable		A156	II	E2	305 Y305	5 L 1 L	307	60 L
+	**Ethanol and motor spirit mixture**, with more than 10% ethanol	3475	3		Liquid flammable		A156	II	E2	305 Y305	5 L 1 L	307	60 L
+	**Ethanol and petrol mixture**, with more than 10% ethanol	3475	3		Liquid flammable		A156	II	E2	305 Y305	5 L 1 L	307	60 L
≠	**Ethanol solution**	1170	3		Liquid flammable		A3 A58	II III	E2 E1	305 Y305 309 Y309	5 L 1 L 60 L 10 L	307 310	60 L 220 L
	Ether, see **Diethyl ether**												
	Ethers, n.o.s.*	3271	3		Liquid flammable		A3	II III	E2 E1	305 Y305 309 Y309	5 L 1 L 60 L 10 L	307 310	60 L 220 L
	2-Ethoxyethanol, see **Ethylene glycol monoethyl ether**												
	2-Ethoxyethyl acetate, see **Ethylene glycol monoethyl ether acetate**												
	Ethoxy propane-1, see **Ethyl propyl ether**												
	Ethyl acetate	1173	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Ethylacetylene, stabilized	2452	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
	Ethyl acrylate, stabilized	1917	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
≠	**Ethyl alcohol**	1170	3		Liquid flammable		A3 A58	II	E2	305 Y305	5 L 1 L	307	60 L
								III	E1	309 Y309	60 L 10 L	310	220 L
≠	**Ethyl alcohol solution**	1170	3		Liquid flammable		A3 A58	II	E2	305 Y305	5 L 1 L	307	60 L
								III	E1	309 Y309	60 L 10 L	310	220 L
	Ethylamine	1036	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
	Ethylamine, aqueous solution with not less than 50% but not more than 70% ethylamine	2270	3	8	Liquid flammable & Corrosive			II	E2	306 Y306	1 L 0.5 L	308	5 L
	Ethyl amyl ketone	2271	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
	N-Ethylaniline	2272	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
	2-Ethylaniline	2273	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
	Ethylbenzene	1175	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
	N-Ethyl-N-benzylaniline	2274	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
	N-Ethylbenzyltoluidines, liquid	2753	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
	N-Ethylbenzyltoluidines, solid	3460	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
	Ethyl borate	1176	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
	Ethyl bromide	1891	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Ethyl bromoacetate	1603	6.1	3		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
2-Ethylbutanol	2275	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
2-Ethylbutyl acetate	1177	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Ethyl butyl ether	1179	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
2-Ethylbutyraldehyde	1178	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Ethyl butyrate	1180	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Ethyl chloride	1037	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3 US 4	A1		E0	FORBIDDEN		200	150 kg
Ethyl chloroacetate	1181	6.1	3	Toxic & Liquid flammable			II	E4	609 Y609	5 L 1 L	611	60 L
Ethyl chlorocarbonate, see **Ethyl chloroformate**												
Ethyl chloroformate	1182	6.1	3 8						FORBIDDEN		FORBIDDEN	
Ethyl 2-chloropropionate	2935	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Ethyl-alpha-chloropropionate, see **Ethyl-2-chloropropionate**												
Ethyl chlorothioformate	2826	8	3						FORBIDDEN		FORBIDDEN	
Ethyl crotonate	1862	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Ethyldichloroarsine	1892	6.1							FORBIDDEN		FORBIDDEN	
Ethyldichlorosilane	1183	4.3	3 8	Danger if wet & Liquid flammable & Corrosive			I	E0	FORBIDDEN		409	1 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Ethylene	1962	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Ethylene, acetylene and propylene mixture, refrigerated liquid containing at least 71.5% ethylene with not more than 22.5% acetylene and not more than 6% propylene	3138	2.1							FORBIDDEN		FORBIDDEN	
Ethylene chlorohydrin	1135	6.1	3						FORBIDDEN		FORBIDDEN	
Ethylenediamine	1604	8	3	Corrosive & Liquid flammable			II	E2	808 Y808	1 L 0.5 L	812	30 L
Ethylene diamine diperchlorate	FORBIDDEN											
Ethylene dibromide	1605	6.1			US 4				FORBIDDEN		FORBIDDEN	
Ethylene dibromide and methyl bromide, liquid mixture, see **Methyl bromide and ethylene dibromide mixture, liquid**												
Ethylene dichloride	1184	3	6.1	Liquid flammable & Toxic	US 4		II	E2	306 Y306	1 L 1 L	308	60 L
Ethylene glycol diethyl ether	1153	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Ethylene glycol dinitrate	FORBIDDEN											
Ethylene glycol monoethyl ether	1171	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Ethylene glycol monoethyl ether acetate	1172	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Ethylene glycol monomethyl ether	1188	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Ethylene glycol monomethyl ether acetate	1189	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Ethyleneimine, stabilized	1185	6.1	3						FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Ethylene oxide	1040	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3 US 4	A2 A131			FORBIDDEN		FORBIDDEN	
Ethylene oxide and carbon dioxide mixture, with more than 9% but not more than 87% ethylene oxide	1041	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	25 kg
Ethylene oxide and carbon dioxide mixture, with more than 87% ethylene oxide	3300	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3 US 4	A2			FORBIDDEN		FORBIDDEN	
Ethylene oxide and carbon dioxide mixture, with not more than 9% ethylene oxide	1952	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Ethylene oxide and chlorotetrafluoroethane mixture, with not more than 8.8% ethylene oxide	3297	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Ethylene oxide and dichlorodifluoromethane mixture, with not more than 12.5% ethylene oxide	3070	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Ethylene oxide and pentafluoroethane mixture, with not more than 7.9% ethylene oxide	3298	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Ethylene oxide and propylene oxide mixture, not more than 30% ethylene oxide	2983	3	6.1	Liquid flammable & Toxic			I	E0	FORBIDDEN		304	30 L
Ethylene oxide and tetrafluoroethane mixture, with not more than 5.6% ethylene oxide	3299	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Ethylene oxide with nitrogen up to a total pressure of 1 MPa at 50°C	1040	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3 US 4	A2			FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Ethylene, refrigerated liquid	1038	2.1							FORBIDDEN		FORBIDDEN	
Ethyl ether	1155	3		Liquid flammable			I	E3	302	1 L	303	30 L
Ethyl fluoride	2453	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Ethyl formate	1190	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
2-Ethylhexylamine	2276	3	8	Liquid flammable & Corrosive			III	E1	309 Y309	5 L 1 L	310	60 L
2-Ethylhexyl chloroformate	2748	6.1	8	Toxic & Corrosive			II	E4	609 Y609	1 L 0.5 L	611	30 L
Ethyl hydroperoxide	FORBIDDEN											
Ethylidene chloride, see **1,1-Dichloroethane**												
Ethyl isobutyrate	2385	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Ethyl isocyanate	2481	3	6.1	Liquid flammable & Toxic	US 2		I	E0	FORBIDDEN		304	30 L
Ethyl lactate	1192	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Ethyl mercaptan	2363	3		Liquid flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	I	E0	FORBIDDEN		308	30 L
Ethyl methacrylate, stabilized	2277	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Ethyl methyl ether	1039	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Ethyl methyl ketone	1193	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Ethyl nitrate	FORBIDDEN											

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Ethyl nitrite	FORBIDDEN											
Ethyl nitrite solution	1194	3	6.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Ethyl orthoformate	2524	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Ethyl oxalate	2525	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
Ethyl perchlorate	FORBIDDEN											
Ethylphenyldichlorosilane	2435	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
1-Ethylpiperidine	2386	3	8	Liquid flammable & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L
Ethyl propionate	1195	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Ethyl propyl ether	2615	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Ethyl silicate, see **Tetraethyl silicate**												
Ethyl sulphate, see **Diethyl sulphate**												
N-Ethyltoluidines	2754	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Ethyltrichlorosilane	1196	3	8	Liquid flammable & Corrosive			II	E2	306	1 L	304	5 L
Etiologic agent, see **Infectious substance**, etc.												
Explosive articles, see **Articles, explosive**, etc.												
Explosive, blasting, type A †	0081	1.1D							FORBIDDEN		FORBIDDEN	
Explosive, blasting, type B †	0082	1.1D							FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Explosive, blasting, type B †	0331	1.5D							FORBIDDEN		FORBIDDEN	
Explosive, blasting, type C †	0083	1.1D							FORBIDDEN		FORBIDDEN	
Explosive, blasting, type D †	0084	1.1D							FORBIDDEN		FORBIDDEN	
Explosive, blasting, type E †	0241	1.1D							FORBIDDEN		FORBIDDEN	
Explosive, blasting, type E †	0332	1.5D							FORBIDDEN		FORBIDDEN	
Explosive, emulsion, see **Explosive, blasting, type E**												
Explosive, seismic, see **Explosive, blasting, type A, B and C**												
Explosive, slurry, see **Explosive blasting, type E**												
Explosive substances, see **Substances, explosive**												
Explosive, water gel, see **Explosive, blasting, type E**												
Extracts, aromatic, liquid †	1169	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Extracts, flavouring, liquid †	1197	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
F												
Fabrics, animal, n.o.s., with oil	1373	4.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Fabrics impregnated with weakly nitrated nitrocellulose, n.o.s.	1353	4.1		Solid flammable			III	E1	419 Y419	25 kg 10 kg	420	100 kg
Fabrics, synthetic, n.o.s, with oil	1373	4.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Fabrics, vegetable, n.o.s., with oil	1373	4.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Ferric arsenate	1606	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Ferric arsenite	1607	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Ferric chloride, anhydrous	1773	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg
Ferric chloride solution	2582	8		Corrosive		A3	III	E1	818 Y818	5 L 1 L	820	60 L
Ferric nitrate	1466	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
Ferrocerium	1323	4.1		Solid flammable		A42	II	E2	415 Y415	15 kg 5 kg	417	50 kg
Ferrosilicon with 30% or more but less than 90% silicon	1408	4.3	6.1	Danger if wet & Toxic		A3 A10	III	E1	422 Y422	25 kg 10 kg	421	100 kg
Ferrous arsenate	1608	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Ferrous metal borings in a form liable to self-heating	2793	4.2		Spontaneous combustion		A3	III	E1	419	25 kg	420	100 kg
Ferrous metal cuttings in a form liable to self-heating	2793	4.2		Spontaneous combustion		A3	III	E1	419	25 kg	420	100 kg
Ferrous metal shavings in a form liable to self-heating	2793	4.2		Spontaneous combustion		A3	III	E1	419	25 kg	420	100 kg
Ferrous metal turnings in a form liable to self-heating	2793	4.2		Spontaneous combustion		A3	III	E1	419	25 kg	420	100 kg
Fertilizer ammoniating solution with free ammonia	1043	2.2		Gas non-flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Fertilizer with ammonium nitrate, n.o.s., see **Ammonium nitrate fertilizer, n.o.s.**												
Fibreglass repair kit, see **Polyester resin kit**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Fibres, animal, n.o.s., with oil	1373	4.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Fibres impregnated with weakly nitrated nitrocellulose, n.o.s.	1353	4.1		Solid flammable	BE 3		III	E1	419 Y419	25 kg 10 kg	420	100 kg
Fibres, synthetic, n.o.s., with oil	1373	4.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Fibres, vegetable, n.o.s., with oil	1373	4.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Films, nitrocellulose base, gelatin coated, except scrap †	1324	4.1		Solid flammable			III	E1	400 Y400	25 kg 10 kg	400	100 kg
Films, nitrocellulose base, from which gelatin has been removed; film scrap, see **Celluloid scrap**												
Fire extinguisher charges, corrosive liquid †	1774	8		Corrosive			II	E0	809 Y809	1 L 0.5 L	819	30 L
Fire extinguisher charges, expelling, explosive, see **Cartridges, power device**												
Fire extinguishers with compressed or liquefied gas	1044	2.2		Gas non-flammable		A19		E0	213	75 kg	213	150 kg
Firelighters, solid with flammable liquid †	2623	4.1		Solid flammable			III	E1	419 Y419	25 kg 10 kg	420	100 kg
Fireworks †	0333	1.1G							FORBIDDEN		FORBIDDEN	
Fireworks †	0334	1.2G							FORBIDDEN		FORBIDDEN	
Fireworks †	0335	1.3G							FORBIDDEN		FORBIDDEN	
Fireworks †	0336	1.4G		Explosive 1.4				E0	FORBIDDEN		135	75 kg
Fireworks †	0337	1.4S		Explosive 1.4				E0	135	25 kg	135	100 kg
≠ **First aid kit**	3316	9		Miscellaneous		A44 A163		E0	915 Y915	10 kg 1 kg	915	10 kg

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft: Packing instruction	Passenger aircraft: Max. net quantity per package	Cargo aircraft: Packing instruction	Cargo aircraft: Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Flammable gas, see **Compressed** or **Liquefied gas, flammable**, etc.												
	Flammable gas in lighters, see **Lighters** (cigarettes), containing flammable gas												
	Flammable gas (small receptacles not fitted with a dispersion device, not refillable), see **Receptacles**, etc.												
≠	**Flammable liquid, n.o.s.***	1993	3		Liquid flammable		A3	I	E3	302	1 L	303	30 L
								II	E2	305	5 L	307	60 L
										Y305	1 L		
								III	E1	309	60 L	310	220 L
										Y309	10 L		
	Flammable liquid, corrosive, n.o.s.*	2924	3	8	Liquid flammable & Corrosive		A3	I	E0	302	0.5 L	303	2.5 L
								II	E2	305	1 L	307	5 L
										Y305	0.5 L		
								III	E1	309	5 L	310	60 L
										Y309	1 L		
	Flammable liquid, toxic, n.o.s.*	1992	3	6.1	Liquid flammable & Toxic		A3	I	E0	FORBIDDEN		303	30 L
								II	E2	305	1 L	307	60 L
										Y305	1 L		
								III	E1	309	60 L	310	220 L
										Y309	2 L		
	Flammable liquid, toxic, corrosive, n.o.s.*	3286	3	6.1 8	Liquid flammable & Toxic & Corrosive			I	E0	FORBIDDEN		303	2.5 L
								II	E2	305	1 L	307	5 L
										Y305	0.5 L		
	Flammable solid, corrosive, inorganic, n.o.s.*	3180	4.1	8	Solid flammable & Corrosive		A3	II	E2	415	15 kg	417	50 kg
										Y415	5 kg		
								III	E1	419	25 kg	420	100 kg
										Y419	5 kg		
	Flammable solid, corrosive, organic, n.o.s.*	2925	4.1	8	Solid flammable & Corrosive		A3	II	E2	415	15 kg	417	50 kg
										Y415	5 kg		
								III	E1	419	25 kg	420	100 kg
										Y419	5 kg		
	Flammable solid, inorganic, n.o.s.*	3178	4.1		Solid flammable		A3	II	E2	415	15 kg	417	50 kg
										Y415	5 kg		
								III	E1	419	25 kg	420	100 kg
										Y419	10 kg		
	Flammable solid, organic, n.o.s.*	1325	4.1		Solid flammable		A3	II	E2	415	15 kg	417	50 kg
										Y415	5 kg		
								III	E1	419	25 kg	420	100 kg
										Y419	10 kg		

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Flammable solid, organic, molten, n.o.s.*	3176	4.1				A3			FORBIDDEN		FORBIDDEN	
Flammable solid, oxidizing, n.o.s.*	3097	4.1	5.1			A3			FORBIDDEN		FORBIDDEN	
Flammable solid, toxic, inorganic, n.o.s.*	3179	4.1	6.1	Solid flammable & Toxic		A3	II	E2	415 Y415	15 kg 1 kg	417	50 kg
							III	E1	419 Y419	25 kg 10 kg	420	100 kg
Flammable solid, toxic, organic, n.o.s.*	2926	4.1	6.1	Solid flammable & Toxic		A3	II	E2	415 Y415	15 kg 1 kg	417	50 kg
							III	E1	419 Y419	25 kg 10 kg	420	100 kg
Flares, aerial †	0093	1.3G		Explosive				E0	FORBIDDEN		135	75 kg
Flares, aerial †	0403	1.4G		Explosive 1.4				E0	FORBIDDEN		135	75 kg
Flares, aerial †	0404	1.4S		Explosive 1.4				E0	135	25 kg	135	100 kg
Flares, aerial †	0420	1.1G							FORBIDDEN		FORBIDDEN	
Flares, aerial †	0421	1.2G							FORBIDDEN		FORBIDDEN	
Flares, aeroplane, see **Flares, aerial**												
Flares, distress, small, see **Signal devices, hand**												
Flares, railway or highway, see **Signal devices, hand**												
Flares, surface †	0092	1.3G		Explosive				E0	FORBIDDEN		135	75 kg
Flares, surface †	0418	1.1G							FORBIDDEN		FORBIDDEN	
Flares, surface †	0419	1.2G							FORBIDDEN		FORBIDDEN	
Flares, water-activated, see **Contrivances, water-activated**, etc.												
Flash powder †	0094	1.1G							FORBIDDEN		FORBIDDEN	
Flash powder †	0305	1.3G							FORBIDDEN		FORBIDDEN	
Flue dusts, toxic, see **Arsenical dust**												
Fluoric acid, see **Hydrofluoric acid, solution**, etc.												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Fluorine, compressed	1045	2.3	5.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Fluoroacetic acid	2642	6.1		Toxic			I	E5	606	1 kg	607	15 kg
2-Fluoroaniline, see **Fluoroanilines**												
4-Fluoroaniline, see **Fluoroanilines**												
o-Fluoroaniline, see **Fluoroanilines**												
p-Fluoroaniline, see **Fluoroanilines**												
Fluoroanilines	2941	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
Fluorobenzene	2387	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Fluoroboric acid	1775	8		Corrosive			II	E2	809 Y809	1 L 0.5 L	813	30 L
Fluoroethane, see **Ethyl fluoride**												
Fluoroform, see **Trifluoromethane**												
Fluoromethane, see **Methyl fluoride**												
Fluorophosphoric acid, anhydrous	1776	8		Corrosive			II	E2	809 Y809	1 L 0.5 L	813	30 L
Fluorosilicates, n.o.s.	2856	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Fluorosilicic acid	1778	8		Corrosive			II	E2	809 Y809	1 L 0.5 L	813	30 L
Fluorosulphonic acid	1777	8		Corrosive			I	E0	807	0.5 L	809	2.5 L
Fluorotoluenes	2388	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Formaldehyde solution with not less than 25% formaldehyde	2209	8		Corrosive	US 4		III	E1	818 Y818	5 L 1 L	820	60 L
Formaldehyde solution, flammable	1198	3	8	Liquid flammable & Corrosive			III	E1	309 Y309	5 L 1 L	310	60 L
Formalin, see **Formaldehyde solution**												

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Formamidine sulphinic acid, see **Thiourea dioxide**												
	Formic acid with more than 85% acid by mass	1779	8	3	Corrosive & Liquid flammable			II	E2	808 Y808	1 L 0.5 L	812	30 L
	Formic acid with not less than 5% but less than 10% acid by mass	3412	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
	Formic acid with not less than 10% but not more than 85% acid by mass	3412	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
	Formic aldehyde, see **Formaldehyde solution**												
	2-Formyl-3,4-dihydro-2H-pyran, see **Acrolein dimer, stabilized**												
	Fracturing devices, explosive, without detonator for oil wells†	0099	1.1D			AU 2 CA 7 GB 3 IR 3 NL 1 US 3	A109			FORBIDDEN		FORBIDDEN	
	Fuel, aviation, turbine engine	1863	3		Liquid flammable		A3	I II III	E3 E2 E1	302 305 Y305 309 Y309	1 L 5 L 1 L 60 L 10 L	303 307 310	30 L 60 L 220 L
+	**Fuel cell cartridges**, containing corrosive substances	3477	8		Corrosive		A146 A157		E0	873	5 kg	873	50 kg
≠	**Fuel cell cartridges**, containing flammable liquids	3473	3		Liquid flammable		A146		E0	374	5 kg	374	50 kg
+	**Fuel cell cartridges**, containing hydrogen in metal hydride	3479	2.1		Gas flammable		A146 A162		E0	215	1 kg	215	15 kg
+	**Fuel cell cartridges**, containing liquefied flammable gas	3478	2.1		Gas flammable		A146 A161		E0	215	1 kg	215	15 kg
+	**Fuel cell cartridges**, containing water-reactive substances	3476	4.3		Danger if wet		A146 A157		E0	495	5 kg	495	50 kg
+	**Fuel cell cartridges contained in equipment**, containing corrosive substances	3477	8		Corrosive		A146 A157		E0	874	5 kg	874	50 kg
+	**Fuel cell cartridges contained in equipment**, containing flammable liquids	3473	3		Liquid flammable		A146		E0	375	5 kg	375	50 kg

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
+	**Fuel cell cartridges contained in equipment**, containing hydrogen in metal hydride	3479	2.1		Gas flammable		A146 A162		E0	216	1 kg	216	15 kg
+	**Fuel cell cartridges contained in equipment**, containing liquefied flammable gas	3478	2.1		Gas flammable		A146 A161		E0	216	1 kg	216	15 kg
+	**Fuel cell cartridges contained in equipment**, containing water-reactive substances	3476	4.3		Danger if wet		A146 A157		E0	496	5 kg	496	50 kg
+	**Fuel cell cartridges packed with equipment**, containing corrosive substances	3477	8		Corrosive		A146 A157		E0	875	5 kg	875	50 kg
+	**Fuel cell cartridges packed with equipment**, containing flammable liquids	3473	3		Liquid flammable		A146		E0	376	5 kg	376	50 kg
+	**Fuel cell cartridges packed with equipment**, containing hydrogen in metal hydride	3479	2.1		Gas flammable		A146 A162		E0	217	1 kg	217	15 kg
+	**Fuel cell cartridges packed with equipment**, containing liquefied flammable gas	3478	2.1		Gas flammable		A146 A161		E0	217	1 kg	217	15 kg
+	**Fuel cell cartridges packed with equipment**, containing water-reactive substances	3476	4.3		Danger if wet		A146 A157		E0	497	5 kg	497	50 kg
	Fuel system components (including fuel control units (FCU), carburettors, fuel lines, fuel pumps), see **Dangerous goods in apparatus** or **Dangerous Goods in machinery** (UN No. 3363)												
	Fulminate of mercury (dry)	FORBIDDEN											
	Fulminate of mercury, wet, see **Mercury fulminate**, etc.												
	Fulminating gold	FORBIDDEN											
	Fulminating mercury	FORBIDDEN											
	Fulminating platinum	FORBIDDEN											
	Fulminating silver	FORBIDDEN											
	Fulminic acid	FORBIDDEN											

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Fumaroyl dichloride, see **Fumaryl chloride**												
Fumaryl chloride	1780	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
Fumigant, see appropriate pesticide												
Fungicide, see appropriate pesticide												
Furaldehydes	1199	6.1	3	Toxic & Liquid flammable			II	E4	609 Y609	5 L 1 L	611	60 L
Furan	2389	3		Liquid flammable			I	E3	302	1 L	303	30 L
Furfuryl alcohol	2874	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
Furfurylamine	2526	3	8	Liquid flammable & Corrosive			III	E1	309 Y309	5 L 1 L	310	60 L
Furyl carbinol, see **Furfuryl alcohol**												
Fuse, detonating, metal clad	0102	1.2D							FORBIDDEN		FORBIDDEN	
Fuse, detonating, metal clad	0290	1.1D							FORBIDDEN		FORBIDDEN	
Fuse, detonating, mild effect, metal clad	0104	1.4D		Explosive 1.4				E0	FORBIDDEN		139	75 kg
Fuse, igniter, tubular, metal clad †	0103	1.4G		Explosive 1.4				E0	FORBIDDEN		140	75 kg
Fusel oil	1201	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Fuse, non-detonating †	0101	1.3G							FORBIDDEN		FORBIDDEN	
Fuse, safety †	0105	1.4S		Explosive 1.4				E0	140	25 kg	140	100 kg
Fuzes, combination, percussion or time, see **Fuzes, detonating** (UN Nos. 0257, 0367)**; Fuzes, igniting** (UN Nos. 0317, 0368)												
Fuzes, detonating †	0106	1.1B							FORBIDDEN		FORBIDDEN	
Fuzes, detonating †	0107	1.2B							FORBIDDEN		FORBIDDEN	
Fuzes, detonating †	0257	1.4B		Explosive 1.4				E0	FORBIDDEN		141	75 kg
Fuzes, detonating †	0367	1.4S		Explosive 1.4				E0	141	25 kg	141	100 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Fuzes, detonating with protective features †	0408	1.1D							FORBIDDEN		FORBIDDEN	
Fuzes, detonating with protective features †	0409	1.2D							FORBIDDEN		FORBIDDEN	
Fuzes, detonating with protective features †	0410	1.4D		Explosive 1.4				E0	FORBIDDEN		141	75 kg
Fuzes, igniting †	0316	1.3G							FORBIDDEN		FORBIDDEN	
Fuzes, igniting †	0317	1.4G		Explosive 1.4				E0	FORBIDDEN		141	75 kg
Fuzes, igniting †	0368	1.4S		Explosive 1.4				E0	141	25 kg	141	100 kg
G												
Galactan trinitrate	FORBIDDEN											
Gallium †	2803	8		Corrosive		A69	III	E0	804	20 kg	804	20 kg
Gas cartridges, (flammable) without a release device, non-refillable	2037	2.1		Gas flammable				E0	203 Y203	1 kg 1 kg	203	15 kg
Gas cartridges (non-flammable) without a release device, non-refillable	2037	2.2		Gas non-flammable		A98		E0	203 Y203	1 kg 1 kg	203	15 kg
Gas cartridges (oxidizing) without a release device, non-refillable	2037	2.2	5.1	Gas non-flammable & Oxidizer				E0	203	1 kg	203	15 kg
Gas cartridges (toxic & corrosive) without a release device, non-refillable	2037	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Gas cartridges (toxic, flammable & corrosive) without a release device, non-refillable	2037	2.3	2.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Gas cartridges (toxic & flammable) without a release device, non-refillable	2037	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Gas cartridges (toxic, oxidizing & corrosive) without a release device, non-refillable	2037	2.3	5.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Gas cartridges (toxic & oxidizing) without a release device, non-refillable	2037	2.3	5.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Gas cartridges (toxic) without a release device, non-refillable	2037	2.3			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Gas, compressed, see **Compressed gas**, etc.												
Gas drips, hydrocarbon †, see **Hydrocarbons, liquid, n.o.s.**												
Gas liquefied, see **Liquefied gas**, etc.												
Gas oil	1202	3		Liquid flammable		A3	III	E1	309 Y309	60 L 10 L	310	220 L
Gasoline	1203	3		Liquid flammable		A100	II	E2	305 Y305	5 L 1 L	307	60 L
Gasoline, casinghead, see **Gasoline**												
Gas, refrigerated liquid, n.o.s.*	3158	2.2		Gas non-flammable				E1	202	50 kg	202	500 kg
Gas, refrigerated liquid, flammable, n.o.s.*	3312	2.1							FORBIDDEN		FORBIDDEN	
Gas, refrigerated liquid, oxidizing, n.o.s.*	3311	2.2	5.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Gas sample, non-pressurized, flammable, n.o.s., not refrigerated liquid	3167	2.1		Gas flammable				E0	206	1 L	206	5 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Gas sample, non-pressurized, toxic, n.o.s., not refrigerated liquid	3169	2.3		Gas toxic	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		206	1 L
Gas sample, non-pressurized, toxic, flammable, n.o.s., not refrigerated liquid	3168	2.3	2.1	Gas toxic & Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		206	1 L
Gas turbine engines † see **Engines, internal combustion** (UN No. 3166)												
Gelatin, blasting, see **Explosive, blasting, type A**												
Gelatin dynamites, see **Explosive, blasting, type A**												
Genetically modified micro-organisms	3245	9		Miscellaneous		A47		E0	913	No limit	913	No limit
Genetically modified organisms	3245	9		Miscellaneous		A47		E0	913	No limit	913	No limit
Germane	2192	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Germanium hydride, see **Germane**												
Glycer-1,3-dichlorohydrin, see **1,3-Dichloropropanol-2**												
Glycerol-1,3-dinitrate	FORBIDDEN											
Glycerol gluconate trinitrate	FORBIDDEN											
Glycerol lactate trinitrate	FORBIDDEN											
Glycerol alpha-monochlorohydrin	2689	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
Glyceryl trinitrate, see **Nitroglycerin**, etc.												

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Glycidaldehyde	2622	3	6.1	Liquid flammable & Toxic	US 4		II	E2	305 Y305	1 L 1 L	307	60 L
Grenades, hand or rifle, with bursting charge †	0284	1.1D							FORBIDDEN		FORBIDDEN	
Grenades, hand or rifle, with bursting charge †	0285	1.2D							FORBIDDEN		FORBIDDEN	
Grenades, hand or rifle, with bursting charge †	0292	1.1F							FORBIDDEN		FORBIDDEN	
Grenades, hand or rifle, with bursting charge †	0293	1.2F							FORBIDDEN		FORBIDDEN	
Grenades, illuminating †, see **Ammunition, illuminating**, etc. (UN Nos. 0171, 0254, 0297)												
Grenades, practice, hand or rifle †	0110	1.4S		Explosive 1.4				E0	141	25 kg	141	100 kg
Grenades, practice, hand or rifle †	0318	1.3G							FORBIDDEN		FORBIDDEN	
Grenades, practice, hand or rifle †	0372	1.2G							FORBIDDEN		FORBIDDEN	
Grenades, practice, hand or rifle †	0452	1.4G		Explosive 1.4				E0	FORBIDDEN		141	75 kg
Grenades, smoke, see **Ammunition, smoke**, etc. (UN Nos. 0015; 0016; 0245; 0246; 0303)												
Guanidine nitrate	1467	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
Guanyl nitrosaminoguanylidene hydrazine (dry)	FORBIDDEN											
Guanyl nitrosaminoguanylidene hydrazine, wetted with not less than 30% water, by mass	0113	1.1A							FORBIDDEN		FORBIDDEN	
Guanyl nitrosaminoguanyltetrazene (dry)	FORBIDDEN											
Guanyl nitrosaminoguanyltetrazene, wetted with not less than 30% water, or mixture of alcohol and water, by mass	0114	1.1A							FORBIDDEN		FORBIDDEN	
Gunpowder, granular or as a meal	0027	1.1D							FORBIDDEN		FORBIDDEN	
Gunpowder, compressed	0028	1.1D							FORBIDDEN		FORBIDDEN	
Gunpowder in pellets	0028	1.1D							FORBIDDEN		FORBIDDEN	

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										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Gutta percha solution, see **Rubber solution**												
	H												
	Hafnium powder, dry	2545	4.2		Spontaneous combustion		A3			FORBIDDEN		FORBIDDEN	
								II	E2	416	15 kg	418	50 kg
								III	E1	416	25 kg	418	100 kg
	Hafnium powder, wetted with not less than 25% water (a visible excess of water must be present) (a) mechanically produced, particle size less than 53 microns; (b) chemically produced, particle size less than 840 microns	1326	4.1		Solid flammable		A35	II	E2	416 Y416	15 kg 5 kg	418	50 kg
	Heating oil, light	1202	3		Liquid flammable		A3	III	E1	309 Y309	60 L 10 L	310	220 L
	Heat producing articles, battery operated equipment, such as underwater torches or soldering equipment, which, if accidentally activated, will generate extreme heat and can cause fire	—	9				A93			FORBIDDEN		FORBIDDEN	
	Heavy hydrogen, see **Deuterium**												
≠	**Helium, compressed**	1046	2.2		Gas non-flammable		A69		E1	200	75 kg	200	150 kg
	Helium, refrigerated liquid	1963	2.2		Gas non-flammable				E1	202	50 kg	202	500 kg
	Heptafluoropropane	3296	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
	n-Heptaldehyde	3056	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
	n-Heptanal, see **n-Heptaldehyde**												
	Heptanes	1206	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
	4-Heptanone, see **Dipropyl ketone**												
	n-Heptene	2278	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
	Hexachloroacetone	2661	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
	Hexachlorobenzene	2729	6.1		Toxic	US 4		III	E1	619 Y619	100 kg 10 kg	619	200 kg
	Hexachlorobutadiene	2279	6.1		Toxic	US 4		III	E1	611 Y611	60 L 2 L	618	220 L

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Hexachloro-1,3-butadiene, see **Hexachlorobutadiene**												
Hexachlorocyclopentadiene	2646	6.1			US 4				FORBIDDEN		FORBIDDEN	
Hexachlorophene	2875	6.1		Toxic	US 4		III	E1	619 Y619	100 kg 10 kg	619	200 kg
Hexachloro-2-propanone, see **Hexachloroacetone**												
Hexadecyltrichlorosilane	1781	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
Hexadiene	2458	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
≠ **Hexaethyl tetraphosphate**	1611	6.1		Toxic	US 4		II	E4	609 Y609	5 L 1 L	611	60 L
Hexaethyl tetraphosphate and compressed gas mixture	1612	2.3			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
> **Hexafluoroacetone**	2420	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Hexafluoroacetone hydrate, liquid	2552	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Hexafluoroacetone hydrate, solid	3436	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Hexafluoroethane	2193	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Hexafluorophosphoric acid	1782	8		Corrosive			II	E2	809 Y809	1 L 0.5 L	813	30 L
Hexafluoropropylene	1858	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Hexahydrocresol, see **Methylcyclohexanols**, etc.												
Hexahydromethyl phenol, see **Methylcyclohexanols**, etc.												

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Hexaldehyde	1207	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
3,3,6,6,9,9-Hexamethyl-1,2,4,5 tetra-oxacyclononane, more than 52%	FORBIDDEN											
Hexamethylenediamine, solid	2280	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg
Hexamethylenediamine solution	1783	8		Corrosive		A3	II	E2	808 Y808	1 L 0.5 L	812	30 L
							III	E1	818 Y818	5 L 1 L	820	60 L
Hexamethylene diisocyanate	2281	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Hexamethyleneimine	2493	3	8	Liquid flammable & Corrosive			II	E2	306 Y306	1 L 0.5 L	308	5 L
Hexamethylenetetramine	1328	4.1		Solid flammable			III	E1	419 Y419	25 kg 10 kg	420	100 kg
Hexamethylene triperoxide diamine (dry)	FORBIDDEN											
Hexamethylol benzene hexanitrate	FORBIDDEN											
Hexamine, see **Hexamethylenetetramine**												
Hexanes	1208	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Hexanitroazoxy benzene	FORBIDDEN											
2,2',4,4',6,6'-Hexanitro-3,3'-dihydroxyazobenzene (dry)	FORBIDDEN											
Hexanitrodiphenylamine	0079	1.1D							FORBIDDEN		FORBIDDEN	
2,3',4,4',6,6'-Hexanitrodiphenylether	FORBIDDEN											
N,N' (Hexanitrodiphenyl) ethylene dinitramine (dry)	FORBIDDEN											
Hexanitrodiphenyl urea	FORBIDDEN											
Hexanitroethane	FORBIDDEN											
Hexanitrooxanilide	FORBIDDEN											

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Hexanitrostilbene	0392	1.1D							FORBIDDEN		FORBIDDEN	
Hexanoic acid, see **Caproic acid**												
Hexanols	2282	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
1-Hexene	2370	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Hexogen and cyclotetramethylenetetranitramine mixture, desensitized with not less than 10% phlegmatizer, by mass	0391	1.1D							FORBIDDEN		FORBIDDEN	
Hexogen and cyclotetramethylenetetranitramine mixture, wetted with not less than 15% water, by mass	0391	1.1D							FORBIDDEN		FORBIDDEN	
Hexogen, desensitized	0483	1.1D							FORBIDDEN		FORBIDDEN	
Hexogen, wetted with not less than 15% water, by mass	0072	1.1D							FORBIDDEN		FORBIDDEN	
Hexolite, dry or wetted with less than 15% water, by mass	0118	1.1D							FORBIDDEN		FORBIDDEN	
Hexotol, dry or wetted with less than 15% water, by mass	0118	1.1D							FORBIDDEN		FORBIDDEN	
Hexotonal	0393	1.1D							FORBIDDEN		FORBIDDEN	
Hexyl	0079	1.1D							FORBIDDEN		FORBIDDEN	
Hexyltrichlorosilane	1784	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
High explosives, see individual explosives' entries												
HMX, desensitized	0484	1.1D							FORBIDDEN		FORBIDDEN	
HMX (dry or unphlegmatized)	FORBIDDEN											
HMX, wetted with not less than 15% water, by mass	0226	1.1D							FORBIDDEN		FORBIDDEN	
Hydrazine, anhydrous	2029	8	3 6.1	Corrosive & Liquid flammable & Toxic	US 4		I	E0	FORBIDDEN		813	2.5 L

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Hydrazine, aqueous solution with more than 37% hydrazine by mass	2030	8	6.1	Corrosive & Toxic	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1 A36 A147	I II III	E0 E0 E1	FORBIDDEN FORBIDDEN 818 Y818	 5 L 1 L	809 812 820	2.5 L 30 L 60 L
Hydrazine, aqueous solution with not more than 37% hydrazine, by mass	3293	6.1		Toxic		A3	III	E1	611 Y611	60 L 2 L	618	220 L
Hydrazine azide	FORBIDDEN											
Hydrazine chlorate	FORBIDDEN											
Hydrazine dicarbonic acid diazide	FORBIDDEN											
Hydrazine perchlorate	FORBIDDEN											
Hydrazine selenate	FORBIDDEN											
Hydrides, metal, water-reactive, n.o.s., see **Metal hydrides, water-reactive, n.o.s.**												
Hydriodic acid	1787	8		Corrosive		A3	II III	E2 E1	809 Y809 819 Y819	1 L 0.5 L 5 L 1 L	813 821	30 L 60 L
Hydriodic acid, anhydrous, see **Hydrogen iodide, anhydrous**												
Hydrobromic acid, more than 49% strength	1788	8			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Hydrobromic acid, not more than 49% strength	1788	8		Corrosive		A3	II III	E2 E1	809 Y809 819 Y819	1 L 0.5 L 5 L 1 L	813 821	30 L 60 L
Hydrocarbon gas mixture, compressed, n.o.s.*	1964	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Hydrocarbon gas mixture, liquefied, n.o.s.*	1965	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Hydrocarbon gas powered small devices, see **Devices, small, hydrocarbon gas powered** with release device												
Hydrocarbon gas refills for small devices with release device	3150	2.1		Gas flammable				E0	201	1 kg	201	15 kg
Hydrocarbons, liquid, n.o.s.	3295	3		Liquid flammable		A3	I	E3	302	1 L	303	30 L
							II	E2	305	5 L	307	60 L
									Y305	1 L		
							III	E1	309	60 L	310	220 L
									Y309	10 L		
Hydrochloric acid	1789	8		Corrosive		A3	II	E2	809	1 L	813	30 L
									Y809	0.5 L		
							III	E1	819	5 L	821	60 L
									Y819	1 L		
Hydrocyanic acid, aqueous solution with not more than 20% hydrogen cyanide	1613	6.1							FORBIDDEN		FORBIDDEN	
Hydrofluoric acid, more than 60% strength	1790	8	6.1	Corrosive & Toxic			I	E0	807	0.5 L	809	2.5 L
Hydrofluoric acid, not more than 60% strength	1790	8	6.1	Corrosive & Toxic			II	E2	809	1 L	813	30 L
									Y809	0.5 L		
Hydrofluoric acid and sulphuric acid mixture	1786	8	6.1	Corrosive & Toxic	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	I	E0	FORBIDDEN		809	2.5 L
Hydrofluoroboric acid, see **Fluoroboric acid**												
Hydrofluosilicic acid, see **Fluorosilicic acid**												
Hydrogen and methane mixture, compressed	2034	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Hydrogen arsenide, see **Arsine**												
Hydrogen bromide, anhydrous	1048	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Hydrogen bromide solution, see **Hydrobromic acid** (UN No. 1788)												
Hydrogen chloride, anhydrous	1050	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Hydrogen chloride, refrigerated liquid	2186	2.3	8						FORBIDDEN		FORBIDDEN	
Hydrogen, compressed	1049	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Hydrogen cyanide, aqueous solution with not more than 20% hydrogen cyanide	1613	6.1							FORBIDDEN		FORBIDDEN	
Hydrogen cyanide, solution in alcohol with not more than 45% hydrogen cyanide	3294	6.1	3						FORBIDDEN		FORBIDDEN	
Hydrogen cyanide, stabilized containing less than 3% water	1051	6.1	3						FORBIDDEN		FORBIDDEN	
Hydrogen cyanide, stabilized containing less than 3% water and absorbed in a porous inert material	1614	6.1							FORBIDDEN		FORBIDDEN	
Hydrogen cyanide, unstabilized	FORBIDDEN											
Hydrogendifluorides, solid, n.o.s.	1740	8		Corrosive		A3	II	E2	815 Y815	15 kg 5 kg	817	50 kg
							III	E1	825 Y825	25 kg 5 kg	826	100 kg
Hydrogendifluorides, solution, n.o.s.	3471	8	6.1	Corrosive & Toxic		A3	II	E2	809 Y809	1 L 0.5 L	813	30 L
							III	E1	819 Y819	5 L 1 L	821	60 L

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Hydrogen fluoride, anhydrous	1052	8	6.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
	Hydrogen fluoride solution, see **Hydrofluoric acid**, etc.												
	Hydrogen in a metal hydride storage system	3468	2.1		Gas flammable		A1 A143		E0	FORBIDDEN		214	100 kg G
+	**Hydrogen in a metal hydride storage system contained in equipment**	3468	2.1		Gas flammable		A1 A143		E0	FORBIDDEN		214	100 kg G
+	**Hydrogen in a metal hydride storage system packed with equipment**	3468	2.1		Gas flammable		A1 A143		E0	FORBIDDEN		214	100 kg G
	Hydrogen iodide, anhydrous	2197	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
	Hydrogen iodide solution, see **Hydriodic acid**												
	Hydrogen peroxide and peroxyacetic acid mixture with acid(s), water and not more than 5% peroxyacetic acid, **stabilized**	3149	5.1	8	Oxidizer & Corrosive		A96	II	E2	501 Y501	1 L 0.5 L	506	5 L
	Hydrogen peroxide, aqueous solution with more than 40% but not more than 60% hydrogen peroxide (stabilized as necessary)	2014	5.1	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2 A75			FORBIDDEN		FORBIDDEN	
	Hydrogen peroxide, aqueous solution with not less than 8% but less than 20% hydrogen peroxide (stabilized as necessary)	2984	5.1		Oxidizer			III	E1	514 Y514	2.5 L 1 L	515	30 L
	Hydrogen peroxide, aqueous solution with not less than 20% but not more than 40% hydrogen peroxide (stabilized as necessary)	2014	5.1	8	Oxidizer & Corrosive			II	E2	501 Y501	1 L 0.5 L	506	5 L
	Hydrogen peroxide, aqueous solution, stabilized with more than 60% hydrogen peroxide	2015	5.1	8						FORBIDDEN		FORBIDDEN	

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Hydrogen peroxide, stabilized	2015	5.1	8						FORBIDDEN		FORBIDDEN	
	Hydrogen, refrigerated liquid	1966	2.1							FORBIDDEN		FORBIDDEN	
	Hydrogen selenide, anhydrous	2202	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
	Hydrogen silicide, see **Silane**												
	Hydrogen sulphide	1053	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
	Hydroselenic acid, see **Hydrogen selenide, anhydrous**												
	Hydrosilicofluoric acid, see **Fluorosilicic acid**												
+	**1-Hydroxybenzotriazole, anhydrous**, dry or wetted with less than 20% water, by mass	0508	1.3C							FORBIDDEN		FORBIDDEN	
+	**1-Hydroxybenzotriazole, anhydrous, wetted** with not less than 20% water, by mass	3474	4.1		Solid flammable		A40	I	E0	416	0.5 kg	416	0.5 kg
	3-Hydroxybutan-2-one, see **Acetyl methyl carbinol**												
	Hydroxyl amine iodide	FORBIDDEN											
	Hydroxylamine sulphate	2865	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg
	1-Hydroxy-3-methyl-2-penten-4-yne, see **1-Pentol**												
	3-Hydroxyphenol, see **Resorcinol**												
	Hypochlorites, inorganic, n.o.s.	3212	5.1		Oxidizer			II	E2	509 Y509	5 kg 2.5 kg	512	25 kg
	Hypochlorite solution †	1791	8		Corrosive		A3	II	E2	809 Y809	1 L 0.5 L	813	30 L
								III	E1	819 Y819	5 L 1 L	821	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Hyponitrous acid	FORBIDDEN											
I												
Igniters †	0121	1.1G							FORBIDDEN		FORBIDDEN	
Igniters †	0314	1.2G							FORBIDDEN		FORBIDDEN	
Igniters †	0315	1.3G							FORBIDDEN		FORBIDDEN	
Igniters †	0325	1.4G		Explosive 1.4				E0	FORBIDDEN		142	75 kg
Igniters †	0454	1.4S		Explosive 1.4				E0	142	25 kg	142	100 kg
Ignition element for lighter, containing pyrophoric liquid	FORBIDDEN											
3,3'-Iminodipropylamine	2269	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
Indiarubber, see **Rubber solution**												
Infectious substance, affecting animals only	2900	6.2		Infectious	AU 3 CA 5 CA 10 GB 5 VU 2	A81 A140		E0	602	50 mL or 50 g	602	4 L or 4 kg
Infectious substance, affecting humans	2814	6.2		Infectious	AU 3 CA 5 CA 11 GB 5 VU 2	A81 A140		E0	602	50 mL or 50 g	602	4 L or 4 kg
Inflammable, see Flammable												
Ink, printer's, flammable, see **Printing ink**												
Inositol hexanitrate (dry)	FORBIDDEN											
Insecticide, see appropriate pesticide												
Insecticide gas, n.o.s.*	1968	2.2		Gas non-flammable				E1	200 or 203 Y203	75 kg 30 kg G	200 or 203	150 kg
Insecticide gas, flammable, n.o.s.*	3354	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Insecticide gas, toxic, n.o.s.*	1967	2.3			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Insecticide gas, toxic, flammable, n.o.s.*	3355	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Inulin trinitrate (dry)	FORBIDDEN											
Iodine azide (dry)	FORBIDDEN											
Iodine monochloride	1792	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		817	50 kg
Iodine pentafluoride	2495	5.1	6.1 8						FORBIDDEN		FORBIDDEN	
2-Iodobutane	2390	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Iodomethane, see **Methyl iodide**												
Iodomethylpropanes	2391	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Iodopropanes	2392	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
alpha-Iodotoluene, see **Benzyl iodide**												
Iodoxy compounds (dry)	FORBIDDEN											
IPDI, see **Isophorone diisocyanate**												
Iridium nitratopentamine iridium nitrate	FORBIDDEN											
Iron chloride, anhydrous, see **Ferric chloride, anhydrous**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Iron (III) chloride, anhydrous, see **Ferric chloride, anhydrous**												
Iron chloride solution, see **Ferric chloride solution**												
Iron oxide, spent † (obtained from coal gas purification)	1376	4.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2 A3			FORBIDDEN		FORBIDDEN	
Iron pentacarbonyl	1994	6.1	3						FORBIDDEN		FORBIDDEN	
Iron perchloride, anhydrous, see **Ferric chloride, anhydrous**												
Iron powder, pyrophoric, see **Pyrophoric metal, n.o.s.** or **Pyrophoric alloy, n.o.s.**												
Iron sesquichloride, anhydrous, see **Ferric chloride, anhydrous**												
Iron sponge, spent † (obtained from coal gas purification)	1376	4.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2 A3			FORBIDDEN		FORBIDDEN	
Iron swarf, see **Ferrous metal, borings, cuttings, shavings or turnings,** etc.												
Irritating agents, see **Tear gas substance**, etc.												
Isobutane	1969	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Isobutanol	1212	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Isobutene, see **Isobutylene**												
Isobutyl acetate	1213	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Isobutyl acrylate, stabilized	2527	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Isobutyl alcohol	1212	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Isobutyl aldehyde	2045	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Isobutylamine	1214	3	8	Liquid flammable & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L
Isobutylene	1055	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Isobutyl formate	2393	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Isobutyl isobutyrate	2528	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Isobutyl isocyanate	2486	3	6.1	Liquid flammable & Toxic	US 2		II	E2	306 Y306	1 L 1 L	308	60 L
Isobutyl methacrylate, stabilized	2283	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Isobutyl propionate	2394	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Isobutyraldehyde	2045	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Isobutyric acid	2529	3	8	Liquid flammable & Corrosive			III	E1	309 Y309	5 L 1 L	310	60 L
Isobutyronitrile	2284	3	6.1	Liquid flammable & Toxic			II	E2	305 Y305	1 L 1 L	307	60 L
Isobutyryl chloride	2395	3	8	Liquid flammable & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L
Isocyanates, flammable, toxic, n.o.s.* †	2478	3	6.1	Liquid flammable & Toxic		A3	II III	E2 E1	306 Y306 309 Y309	1 L 1 L 60 L 2 L	308 310	60 L 220 L
Isocyanate solution, flammable, toxic, n.o.s.* †	2478	3	6.1	Liquid flammable & Toxic		A3	II III	E2 E1	306 Y306 309 Y309	1 L 1 L 60 L 2 L	308 310	60 L 220 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Isocyanate solution, toxic, n.o.s.* †	2206	6.1		Toxic		A3	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Isocyanate solution, toxic, flammable, n.o.s.* †	3080	6.1	3	Toxic & Liquid flammable			II	E4	609 Y609	5 L 1 L	611	60 L
Isocyanates, toxic, n.o.s.* †	2206	6.1		Toxic		A3	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Isocyanates, toxic, flammable, n.o.s.* †	3080	6.1	3	Toxic & Liquid flammable			II	E4	609 Y609	5 L 1 L	611	60 L
Isocyanatobenzotrifluorides	2285	6.1	3	Toxic & Liquid flammable			II	E4	609 Y609	5 L 1 L	611	60 L
3-Isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate, see **Isophorone diisocyanate**												
Isododecane, see **Pentamethylheptane**												
Isoheptene	2287	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Isohexene	2288	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Isooctane, see **Octanes**												
Isooctene	1216	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Isopentane, see **Pentanes,** liquid												
Isopentenes	2371	3		Liquid flammable			I	E3	306	1 L	304	30 L
Isopentylamine, see **Amylamine**												
Isopentyl nitrite, see **Amyl nitrite**												
Isophoronediamine	2289	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
Isophorone diisocyanate	2290	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
Isoprene, stabilized	1218	3		Liquid flammable			I	E3	302	1 L	303	30 L
Isopropanol	1219	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Isopropenyl acetate	2403	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Isopropenylbenzene	2303	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Isopropyl acetate	1220	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Isopropyl acid phosphate	1793	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg
Isopropyl alcohol	1219	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Isopropylamine	1221	3	8	Liquid flammable & Corrosive			I	E0	302	0.5 L	303	2.5 L
Isopropylbenzene	1918	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Isopropyl bromide, see **2-Bromopropane**												
Isopropyl sec-butyl peroxydicarbonate, not more than 52%, with di-sec-butyl peroxydicarbonate, not more than 28%, with di-isopropyl peroxydicarbonate, not more than 22%	FORBIDDEN											
Isopropyl butyrate	2405	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Isopropyl chloride, see **2-Chloropropane**												
Isopropyl chloroacetate	2947	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Isopropyl chloroformate	2407	6.1	3 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Isopropyl 2-chloropropionate	2934	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Isopropyl-alpha-chloropropionate, see **Isopropyl 2-chloropropionate**												
Isopropylcumyl hydroperoxide, more than 72% in solution	FORBIDDEN											
Isopropyl ether, see **Diisopropyl ether**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Isopropylethylene, see **3-Methyl-1-butene**												
Isopropyl formate, see **Propyl formates**												
Isopropyl isobutyrate	2406	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Isopropyl isocyanate	2483	3	6.1						FORBIDDEN		FORBIDDEN	
Isopropyl mercaptan, see **Propanethiols**												
Isopropyl nitrate	1222	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Isopropyl propionate	2409	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Isopropyltoluene, see **Cymenes**												
Isopropyltoluol, see **Cymenes**												
Isosorbide dinitrate mixture with not less than 60% lactose, mannose, starch or calcium hydrogen phosphate	2907	4.1		Solid flammable	BE 3	A49	II	E0	415	15 kg	417	50 kg
Isosorbide-5-mononitrate	3251	4.1				A110			FORBIDDEN		FORBIDDEN	
Isothiocyanic acid	FORBIDDEN											
Isovaleraldehyde, see **Valeraldehyde**												
J												
Jet fuel, see **Fuel, aviation, turbine engine**												
Jet perforating guns, charged, oil well, without detonator †	0124	1.1D							FORBIDDEN		FORBIDDEN	
Jet perforating guns, charged, oil well, without detonator †	0494	1.4D		Explosive 1.4		A24		E0	FORBIDDEN		101	300 kg
Jet tappers, without detonator, see **Charges, shaped, commercial**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
K												
Kerosene	1223	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Ketones, liquid, n.o.s.*	1224	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Krypton, compressed	1056	2.2		Gas non-flammable		A69		E1	200	75 kg	200	150 kg
Krypton, refrigerated liquid	1970	2.2		Gas non-flammable				E1	202	50 kg	202	500 kg
L												
Lacquer base or lacquer chips, nitrocellulose, dry †, see **Nitrocellulose**, etc. (UN No. 2557)												
Lacquer base or lacquer chips, plastic, wet with alcohol or solvent, see **Nitrocellulose** (UN Nos. 2059, 2555, 2556) or **Paint**, etc. (UN No. 1263)												
Lead acetate	1616	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Lead (II) acetate, see **Lead acetate**												
Lead arsenates	1617	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg
Lead arsenites	1618	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Lead azide (dry)	FORBIDDEN											
Lead azide, wetted with not less than 20% water, or mixture of alcohol and water, by mass	0129	1.1A							FORBIDDEN		FORBIDDEN	
Lead chloride, solid, see **Lead compound, soluble, n.o.s.**												
Lead compound, soluble, n.o.s.	2291	6.1		Toxic		A92	III	E1	619 Y619	100 kg 10 kg	619	200 kg
Lead cyanide	1620	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Lead (II) cyanide, see **Lead cyanide**												
Lead dioxide	1872	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Lead nitrate	1469	5.1	6.1	Oxidizer & Toxic			II	E2	508 Y508	5 kg 1 kg	511	25 kg
Lead (II) nitrate, see **Lead nitrate**												
Lead nitroresorcinate (dry)	FORBIDDEN											
Lead (II) perchlorate, see **Lead perchlorate**												
Lead perchlorate, solid	1470	5.1	6.1	Oxidizer & Toxic			II	E2	508 Y508	5 kg 1 kg	511	25 kg
Lead perchlorate solution	3408	5.1	6.1	Oxidizer & Toxic		A3	II	E2	501 Y501	1 L 0.5 L	506	5 L
							III	E1	514 Y514	2.5 L 1 L	515	30 L
Lead peroxide, see **Lead dioxide**												
Lead phosphite, dibasic	2989	4.1		Solid flammable		A3	II	E2	415 Y415	15 kg 5 kg	417	50 kg
							III	E1	419 Y419	25 kg 10 kg	420	100 kg
Lead picrate (dry)	FORBIDDEN											
Lead styphnate (dry)	FORBIDDEN											
Lead styphnate, wetted with not less than 20% water, or mixture of alcohol and water, by mass	0130	1.1A							FORBIDDEN		FORBIDDEN	
Lead sulphate with more than 3% free acid	1794	8		Corrosive	US 4		II	E2	814 Y814	15 kg 5 kg	816	50 kg
Lead tetraethyl, see **Motor fuel anti-knock mixture**												
Lead tetramethyl, see **Motor fuel anti-knock mixture**												
Lead trinitroresorcinate (dry)	FORBIDDEN											
Lead trinitroresorcinate, wetted with not less than 20% water, or mixture of alcohol and water, by mass	0130	1.1A							FORBIDDEN		FORBIDDEN	

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Life-saving appliances, not self-inflating containing dangerous goods as equipment	3072	9		Miscellaneous		A48 A87		E0	see 905	No limit	see 905	No limit
	Life-saving appliances, self-inflating	2990	9		Miscellaneous		A48 A87		E0	see 905	No limit	see 905	No limit
	Lighter flints, see **Ferrocerium**												
	Lighter fluid, see **Flammable liquid, n.o.s.**												
	Lighter refills containing flammable gas	1057	2.1		Gas flammable				E0	201	1 kg	201	15 kg
	Lighters containing flammable gas	1057	2.1		Gas flammable	US 7			E0	201	1 kg	201	15 kg
	Lighters (cigarettes) containing pyrophoric liquid	FORBIDDEN											
	Lighters, fuse †	0131	1.4S		Explosive 1.4				E0	142	25 kg	142	100 kg
	Lighters (cigarettes) with **lighter fluids**	FORBIDDEN											
	Limonene, inactive, see **Dipentene**												
	Liquefied gas, n.o.s.*	3163	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
	Liquefied gases, non-flammable, charged with nitrogen, carbon dioxide or air	1058	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
	Liquefied gas, flammable, n.o.s.*	3161	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
≠	**Liquefied gas, oxidizing, n.o.s.***	3157	2.2	5.1	Gas non-flammable & Oxidizer	US 18			E0	200	75 kg	200	150 kg
	Liquefied gas, toxic, n.o.s.*	3162	2.3			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Liquefied gas, toxic, corrosive, n.o.s.*	3308	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Liquefied gas, toxic, flammable, n.o.s.*	3160	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Liquefied gas, toxic, flammable, corrosive, n.o.s.*	3309	2.3	2.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Liquefied gas, toxic, oxidizing, n.o.s.*	3307	2.3	5.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Liquefied gas, toxic, oxidizing, corrosive, n.o.s.*	3310	2.3	5.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Liquefied petroleum gas, see **Petroleum gases, liquefied**												
Liquor, see **Alcoholic beverages**, etc.												
Lithium	1415	4.3		Danger if wet	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	I	E0	FORBIDDEN		412	15 kg
Lithium aluminium hydride	1410	4.3		Danger if wet			I	E0	FORBIDDEN		412	15 kg
Lithium aluminium hydride, ethereal	1411	4.3	3	Danger if wet & Liquid flammable			I	E0	FORBIDDEN		409	1 L
Lithium borohydride	1413	4.3		Danger if wet			I	E0	FORBIDDEN		412	15 kg

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Lithium ferrosilicon	2830	4.3		Danger if wet			II	E2	415 Y415	15 kg 5 kg	417	50 kg
	Lithium hydride	1414	4.3		Danger if wet			I	E0	FORBIDDEN		412	15 kg
	Lithium hydride, fused solid	2805	4.3		Danger if wet			II	E2	416 Y416	15 kg 5 kg	418	50 kg
	Lithium hydroxide	2680	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
	Lithium hydroxide solution	2679	8		Corrosive		A3	II	E2	809 Y809	1 L 0.5 L	813	30 L
								III	E1	819 Y819	5 L 1 L	821	60 L
	Lithium hypochlorite, dry	1471	5.1		Oxidizer			II	E2	509 Y509	5 kg 2.5 kg	512	25 kg
	Lithium hypochlorite mixture	1471	5.1		Oxidizer			II	E2	509 Y509	5 kg 2.5 kg	512	25 kg
	Lithium in cartouches, see **Lithium**												
+	**Lithium ion batteries** (including lithium ion polymer batteries)	3480	9		Miscellaneous		A88 A99 A154 A164	II	E0	965	5 kg G	965	35 kg G
+	**Lithium ion batteries contained in equipment** (including lithium ion polymer batteries)	3481	9		Miscellaneous		A48 A154 A164		E0	see 967		see 967	
+	**Lithium ion batteries packed with equipment** (including lithium ion polymer batteries)	3481	9		Miscellaneous		A88 A154 A164		E0	see 966		see 966	
≠	**Lithium metal batteries** (including lithium alloy batteries)†	3090	9		Miscellaneous	US 2 US 3	A88 A99 A154 A164	II	E0	968	2.5 kg G	968	35 kg G
≠	**Lithium metal batteries contained in equipment** (including lithium alloy batteries)†	3091	9		Miscellaneous	US 2 US 3	A48 A154 A164		E0	see 970		see 970	
≠	**Lithium metal batteries packed with equipment** (including lithium alloy batteries)†	3091	9		Miscellaneous	US 2 US 3	A154 A164		E0	see 969		see 969	
	Lithium nitrate	2722	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
	Lithium nitride	2806	4.3		Danger if wet			I	E0	FORBIDDEN		411	15 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Lithium peroxide	1472	5.1		Oxidizer			II	E2	509 Y509	5 kg 2.5 kg	512	25 kg
Lithium silicide, see **Lithium silicon**												
Lithium silicon †	1417	4.3		Danger if wet			II	E2	416 Y416	15 kg 5 kg	418	50 kg
LNG, see **Methane, refrigerated liquid** or **natural gas, refrigerated liquid,** etc.												
London Purple	1621	6.1		Toxic		A6	II	E4	613 Y613	25 kg 1 kg	615	100 kg
LPG, see **Petroleum gases, liquefied**												
Lye, see **Sodium hydroxide, solid**												
Lythene, see **Petroleum distillates, n.o.s.**												
M												
Magnesium in pellets, turnings or ribbons	1869	4.1		Solid flammable		A15	III	E1	419 Y419	25 kg 10 kg	420	100 kg
Magnesium alloys with more than 50% magnesium in pellets, turnings or ribbons	1869	4.1		Solid flammable		A15	III	E1	419 Y419	25 kg 10 kg	420	100 kg
Magnesium alloys powder	1418	4.3	4.2	Danger if wet & Spontaneous combustion		A3	I	E0	FORBIDDEN		411	15 kg
							II	E2	415	15 kg	417	50 kg
							III	E1	419	25 kg	420	100 kg
Magnesium aluminium phosphide	1419	4.3	6.1	Danger if wet & Toxic			I	E0	FORBIDDEN		412	15 kg
Magnesium arsenate	1622	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Magnesium bisulphite solution, see **Bisulphites, aqueous solution, n.o.s.**												
Magnesium bromate	1473	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Magnesium chlorate	2723	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Magnesium chloride and chlorate mixture, see **Chlorate and magnesium chloride mixture**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Magnesium diamide	2004	4.2		Spontaneous combustion			II	E2	416	15 kg	418	50 kg
Magnesium dross, wet or hot	FORBIDDEN											
Magnesium fluorosilicate	2853	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Magnesium granules, coated, particle size not less than 149 microns	2950	4.3		Danger if wet			III	E1	419 Y419	25 kg 10 kg	420	100 kg
Magnesium hydride	2010	4.3		Danger if wet			I	E0	FORBIDDEN		412	15 kg
≠ **Magnesium nitrate**	1474	5.1		Oxidizer		A155	III	E1	516 Y516	25 kg 10 kg	518	100 kg
Magnesium perchlorate	1475	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Magnesium peroxide	1476	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Magnesium phosphide	2011	4.3	6.1	Danger if wet & Toxic			I	E0	FORBIDDEN		412	15 kg
Magnesium powder	1418	4.3	4.2	Danger if wet & Spontaneous combustion		A3	I	E0	FORBIDDEN		411	15 kg
							II	E2	415	15 kg	417	50 kg
							III	E1	419	25 kg	420	100 kg
Magnesium scrap †, see **Magnesium** or **Magnesium alloys** (UN No. 1869)												
Magnesium silicide	2624	4.3		Danger if wet			II	E2	416 Y416	15 kg 5 kg	418	50 kg
Magnesium silicofluoride, see **Magnesium fluorosilicate**												
Magnetized material	2807	9		Magnetic				E0	902	No limit	902	No limit
Maleic anhydride	2215	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg
Maleic anhydride, molten	2215	8							FORBIDDEN		FORBIDDEN	
Malonic dinitrile, see **Malononitrile**												
Malonic ethyl ester nitrile, see **Ethyl cyanoacetate**												
Malonodinitrile, see **Malononitrile**												
Malononitrile	2647	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Maneb	2210	4.2	4.3	Spontaneous combustion & Danger if wet		A30	III	E1	419	25 kg	420	100 kg
Maneb preparation with not less than 60% maneb	2210	4.2	4.3	Spontaneous combustion & Danger if wet		A30	III	E1	419	25 kg	420	100 kg
Maneb preparation, stabilized against self-heating	2968	4.3		Danger if wet		A3	III	E1	419 Y419	25 kg 10 kg	420	100 kg
Maneb stabilized against self-heating	2968	4.3		Danger if wet		A3	III	E1	419 Y419	25 kg 10 kg	420	100 kg
Manganese ethylene-di-dithiocarbamate, see **Maneb**												
Manganese ethylene-1,2-di-dithiocarbamate, see **Maneb**												
Manganese nitrate	2724	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
Manganese (II) nitrate, see **Manganese nitrate**												
Manganese resinate	1330	4.1		Solid flammable			III	E1	419 Y419	25 kg 10 kg	420	100 kg
Manganous nitrate, see **Manganese nitrate**												
Mannitan tetranitrate	FORBIDDEN											
Mannitol hexanitrate (dry)	FORBIDDEN											
Mannitol hexanitrate, wetted with not less than 40% water, or mixture of alcohol and water, by mass	0133	1.1D							FORBIDDEN		FORBIDDEN	
Matches, fusee †	2254	4.1			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2 A125			FORBIDDEN		FORBIDDEN	
Matches, safety (book, card or strike on box) †	1944	4.1		Solid flammable		A125	III	E1	404 Y404	25 kg 10 kg	404	100 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Matches, 'strike anywhere' †	1331	4.1			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2 A125			FORBIDDEN		FORBIDDEN	
Matches, trick, see **Fireworks**, etc.												
Matches, wax 'vesta'	1945	4.1		Solid flammable		A125	III	E1	404 Y404	25 kg 10 kg	404	100 kg
Medical waste, n.o.s	3291	6.2		Infectious		A117	II	E0	622	No limit	622	No limit
Medicine, n.o.s., see **Consumer commodity**												
Medicine, liquid, flammable, toxic, n.o.s.	3248	3	6.1	Liquid flammable & Toxic		A3 A80	II	E2	305 Y305	1 L 1 L	307	5 L
							III	E1	305 Y305	5 L 2 L	307	5 L
Medicine, liquid, toxic, n.o.s.	1851	6.1		Toxic		A3	II	E4	609 Y609	5 L 1 L	611	5 L
							III	E1	609 Y609	5 L 2 L	611	5 L
Medicine, solid, toxic, n.o.s.	3249	6.1		Toxic		A3	II	E4	613 Y613	5 kg 1 kg	615	5 kg
							III	E1	613 Y613	5 kg 5 kg	615	5 kg
p-Mentha-1,8-diene, see **Dipentene**												
Mercaptan mixture, liquid, flammable, n.o.s.*	3336	3		Liquid flammable		A3	I	E3	302	1 L	303	30 L
							II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Mercaptan mixture, liquid, flammable, toxic, n.o.s.*	1228	3	6.1	Liquid flammable & Toxic	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1 A3 A36	II	E0	FORBIDDEN		308	60 L
							III	E1	306 Y306	5 L 1 L	308	220 L
Mercaptan mixture, liquid, toxic, flammable, n.o.s.*	3071	6.1	3	Toxic & Liquid flammable			II	E4	610 Y610	5 L 1 L	612	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Mercaptans, liquid, flammable, n.o.s.*	3336	3		Liquid flammable		A3	I II III	E3 E2 E1	302 305 Y305 309 Y309	1 L 5 L 1 L 60 L 10 L	303 307 310	30 L 60 L 220 L
Mercaptans, liquid, flammable, toxic, n.o.s.*	1228	3	6.1	Liquid flammable & Toxic	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1 A3 A36	II III	E0 E1	FORBIDDEN 306 Y306	 5 L 1 L	308 308	60 L 220 L
Mercaptans, liquid, toxic, flammable, n.o.s.*	3071	6.1	3	Toxic & Liquid flammable			II	E4	610 Y610	5 L 1 L	612	60 L
2-Mercaptoethanol, see **Thioglycol**												
2-Mercaptopropionic acid, see **Thiolactic acid**												
5-Mercaptotetrazol-1-acetic acid	0448	1.4C		Explosive 1.4				E0	FORBIDDEN		114 b)	75 kg
Mercuric arsenate	1623	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Mercuric chloride	1624	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Mercuric nitrate	1625	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg
Mercuric potassium cyanide	1626	6.1		Toxic			I	E5	606	5 kg	607	50 kg
Mercuric sulphate, see **Mercury sulphate**												
Mercurol, see **Mercury nucleate**												
Mercurous azide	FORBIDDEN											
Mercurous bisulphate, see **Mercury sulphate**												
Mercurous nitrate	1627	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg
Mercurous sulphate, see **Mercury sulphate**												
Mercury	2809	8		Corrosive	US 4		III	E0	803	35 kg	803	35 kg
Mercury contained in manufactured articles	2809	8		Corrosive		A48 A69		E0	see 805		see 805	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Mercury acetate	1629	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Mercury acetylide	FORBIDDEN											
Mercury ammonium chloride	1630	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Mercury based pesticide, liquid, flammable, toxic*, flash point less than 23°C	2778	3	6.1	Liquid flammable & Toxic		A4	I	E0	FORBIDDEN		303	30 L
							II	E2	305 Y305	1 L 1 L	307	60 L
Mercury based pesticide, liquid, toxic*	3012	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Mercury based pesticide, liquid, toxic, flammable*, flash point not less than 23°C	3011	6.1	3	Toxic & Liquid flammable		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Mercury based pesticide, solid, toxic*	2777	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613 Y613	25 kg 1 kg	615	100 kg
							III	E1	619 Y619	100 kg 10 kg	619	200 kg
Mercury benzoate	1631	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Mercury bichloride, see **Mercuric chloride**												
Mercury bromides	1634	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Mercury compound, liquid, n.o.s.	2024	6.1		Toxic		A3	I	E5	610	1 L	605	30 L
						A4	II	E4	617	5 L	612	60 L
						A6			Y617	1 L		
						A18	III	E1	612 Y612	60 L 2 L	620	220 L
Mercury compound, solid, n.o.s.	2025	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613 Y613	25 kg 1 kg	615	100 kg
						A6						
						A18	III	E1	619 Y619	100 kg 10 kg	619	200 kg
Mercury cyanide	1636	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Mercury fulminate, wetted with not less than 20% water, or mixture of alcohol and water, by mass	0135	1.1A							FORBIDDEN		FORBIDDEN	
Mercury gluconate	1637	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
≠ **Mercury iodide**	1638	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Mercury iodide aquabasic ammonobasic (Iodide of Millon's base)	FORBIDDEN											
> Mercury nitride	FORBIDDEN											
Mercury nucleate	1639	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Mercury oleate	1640	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Mercury oxide	1641	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Mercury oxycyanide, desensitized	1642	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Mercury potassium iodide	1643	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Mercury salicylate	1644	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Mercury sulphate	1645	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg
Mercury thiocyanate	1646	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg
Mercury vapour tubes, see **Mercury** contained in manufactured articles												
Mesitylene, see **1,3,5-Trimethylbenzene**												
Mesityl oxide	1229	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Metal carbonyls, liquid, n.o.s.*	3281	6.1		Toxic		A3 A4 A137	I II	E5 E4	603 609 Y609	1 L 5 L 1 L	604 611	30 L 60 L
							III	E1	611 Y611	60 L 2 L	618	220 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Metal carbonyls, solid, n.o.s.*	3466	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613	25 kg	615	100 kg
									Y613	1 kg		
							III	E1	619	100 kg	619	200 kg
									Y619	10 kg		
Metal catalyst, dry	2881	4.2		Spontaneous combustion		A3			FORBIDDEN		FORBIDDEN	
						A36	II	E0	FORBIDDEN		416	50 kg
							III	E1	422	25 kg	421	100 kg
Metal catalyst, wetted with a visible excess of liquid	1378	4.2		Spontaneous combustion	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		416	50 kg
Metaldehyde	1332	4.1		Solid flammable			III	E1	419	25 kg	420	100 kg
									Y419	10 kg		
Metal hydrides, flammable, n.o.s.*	3182	4.1		Solid flammable		A3	II	E2	416	15 kg	418	50 kg
									Y416	5 kg		
							III	E1	422	25 kg	421	100 kg
									Y422	10 kg		
Metal hydrides, water-reactive, n.o.s.*	1409	4.3		Danger if wet			I	E0	FORBIDDEN		412	15 kg
							II	E2	416	15 kg	418	50 kg
									Y416	5 kg		
Metallic substance, water-reactive, n.o.s.*	3208	4.3		Danger if wet		A3	I	E0	FORBIDDEN		412	15 kg
							II	E2	416	15 kg	418	50 kg
									Y416	5 kg		
							III	E1	422	25 kg	421	100 kg
									Y422	10 kg		
Metallic substance, water-reactive, self-heating, n.o.s.*	3209	4.3	4.2	Danger if wet & Spontaneous combustion		A3	I	E0	FORBIDDEN		412	15 kg
							II	E2	416	15 kg	418	50 kg
							III	E1	422	25 kg	421	100 kg
Metal powder, flammable, n.o.s.	3089	4.1		Solid flammable		A3	II	E2	415	15 kg	417	50 kg
									Y415	5 kg		
							III	E1	419	25 kg	420	100 kg
									Y419	10 kg		
Metal powder, self-heating, n.o.s.*	3189	4.2		Spontaneous combustion		A3	II	E2	415	15 kg	417	50 kg
							III	E1	419	25 kg	420	100 kg
Metal salts of organic compounds, flammable, n.o.s.*	3181	4.1		Solid flammable		A3	II	E2	415	15 kg	417	50 kg
									Y415	5 kg		
							III	E1	419	25 kg	420	100 kg
									Y419	10 kg		
Methacrylaldehyde, stabilized	2396	3	6.1	Liquid flammable & Toxic			II	E2	305	1 L	307	60 L
									Y305	1 L		

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Methacrylic acid, stabilized	2531	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
Methacrylonitrile, stabilized	3079	3	6.1						FORBIDDEN		FORBIDDEN	
Methallyl alcohol	2614	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Methanal, see **Formaldehyde solution**												
Methane and hydrogen, mixture, compressed, see **Hydrogen and methane, mixture, compressed**												
Methane, compressed	1971	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Methane, refrigerated liquid LNG	1972	2.1							FORBIDDEN		FORBIDDEN	
Methanesulphonyl chloride	3246	6.1	8						FORBIDDEN		FORBIDDEN	
Methanol	1230	3	6.1	Liquid flammable		A104 A113	II	E2	305 Y305	1 L 1 L	307	60 L
Methazoic acid	FORBIDDEN											
2-Methoxyethyl acetate, see **Ethylene glycol monomethyl ether acetate**												
Methoxymethyl isocyanate	2605	3	6.1						FORBIDDEN		FORBIDDEN	
4-Methoxy-4-methylpentan-2-one	2293	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
1-Methoxy-2-nitrobenzene, see **Nitroanisole**												
1-Methoxy-3-nitrobenzene, see **Nitroanisole**												
1-Methoxy-4-nitrobenzene, see **Nitroanisole**												
1-Methoxy-2-propanol	3092	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Methyl acetate	1231	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Methylacetylene and propadiene mixture, stabilized †	1060	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
beta-Methyl acrolein, see **Crotonaldehyde, stabilized**												
Methyl acrylate, stabilized	1919	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Methylal	1234	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Methyl alcohol, see **Methanol**												
Methyl allyl alcohol, see **Methallyl alcohol**												
Methylallyl chloride	2554	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Methylamine, anhydrous	1061	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3 US 4	A1		E0	FORBIDDEN		200	150 kg
Methylamine, aqueous solution	1235	3	8	Liquid flammable & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L
Methylamine dinitramine and dry salts thereof	FORBIDDEN											
Methylamine nitroform	FORBIDDEN											
Methylamine perchlorate (dry)	FORBIDDEN											
Methylamyl acetate	1233	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Methyl amyl alcohol, see **Methyl isobutyl carbinol**												
Methyl amyl ketone, see **Amyl methyl ketone**												
N-Methylaniline	2294	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Methylated spirit, see **Alcohols, n.o.s.** or **Alcohols, flammable, toxic, n.o.s.**												
alpha-Methylbenzyl alcohol, liquid	2937	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
alpha-Methylbenzyl alcohol, solid	3438	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Methyl bromide with not more than 2% chloropicrin	1062	2.3			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Methyl bromide and chloropicrin mixture, see **Chloropicrin and methyl bromide mixture**												
Methyl bromide and ethylene dibromide mixture, liquid	1647	6.1			AU 1 CA 7 GB 3 NL 1 US 3				FORBIDDEN		FORBIDDEN	
Methyl bromoacetate	2643	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
2-Methylbutanal	3371	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
3-Methylbutan-2-one	2397	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
2-Methyl-1-butene	2459	3		Liquid flammable			I	E3	302	1 L	303	30 L
2-Methyl-2-butene	2460	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
3-Methyl-1-butene	2561	3		Liquid flammable			I	E3	302	1 L	303	30 L
N-Methylbutylamine	2945	3	8	Liquid flammable & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L
Methyl tert-butyl ether	2398	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Methyl butyrate	1237	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Methyl chloride	1063	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	100 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Methyl chloride and chloropicrin mixture, see **Chloropicrin and methyl chloride mixture**												
Methyl chloride and methylene chloride mixture	1912	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1 A52		E0	FORBIDDEN		200	150 kg
Methyl chloroacetate	2295	6.1	3						FORBIDDEN		FORBIDDEN	
Methyl chlorocarbonate, see **Methyl chloroformate**												
Methyl chloroform, see **1,1,1-Trichloroethane**												
Methyl chloroformate	1238	6.1	3 8						FORBIDDEN		FORBIDDEN	
Methyl chloromethyl ether	1239	6.1	3						FORBIDDEN		FORBIDDEN	
Methyl 2-chloropropionate	2933	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Methyl-alpha-chloropropionate, see **Methyl 2-chloropropionate**												
Methylchlorosilane	2534	2.3	2.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Methyl cyanide, see **Acetonitrile**												
Methylcyclohexane	2296	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Methylcyclohexanols, flammable	2617	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Methylcyclohexanone	2297	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Methylcyclopentane	2298	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Methyl dichloroacetate	2299	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
Methyldichlorosilane	1242	4.3	3 8	Danger if wet & Liquid flammable & Corrosive			I	E0	FORBIDDEN		409	1 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Methylene bromide, see **Dibromomethane**												
Methylene chloride, see **Dichloromethane**												
Methylene chloride and methyl chloride mixture, see **Methyl chloride and methylene chloride mixture**												
Methylene cyanide, see **Malononitrile**												
2,2'-Methylene-di- (3,4,6-trichlorophenol), see **Hexachlorophene**												
p,p'-Methylene dianiline, see **4,4'-Diaminodiphenylmethane**												
Methylene dibromide, see **Dibromomethane**												
Methylene-di-(phenylene diisocyanate), see **Diphenylmethane-4,4'-diisocyanate**												
Methylene-di-(4-phenyl isocyanate), see **Diphenylmethane-4,4'-diisocyanate**												
Methylene glycol dinitrate	FORBIDDEN											
Methyl ethyl ether, see **Ethyl methyl ether**												
Methyl ethyl ketone	1193	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Methyl ethyl ketone peroxide(s), more than 50%	FORBIDDEN											
Methyl ethyl ketone peroxide(s), not more than 52% when with 48% or more diluent type A	FORBIDDEN											
2-Methyl-5-ethylpyridine	2300	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Methyl fluoride	2454	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Methyl formate	1243	3		Liquid flammable			I	E3	302	1 L	303	30 L
2-Methylfuran	2301	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
a-Methylglucoside tetranitrate	FORBIDDEN											
a-Methylglycerol trinitrate	FORBIDDEN											
Methyl glycol, see **Ethylene glycol monomethyl ether**												
Methyl glycol acetate, see **Ethylene glycol monomethyl ether acetate**												
2-Methyl-2-heptanethiol	3023	6.1	3						FORBIDDEN		FORBIDDEN	
5-Methylhexan-2-one	2302	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Methylhydrazine	1244	6.1	3 8						FORBIDDEN		FORBIDDEN	
Methyl iodide	2644	6.1			US 4				FORBIDDEN		FORBIDDEN	
Methyl isobutyl carbinol	2053	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Methyl isobutyl ketone	1245	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Methyl isocyanate	2480	6.1	3						FORBIDDEN		FORBIDDEN	
Methyl isopropenyl ketone, stabilized	1246	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Methyl isothiocyanate	2477	6.1	3						FORBIDDEN		FORBIDDEN	
Methyl isovalerate	2400	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Methyl magnesium bromide in ethyl ether	1928	4.3	3	Danger if wet & Liquid flammable			I	E0	FORBIDDEN		409	1 L
Methyl mercaptan	1064	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Methyl mercaptopropionaldehyde, see **4-Thia-pentanal**												
Methyl methacrylate monomer, stabilized	1247	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
4-Methylmorpholine	2535	3	8	Liquid flammable & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L
N-Methylmorpholine	2535	3	8	Liquid flammable & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L
Methyl nitramine (dry), metal salts of	FORBIDDEN											
Methyl nitrate	FORBIDDEN											
Methyl nitrite	FORBIDDEN											
Methyl orthosilicate	2606	6.1	3						FORBIDDEN		FORBIDDEN	
Methylpentadiene	2461	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Methylpentanes, see **Hexanes**												
2-Methylpentan-2-ol	2560	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
4-Methylpentan-2-ol, see **Methyl isobutyl carbinol**												
3-Methyl-2-penten-4-ynol, see **1-Pentol**												
Methylphenyldichlorosilane	2437	8		Corrosive			II	E2	808	1 L	812	30 L
2-Methyl-2-phenylpropane, see **Butylbenzenes**												
Methyl picric acid (heavy metal salts of)	FORBIDDEN											
1-Methylpiperidine	2399	3	8	Liquid flammable & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L
Methyl propionate	1248	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Methylpropylbenzene, see **Cymenes**												
Methyl propyl ether	2612	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Methyl propyl ketone	1249	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Methyl pyridines, see **Picolines**												
alpha-Methylstyrene, see **Isopropenylbenzene**												
Methylstyrene, inhibited, see **Vinyltoluenes, inhibited**												
Methyl sulphate, see **Dimethyl sulphate**												
Methyl sulphide, see **Dimethyl sulphide**												
Methyltetrahydrofuran	2536	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Methyl trichloroacetate	2533	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
≠ **Methyltrichlorosilane**	1250	3	8	Liquid flammable & Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3		II	E2	306	1 L	304	5 L
Methyl trimethylol methane trinitrate	FORBIDDEN											
alpha-Methylvaleraldehyde	2367	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Methyl vinyl benzene, inhibited, see **Vinyltoluene, inhibited**												
Methyl vinyl ketone, stabilized	1251	6.1	3 8						FORBIDDEN		FORBIDDEN	
MIBC, see **Methyl isobutyl carbinol**												
Mine rescue equipment containing carbon dioxide, see **Carbon dioxide**												
Mines with bursting charge †	0136	1.1F							FORBIDDEN		FORBIDDEN	
Mines with bursting charge †	0137	1.1D							FORBIDDEN		FORBIDDEN	
Mines with bursting charge †	0138	1.2D							FORBIDDEN		FORBIDDEN	
Mines with bursting charge †	0294	1.2F							FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Mirbane oil, see **Nitrobenzene**												
Missiles, guided, see **Rockets,** (UN No. 0398) **liquid fuelled**, etc. or **Rockets**, etc.												
Mobility aids, see **Battery-powered equipment** or **Battery-powered vehicle**												
Molybdenum pentachloride	2508	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg
Monochloroacetic acid, see **Chloroacetic acid**, etc.												
Monochlorobenzene, see **Chlorobenzene**												
Monochlorodifluoromethane, see **Chlorodifluoromethane**												
Monochlorodifluoromethane and monochloropentafluoroethane mixture, see **Chlorodifluoromethane and chloropentafluoroethane mixture**, etc.												
Monochlorodifluoromono-bromomethane, see **Chlorodifluorobromomethane**												
Monoethylamine, see **Ethylamine**												
Monopropylamine, see **Propylamine**												
Morpholine	2054	8	3	Corrosive & Liquid flammable			I	E0	807	0.5 L	809	2.5 L
Motorcycles, see **Vehicle (flammable gas powered)** or **Vehicle (flammable liquid powered)**												
Motor fuel anti-knock mixture	1649	6.1		Toxic	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1 A147	I	E0	FORBIDDEN		605	30 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Motor spirit	1203	3		Liquid flammable		A100	II	E2	305 Y305	5 L 1 L	307	60 L
Muriatic acid, see **Hydrochloric acid**												
Musk xylene	2956	4.1							FORBIDDEN		FORBIDDEN	
Mysorite, see **Brown asbestos**												
N												
Naphtha, see **Petroleum distillates, n.o.s.**												
Naphthalene, crude	1334	4.1		Solid flammable	US 4		III	E1	419 Y419	25 kg 10 kg	420	100 kg
Naphthalene diozonide	FORBIDDEN											
Naphthalene, molten	2304	4.1							FORBIDDEN		FORBIDDEN	
Naphthalene, refined	1334	4.1		Solid flammable	US 4		III	E1	419 Y419	25 kg 10 kg	420	100 kg
Naphtha, petroleum, see **Petroleum distillates, n.o.s.**												
Naphtha, solvent, see **Petroleum products, n.o.s.**												
alpha-Naphthylamine	2077	6.1		Toxic	US 4		III	E1	619 Y619	100 kg 10 kg	619	200 kg
Naphthyl amineperchlorate	FORBIDDEN											
beta-Naphthylamine, solid	1650	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg
beta-Naphthylamine solution	3411	6.1		Toxic		A3	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Naphthylthiourea	1651	6.1		Toxic	US 4	A6	II	E4	613 Y613	25 kg 1 kg	615	100 kg
1-Naphthylthiourea, see **Naphthylthiourea**												
Naphthylurea	1652	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Natural gas, compressed with high methane content	1971	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
	Natural gasoline, see **Gasoline** or **Motor spirit** or **Petrol**												
	Natural gas, refrigerated liquid with high methane content	1972	2.1							FORBIDDEN		FORBIDDEN	
	Neohexane, see **Hexanes**												
≠	**Neon, compressed**	1065	2.2		Gas non-flammable		A69		E1	200	75 kg	200	150 kg
	Neon, refrigerated liquid	1913	2.2		Gas non-flammable				E1	202	50 kg	202	500 kg
	Neothyl, see **Methyl propyl ether**												
	Nickel carbonyl	1259	6.1	3						FORBIDDEN		FORBIDDEN	
	Nickel cyanide	1653	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg
	Nickel (II) cyanide, see **Nickel cyanide**												
	Nickel nitrate	2725	5.1		Oxidizer	US 4		III	E1	516 Y516	25 kg 10 kg	518	100 kg
	Nickel (II) nitrate, see **Nickel nitrate**												
	Nickel nitrite	2726	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
	Nickel (II) nitrite, see **Nickel nitrite**												
	Nickelous nitrate, see **Nickel nitrate**												
	Nickelous nitrite, see **Nickel nitrite**												
	Nickel picrate	FORBIDDEN											
	Nickel tetracarbonyl, see **Nickel carbonyl**												
	Nicotine	1654	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Nicotine compound, liquid, n.o.s.	3144	6.1		Toxic	US 4	A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609	5 L	611	60 L
						A6			Y609	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		
Nicotine compound, solid, n.o.s.	1655	6.1		Toxic	US 4	A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613	25 kg	615	100 kg
						A6			Y613	1 kg		
							III	E1	619	100 kg	619	200 kg
									Y619	10 kg		
Nicotine hydrochloride, liquid	1656	6.1		Toxic	US 4	A3	II	E4	609	5 L	611	60 L
						A6			Y609	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		
Nicotine hydrochloride, solid	3444	6.1		Toxic		A6	II	E4	613	25 kg	615	100 kg
									Y613	1 kg		
Nicotine hydrochloride solution	1656	6.1		Toxic	US 4	A3	II	E4	609	5 L	611	60 L
						A6			Y609	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		
Nicotine preparation, liquid, n.o.s.	3144	6.1		Toxic	US 4	A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609	5 L	611	60 L
						A6			Y609	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		
Nicotine preparation, solid, n.o.s.	1655	6.1		Toxic	US 4	A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613	25 kg	615	100 kg
						A6			Y613	1 kg		
							III	E1	619	100 kg	619	200 kg
									Y619	10 kg		
Nicotine salicylate	1657	6.1		Toxic	US 4		II	E4	613	25 kg	615	100 kg
									Y613	1 kg		
Nicotine sulphate, solid	3445	6.1		Toxic	US 4	A3	II	E4	613	25 kg	615	100 kg
									Y613	1 kg		
Nicotine sulphate solution	1658	6.1		Toxic	US 4	A3	II	E4	609	5 L	611	60 L
									Y609	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		
Nicotine tartrate	1659	6.1		Toxic	US 4		II	E4	613	25 kg	615	100 kg
									Y613	1 kg		
Nitrates, inorganic, n.o.s.	1477	5.1		Oxidizer		A3	II	E2	508	5 kg	511	25 kg
									Y508	2.5 kg		
							III	E1	516	25 kg	518	100 kg
									Y516	10 kg		

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft: Packing instruction	Passenger aircraft: Max. net quantity per package	Cargo aircraft: Packing instruction	Cargo aircraft: Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Nitrates, inorganic, aqueous solution, n.o.s.	3218	5.1		Oxidizer		A3 A65	II III	E2 E1	503 Y503 514 Y514	1 L 0.5 L 2.5 L 1 L	505 515	5 L 30 L
	Nitrates of diazonium compounds	FORBIDDEN											
	Nitrating acid mixture with more than 50% nitric acid †	1796	8	5.1	Corrosive & Oxidizer			I	E0	FORBIDDEN		809	2.5 L
	Nitrating acid mixture with not more than 50% nitric acid †	1796	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
	Nitrating acid mixture, spent with more than 50% nitric acid †	1826	8	5.1	Corrosive & Oxidizer		A34	I	E0	FORBIDDEN		809	2.5 L
	Nitrating acid mixture, spent with not more than 50% nitric acid †	1826	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1 A34	II	E0	FORBIDDEN		813	30 L
≠	**Nitric acid**, other than red fuming, with at least 65% but not more than 70% nitric acid	2031	8	5.1	Corrosive & Oxidizer	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
+	**Nitric acid**, other than red fuming, with more than 20% and less than 65% nitric acid	2031	8		Corrosive			II	E0	FORBIDDEN		813	30 L
	Nitric acid, other than red fuming, with more than 70% nitric acid	2031	8	5.1	Corrosive & Oxidizer			I	E0	FORBIDDEN		809	2.5 L
	Nitric acid, other than red fuming, with not more than 20% nitric acid	2031	8		Corrosive			II	E2	807 Y807	1 L 0.5 L	813	30 L
	Nitric acid, red fuming	2032	8	5.1 6.1						FORBIDDEN		FORBIDDEN	
	Nitric oxide and dinitrogen tetroxide mixture	1975	2.3	5.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft: Packing instruction	Passenger aircraft: Max. net quantity per package	Cargo aircraft: Packing instruction	Cargo aircraft: Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Nitric oxide and nitrogen dioxide mixture	1975	2.3	5.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Nitric oxide, compressed	1660	2.3	5.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Nitriles, flammable, toxic, n.o.s.*	3273	3	6.1	Liquid flammable & Toxic			I	E0	FORBIDDEN		303	30 L
							II	E2	305 Y305	1 L 1 L	307	60 L
Nitriles, toxic, flammable, n.o.s.*	3275	6.1	3	Toxic & Liquid flammable		A4 A137	I II	E5 E4	603 609 Y609	1 L 5 L 1 L	604 611	30 L 60 L
Nitriles, toxic, liquid, n.o.s.*	3276	6.1		Toxic		A3 A4 A137	I II	E5 E4	603 609 Y609	1 L 5 L 1 L	604 611	30 L 60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Nitriles, toxic, solid, n.o.s.*	3439	6.1		Toxic		A3 A5	I II	E5 E4	606 613 Y613	5 kg 25 kg 1 kg	607 615	50 kg 100 kg
							III	E1	619 Y619	100 kg 10 kg	619	200 kg
Nitrites, inorganic, n.o.s.	2627	5.1		Oxidizer		A33	II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Nitrites, inorganic, aqueous solution, n.o.s.	3219	5.1		Oxidizer		A3 A33	II	E2	503 Y503	1 L 0.5 L	505	5 L
							III	E1	514 Y514	2.5 L 1 L	515	30 L
N-Nitroaniline	FORBIDDEN											
Nitroanilines (o-,m-,p-)	1661	6.1		Toxic		A113	II	E4	613 Y613	25 kg 1 kg	615	100 kg
Nitroanisoles, liquid	2730	6.1		Toxic		A113	III	E1	611 Y611	60 L 2 L	618	220 L
Nitroanisoles, solid	3458	6.1		Toxic		A113	III	E1	616 Y616	100 kg 10 kg	616	200 kg
Nitrobenzene	1662	6.1		Toxic		A113	II	E4	609 Y609	5 L 1 L	611	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Nitrobenzene bromide, see **Nitrobromobenzenes**, etc.												
m-Nitrobenzene diazonium perchlorate	FORBIDDEN											
Nitrobenzenesulphonic acid	2305	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
Nitrobenzol, see **Nitrobenzene**												
5-Nitrobenzotriazol	0385	1.1D							FORBIDDEN		FORBIDDEN	
Nitrobenzotrifluorides, liquid	2306	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Nitrobenzotrifluorides, solid	3431	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Nitrobromobenzene, liquid	2732	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
Nitrobromobenzene, solid	3459	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Nitrocellulose, dry or wetted with less than 25% water (or alcohol), by mass	0340	1.1D							FORBIDDEN		FORBIDDEN	
Nitrocellulose, unmodified or plasticized with less than 18% plasticizing substance, by mass	0341	1.1D							FORBIDDEN		FORBIDDEN	
Nitrocellulose membrane filters with not more than 12.6% nitrogen, by dry mass	3270	4.1		Solid flammable		A57 A73 A122	II	E2	401 Y401	1 kg 1 kg	401	15 kg
Nitrocellulose, with not more than 12.6% nitrogen, by dry mass, **mixture without plasticizer, without pigment**	2557	4.1		Solid flammable	BE 3	A57 A86	II	E0	416	1 kg	418	15 kg
Nitrocellulose, with not more than 12.6% nitrogen, by dry mass, **mixture without plasticizer, with pigment**	2557	4.1		Solid flammable	BE 3	A57 A86	II	E0	416	1 kg	418	15 kg
Nitrocellulose, with not more than 12.6% nitrogen, by dry mass, **mixture with plasticizer, without pigment**	2557	4.1		Solid flammable	BE 3	A57 A86	II	E0	416	1 kg	418	15 kg
Nitrocellulose, with not more than 12.6% nitrogen, by dry mass, **mixture with plasticizer, with pigment**	2557	4.1		Solid flammable	BE 3	A57 A86	II	E0	416	1 kg	418	15 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Nitrocellulose, plasticized with not less than 18% plasticizing substance, by mass	0343	1.3C							FORBIDDEN		FORBIDDEN	
Nitrocellulose solution, flammable with not more than 12.6% nitrogen, by dry mass, and not more than 55% nitrocellulose	2059	3		Liquid flammable	BE 3	A3	I	E0	302	1 L	303	30 L
						A91	II	E0	305	5 L	307	60 L
									Y305	1 L		
							III	E0	309	60 L	310	220 L
									Y309	10 L		
Nitrocellulose, wetted with not less than 25% alcohol, by mass	0342	1.3C							FORBIDDEN		FORBIDDEN	
Nitrocellulose with alcohol, not less than 25% alcohol, by mass, and not more than 12.6% nitrogen, by dry mass	2556	4.1		Solid flammable	BE 3	A57	II	E0	416	1 kg	418	15 kg
Nitrocellulose with water, not less than 25% water by mass	2555	4.1		Solid flammable	BE 3	A57	II	E0	416	15 kg	418	50 kg
Nitrochlorobenzenes, see **Chloronitrobenzenes**												
3-Nitro-4-chlorobenzotrifluoride	2307	6.1		Toxic			II	E4	609	5 L	611	60 L
									Y609	1 L		
Nitrocresols, liquid	3434	6.1		Toxic			III	E1	611	60 L	618	220 L
									Y611	2 L		
Nitrocresols, solid	2446	6.1		Toxic			III	E1	619	100 kg	619	200 kg
									Y619	10 kg		
6-Nitro-4-diazotoluene-3-sulphonic acid (dry)	FORBIDDEN											
Nitroethane	2842	3		Liquid flammable			III	E1	309	60 L	310	220 L
									Y309	10 L		
Nitroethylene polymer	FORBIDDEN											
Nitroethyl nitrate	FORBIDDEN											
≠ **Nitrogen, compressed**	1066	2.2		Gas non-flammable		A69		E1	200	75 kg	200	150 kg
Nitrogen dioxide	1067	2.3	5.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Nitrogen, refrigerated liquid	1977	2.2		Gas non-flammable		A152		E1	202	50 kg	202	500 kg
Nitrogen trichloride	FORBIDDEN											

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft: Packing instruction	Passenger aircraft: Max. net quantity per package	Cargo aircraft: Packing instruction	Cargo aircraft: Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
≠	**Nitrogen trifluoride**	2451	2.2	5.1	Gas non-flammable & Oxidizer	US 18			E0	200	75 kg	200	150 kg
	Nitrogen triiodide	FORBIDDEN											
	Nitrogen triiodide monoamine	FORBIDDEN											
	Nitrogen trioxide	2421	2.3	5.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
	Nitroglycerin, desensitized with not less than 40% non-volatile water-insoluble phlegmatizer, by mass	0143	1.1D	6.1						FORBIDDEN		FORBIDDEN	
	Nitroglycerin, liquid, not desensitized	FORBIDDEN											
	Nitroglycerin mixture, desensitized, liquid, n.o.s.* with not more than 30% nitroglycerin, by mass	3357	3			BE 3	A17			FORBIDDEN		FORBIDDEN	
	Nitroglycerin mixture, desensitized, liquid flammable, n.o.s.* with not more than 30% nitroglycerin, by mass	3343	3			BE 3				FORBIDDEN		FORBIDDEN	
≠	**Nitroglycerin mixture, desensitized, solid, n.o.s.*** with more than 2% but not more than 10% nitroglycerin, by mass	3319	4.1		Solid flammable	AU 1 BE 3 CA 7 GB 3 IR 3 NL 1 US 3	A1 A68	II	E0	FORBIDDEN		499	0.5 kg
	Nitroglycerin solution in alcohol with more than 1% but not more than 10% nitroglycerin	0144	1.1D							FORBIDDEN		FORBIDDEN	
	Nitroglycerin solution in alcohol with more than 1% but not more than 5% nitroglycerin	3064	3		Liquid flammable	BE 3		II	E0	FORBIDDEN		311	5 L
	Nitroglycerin solution in alcohol with not more than 1% nitroglycerin	1204	3		Liquid flammable	BE 3		II	E0	306 Y306	5 L 1 L	308	60 L
	Nitroguanidine, dry or wetted with less than 20% water, by mass	0282	1.1D							FORBIDDEN		FORBIDDEN	
	Nitroguanidine nitrate	FORBIDDEN											

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Nitroguanidine, wetted with not less than 20% water, by mass	1336	4.1		Solid flammable	BE 3	A40	I	E0	416	1 kg	412	15 kg
1-Nitro hydantoin	FORBIDDEN											
Nitrohydrochloric acid	1798	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	I	E0	FORBIDDEN		809	2.5 L
Nitro isobutane triol trinitrate	FORBIDDEN											
Nitromannite (dry)	FORBIDDEN											
Nitromannite, wetted with not less than 40% water, or mixture of alcohol and water, by mass	0133	1.1D							FORBIDDEN		FORBIDDEN	
Nitromethane	1261	3		Liquid flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1 A39	II	E0	FORBIDDEN		307	60 L
N-Nitro-N-methylglycolamide nitrate	FORBIDDEN											
2-Nitro-2-methylpropanol nitrate	FORBIDDEN											
Nitromuriatic acid, see **Nitrohydrochloric acid**												
Nitronaphthalene	2538	4.1		Solid flammable			III	E1	419 Y419	25 kg 10 kg	420	100 kg
Nitrophenols (o-,m-,p-)	1663	6.1		Toxic	US 4	A113	III	E1	619 Y619	100 kg 10 kg	619	200 kg
m-Nitrophenyldinitro methane	FORBIDDEN											
4-Nitrophenylhydrazine with not less than 30% water, by mass	3376	4.1			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Nitropropanes	2608	3		Liquid flammable	US 4		III	E1	309 Y309	60 L 10 L	310	220 L
p-Nitrosodimethylaniline	1369	4.2		Spontaneous combustion			II	E2	416	15 kg	418	50 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Nitrostarch, dry or wetted with less than 20% water, by mass	0146	1.1D							FORBIDDEN		FORBIDDEN	
Nitrostarch, wetted with not less than 20% water, by mass	1337	4.1		Solid flammable	BE 3	A40	I	E0	416	1 kg	412	15 kg
Nitrosugars (dry)	FORBIDDEN											
Nitrosyl chloride	1069	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Nitrosylsulphuric acid, liquid	2308	8		Corrosive			II	E2	809 Y809	1 L 0.5 L	813	30 L
Nitrosylsulphuric acid, solid	3456	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
Nitrotoluenes, liquid	1664	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Nitrotoluenes, solid	3446	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Nitrotoluidines (mono)	2660	6.1		Toxic	US 4		III	E1	619 Y619	100 kg 10 kg	619	200 kg
Nitrotriazolone	0490	1.1D							FORBIDDEN		FORBIDDEN	
Nitro urea	0147	1.1D							FORBIDDEN		FORBIDDEN	
≠ **Nitrous oxide**	1070	2.2	5.1	Gas non-flammable & Oxidizer	US 18			E0	200	75 kg	200	150 kg
Nitrous oxide, refrigerated liquid	2201	2.2	5.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Nitroxylenes, liquid	1665	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Nitroxylenes, solid	3447	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Non-activated carbon, see **Carbon, animal or vegetable origin**												
Non-activated charcoal, see **Carbon, animal or vegetable origin**												
Nonanes	1920	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Non-flammable gas, n.o.s., see **Compressed** or **Liquefied gas**, etc.												
Non-liquefied gas, see **Compressed gas**, etc.												
Non-liquefied hydrocarbon gas, see **Hydrocarbon gas, compressed, n.o.s.**												
Nonyltrichlorosilane	1799	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
2,5-Norbornadiene, stabilized	2251	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Normal propyl alcohol, see **Propyl alcohol, normal**												
NTO	0490	1.1D							FORBIDDEN		FORBIDDEN	
O												
Octadecyltrichlorosilane	1800	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
Octadiene	2309	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
1,7-Octadiene-3,5-diyne-1,8-dimethoxy-9-octadecynoic acid	FORBIDDEN											
Octafluorobut-2-ene	2422	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Octafluorocyclobutane	1976	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Octafluoropropane	2424	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Octanes	1262	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Octogen, desensitized	0484	1.1D							FORBIDDEN		FORBIDDEN	
Octogen (dry or unphlegmatized)	FORBIDDEN											

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Octogen, wetted with not less than 15% water, by mass	0226	1.1D							FORBIDDEN		FORBIDDEN	
Octol, dry or wetted with less than 15% water, by mass	0266	1.1D							FORBIDDEN		FORBIDDEN	
Octolite, dry or wetted with less than 15% water, by mass	0266	1.1D							FORBIDDEN		FORBIDDEN	
Octonal	0496	1.1D							FORBIDDEN		FORBIDDEN	
Octyl aldehydes	1191	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
tert-Octyl mercaptan, see **2-Methyl-2-heptanethiol**												
Octyltrichlorosilane	1801	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
Oenanthol, see **n-Heptaldehyde**												
Oil gas, compressed †	1071	2.3	2.1	Gas toxic & Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	25 kg
Oil well sampling device, charged, see **Compressed** or **Liquefied gas, flammable, n.o.s.**												
Oleum, see **Sulphuric acid, fuming**												
Organic peroxide type B, liquid	FORBIDDEN											
Organic peroxide type B, liquid, temperature controlled	FORBIDDEN											
Organic peroxide type B, solid	FORBIDDEN											
Organic peroxide type B, solid, temperature controlled	FORBIDDEN											
Organic peroxide type C, liquid*	3103	5.2		Organic peroxide		A14 A20 A150		E0	500	5 L	502	10 L

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Organic peroxide type C, liquid, temperature controlled*	3113	5.2							FORBIDDEN		FORBIDDEN	
Organic peroxide type C, solid*	3104	5.2		Organic peroxide		A14 A20 A150		E0	510	5 kg	513	10 kg
Organic peroxide type C, solid, temperature controlled*	3114	5.2							FORBIDDEN		FORBIDDEN	
Organic peroxide type D, liquid*	3105	5.2		Organic peroxide		A14 A20 A150		E0	500	5 L	502	10 L
Organic peroxide type D, liquid, temperature controlled*	3115	5.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2 A150			FORBIDDEN		FORBIDDEN	
Organic peroxide type D, solid*	3106	5.2		Organic peroxide		A14 A20		E0	510	5 kg	513	10 kg
Organic peroxide type D, solid, temperature controlled*	3116	5.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Organic peroxide type E, liquid*	3107	5.2		Organic peroxide		A14 A20 A150		E0	500	10 L	502	25 L
Organic peroxide type E, liquid, temperature controlled*	3117	5.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Organic peroxide type E, solid*	3108	5.2		Organic peroxide		A14 A20		E0	510	10 kg	513	25 kg
Organic peroxide type E, solid, temperature controlled*	3118	5.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Organic peroxide type F, liquid*	3109	5.2		Organic peroxide		A14 A20 A150		E0	500	10 L	502	25 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Organic peroxide type F, liquid, temperature controlled*	3119	5.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2 A150			FORBIDDEN		FORBIDDEN	
Organic peroxide type F, solid*	3110	5.2		Organic peroxide		A14 A20		E0	510	10 kg	513	25 kg
Organic peroxide type F, solid, temperature controlled*	3120	5.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Organic pigments, self-heating	3313	4.2		Spontaneous combustion		A3	II III	E2 E1	415 419	15 kg 25 kg	417 420	50 kg 100 kg
Organoarsenic compound, liquid, n.o.s.*	3280	6.1		Toxic		A3 A4 A137	I II III	E5 E4 E1	603 609 Y609 611 Y611	1 L 5 L 1 L 60 L 2 L	604 611 618	30 L 60 L 220 L
Organoarsenic compound, solid, n.o.s.*	3465	6.1		Toxic		A3 A5	I II III	E5 E4 E1	606 613 Y613 619 Y619	5 kg 25 kg 1 kg 100 kg 10 kg	607 615 619	50 kg 100 kg 200 kg
Organochlorine pesticide, liquid, flammable, toxic*, flash point less than 23°C	2762	3	6.1	Liquid flammable & Toxic		A4	I II	E0 E2	FORBIDDEN 305 Y305	 1 L 1 L	303 307	30 L 60 L
Organochlorine pesticide, liquid, toxic*	2996	6.1		Toxic		A3 A4	I II III	E5 E4 E1	603 609 Y609 611 Y611	1 L 5 L 1 L 60 L 2 L	604 611 618	30 L 60 L 220 L
Organochlorine pesticide, liquid, toxic, flammable*, flash point not less than 23°C	2995	6.1	3	Toxic & Liquid flammable		A3 A4	I II III	E5 E4 E1	603 609 Y609 611 Y611	1 L 5 L 1 L 60 L 2 L	604 611 618	30 L 60 L 220 L
Organochlorine pesticide, solid, toxic*	2761	6.1		Toxic		A3 A5	I II III	E5 E4 E1	606 613 Y613 619 Y619	5 kg 25 kg 1 kg 100 kg 10 kg	607 615 619	50 kg 100 kg 200 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Organometallic compound, toxic, liquid, n.o.s.*	3282	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609	5 L	611	60 L
									Y609	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		
Organometallic compound, toxic, solid, n.o.s.*	3467	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613	25 kg	615	100 kg
									Y613	1 kg		
							III	E1	619	100 kg	619	200 kg
									Y619	10 kg		
Organometallic substance, liquid, pyrophoric*	3392	4.2							FORBIDDEN		FORBIDDEN	
Organometallic substance, liquid, pyrophoric, water reactive*	3394	4.2	4.3						FORBIDDEN		FORBIDDEN	
Organometallic substance, liquid, water reactive*	3398	4.3		Danger if wet		A3	I	E0	FORBIDDEN		408	1 L
							II	E2	413	1 L	414	5 L
							III	E1	414	5 L	425	60 L
Organometallic substance, liquid, water reactive, flammable*	3399	4.3	3	Danger if wet & Liquid flammable		A3	I	E0	FORBIDDEN		409	1 L
							II	E2	409	1 L	431	5 L
							III	E1	431	5 L	432	60 L
Organometallic substance, solid, pyrophoric*	3391	4.2							FORBIDDEN		FORBIDDEN	
Organometallic substance, solid, pyrophoric, water reactive*	3393	4.2	4.3						FORBIDDEN		FORBIDDEN	
Organometallic substance, solid, self-heating*	3400	4.2		Spontaneous combustion		A3	II	E2	415	15 kg	417	50 kg
							III	E1	419	25 kg	420	100 kg
Organometallic substance, solid, water reactive*	3395	4.3		Danger if wet		A3	I	E0	FORBIDDEN		415	15 kg
							II	E2	415	15 kg	417	50 kg
							III	E1	419	25 kg	420	100 kg
Organometallic substance, solid, water reactive, flammable*	3396	4.3	4.1	Danger if wet & Solid flammable		A3	I	E0	FORBIDDEN		411	15 kg
							II	E2	415	15 kg	417	50 kg
							III	E1	419	25 kg	420	100 kg
Organometallic substance, solid, water reactive, self-heating*	3397	4.3	4.2	Danger if wet & Spontaneous combustion		A3	I	E0	FORBIDDEN		411	15 kg
							II	E2	415	15 kg	417	50 kg
							III	E1	419	25 kg	420	100 kg
Organophosphorus compound, toxic, flammable, n.o.s.*	3279	6.1	3	Toxic & Liquid flammable		A4	I	E5	603	1 L	604	30 L
						A6	II	E4	609	5 L	611	60 L
						A137			Y609	1 L		
Organophosphorus compound, toxic, liquid, n.o.s.*	3278	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609	5 L	611	60 L
						A6			Y609	1 L		
						A137	III	E1	611	60 L	618	220 L
									Y611	2 L		

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Organophosphorus compound, toxic, solid, n.o.s.*	3464	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613	25 kg	615	100 kg
						A6			Y613	1 kg		
							III	E1	619	100 kg	619	200 kg
									Y619	10 kg		
Organophosphorus pesticide, liquid, flammable, toxic*, flash point less than 23°C	2784	3	6.1	Liquid flammable & Toxic		A4	I	E0	FORBIDDEN		303	30 L
							II	E2	305	1 L	307	60 L
									Y305	1 L		
Organophosphorus pesticide, liquid, toxic*	3018	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609	5 L	611	60 L
									Y609	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		
Organophosphorus pesticide, liquid, toxic, flammable*, flash point not less than 23°C	3017	6.1	3	Toxic & Liquid flammable		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609	5 L	611	60 L
									Y609	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		
Organophosphorus pesticide, solid, toxic*	2783	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613	25 kg	615	100 kg
									Y613	1 kg		
							III	E1	619	100 kg	619	200 kg
									Y619	10 kg		
Organotin compound, liquid, n.o.s.*	2788	6.1		Toxic		A3	I	E5	610	1 L	605	30 L
						A4	II	E4	610	5 L	612	60 L
						A6			Y610	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		
Organotin compound, solid, n.o.s.*	3146	6.1		Toxic		A3	I	E5	608	5 kg	608	50 kg
						A5	II	E4	614	25 kg	616	100 kg
						A6			Y614	1 kg		
							III	E1	619	100 kg	619	200 kg
									Y619	10 kg		
Organotin pesticide, liquid, flammable, toxic*, flash point less than 23°C	2787	3	6.1	Liquid flammable & Toxic		A4	I	E0	FORBIDDEN		303	30 L
							II	E2	305	1 L	307	60 L
									Y305	1 L		
Organotin pesticide, liquid, toxic*	3020	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609	5 L	611	60 L
									Y609	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Organotin pesticide, liquid, toxic, flammable*, flash point not less than 23°C	3019	6.1	3	Toxic & Liquid flammable		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609	5 L	611	60 L
									Y609	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		
Organotin pesticide, solid, toxic*	2786	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613	25 kg	615	100 kg
									Y613	1 kg		
							III	E1	619	100 kg	619	200 kg
									Y619	10 kg		
Orthophosphoric acid, see **Phosphoric acid**												
Osmium tetroxide	2471	6.1		Toxic			I	E5	608	5 kg	608	50 kg
Oxidizing liquid, n.o.s.*	3139	5.1		Oxidizer		A3	I	E0	FORBIDDEN		501	2.5 L
							II	E2	501	1 L	505	5 L
									Y501	0.5 L		
							III	E1	514	2.5 L	515	30 L
									Y514	1 L		
Oxidizing liquid, corrosive, n.o.s.*	3098	5.1	8	Oxidizer & Corrosive		A3	I	E0	FORBIDDEN		501	2.5 L
							II	E2	501	1 L	506	5 L
									Y501	0.5 L		
							III	E1	514	2.5 L	515	30 L
									Y514	1 L		
Oxidizing liquid, toxic, n.o.s.*	3099	5.1	6.1	Oxidizer & Toxic		A3	I	E0	FORBIDDEN		501	2.5 L
							II	E2	501	1 L	506	5 L
									Y501	0.5 L		
							III	E1	514	2.5 L	515	30 L
									Y514	1 L		
Oxidizing solid, n.o.s.*	1479	5.1		Oxidizer		A3	I	E0	509	1 kg	512	15 kg
							II	E2	508	5 kg	511	25 kg
									Y508	2.5 kg		
							III	E1	516	25 kg	518	100 kg
									Y516	10 kg		
Oxidizing solid, corrosive, n.o.s.*	3085	5.1	8	Oxidizer & Corrosive		A3	I	E0	508	1 kg	511	15 kg
							II	E2	508	5 kg	511	25 kg
									Y508	2.5 kg		
							III	E1	516	25 kg	518	100 kg
									Y516	5 kg		
Oxidizing solid, flammable, n.o.s.*	3137	5.1	4.1						FORBIDDEN		FORBIDDEN	
Oxidizing solid, self-heating, n.o.s.*	3100	5.1	4.2						FORBIDDEN		FORBIDDEN	

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft: Packing instruction	Passenger aircraft: Max. net quantity per package	Cargo aircraft: Packing instruction	Cargo aircraft: Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Oxidizing solid, toxic, n.o.s.*	3087	5.1	6.1	Oxidizer & Toxic		A3	I	E0	508	1 kg	511	15 kg
								II	E2	508	5 kg	511	25 kg
										Y508	1 kg		
								III	E1	516	25 kg	518	100 kg
										Y516	10 kg		
	Oxidizing solid, water-reactive, n.o.s.*	3121	5.1	4.3						FORBIDDEN		FORBIDDEN	
	Oxirane, see **Ethylene oxide**, etc.												
≠	**Oxygen, compressed**	1072	2.2	5.1	Gas non-flammable & Oxidizer	US 18			E0	200	75 kg	200	150 kg
	Oxygen difluoride, compressed	2190	2.3	5.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
≠	**Oxygen generator, chemical** † (including when contained in associated equipment, e.g. passenger service units (PSUs), protective breathing equipment (PBE), etc.)	3356	5.1		Oxidizer	AU 1 CA 7 FR 7 GB 3 IR 3 NL 1 US 3 US 18	A1 A111 A116 A144	II	E0	FORBIDDEN		523	25 kg G
	Oxygen, refrigerated liquid	1073	2.2	5.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
	1-Oxy-4-nitrobenzene, see **Nitrophenols**												
	P												
	Paint (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base)	1263	3		Liquid flammable		A3 A72	I	E3	302	1 L	303	30 L
								II	E2	305	5 L	307	60 L
										Y305	1 L		
								III	E1	309	60 L	310	220 L
										Y309	10 L		

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Paint (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base)	3066	8		Corrosive		A3 A72	II	E2	808 Y808	1 L 0.5 L	812	30 L
							III	E1	818 Y818	5 L 1 L	820	60 L
Paint, corrosive, flammable (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base)	3470	8	3	Corrosive & Liquid flammable		A72	II	E2	808 Y808	1 L 0.5 L	812	30 L
Paint, flammable, corrosive (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base)	3469	3	8	Liquid flammable & Corrosive		A3 A72	I II	E0 E2	302 305 Y305	0.5 L 1 L 0.5 L	303 307	2.5 L 5 L
							III	E1	309 Y309	5 L 1 L	310	60 L
Paint related material (including paint thinning or reducing compound)	1263	3		Liquid flammable		A3 A72	I II	E3 E2	302 305 Y305	1 L 5 L 1 L	303 307	30 L 60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Paint related material (including paint thinning or reducing compound)	3066	8		Corrosive		A3 A72	II	E2	808 Y808	1 L 0.5 L	812	30 L
							III	E1	818 Y818	5 L 1 L	820	60 L
Paint related material corrosive, flammable (including paint thinning or reducing compound)	3470	8	3	Corrosive & Liquid flammable		A72	II	E2	808 Y808	1 L 0.5 L	812	30 L
Paint related material, flammable, corrosive (including paint thinning or reducing compound)	3469	3	8	Liquid flammable & Corrosive		A3 A72	I II	E0 E2	302 305 Y305	0.5 L 1 L 0.5 L	303 307	2.5 L 5 L
							III	E1	309 Y309	5 L 1 L	310	60 L
Paper, unsaturated oil treated, incompletely dried (including carbon paper)	1379	4.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Paraffin, see **Kerosene**												
Paraformaldehyde	2213	4.1		Solid flammable			III	E1	419 Y419	25 kg 10 kg	420	100 kg
Paraldehyde	1264	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
PCBs, see **Polychlorinated biphenyls**												
Pentaborane	1380	4.2	6.1						FORBIDDEN		FORBIDDEN	
Pentachloroethane	1669	6.1		Toxic	US 4		II	E4	609 Y609	5 L 1 L	611	60 L
Pentachlorophenol	3155	6.1		Toxic		A6	II	E4	613 Y613	25 kg 1 kg	615	100 kg
Pentaerythrite tetranitrate with not less than 7% wax, by mass	0411	1.1D							FORBIDDEN		FORBIDDEN	
Pentaerythrite tetranitrate, desensitized with not less than 15% phlegmatizer by mass	0150	1.1D							FORBIDDEN		FORBIDDEN	
Pentaerythrite tetranitrate (dry)	FORBIDDEN											
Pentaerythrite tetranitrate mixture desensitized, solid, n.o.s.* with more than 10% but not more than 20% PETN, by mass	3344	4.1			BE 3				FORBIDDEN		FORBIDDEN	
Pentaerythrite tetranitrate, wetted with not less than 25% water, by mass	0150	1.1D							FORBIDDEN		FORBIDDEN	
Pentaerythritol tetranitrate with not less than 7% wax, by mass	0411	1.1D							FORBIDDEN		FORBIDDEN	
Pentaerythritol tetranitrate, desensitized with not less than 15% phlegmatizer, by mass	0150	1.1D							FORBIDDEN		FORBIDDEN	
Pentaerythritol tetranitrate (dry)	FORBIDDEN											
+ **Pentaerythritol tetranitrate mixture desensitized, solid, n.o.s.*** with more than 10% but not more than 20% PETN, by mass	3344	4.1			BE 3				FORBIDDEN		FORBIDDEN	
Pentaerythritol tetranitrate, wetted with not less than 25% water, by mass	0150	1.1D							FORBIDDEN		FORBIDDEN	
Pentafluoroethane	3220	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Pentafluoroethane, 1,1,1-trifluoroethane, and 1,1,1,2-tetrafluoroethane zeotropic mixture with approximately 44% pentafluoroethane and 52% 1,1,1-trifluoroethane, see **Refrigerant gas R 404A**												
Pentamethylheptane	2286	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Pentanal, see **Valeraldehyde**												
n-Pentane, see **Pentanes, liquid**												
Pentane-2,4-dione	2310	3	6.1	Liquid flammable & Toxic			III	E1	309 Y309	60 L 2 L	310	220 L
Pentanes, liquid	1265	3		Liquid flammable			I II	E3 E2	302 305 Y305	1 L 5 L 1 L	303 307	30 L 60 L
Pentanitroaniline (dry)	FORBIDDEN											
Pentanols	1105	3		Liquid flammable		A3	II III	E2 E1	305 Y305 309 Y309	5 L 1 L 60 L 10 L	307 310	60 L 220 L
1-Pentene	1108	3		Liquid flammable			I	E3	302	1 L	303	30 L
1-Pentol	2705	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
Pentolite, dry or wetted with less than 15% water, by mass	0151	1.1D							FORBIDDEN		FORBIDDEN	
Pentyl nitrite, see **Amyl nitrite**												
Perchlorates, inorganic, n.o.s.	1481	5.1		Oxidizer		A3	II III	E2 E1	508 Y508 516 Y516	5 kg 2.5 kg 25 kg 10 kg	511 518	25 kg 100 kg
Perchlorates, inorganic, aqueous solution, n.o.s.	3211	5.1		Oxidizer		A3	II III	E2 E1	501 Y501 506 Y506	1 L 0.5 L 2.5 L 1 L	506 507	5 L 30 L
Perchloric acid with more than 50% but not more than 72% acid, by mass	1873	5.1	8	Oxidizer & Corrosive			I	E0	FORBIDDEN		501	2.5 L
Perchloric acid with not more than 50% acid, by mass	1802	8	5.1	Corrosive & Oxidizer	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
Perchloric acid with more than 72% acid, by mass	FORBIDDEN											

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Perchlorobenzene, see **Hexachlorobenzene**												
Perchlorocyclopentadiene, see **Hexachlorocyclopentadiene**												
Perchloroethylene, see **Tetrachloroethylene**												
Perchloromethyl mercaptan	1670	6.1			US 4				FORBIDDEN		FORBIDDEN	
Perchloryl fluoride	3083	2.3	5.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Perfluoroacetylchloride, see **Trifluoroacetyl chloride**												
Perfluoro(ethyl vinyl ether)	3154	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Perfluoro(methyl vinyl ether)	3153	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Perfluoropropane, see **Octafluoropropane**												
Perfumery products with flammable solvents	1266	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Permanganates, inorganic, n.o.s.	1482	5.1		Oxidizer		A3 A37	II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
							III	E1	516 Y516	25 kg 10 kg	518	100 kg
Permanganates, inorganic, aqueous solution, n.o.s.	3214	5.1		Oxidizer		A37	II	E2	503 Y503	1 L 0.5 L	505	5 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Permeation devices for calibrating air quality monitoring equipment, see Special Provision A41												
Peroxide, organic, see **Organic peroxide**, etc.												
Peroxides, inorganic, n.o.s.	1483	5.1		Oxidizer		A3	II	E2	509 Y509	5 kg 2.5 kg	512	25 kg
							III	E1	517 Y517	25 kg 10 kg	519	100 kg
Peroxyacetic acid, more than 43% and with more than 6% hydrogen peroxide	FORBIDDEN											
Persulphates, inorganic, n.o.s.	3215	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
Persulphates, inorganic, aqueous solution, n.o.s.	3216	5.1		Oxidizer			III	E1	514 Y514	2.5 L 1 L	515	30 L
Pesticide, liquid, flammable, toxic, n.o.s.*, flash point less than 23°C	3021	3	6.1	Liquid flammable & Toxic		A4	I	E0	FORBIDDEN		303	30 L
							II	E2	305 Y305	1 L 1 L	307	60 L
Pesticide, liquid, toxic, n.o.s.*	2902	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Pesticide, liquid, toxic, flammable, n.o.s.*, flash point not less than 23°C	2903	6.1	3	Toxic & Liquid flammable		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Pesticide, solid, toxic, n.o.s.*	2588	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613 Y613	25 kg 1 kg	615	100 kg
							III	E1	619 Y619	100 kg 10 kg	619	200 kg
Pesticide, toxic, under compressed gas, n.o.s., see **Aerosols**												
PETN/TNT, see **Pentolite**, etc.												
PETN with not less than 7% wax, by mass	0411	1.1D							FORBIDDEN		FORBIDDEN	

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	PETN, desensitized with not less than 15% phlegmatizer, by mass	0150	1.1D							FORBIDDEN		FORBIDDEN	
	PETN (dry)	FORBIDDEN											
+	**PETN mixture desensitized, solid, n.o.s.*** with more than 10% but not more than 20% PETN, by mass	3344	4.1			BE 3				FORBIDDEN		FORBIDDEN	
	PETN, wetted with not less than 25% water, by mass	0150	1.1D							FORBIDDEN		FORBIDDEN	
	Petrol	1203	3		Liquid flammable		A100	II	E2	305 Y305	5 L 1 L	307	60 L
	Petroleum crude oil	1267	3		Liquid flammable		A3	I II III	E3 E2 E1	302 305 Y305 309 Y309	1 L 5 L 1 L 60 L 10 L	303 307 310	30 L 60 L 220 L
	Petroleum distillates, n.o.s.	1268	3		Liquid flammable		A3	I II III	E3 E2 E1	302 305 Y305 309 Y309	1 L 5 L 1 L 60 L 10 L	303 307 310	30 L 60 L 220 L
	Petroleum ether, see **Petroleum distillates, n.o.s.**												
	Petroleum gases, liquefied	1075	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
	Petroleum naphtha, see **Petroleum distillates, n.o.s.**												
	Petroleum oil, see **Petroleum products, n.o.s.**												
	Petroleum products, n.o.s.	1268	3		Liquid flammable		A3	I II III	E3 E2 E1	302 305 Y305 309 Y309	1 L 5 L 1 L 60 L 10 L	303 307 310	30 L 60 L 220 L
	Petroleum raffinate, see **Petroleum distillates, n.o.s.**												
	Petroleum spirit, see **Petroleum distillates, n.o.s.**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Phenacyl bromide	2645	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Phenetidines	2311	6.1		Toxic		A113	III	E1	611 Y611	60 L 2 L	618	220 L
Phenolates, liquid	2904	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
Phenolates, solid	2905	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg
Phenol, molten	2312	6.1							FORBIDDEN		FORBIDDEN	
Phenol, solid	1671	6.1		Toxic		A113	II	E4	613 Y613	25 kg 1 kg	615	100 kg
Phenol solution	2821	6.1		Toxic		A3	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Phenolsulphonic acid, liquid	1803	8		Corrosive			II	E2	809 Y809	1 L 0.5 L	813	30 L
Phenoxyacetic acid derivative pesticide, liquid, flammable, toxic*, flash point less than 23°C	3346	3	6.1	Liquid flammable & Toxic		A4	I	E0	FORBIDDEN		303	30 L
							II	E2	305 Y305	1 L 1 L	307	60 L
Phenoxyacetic acid derivative pesticide, liquid, toxic*	3348	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Phenoxyacetic acid derivative pesticide, liquid, toxic, flammable*, flash point not less than 23°C	3347	6.1	3	Toxic & Liquid flammable		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Phenoxyacetic acid derivative pesticide, solid, toxic*	3345	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613 Y613	25 kg 1 kg	615	100 kg
							III	E1	619 Y619	100 kg 10 kg	619	200 kg
Phenylacetonitrile, liquid	2470	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
Phenylacetyl chloride	2577	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
Phenylamine, see **Aniline**												
1-Phenylbutane, see **Butylbenzenes**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
2-Phenylbutane, see **Butylbenzenes**												
Phenylcarbylamine chloride	1672	6.1							FORBIDDEN		FORBIDDEN	
Phenyl chloroformate	2746	6.1	8	Toxic & Corrosive			II	E4	609 Y609	1 L 1 L	611	60 L
Phenyl cyanide, see **Benzonitrile**												
m-Phenylene diaminediperchlorate (dry)	FORBIDDEN											
Phenylenediamines (o-,m-,p-)	1673	6.1		Toxic		A113	III	E1	619 Y619	100 kg 10 kg	619	200 kg
Phenylethylene, see **Styrene monomer, inhibited**												
Phenylhydrazine	2572	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Phenyl isocyanate	2487	6.1	3						FORBIDDEN		FORBIDDEN	
Phenylisocyanodichloride, see **Phenylcarbylamine chloride**												
Phenyl mercaptan	2337	6.1	3		US 4				FORBIDDEN		FORBIDDEN	
Phenylmercuric acetate	1674	6.1		Toxic	US 4	A6	II	E4	613 Y613	25 kg 1 kg	615	100 kg
Phenylmercuric compound, n.o.s.	2026	6.1		Toxic		A3 A5 A6	I II	E5 E4	606 613 Y613	5 kg 25 kg 1 kg	607 615	50 kg 100 kg
							III	E1	619 Y619	100 kg 10 kg	619	200 kg
Phenylmercuric hydroxide	1894	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Phenylmercuric nitrate	1895	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Phenylphosphorus dichloride	2798	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		812	30 L
Phenylphosphorus thiodichloride	2799	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		812	30 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
2-Phenylpropene, see **Isopropenylbenzene**												
Phenyltrichlorosilane	1804	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
Phosgene	1076	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
9-Phosphabicyclononanes	2940	4.2		Spontaneous combustion			II	E2	415	15 kg	417	50 kg
Phosphine	2199	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Phosphoretted hydrogen, see **Phosphine**												
Phosphoric acid, anhydrous, see **Phosphorus pentoxide**												
Phosphoric acid, solid	3453	8		Corrosive			III	E1	825 Y825	25 kg 5 kg	826	100 kg
Phosphoric acid, solution	1805	8		Corrosive		A3	III	E1	819 Y819	5 L 1 L	821	60 L
Phosphorous acid	2834	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg
Phosphorous (V) sulphide, free from yellow and white phosphorous, see **Phosphorous pentasulphide**												
Phosphorus, amorphous	1338	4.1		Solid flammable			III	E1	422 Y422	25 kg 10 kg	421	100 kg
Phosphorus bromide, see **Phosphorus tribromide**												
Phosphorus chloride, see **Phosphorus trichloride**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Phosphorus heptasulphide, free from yellow and white phosphorus	1339	4.1		Solid flammable			II	E2	416 Y416	15 kg 5 kg	418	50 kg
Phosphorus oxybromide	1939	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		817	50 kg
Phosphorus oxybromide, molten	2576	8							FORBIDDEN		FORBIDDEN	
Phosphorus oxychloride	1810	8			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Phosphorus pentabromide	2691	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		817	50 kg
Phosphorus pentachloride	1806	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		817	50 kg
Phosphorus pentafluoride	2198	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Phosphorus pentasulphide, free from yellow and white phosphorus	1340	4.3	4.1	Danger if wet & Solid flammable	US 4		II	E2	416 Y416	15 kg 5 kg	418	50 kg
Phosphorus pentoxide	1807	8		Corrosive			II	E2	815 Y815	15 kg 5 kg	817	50 kg
Phosphorus sesquisulphide, free from yellow and white phosphorus	1341	4.1		Solid flammable			II	E2	416 Y416	15 kg 5 kg	418	50 kg
Phosphorus sulphochloride, see **Thiophosphoryl chloride**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Phosphorus tribromide	1808	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
Phosphorus trichloride	1809	6.1	8						FORBIDDEN		FORBIDDEN	
Phosphorus trioxide	2578	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg
Phosphorus trisulphide, free from yellow and white phosphorus	1343	4.1		Solid flammable			II	E2	416 Y416	15 kg 5 kg	418	50 kg
Phosphorus, white, dry	1381	4.2	6.1						FORBIDDEN		FORBIDDEN	
Phosphorus, white, in solution	1381	4.2	6.1						FORBIDDEN		FORBIDDEN	
Phosphorus, white, molten	2447	4.2	6.1						FORBIDDEN		FORBIDDEN	
Phosphorus (white or red) and a chlorate, mixture of	FORBIDDEN											
Phosphorus, white, under water	1381	4.2	6.1						FORBIDDEN		FORBIDDEN	
Phosphorus, yellow, dry	1381	4.2	6.1						FORBIDDEN		FORBIDDEN	
Phosphorus, yellow, in solution	1381	4.2	6.1						FORBIDDEN		FORBIDDEN	
Phosphorus, yellow, under water	1381	4.2	6.1						FORBIDDEN		FORBIDDEN	
Phosphoryl chloride, see **Phosphorus oxychloride**												
Phthalic anhydride with more than 0.05% of maleic anhydride	2214	8		Corrosive		A74	III	E1	822 Y822	25 kg 5 kg	823	100 kg
Picolines	2313	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Picramide	0153	1.1D							FORBIDDEN		FORBIDDEN	
Picric acid, dry or wetted with less than 30% water, by mass	0154	1.1D							FORBIDDEN		FORBIDDEN	
+ **Picric acid, wetted** with not less than 30% water, by mass	1344	4.1		Solid flammable	BE 3	A40	I	E0	416	1 kg	412	15 kg
Picric acid, wetted with not less than 10% water, by mass	3364	4.1		Solid flammable		A40	I	E0	416	0.5 kg	416	0.5 kg
Picrite, dry or wetted with less than 20% water, by mass	0282	1.1D							FORBIDDEN		FORBIDDEN	
Picrite, wetted with not less than 20% water by mass	1336	4.1		Solid flammable	BE 3	A40	I	E0	416	1 kg	412	15 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Picrotoxin, see **Toxins, extracted from living sources, n.o.s.**												
Picryl chloride	0155	1.1D							FORBIDDEN		FORBIDDEN	
Picryl chloride, wetted with not less than 10% water, by mass	3365	4.1		Solid flammable		A40	I	E0	416	0.5 kg	416	0.5 kg
alpha-Pinene	2368	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Pine oil	1272	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Piperazine	2579	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg
Piperidine	2401	8	3	Corrosive & Liquid flammable			I	E0	807	0.5 L	809	2.5 L
Pivaloyl chloride, see **Trimethylacetyl chloride**												
Plastic explosives, see **Explosive, blasting, type D**												
Plastics moulding compound in dough, sheet or extruded rope form evolving flammable vapour	3314	9		Miscellaneous		A38	III	E1	908	100 kg	908	200 kg
Plastics, nitrocellulose-based, self-heating, n.o.s.*	2006	4.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Plastic solvent, n.o.s. †, see **Flammable liquid, n.o.s.**												
Plutonium nitrate solution, see Part 2, Chapter 7												
Poisonous, see Toxic												
Polyamines, flammable, corrosive, n.o.s.*	2733	3	8	Liquid flammable & Corrosive		A3	I II III	E0 E2 E1	302 305 Y305 309 Y309	0.5 L 1 L 0.5 L 5 L 1 L	303 307 310	2.5 L 5 L 60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft: Packing instruction	Passenger aircraft: Max. net quantity per package	Cargo aircraft: Packing instruction	Cargo aircraft: Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Polyamines, liquid, corrosive, n.o.s.*	2735	8		Corrosive		A3	I	E0	807	0.5 L	809	2.5 L
							II	E2	808	1 L	812	30 L
									Y808	0.5 L		
							III	E1	818	5 L	820	60 L
									Y818	1 L		
Polyamines, liquid, corrosive, flammable, n.o.s.*	2734	8	3	Corrosive & Liquid flammable			I	E0	807	0.5 L	809	2.5 L
							II	E2	808	1 L	812	30 L
									Y808	0.5 L		
Polyamines, solid, corrosive, n.o.s.*	3259	8		Corrosive		A3	I	E0	810	1 kg	811	25 kg
							II	E2	814	15 kg	816	50 kg
									Y814	5 kg		
							III	E1	822	25 kg	823	100 kg
									Y822	5 kg		
Polychlorinated biphenyls, liquid	2315	9		Miscellaneous	US 4	A11	II	E2	907	100 L	907	220 L
Polychlorinated biphenyls, solid	3432	9		Miscellaneous	US 4	A11	II	E2	911	100 kg	911	200 kg
≠ **Polyester resin kit** †	3269	3		Liquid flammable		A66	II	E0	312	5 kg	312	5 kg
						A163			Y312	1 kg		
							III	E0	312	5 kg	312	5 kg
									Y312	1 kg		
Polyhalogenated biphenyls, liquid	3151	9		Miscellaneous		A11 A95	II	E2	907	100 L	907	220 L
Polyhalogenated biphenyls, solid	3152	9		Miscellaneous		A11 A95	II	E2	911	100 kg	911	200 kg
Polyhalogenated terphenyls, liquid	3151	9		Miscellaneous		A11 A95	II	E2	907	100 L	907	220 L
Polyhalogenated terphenyls, solid	3152	9		Miscellaneous		A11 A95	II	E2	911	100 kg	911	200 kg
Polymeric beads, expandable, evolving flammable vapour †	2211	9		Miscellaneous		A38	III	E1	908	100 kg	908	200 kg
Polystyrene beads, expandable, etc., see **Polymeric beads, expandable**, evolving flammable vapour												
Potassium	2257	4.3		Danger if wet	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	I	E0	FORBIDDEN		412	15 kg
Potassium arsenate	1677	6.1		Toxic	US 4		II	E4	613	25 kg	615	100 kg
									Y613	1 kg		
Potassium arsenite	1678	6.1		Toxic	US 4		II	E4	613	25 kg	615	100 kg
									Y613	1 kg		

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Potassium bifluoride, see **Potassium hydrogendifluoride**												
Potassium bisulphate, see **Potassium hydrogen sulphate**												
Potassium bisulphite solution, see **Bisulphites, aqueous solution, n.o.s.**												
Potassium borohydride	1870	4.3		Danger if wet			I	E0	FORBIDDEN		412	15 kg
Potassium bromate	1484	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Potassium carbonyl	FORBIDDEN											
Potassium chlorate	1485	5.1		Oxidizer			II	E2	509 Y509	5 kg 2.5 kg	512	25 kg
Potassium chlorate, aqueous solution	2427	5.1		Oxidizer		A3	II	E2	503 Y503	1 L 0.5 L	505	5 L
							III	E1	514 Y514	2.5 L 1 L	515	30 L
Potassium chlorate mixed with mineral oil, see **Explosive, blasting, type C**												
Potassium cuprocyanide	1679	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Potassium cyanide, solid	1680	6.1		Toxic	US 4		I	E5	606	5 kg	607	50 kg
Potassium cyanide solution	3413	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
							II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Potassium dicyanocuprate, (I), see **Potassium cuprocyanide**												
Potassium dithionite	1929	4.2		Spontaneous combustion			II	E2	416	15 kg	418	50 kg
Potassium fluoride, solid	1812	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Potassium fluoride solution	3422	6.1		Toxic		A3	III	E1	611 Y611	60 L 2 L	618	220 L
Potassium fluoroacetate	2628	6.1		Toxic			I	E5	606	5 kg	607	50 kg
Potassium fluorosilicate	2655	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Potassium hexafluorosilicate, see **Potassium fluorosilicate**												
Potassium hydrate, see **Potassium hydroxide, solid**												
Potassium hydrogendifluoride, solid	1811	8	6.1	Corrosive & Toxic			II	E2	815 Y815	15 kg 5 kg	817	50 kg
Potassium hydrogendifluoride solution	3421	8	6.1	Corrosive & Toxic		A3	II	E2	809 Y809	1 L 0.5 L	813	30 L
							III	E1	819 Y819	5 L 1 L	821	60 L
Potassium hydrogen sulphate	2509	8		Corrosive			II	E2	815 Y815	15 kg 5 kg	817	50 kg
Potassium hydrosulphite	1929	4.2		Spontaneous combustion			II	E2	416	15 kg	418	50 kg
Potassium hydroxide, liquid, see **Potassium hydroxide solution**												
Potassium hydroxide, solid	1813	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
Potassium hydroxide solution	1814	8		Corrosive		A3	II	E2	809 Y809	1 L 0.5 L	813	30 L
							III	E1	819 Y819	5 L 1 L	821	60 L
Potassium metal alloys, liquid	1420	4.3		Danger if wet	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	I	E0	FORBIDDEN		409	1 L
Potassium metal alloys, solid	3403	4.3		Danger if wet			I	E0	FORBIDDEN		412	15 kg
Potassium metavanadate	2864	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Potassium monoxide	2033	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
Potassium nitrate	1486	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
Potassium nitrate and sodium nitrate mixture, see **Sodium nitrate and potassium nitrate mixture**												
Potassium nitrate and sodium nitrite mixture	1487	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Potassium nitrite	1488	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Potassium perchlorate	1489	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Potassium permanganate	1490	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Potassium peroxide	1491	5.1		Oxidizer	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	I	E0	FORBIDDEN		512	15 kg
Potassium persulphate	1492	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
Potassium phosphide	2012	4.3	6.1	Danger if wet & Toxic			I	E0	FORBIDDEN		412	15 kg
Potassium selenate, see **Selenates**												
Potassium selenite, see **Selenites**												
Potassium silicofluoride, see **Potassium fluorosilicate**												
Potassium sodium alloys, liquid †	1422	4.3		Danger if wet	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	I	E0	FORBIDDEN		409	1 L
Potassium sodium alloys, solid	3404	4.3		Danger if wet			I	E0	FORBIDDEN		412	15 kg
Potassium sulphide with less than 30% water of crystallization	1382	4.2		Spontaneous combustion			II	E2	416	15 kg	418	50 kg
Potassium sulphide, anhydrous †	1382	4.2		Spontaneous combustion			II	E2	416	15 kg	418	50 kg
Potassium sulphide, hydrated with not less than 30% water of crystallization	1847	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
Potassium superoxide	2466	5.1		Oxidizer	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	I	E0	FORBIDDEN		512	15 kg
Potassium tetracyanomercurate, (II), see **Mercuric potassium cyanide**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Powder cake, wetted with not less than 17% alcohol, by mass †	0433	1.1C							FORBIDDEN		FORBIDDEN	
Powder cake, wetted with not less than 25% water, by mass †	0159	1.3C							FORBIDDEN		FORBIDDEN	
Powder paste, wetted with not less than 17% alcohol, by mass †	0433	1.1C							FORBIDDEN		FORBIDDEN	
Powder paste, wetted with not less than 25% water, by mass	0159	1.3C							FORBIDDEN		FORBIDDEN	
Powder, smokeless †	0160	1.1C							FORBIDDEN		FORBIDDEN	
Powder, smokeless †	0161	1.3C							FORBIDDEN		FORBIDDEN	
Power devices, explosive, see **Cartridges, power device**												
Pressurized products, see **Aerosols** etc.												
Primers, cap type †	0044	1.4S		Explosive 1.4				E0	133	25 kg	133	100 kg
Primers, cap type †	0377	1.1B							FORBIDDEN		FORBIDDEN	
Primers, cap type †	0378	1.4B		Explosive 1.4				E0	FORBIDDEN		133	75 kg
Primers, small arms, see **Primers, cap type**												
Primers, tubular †	0319	1.3G							FORBIDDEN		FORBIDDEN	
Primers, tubular †	0320	1.4G		Explosive 1.4				E0	FORBIDDEN		133	75 kg
Primers, tubular †	0376	1.4S		Explosive 1.4				E0	133	25 kg	133	100 kg
Printing ink, flammable	1210	3		Liquid flammable		A3	I	E3	302	1 L	303	30 L
						A72	II	E2	305	5 L	307	60 L
									Y305	1 L		
							III	E1	309	60 L	310	220 L
									Y309	10 L		
Printing ink related material, (including printing ink thinning or reducing compound), flammable	1210	3		Liquid flammable		A3	I	E3	302	1 L	303	30 L
						A72	II	E2	305	5 L	307	60 L
									Y305	1 L		
							III	E1	309	60 L	310	220 L
									Y309	10 L		
Projectiles, inert with tracer †	0345	1.4S		Explosive 1.4				E0	130	25 kg	130	100 kg
Projectiles, inert with tracer †	0424	1.3G							FORBIDDEN		FORBIDDEN	
Projectiles, inert with tracer †	0425	1.4G		Explosive 1.4				E0	FORBIDDEN		130	75 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Projectiles with burster or expelling charge †	0346	1.2D							FORBIDDEN		FORBIDDEN	
Projectiles with burster or expelling charge †	0347	1.4D		Explosive 1.4				E0	FORBIDDEN		130	75 kg
Projectiles with burster or expelling charge †	0426	1.2F							FORBIDDEN		FORBIDDEN	
Projectiles with burster or expelling charge †	0427	1.4F							FORBIDDEN		FORBIDDEN	
Projectiles with burster or expelling charge †	0434	1.2G							FORBIDDEN		FORBIDDEN	
Projectiles with burster or expelling charge †	0435	1.4G		Explosive 1.4				E0	FORBIDDEN		130	75 kg
Projectiles with bursting charge †	0167	1.1F							FORBIDDEN		FORBIDDEN	
Projectiles with bursting charge †	0168	1.1D							FORBIDDEN		FORBIDDEN	
Projectiles with bursting charge †	0169	1.2D							FORBIDDEN		FORBIDDEN	
Projectiles with bursting charge †	0324	1.2F							FORBIDDEN		FORBIDDEN	
Projectiles with bursting charge †	0344	1.4D		Explosive 1.4				E0	FORBIDDEN		130	75 kg
Projectiles, illuminating, see **Ammunition, illuminating**, etc.												
Propadiene and methyl acetylene mixture, stabilized, see **Methyl acetylene and propadiene mixture, stabilized**												
Propadiene, stabilized	2200	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Propane	1978	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Propanethiols	2402	3		Liquid flammable			II	E2	306 Y306	5 L 1 L	308	60 L
n-Propanol	1274	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Propellant, liquid †	0495	1.3C							FORBIDDEN		FORBIDDEN	
Propellant, liquid †	0497	1.1C							FORBIDDEN		FORBIDDEN	
Propellant, single, double or triple base, see **Powder, smokeless**												
Propellant, solid †	0498	1.1C							FORBIDDEN		FORBIDDEN	
Propellant, solid †	0499	1.3C							FORBIDDEN		FORBIDDEN	
Propellant, solid	0501	1.4C							FORBIDDEN		FORBIDDEN	
Propene, see **Propylene**												
Propionaldehyde	1275	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Propionic acid with not less than 90% acid by mass	3463	8	3	Corrosive & Liquid flammable			II	E2	808 Y808	1 L 0.5 L	812	30 L
Propionic acid with not less than 10% and less than 90% acid by mass	1848	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
Propionic anhydride	2496	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
Propionitrile	2404	3	6.1	Liquid flammable & Toxic	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		307	60 L
Propionyl chloride	1815	3	8	Liquid flammable & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L
n-Propyl acetate	1276	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Propyl alcohol, normal	1274	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Propylamine	1277	3	8	Liquid flammable & Corrosive			II	E2	306 Y306	1 L 0.5 L	308	5 L
n-Propylbenzene	2364	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Propyl chloride, see **1-Chloropropane**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
n-Propyl chloroformate	2740	6.1	3 8						FORBIDDEN		FORBIDDEN	
Propylene	1077	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Propylene chlorohydrin	2611	6.1	3	Toxic & Liquid flammable			II	E4	609 Y609	5 L 1 L	611	60 L
1,2-Propylenediamine	2258	8	3	Corrosive & Liquid flammable			II	E2	809 Y809	1 L 0.5 L	813	30 L
Propylene dichloride, see **1,2-Dichloropropane**												
Propyleneimine, stabilized	1921	3	6.1	Liquid flammable & Toxic	US 4		I	E0	306	1 L	304	30 L
Propylene or liquefied petroleum gas, see **Petroleum gases, liquefied**												
Propylene oxide	1280	3		Liquid flammable			I	E3	306	1 L	304	30 L
Propylene tetramer	2850	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Propylene trimer, see **Tripropylene**												
Propyl formates	1281	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
n-Propyl isocyanate	2482	6.1	3						FORBIDDEN		FORBIDDEN	
Propyl mercaptan, see **Propanethiols**												
n-Propyl nitrate	1865	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Propyltrichlorosilane	1816	8	3	Corrosive & Liquid flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
Pyrazine hexahydride, see **Piperazine**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Pyrethroid pesticide, liquid flammable, toxic*, flash point less than 23°C	3350	3	6.1	Liquid flammable & Toxic		A4	I	E0	FORBIDDEN		303	30 L
							II	E2	305 Y305	1 L 1 L	307	60 L
Pyrethroid pesticide, liquid, toxic*	3352	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Pyrethroid pesticide, liquid, toxic, flammable*, flash point not less than 23°C	3351	6.1	3	Toxic & Liquid flammable		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Pyrethroid pesticide, solid, toxic*	3349	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613 Y613	25 kg 1 kg	615	100 kg
							III	E1	619 Y619	100 kg 10 kg	619	200 kg
Pyridine	1282	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Pyridine perchlorate	FORBIDDEN											
Pyrophoric alloy, n.o.s.*	1383	4.2							FORBIDDEN		FORBIDDEN	
Pyrophoric liquid, inorganic, n.o.s.* †	3194	4.2							FORBIDDEN		FORBIDDEN	
Pyrophoric liquid, organic, n.o.s.*†	2845	4.2							FORBIDDEN		FORBIDDEN	
Pyrophoric metal, n.o.s.*	1383	4.2							FORBIDDEN		FORBIDDEN	
Pyrophoric solid, inorganic, n.o.s.* †	3200	4.2							FORBIDDEN		FORBIDDEN	
Pyrophoric solid, organic, n.o.s.* †	2846	4.2							FORBIDDEN		FORBIDDEN	
Pyrosulphuryl chloride	1817	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
Pyroxylin solution †, see **Nitrocellulose solution, flammable**												
Pyrrolidine	1922	3	8	Liquid flammable & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Q												
	Quebrachitol pentanitrate	FORBIDDEN											
	Quinoline	2656	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
	Quinone, see **Benzoquinone**												
	R												
≠	**Radioactive material, excepted package — articles manufactured from natural uranium** or **depleted uranium** or **natural thorium**	2909	7		None		A130			See Part 1;6			
≠	**Radioactive material, excepted package — empty packaging**	2908	7		None		A130			See Part 1;6			
≠	**Radioactive material, excepted package — instruments** or **articles**	2911	7		None		A130			See Part 1;6			
≠	**Radioactive material, excepted package — limited quantity of material**	2910	7		None		A130			See Part 1;6			
	Radioactive material, low specific activity (LSA-I), non-fissile or fissile excepted	2912	7		Radioactive	CA 1	A23 A78 A139			See Part 2;7 and Part 4;9			
≠	**Radioactive material, low specific activity (LSA-II)**, non-fissile or fissile excepted	3321	7		Radioactive	CA 1	A23 A78 A139 A159			See Part 2;7 and Part 4;9			
≠	**Radioactive material, low specific activity (LSA-II), fissile**	3324	7		Radioactive	CA 1	A76 A78 A159			See Part 2;7 and Part 4;9			
≠	**Radioactive material, low specific activity (LSA-III)**, non-fissile or fissile excepted	3322	7		Radioactive	CA 1	A23 A78 A139 A159			See Part 2;7 and Part 4;9			
≠	**Radioactive material, low specific activity (LSA-III), fissile**	3325	7		Radioactive	CA 1	A76 A78 A159			See Part 2;7 and Part 4;9			
≠	**Radioactive material, surface contaminated objects (SCO-I** or **SCO-II)**, non-fissile or fissile excepted	2913	7		Radioactive	CA 1	A78 A139 A159			See Part 2;7 and Part 4;9			

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
≠	**Radioactive material, surface contaminated objects (SCO-I** or **SCO-II), fissile**	3326	7		Radioactive	CA 1	A76 A78 A159			See Part 2;7 and Part 4;9			
	Radioactive material, transported under special arrangement, non-fissile or fissile excepted	2919	7		Radioactive	CA 1	A78 A139			See Part 2;7 and Part 4;9			
	Radioactive material, transported under special arrangement, fissile	3331	7		Radioactive	CA 1	A78			See Part 2;7 and Part 4;9			
	Radioactive material, Type A package, non-special form, non-fissile or fissile excepted	2915	7		Radioactive	CA 1	A23 A78 A139			See Part 2;7 and Part 4;9			
	Radioactive material, Type A package, fissile, non-special form	3327	7		Radioactive	CA 1	A78			See Part 2;7 and Part 4;9			
	Radioactive material, Type A package, special form, non-fissile or fissile excepted	3332	7		Radioactive	CA 1	A78 A139			See Part 2;7 and Part 4;9			
	Radioactive material, Type A package, special form, fissile	3333	7		Radioactive	CA 1	A78			See Part 2;7 and Part 4;9			
≠	**Radioactive material, Type B(M) package**, non-fissile or fissile excepted	2917	7		Radioactive	CA 1	A78 A139 A160			See Part 2;7 and Part 4;9			
≠	**Radioactive material, Type B(M) package, fissile**	3329	7		Radioactive	CA 1	A78 A160			See Part 2;7 and Part 4;9			
≠	**Radioactive material, Type B(U) package**, non-fissile or fissile excepted	2916	7		Radioactive	CA 1	A78 A139 A160			See Part 2;7 and Part 4;9			
≠	**Radioactive material, Type B(U) package, fissile**	3328	7		Radioactive	CA 1	A78 A160			See Part 2;7 and Part 4;9			
	Radioactive material, Type C package, non-fissile or fissile excepted	3323	7		Radioactive	CA 1	A78 A139			See Part 2;7 and Part 4;9			
	Radioactive material, Type C package, fissile	3330	7		Radioactive	CA 1	A78			See Part 2;7 and Part 4;9			
	Radioactive material, uranium hexafluoride, non-fissile or fissile excepted	2978	7	8	Radioactive & Corrosive	CA 1	A139			See Part 2;7 and Part 4;9			
	Radioactive material, uranium hexafluoride, fissile	2977	7	8	Radioactive & Corrosive					See Part 2;7 and Part 4;9			

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
RDX and cyclotetramethylenetetranitramine mixture, desensitized with not less than 10% phlegmatizer, by mass	0391	1.1D							FORBIDDEN		FORBIDDEN	
RDX and cyclotetramethylenetetranitramine mixture, wetted with not less than 15% water, by mass	0391	1.1D							FORBIDDEN		FORBIDDEN	
RDX, desensitized	0483	1.1D							FORBIDDEN		FORBIDDEN	
RDX, wetted with not less than 15% water, by mass	0072	1.1D							FORBIDDEN		FORBIDDEN	
Receptacles, small, containing gas (flammable) without a release device, non-refillable	2037	2.1		Gas flammable				E0	203 Y203	1 kg 1 kg	203	15 kg
Receptacles, small, containing gas (non-flammable) without a release device, non-refillable	2037	2.2		Gas non-flammable		A98		E0	203 Y203	1 kg 1 kg	203	15 kg
Receptacles, small, containing gas (oxidizing) without a release device, non-refillable	2037	2.2	5.1	Gas non-flammable & Oxidizer				E0	203	1 kg	203	15 kg
Receptacles, small, containing gas (toxic & corrosive) without a release device, non-refillable	2037	2.3	2.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Receptacles, small, containing gas (toxic, flammable & corrosive) without a release device, non-refillable	2037	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Receptacles, small, containing gas (toxic & flammable) without a release device, non-refillable	2037	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Receptacles, small, containing gas (toxic, oxidizing & corrosive) without a release device, non-refillable	2037	2.3	5.1 8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Receptacles, small, containing gas (toxic & oxidizing) without a release device, non-refillable	2037	2.3	5.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Receptacles, small, containing gas (toxic) without a release device, non-refillable	2037	2.3			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Red phosphorus, see **Phosphorus, amorphous**												
Refrigerant gas, n.o.s.*	1078	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 12	1028	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 12B1	1974	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 13	1022	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 13B1	1009	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 14	1982	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 21	1029	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 22	1018	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 23	1984	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 32	3252	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Refrigerant gas R 40	1063	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	100 kg
Refrigerant gas R 41	2454	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Refrigerant gas R 114	1958	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 115	1020	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 116	2193	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 124	1021	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 125	3220	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 133a	1983	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 134a	3159	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 142b	2517	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Refrigerant gas R 143a	2035	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Refrigerant gas R 152a	1030	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Refrigerant gas R 161	2453	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Refrigerant gas R 218	2424	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 227	3296	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 404A	3337	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 407A	3338	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 407B	3339	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 407C	3340	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 500	2602	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 502	1973	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 503	2599	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 1132a	1959	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Refrigerant gas R 1216	1858	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R 1318	2422	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerant gas R C318	1976	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Refrigerating machines containing flammable, non-toxic, liquefied gas	3358	2.1				A103			FORBIDDEN		FORBIDDEN	
Refrigerating machines containing non-flammable, non-toxic gases or ammonia solutions (UN 2672)	2857	2.2		Gas non-flammable		A26		E0	See 211		See 211	
Refrigerating machines containing toxic, liquefied gas or ammonia solution with more than 50% ammonia	FORBIDDEN											
Regulated medical waste, n.o.s.	3291	6.2		Infectious		A117	II	E0	622	No limit	622	No limit
Release devices, explosive †	0173	1.4S		Explosive 1.4				E0	134	25 kg	134	100 kg
Resin solution, flammable	1866	3		Liquid flammable		A3	I II III	E3 E2 E1	302 305 Y305 309 Y309	1 L 5 L 1 L 60 L 10 L	303 307 310	30 L 60 L 220 L
Resorcin, see **Resorcinol**												
Resorcinol	2876	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Rivets, explosive	0174	1.4S		Explosive 1.4				E0	134	25 kg	134	100 kg
Rocket motors †	0186	1.3C		Explosive				E0	FORBIDDEN		130	220 kg
Rocket motors †	0280	1.1C							FORBIDDEN		FORBIDDEN	
Rocket motors †	0281	1.2C							FORBIDDEN		FORBIDDEN	
Rocket motors, liquid fuelled †	0395	1.2J							FORBIDDEN		FORBIDDEN	
Rocket motors, liquid fuelled †	0396	1.3J							FORBIDDEN		FORBIDDEN	
Rocket motors with hypergolic liquids with or without expelling charge †	0250	1.3L							FORBIDDEN		FORBIDDEN	
Rocket motors with hypergolic liquids with or without expelling charge †	0322	1.2L							FORBIDDEN		FORBIDDEN	
Rockets with bursting charge †	0180	1.1F							FORBIDDEN		FORBIDDEN	
Rockets with bursting charge †	0181	1.1E							FORBIDDEN		FORBIDDEN	
Rockets with bursting charge †	0182	1.2E							FORBIDDEN		FORBIDDEN	
Rockets with bursting charge †	0295	1.2F							FORBIDDEN		FORBIDDEN	
Rockets with expelling charge †	0436	1.2C							FORBIDDEN		FORBIDDEN	
Rockets with expelling charge †	0437	1.3C							FORBIDDEN		FORBIDDEN	
Rockets with expelling charge †	0438	1.4C		Explosive 1.4				E0	FORBIDDEN		130	75 kg
Rockets with inert head †	0183	1.3C							FORBIDDEN		FORBIDDEN	
Rockets with inert head †	0502	1.2C							FORBIDDEN		FORBIDDEN	
Rockets, line-throwing †	0238	1.2G							FORBIDDEN		FORBIDDEN	
Rockets, line-throwing †	0240	1.3G		Explosive				E0	FORBIDDEN		130	75 kg
Rockets, line-throwing †	0453	1.4G		Explosive 1.4				E0	FORBIDDEN		130	75 kg
Rockets, liquid fuelled with bursting charge †	0397	1.1J							FORBIDDEN		FORBIDDEN	
Rockets, liquid fuelled with bursting charge †	0398	1.2J							FORBIDDEN		FORBIDDEN	
Rosin oil	1286	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Rubber scrap, powdered or granulated, not exceeding 840 microns and rubber content exceeding 45%	1345	4.1		Solid flammable		A3	II	E2	415 Y415	15 kg 5 kg	417	50 kg
Rubber shoddy, powdered or granulated, not exceeding 840 microns and rubber content exceeding 45%	1345	4.1		Solid flammable		A3	II	E2	415 Y415	15 kg 5 kg	417	50 kg
Rubber solution	1287	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Rubidium	1423	4.3		Danger if wet			I	E0	FORBIDDEN		412	15 kg
Rubidium hydroxide	2678	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
Rubidium hydroxide solution	2677	8		Corrosive		A3	II	E2	809 Y809	1 L 0.5 L	813	30 L
							III	E1	819 Y819	5 L 1 L	821	60 L
S												
Saltpetre, see **Potassium nitrate**												
Samples, explosive*, other than initiating explosives	0190	1							FORBIDDEN		FORBIDDEN	
Sand acid, see **Fluorosilicic acid**												
Seat-belt pretensioners †	0503	1.4G		Explosive 1.4		A32 A56		E0	FORBIDDEN		135	75 kg
Seat-belt pretensioners †	3268	9		Miscellaneous	BE 3 US 16	A32 A115 A119	III	E0	917	25 kg	917	100 kg
Security type equipment such as attaché cases incorporating cash boxes, cash bags, dangerous goods, for example lithium batteries or pyrotechnic material	FORBIDDEN											
Seed cake with more than 1.5% oil and not more than 11% moisture	1386	4.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Seed cake with not more than 1.5% oil and not more than 11% moisture	2217	4.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2 A55			FORBIDDEN		FORBIDDEN	
Seed expellers, see **Seed cake**, etc.												
Selenates	2630	6.1		Toxic	US 4		I	E5	606	5 kg	607	50 kg
Selenic acid	1905	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	I	E0	FORBIDDEN		811	25 kg
Selenites	2630	6.1		Toxic	US 4		I	E5	606	5 kg	607	50 kg
Selenium compound, liquid, n.o.s.	3440	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Selenium compound, solid, n.o.s.	3283	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613 Y613	25 kg 1 kg	615	100 kg
							III	E1	619 Y619	100 kg 10 kg	619	200 kg
Selenium disulphide	2657	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg
Selenium hexafluoride	2194	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Selenium nitride	FORBIDDEN											
Selenium oxychloride	2879	8	6.1	Corrosive & Toxic			I	E0	807	0.5 L	809	2.5 L
Self-heating liquid, corrosive, inorganic, n.o.s.*	3188	4.2	8	Spontaneous combustion & Corrosive		A3	II	E2	408	1 L	414	5 L
							III	E1	414	5 L	425	60 L
Self-heating liquid, corrosive, organic, n.o.s.*	3185	4.2	8	Spontaneous combustion & Corrosive		A3	II	E2	408	1 L	414	5 L
							III	E1	414	5 L	425	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Self-heating liquid, inorganic, n.o.s.*	3186	4.2		Spontaneous combustion		A3	II III	E2 E1	408 414	1 L 5 L	414 425	5 L 60 L
Self-heating liquid, organic, n.o.s.*	3183	4.2		Spontaneous combustion		A3	II III	E2 E1	408 414	1 L 5 L	414 425	5 L 60 L
Self-heating liquid, toxic, inorganic, n.o.s.*	3187	4.2	6.1	Spontaneous combustion & Toxic		A3	II III	E2 E1	408 414	1 L 5 L	414 425	5 L 60 L
Self-heating liquid, toxic, organic, n.o.s.*	3184	4.2	6.1	Spontaneous combustion & Toxic		A3	II III	E2 E1	408 414	1 L 5 L	414 425	5 L 60 L
Self-heating solid, corrosive, inorganic, n.o.s.*	3192	4.2	8	Spontaneous combustion & Corrosive		A3	II III	E2 E1	415 419	15 kg 25 kg	417 420	50 kg 100 kg
Self-heating solid, corrosive, organic, n.o.s.*	3126	4.2	8	Spontaneous combustion & Corrosive		A3	II III	E2 E1	415 419	15 kg 25 kg	417 420	50 kg 100 kg
Self-heating solid, inorganic, n.o.s.*	3190	4.2		Spontaneous combustion		A3	II III	E2 E1	415 419	15 kg 25 kg	417 420	50 kg 100 kg
Self-heating solid, organic, n.o.s.*	3088	4.2		Spontaneous combustion		A3	II III	E2 E1	415 419	15 kg 25 kg	417 420	50 kg 100 kg
Self-heating solid, oxidizing, n.o.s.*	3127	4.2	5.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2 A3			FORBIDDEN		FORBIDDEN	
Self-heating solid, toxic, inorganic, n.o.s.*	3191	4.2	6.1	Spontaneous combustion & Toxic		A3	II III	E2 E1	415 419	15 kg 25 kg	417 420	50 kg 100 kg
Self-heating solid, toxic, organic, n.o.s.*	3128	4.2	6.1	Spontaneous combustion & Toxic		A3	II III	E2 E1	415 419	15 kg 25 kg	417 420	50 kg 100 kg
Self-inflating passenger restraint systems (air bags) for motor vehicles, see **Life-saving appliances, self-inflating** (UN No. 2990) or **Air bag inflators** or **Air bag modules** or **Seat-belt pretensioners** (UN No. 3268)												
Self-propelled vehicle, see **Battery-powered equipment** or **Battery-powered vehicle** or **Vehicle, (flammable gas powered)** or **Vehicle, (flammable liquid powered)**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Self-reactive liquid type B*	3221	4.1							FORBIDDEN		FORBIDDEN	
Self-reactive liquid type B, temperature controlled*	3231	4.1							FORBIDDEN		FORBIDDEN	
Self-reactive liquid type C*	3223	4.1		Solid flammable		A20		E0	427	5 L	428	10 L
Self-reactive liquid type C, temperature controlled*	3233	4.1							FORBIDDEN		FORBIDDEN	
Self-reactive liquid type D*	3225	4.1		Solid flammable		A20		E0	427	5 L	428	10 L
Self-reactive liquid type D, temperature controlled*	3235	4.1							FORBIDDEN		FORBIDDEN	
Self-reactive liquid type E*	3227	4.1		Solid flammable		A20		E0	427	10 L	428	25 L
Self-reactive liquid type E, temperature controlled*	3237	4.1							FORBIDDEN		FORBIDDEN	
Self-reactive liquid type F*	3229	4.1		Solid flammable		A20		E0	427	10 L	428	25 L
Self-reactive liquid type F, temperature controlled*	3239	4.1							FORBIDDEN		FORBIDDEN	
Self-reactive solid type B	FORBIDDEN											
Self-reactive solid type B, temperature controlled	FORBIDDEN											
Self-reactive solid type C*	3224	4.1		Solid flammable		A20		E0	429	5 kg	430	10 kg
Self-reactive solid type C, temperature controlled*	3234	4.1							FORBIDDEN		FORBIDDEN	
Self-reactive solid type D*	3226	4.1		Solid flammable		A20		E0	429	5 kg	430	10 kg
Self-reactive solid type D, temperature controlled*	3236	4.1							FORBIDDEN		FORBIDDEN	
Self-reactive solid type E*	3228	4.1		Solid flammable		A20		E0	429	10 kg	430	25 kg
Self-reactive solid type E, temperature controlled*	3238	4.1							FORBIDDEN		FORBIDDEN	
Self-reactive solid type F*	3230	4.1		Solid flammable		A20		E0	429	10 kg	430	25 kg
Self-reactive solid type F, temperature controlled*	3240	4.1							FORBIDDEN		FORBIDDEN	
Shale oil	1288	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Shaped charges, see **Charges, shaped, commercial**												

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Signal devices, hand †	0191	1.4G		Explosive 1.4				E0	FORBIDDEN		135	75 kg
	Signal devices, hand †	0373	1.4S		Explosive 1.4				E0	135	25 kg	135	100 kg
	Signals, distress, ship †	0194	1.1G							FORBIDDEN		FORBIDDEN	
	Signals, distress, ship †	0195	1.3G		Explosive				E0	FORBIDDEN		135	75 kg
+	**Signals, distress**, ship†	0505	1.4G		Explosive 1.4				E0	FORBIDDEN		135	75 kg
+	**Signals, distress**, ship†	0506	1.4S		Explosive 1.4				E0	135	25 kg	135	100 kg
	Signals, distress, ship, water-activated, see **Contrivances, water-activated**, etc.												
	Signals, railway track, explosive †	0192	1.1G							FORBIDDEN		FORBIDDEN	
	Signals, railway track, explosive †	0193	1.4S		Explosive 1.4				E0	135	25 kg	135	100 kg
	Signals, railway track, explosive †	0492	1.3G							FORBIDDEN		FORBIDDEN	
	Signals, railway track, explosive †	0493	1.4G		Explosive 1.4				E0	FORBIDDEN		135	75 kg
	Signals, smoke †	0196	1.1G							FORBIDDEN		FORBIDDEN	
	Signals, smoke †	0197	1.4G		Explosive 1.4				E0	FORBIDDEN		135	75 kg
	Signals, smoke †	0313	1.2G							FORBIDDEN		FORBIDDEN	
	Signals, smoke †	0487	1.3G							FORBIDDEN		FORBIDDEN	
+	**Signals, smoke** †	0507	1.4S		Explosive 1.4				E0	135	25 kg	135	100 kg
	Silane	2203	2.1			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
	Silicofluoric acid, see **Fluorosilicic acid**												
	Silicofluorides, n.o.s., see **Fluorosilicates, n.o.s.**												
	Silicon chloride, see **Silicon tetrachloride**												
	Silicon powder, amorphous	1346	4.1		Solid flammable		A54	III	E1	419 Y419	25 kg 10 kg	420	100 kg
	Silicon tetrachloride	1818	8		Corrosive			II	E2	809 Y809	1 L 0.5 L	813	30 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Silicon tetrafluoride	1859	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Silver acetylide (dry)	FORBIDDEN											
Silver arsenite	1683	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Silver azide (dry)	FORBIDDEN											
Silver chlorite (dry)	FORBIDDEN											
Silver cyanide	1684	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg
Silver fulminate (dry)	FORBIDDEN											
Silver nitrate	1493	5.1		Oxidizer	US 4		II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Silver oxalate (dry)	FORBIDDEN											
Silver picrate (dry)	FORBIDDEN											
Silver picrate, wetted with not less than 30% water, by mass	1347	4.1			BE 3	A40			FORBIDDEN		FORBIDDEN	
Sludge acid †	1906	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
Soda lime with more than 4% sodium hydroxide †	1907	8		Corrosive		A16	III	E1	822 Y822	25 kg 5 kg	823	100 kg
Sodium	1428	4.3		Danger if wet	AU 1 CA 7 GB 3 IR 3 NL 1 US 3 US 4	A1	I	E0	FORBIDDEN		412	15 kg
Sodium aluminate, solid	2812	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Sodium aluminate solution	1819	8		Corrosive		A3	II	E2	808 Y808	1 L 0.5 L	812	30 L
							III	E1	818 Y818	5 L 1 L	820	60 L
Sodium aluminium hydride	2835	4.3		Danger if wet	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		418	50 kg
Sodium ammonium vanadate	2863	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Sodium arsanilate	2473	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Sodium arsenate	1685	6.1		Toxic	US 4		II	E4	613 Y613	25 kg 1 kg	615	100 kg
Sodium arsenite, aqueous solution	1686	6.1		Toxic	US 4	A3 A6	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Sodium arsenite, solid	2027	6.1		Toxic	US 4	A6	II	E4	613 Y613	25 kg 1 kg	615	100 kg
Sodium azide	1687	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Sodium bifluoride, see **Sodium hydrogendifluoride**												
Sodium binoxide, see **Sodium peroxide**												
Sodium bisulphite solution, see **Bisulphites, aqueous solution, n.o.s.**												
Sodium borohydride	1426	4.3		Danger if wet			I	E0	FORBIDDEN		412	15 kg
Sodium borohydride and sodium hydroxide solution, with not more than 12% sodium borohydride and not more than 40% sodium hydroxide by mass	3320	8		Corrosive		A3	II	E2	809 Y809	1 L 0.5 L	813	30 L
							III	E1	819 Y819	5 L 1 L	821	60 L
Sodium bromate	1494	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Sodium cacodylate	1688	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Sodium carbonate peroxyhydrate	3378	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	512	25 kg
							III	E1	516 Y516	25 kg 10 kg	518	100 kg
Sodium chlorate	1495	5.1		Oxidizer			II	E2	509 Y509	5 kg 2.5 kg	512	25 kg
Sodium chlorate, aqueous solution	2428	5.1		Oxidizer		A3	II	E2	503 Y503	1 L 0.5 L	505	5 L
							III	E1	514 Y514	2.5 L 1 L	515	30 L
Sodium chlorate mixed with dinitrotoluene, see **Explosive, blasting, type C**												
Sodium chlorite	1496	5.1		Oxidizer			II	E2	509 Y509	5 kg 2.5 kg	512	25 kg
Sodium chloroacetate	2659	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Sodium cuprocyanide, solid	2316	6.1		Toxic			I	E5	606	5 kg	607	50 kg
Sodium cuprocyanide solution	2317	6.1		Toxic			I	E5	603	1 L	604	30 L
Sodium cyanide, solid	1689	6.1		Toxic	US 4		I	E5	606	5 kg	607	50 kg
Sodium cyanide solution	3414	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
							II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Sodium dicyanocuprate, (I), solid, see **Sodium cuprocyanide, solid**												
Sodium dicyanocuprate, (I), solution, see **Sodium cuprocyanide solution**												
Sodium dimethylarsenate, see **Sodium cacodylate**												
Sodium dinitro-o-cresolate, dry or wetted with less than 15% water, by mass	0234	1.3C							FORBIDDEN		FORBIDDEN	
Sodium dinitro-o-cresolate, wetted with not less than 15% water, by mass	1348	4.1	6.1	Solid flammable & Toxic	BE 3	A40	I	E0	416	1 kg	412	15 kg
Sodium dinitro-o-cresolate, wetted with not less than 10% water, by mass	3369	4.1		Solid flammable		A40	I	E0	416	0.5 kg	416	0.5 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Sodium dioxide, see **Sodium peroxide**												
Sodium dithionite	1384	4.2		Spontaneous combustion			II	E2	416	15 kg	418	50 kg
Sodium fluoride, solid	1690	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Sodium fluoride solution	3415	6.1		Toxic		A3	III	E1	611 Y611	60 L 2 L	618	220 L
Sodium fluoroacetate	2629	6.1		Toxic	US 4		I	E5	606	5 kg	607	50 kg
Sodium fluorosilicate	2674	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Sodium hexafluorosilicate, see **Sodium fluorosilicate**												
Sodium hydrate, see **Sodium hydroxide solution**												
Sodium hydride	1427	4.3		Danger if wet			I	E0	FORBIDDEN		412	15 kg
Sodium hydrogen 4-amino-phenylarsenate, see **Sodium arsanilate**												
≠ **Sodium hydrogendifluoride**	2439	8		Corrosive	US 4		II	E2	815 Y815	15 kg 5 kg	817	50 kg
> **Sodium hydrosulphide** with less than 25% water of crystallization	2318	4.2		Spontaneous combustion			II	E2	416	15 kg	418	50 kg
Sodium hydrosulphide, hydrated with not less than 25% water of crystallization	2949	8		Corrosive			II	E2	815 Y815	15 kg 5 kg	817	50 kg
Sodium hydrosulphite	1384	4.2		Spontaneous combustion			II	E2	416	15 kg	418	50 kg
Sodium hydroxide, solid	1823	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
Sodium hydroxide solution	1824	8		Corrosive		A3	II	E2	809 Y809	1 L 0.5 L	813	30 L
							III	E1	819 Y819	5 L 1 L	821	60 L
Sodium metasilicate pentahydrate, see **Disodium trioxosilicate**												
Sodium methylate	1431	4.2	8	Spontaneous combustion & Corrosive			II	E2	416	15 kg	418	50 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Sodium methylate solution in alcohol	1289	3	8	Liquid flammable & Corrosive		A3	II	E2	305 Y305	1 L 0.5 L	307	5 L
							III	E1	309 Y309	5 L 1 L	310	60 L
Sodium monoxide	1825	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
Sodium nitrate	1498	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
Sodium nitrate and potassium nitrate mixture	1499	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
Sodium nitrite	1500	5.1	6.1	Oxidizer & Toxic	US 4		III	E1	516 Y516	25 kg 10 kg	518	100 kg
Sodium nitrite and potassium nitrate mixture, see **Potassium nitrate and sodium nitrite mixture**												
Sodium pentachlorophenate	2567	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Sodium perborate monohydrate	3377	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
Sodium perchlorate	1502	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Sodium permanganate	1503	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Sodium peroxide	1504	5.1		Oxidizer	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	I	E0	FORBIDDEN		512	15 kg
Sodium peroxoborate, anhydrous	3247	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Sodium persulphate	1505	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
Sodium phosphide	1432	4.3	6.1	Danger if wet & Toxic			I	E0	FORBIDDEN		412	15 kg
Sodium picramate, dry or wetted with less than 20% water, by mass	0235	1.3C							FORBIDDEN		FORBIDDEN	
Sodium picramate, wetted with not less than 20% water, by mass	1349	4.1		Solid flammable	AU 1 BE 3 CA 7 GB 3 IR 3 NL 1 US 3	A1 A40	I	E0	FORBIDDEN		412	15 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Sodium picryl peroxide	FORBIDDEN											
Sodium potassium alloys, see **Potassium sodium alloys**												
Sodium selenate, see **Selenates**												
Sodium selenite, see **Selenites**												
Sodium silicofluoride, see **Sodium fluorosilicate**												
Sodium sulphide with less than 30% water of crystallization	1385	4.2		Spontaneous combustion			II	E2	416	15 kg	418	50 kg
Sodium sulphide, anhydrous †	1385	4.2		Spontaneous combustion			II	E2	416	15 kg	418	50 kg
Sodium sulphide, hydrated with not less than 30% water	1849	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
Sodium superoxide	2547	5.1		Oxidizer	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	I	E0	FORBIDDEN		512	15 kg
Sodium tetranitride	FORBIDDEN											
Solids containing corrosive liquid, n.o.s.*	3244	8		Corrosive		A77	II	E2	814 Y814	15 kg 5 kg	816	50 kg
Solids containing flammable liquid, n.o.s.*	3175	4.1		Solid flammable		A46	II	E2	415 Y415	15 kg 5 kg	417	50 kg
Solids containing toxic liquid, n.o.s.*	3243	6.1		Toxic		A50	II	E4	613 Y613	25 kg 1 kg	615	100 kg
Solvents, flammable †, n.o.s., see **Flammable liquid, n.o.s.**												
Solvents, flammable, toxic †, n.o.s., see **Flammable liquid, toxic, n.o.s.**												
Sounding devices, explosive †	0204	1.2F							FORBIDDEN		FORBIDDEN	
Sounding devices, explosive †	0296	1.1F							FORBIDDEN		FORBIDDEN	
Sounding devices, explosive †	0374	1.1D							FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Sounding devices, explosive †	0375	1.2D							FORBIDDEN		FORBIDDEN	
Squibs, see **Igniters** (UN 0325, 0454)												
Stannic chloride, anhydrous	1827	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
Stannic chloride pentahydrate	2440	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg
Stannic phosphides	1433	4.3	6.1	Danger if wet & Toxic			I	E0	FORBIDDEN		412	15 kg
Steel swarf, see **Ferrous metal, borings, shavings, turnings or cuttings**, etc.												
Stibine	2676	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Storage batteries, wet, see **Batteries, wet**, etc.												
Strontium alloys, pyrophoric, see **Pyrophoric metal, n.o.s.**, etc.												
Strontium arsenite	1691	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Strontium chlorate	1506	5.1		Oxidizer			II	E2	509 Y509	5 kg 2.5 kg	512	25 kg
Strontium dioxide, see **Strontium peroxide**												
Strontium nitrate	1507	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
Strontium perchlorate	1508	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Strontium peroxide	1509	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Strontium phosphide	2013	4.3	6.1	Danger if wet & Toxic			I	E0	FORBIDDEN		412	15 kg
Strychnine	1692	6.1		Toxic	US 4	A5	I	E5	606	5 kg	607	50 kg
Strychnine salts	1692	6.1		Toxic	US 4	A5	I	E5	606	5 kg	607	50 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Styphnic acid, dry or wetted with less than 20% water, or mixture of alcohol and water, by mass	0219	1.1D							FORBIDDEN		FORBIDDEN	
Styphnic acid, wetted with not less than 20% water, or mixture of alcohol and water, by mass	0394	1.1D							FORBIDDEN		FORBIDDEN	
Styrene monomer, stabilized	2055	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Substances, EVI, n.o.s.* †	0482	1.5D							FORBIDDEN		FORBIDDEN	
Substances, explosive, n.o.s.*	0357	1.1L							FORBIDDEN		FORBIDDEN	
Substances, explosive, n.o.s.*	0358	1.2L							FORBIDDEN		FORBIDDEN	
Substances, explosive, n.o.s.*	0359	1.3L							FORBIDDEN		FORBIDDEN	
Substances, explosive, n.o.s.*	0473	1.1A							FORBIDDEN		FORBIDDEN	
Substances, explosive, n.o.s.*	0474	1.1C							FORBIDDEN		FORBIDDEN	
Substances, explosive, n.o.s.*	0475	1.1D							FORBIDDEN		FORBIDDEN	
Substances, explosive, n.o.s.*	0476	1.1G							FORBIDDEN		FORBIDDEN	
Substances, explosive, n.o.s.*	0477	1.3C							FORBIDDEN		FORBIDDEN	
Substances, explosive, n.o.s.*	0478	1.3G							FORBIDDEN		FORBIDDEN	
Substances, explosive, n.o.s.*	0479	1.4C		Explosive 1.4		A62		E0	FORBIDDEN		101	75 kg
Substances, explosive, n.o.s.*	0480	1.4D		Explosive 1.4		A62		E0	FORBIDDEN		101	75 kg
Substances, explosive, n.o.s.*	0481	1.4S		Explosive 1.4		A62		E0	101	25 kg	101	100 kg
Substances, explosive, n.o.s.*	0485	1.4G		Explosive 1.4		A62		E0	FORBIDDEN		101	75 kg
Substances, explosive, very insensitive, n.o.s.* †	0482	1.5D							FORBIDDEN		FORBIDDEN	
Substances liable to spontaneous combustion, n.o.s., see **Pyrophoric liquid/solid, inorganic/organic, n.o.s.** or **Self-heating liquid/solid, inorganic/organic, n.o.s.**												
Substituted nitrophenol pesticide, liquid, flammable, toxic*, flash point less than 23°C	2780	3	6.1	Liquid flammable & Toxic		A4	I	E0	FORBIDDEN		303	30 L
							II	E2	305 Y305	1 L 1 L	307	60 L
Substituted nitrophenol pesticide, liquid, toxic*	3014	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Substituted nitrophenol pesticide, liquid, toxic, flammable*, flash point not less than 23°C	3013	6.1	3	Toxic & Liquid flammable		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609	5 L	611	60 L
									Y609	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		
Substituted nitrophenol pesticide, solid, toxic*	2779	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613	25 kg	615	100 kg
									Y613	1 kg		
							III	E1	619	100 kg	619	200 kg
									Y619	10 kg		
Sucrose octanitrate (dry)	FORBIDDEN											
Sulphamic acid	2967	8		Corrosive			III	E1	822	25 kg	823	100 kg
									Y822	5 kg		
Sulphur	1350	4.1		Solid flammable		A105	III	E1	419	25 kg	420	100 kg
									Y419	10 kg		
Sulphur chlorides	1828	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	I	E0	FORBIDDEN		809	2.5 L
Sulphur dichloride, see **Sulphur chlorides**												
Sulphur dioxide	1079	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Sulphuretted hydrogen, see **Hydrogen sulphide, liquefied**												
Sulphur hexafluoride	1080	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Sulphuric acid with more than 51% acid	1830	8		Corrosive			II	E2	809	1 L	813	30 L
									Y809	0.5 L		
Sulphuric acid with not more than 51% acid	2796	8		Corrosive			II	E2	809	1 L	813	30 L
									Y809	0.5 L		
Sulphuric acid, fuming †	1831	8	6.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Sulphuric acid, spent †	1832	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1 A34	II	E0	FORBIDDEN		813	30 L
Sulphuric and hydrofluoric acid mixture, see **Hydrofluoric acid and sulphuric acid mixture**												
Sulphur, molten	2448	4.1							FORBIDDEN		FORBIDDEN	
Sulphur monochloride, see **Sulphur chlorides**												
Sulphurous acid	1833	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L
Sulphur tetrafluoride	2418	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Sulphur trioxide, stabilized	1829	8			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Sulphuryl chloride	1834	8							FORBIDDEN		FORBIDDEN	
Sulphuryl fluoride	2191	2.3			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
T												
Talcum with tremolite and/or actinolite, see **White asbestos,** etc.												
Tars, liquid, including road asphalt and oils, bitumen and cut backs	1999	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Tartar emetic, see **Antimony potassium tartrate**												

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Tear gas candles	1700	6.1	4.1	Toxic & Solid flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		601	50 kg
Tear gas cartridges, see **Ammunition, tear-producing,** etc.												
Tear gas devices, containing tear gas substances, see **Aerosols** etc.												
Tear gas grenades, see **Tear gas candles**												
Tear gas substance, liquid, n.o.s.*	1693	6.1		Toxic	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2 A36	 II	 E0	FORBIDDEN FORBIDDEN		FORBIDDEN 611	 5 L
Tear gas substance, solid, n.o.s.*	3448	6.1		Toxic	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1 A36	I II	E0 E0	FORBIDDEN FORBIDDEN		607 615	15 kg 25 kg
Tellurium compound, n.o.s.	3284	6.1		Toxic		A3 A5	I II	E5 E4	606 613 Y613	5 kg 25 kg 1 kg	607 615	50 kg 100 kg
							III	E1	619 Y619	100 kg 10 kg	619	200 kg
Tellurium hexafluoride	2195	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Terpene hydrocarbons, n.o.s.	2319	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Terpinolene	2541	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Tetraazido benzene quinone	FORBIDDEN											
Tetrabromoethane	2504	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
1,1,2,2-Tetrachloroethane	1702	6.1		Toxic	US 4		II	E4	610 Y610	5 L 1 L	612	60 L

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Tetrachloroethylene	1897	6.1		Toxic	US 4		III	E1	605 Y605	60 L 2 L	612	220 L
Tetraethylammonium perchlorate (dry)	FORBIDDEN											
Tetraethyl dithiopyrophosphate	1704	6.1		Toxic	US 4	A6	II	E4	609 Y609	5 L 1 L	611	60 L
Tetraethylenepentamine	2320	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
Tetraethyl lead, see **Motor fuel anti-knock mixture**												
Tetraethyloxysilane, see **Tetraethyl silicate**												
Tetraethyl silicate	1292	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Tetrafluorodichloroethane, see **Dichlorotetrafluoroethane**												
1,1,1,2-Tetrafluoroethane	3159	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Tetrafluoroethylene, stabilized	1081	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Tetrafluoromethane	1982	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
1,2,3,6-Tetrahydrobenzaldehyde	2498	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Tetrahydrofuran	2056	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Tetrahydrofurfurylamine	2943	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Tetrahydro-1,4-oxazine, see **Morpholine**												
Tetrahydrophthalic anhydrides with more than 0.05% of maleic anhydride	2698	8		Corrosive		A74	III	E1	822 Y822	25 kg 5 kg	823	100 kg
1,2,3,6-Tetrahydropyridine	2410	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Tetrahydrothiophene	2412	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Tetramethoxysilane, see **Methyl orthosilicate**												
Tetramethylammonium hydroxide, solid	3423	8		Corrosive			II	E2	814 Y814	15 kg 5 kg	816	50 kg
Tetramethylammonium hydroxide solution	1835	8		Corrosive		A3	II	E2	808 Y808	1 L 0.5 L	812	30 L
							III	E1	818 Y818	5 L 1 L	820	60 L
Tetramethylene, see **Cyclobutane**												
Tetramethylene cyanide, see **Adiponitrile**												
Tetramethylene diperoxide dicarbamide	FORBIDDEN											
Tetramethyl lead, see **Motor fuel anti-knock mixture**												
Tetramethylsilane	2749	3		Liquid flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	I	E0	FORBIDDEN		304	30 L
Tetranitroaniline	0207	1.1D							FORBIDDEN		FORBIDDEN	
Tetranitro diglycerin	FORBIDDEN											
Tetranitromethane	1510	5.1	6.1						FORBIDDEN		FORBIDDEN	
2,3,4,6-Tetranitrophenol	FORBIDDEN											
2,3,4,6-Tetranitrophenyl methyl nitramine	FORBIDDEN											
2,3,4,6-Tetranitrophenylnitramine	FORBIDDEN											
Tetranitroresorcinol (dry)	FORBIDDEN											
2,3,5,6-Tetranitroso- 1,4-dinitrobenzene	FORBIDDEN											
2,3,5,6-Tetranitroso nitrobenzene (dry)	FORBIDDEN											

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Tetrapropyl orthotitanate	2413	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Tetrazene (dry)	FORBIDDEN											
Tetrazene, wetted with not less than 30% water, or mixture of alcohol and water, by mass	0114	1.1A							FORBIDDEN		FORBIDDEN	
Tetrazine	FORBIDDEN											
Tetrazol-1-acetic acid	0407	1.4C		Explosive 1.4				E0	FORBIDDEN		114 b)	75 kg
1H-Tetrazole	0504	1.1D							FORBIDDEN		FORBIDDEN	
Tetrazolyl azide (dry)	FORBIDDEN											
Tetryl	0208	1.1D							FORBIDDEN		FORBIDDEN	
Thallium chlorate	2573	5.1	6.1	Oxidizer & Toxic			II	E2	508 Y508	5 kg 1 kg	511	25 kg
Thallium (I) chlorate, see **Thallium chlorate**												
Thallium compound, n.o.s.	1707	6.1		Toxic	US 4	A6	II	E4	613 Y613	25 kg 1 kg	615	100 kg
Thallium nitrate	2727	6.1	5.1	Toxic & Oxidizer			II	E4	613 Y613	5 kg 1 kg	615	25 kg
Thallium (I) nitrate, see **Thallium nitrate**												
Thallous chlorate, see **Thallium chlorate**												
4-Thiapentanal	2785	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
Thia-4-pentanal, see **4-Thiapentanal**												
Thioacetic acid	2436	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Thiocarbamate pesticide, liquid, flammable, toxic*, flash point less than 23°C	2772	3	6.1	Liquid flammable & Toxic		A4	I II	E0 E2	FORBIDDEN 305 Y305	 1 L 1 L	303 307	30 L 60 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Thiocarbamate pesticide, liquid, toxic*	3006	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609	5 L	611	60 L
									Y609	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		
Thiocarbamate pesticide, liquid, toxic, flammable*, flash point not less than 23°C	3005	6.1	3	Toxic & Liquid flammable		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609	5 L	611	60 L
									Y609	1 L		
							III	E1	611	60 L	618	220 L
									Y611	2 L		
Thiocarbamate pesticide, solid, toxic*	2771	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613	25 kg	615	100 kg
									Y613	1 kg		
							III	E1	619	100 kg	619	200 kg
									Y619	10 kg		
Thioglycol	2966	6.1		Toxic			II	E4	609	5 L	611	60 L
									Y609	1 L		
Thioglycolic acid	1940	8		Corrosive			II	E2	809	1 L	813	30 L
									Y809	0.5 L		
Thiolactic acid	2936	6.1		Toxic			II	E4	609	5 L	611	60 L
									Y609	1 L		
Thionyl chloride	1836	8			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Thiophene	2414	3		Liquid flammable			II	E2	305	5 L	307	60 L
									Y305	1 L		
Thiophenol, see **Phenyl mercaptan**												
Thiophosgene	2474	6.1			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Thiophosphoryl chloride	1837	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
Thiourea dioxide	3341	4.2		Spontaneous combustion		A3	II	E2	415	15 kg	417	50 kg
							III	E1	419	25 kg	420	100 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Tin chloride anhydrous, see **Stannic chloride, anhydrous**												
Tin (IV) chloride, anhydrous, see **Stannic chloride, anhydrous**												
Tin chloride pentahydrate, see **Stannic chloride pentahydrate**												
Tin (IV) chloride pentahydrate, see **Stannic chloride pentahydrate**												
Tinctures, medicinal	1293	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Tin tetrachloride, see **Stannic chloride, anhydrous**												
Tire assemblies inflated, unserviceable, damaged or above maximum rated pressure	—	2.2				A59			FORBIDDEN		FORBIDDEN	
Titanium disulphide	3174	4.2		Spontaneous combustion			III	E1	419	25 kg	420	100 kg
Titanium hydride	1871	4.1		Solid flammable			II	E2	416 Y416	15 kg 5 kg	418	50 kg
Titanium powder, dry	2546	4.2		Spontaneous combustion		A3			FORBIDDEN		FORBIDDEN	
							II	E2	416	15 kg	418	50 kg
							III	E1	416	25 kg	418	100 kg
Titanium powder, wetted with not less than 25% water (a visible excess of water must be present) (a) mechanically produced, particle size less than 53 microns; (b) chemically produced, particle size less than 840 microns	1352	4.1		Solid flammable		A35	II	E2	416 Y416	15 kg 5 kg	418	50 kg
Titanium sponge granules	2878	4.1		Solid flammable		A3	III	E1	419 Y419	25 kg 10 kg	420	100 kg
Titanium sponge powders	2878	4.1		Solid flammable		A3	III	E1	419 Y419	25 kg 10 kg	420	100 kg
Titanium sulphate solution with not more than 45% sulphuric acid, see **Corrosive liquid, acidic, inorganic, n.o.s.**												

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Titanium tetrachloride	1838	8			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
	Titanium trichloride mixture	2869	8		Corrosive		A3	II	E2	815 Y815	15 kg 5 kg	817	50 kg
								III	E1	825 Y825	25 kg 5 kg	826	100 kg
	Titanium trichloride mixture, pyrophoric	2441	4.2	8						FORBIDDEN		FORBIDDEN	
	Titanium trichloride, pyrophoric	2441	4.2	8						FORBIDDEN		FORBIDDEN	
	TNT, dry or wetted with less than 30% water, by mass	0209	1.1D							FORBIDDEN		FORBIDDEN	
	TNT and hexanitrostilbene mixture	0388	1.1D							FORBIDDEN		FORBIDDEN	
	TNT and trinitrobenzene mixture	0388	1.1D							FORBIDDEN		FORBIDDEN	
	TNT mixed with aluminium, see **Tritonal**												
	TNT mixture containing trinitrobenzene and hexanitrostilbene	0389	1.1D							FORBIDDEN		FORBIDDEN	
+	**TNT, wetted** with not less than 30% water, by mass	1356	4.1		Solid flammable	BE 3	A40	I	E0	416	0.5 kg	416	0.5 kg
	TNT, wetted with not less than 10% water, by mass	3366	4.1		Solid flammable		A40	I	E0	416	0.5 kg	416	0.5 kg
	Toe puffs, nitrocellulose base, see **Fibres impregnated with weakly nitrated nitrocellulose, n.o.s.** or **Fabrics impregnated with weakly nitrated nitrocellulose, n.o.s.**												
	Toluene	1294	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
	Toluene diisocyanate	2078	6.1		Toxic	US 4	A113	II	E4	609 Y609	5 L 1 L	611	60 L
	Toluidines, liquid	1708	6.1		Toxic	US 4	A113	II	E4	609 Y609	5 L 1 L	611	60 L
	Toluidines, solid	3451	6.1		Toxic	US 4	A113	II	E4	613 Y613	25 kg 1 kg	615	100 kg
	Toluol, see **Toluene**												
	2,4-Toluylenediamine, solid	1709	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
2,4-Toluylenediamine solution	3418	6.1		Toxic		A3	III	E1	611 Y611	60 L 2 L	618	220 L
Toluylene diisocyanate, see **Toluene diisocyanate**												
Tolylethylene, inhibited, see **Vinyltoluenes, stabilized**												
Torpedoes with bursting charge †	0329	1.1E							FORBIDDEN		FORBIDDEN	
Torpedoes with bursting charge †	0330	1.1F							FORBIDDEN		FORBIDDEN	
Torpedoes with bursting charge †	0451	1.1D							FORBIDDEN		FORBIDDEN	
Torpedoes, liquid fuelled with inert head †	0450	1.3J							FORBIDDEN		FORBIDDEN	
Torpedoes, liquid fuelled with or without bursting charge †	0449	1.1J							FORBIDDEN		FORBIDDEN	
Toxic by inhalation liquid, n.o.s.* with an inhalation toxicity lower than or equal to 200ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}	3381	6.1							FORBIDDEN		FORBIDDEN	
Toxic by inhalation liquid, n.o.s.* with an inhalation toxicity lower than or equal to 1 000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}	3382	6.1							FORBIDDEN		FORBIDDEN	
Toxic by inhalation liquid, corrosive, n.o.s.* with an inhalation toxicity lower than or equal to 200 ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}	3389	6.1	8						FORBIDDEN		FORBIDDEN	
Toxic by inhalation liquid, corrosive, n.o.s.* with an inhalation toxicity lower than or equal to 1 000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}	3390	6.1	8						FORBIDDEN		FORBIDDEN	
Toxic by inhalation liquid, flammable, n.o.s.* with an inhalation toxicity lower than or equal to 200 ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}	3383	6.1	3						FORBIDDEN		FORBIDDEN	
Toxic by inhalation liquid, flammable, n.o.s.* with an inhalation toxicity lower than or equal to 1 000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}	3384	6.1	3						FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Toxic by inhalation liquid, oxidizing, n.o.s.* with an inhalation toxicity lower than or equal to 200 ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}	3387	6.1	5.1						FORBIDDEN		FORBIDDEN	
Toxic by inhalation liquid, oxidizing, n.o.s.* with an inhalation toxicity lower than or equal to 1 000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}	3388	6.1	5.1						FORBIDDEN		FORBIDDEN	
Toxic by inhalation liquid, water-reactive, n.o.s.* with an inhalation toxicity lower than or equal to 200 ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}	3385	6.1	4.3						FORBIDDEN		FORBIDDEN	
Toxic by inhalation liquid, water-reactive, n.o.s.* with an inhalation toxicity lower than or equal to 1 000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}	3386	6.1	4.3						FORBIDDEN		FORBIDDEN	
Toxic gas, n.o.s., see **Compressed** or **Liquefied gas, toxic,** etc.												
Toxic liquid, corrosive, inorganic, n.o.s.*	3289	6.1	8	Toxic & Corrosive		A4 A137	I II	E5 E4	603 609 Y609	0.5 L 1 L 0.5 L	604 611	2.5 L 30 L
Toxic liquid, corrosive, organic, n.o.s.*	2927	6.1	8	Toxic & Corrosive		A4 A137	I II	E5 E4	603 609 Y609	0.5 L 1 L 0.5 L	604 611	2.5 L 30 L
Toxic liquid, flammable, organic, n.o.s.*	2929	6.1	3	Toxic & Liquid flammable		A4 A137	I II	E5 E4	603 609 Y609	1 L 5 L 1 L	604 611	30 L 60 L
Toxic liquid, inorganic, n.o.s.*	3287	6.1		Toxic		A3 A4 A137	I II	E5 E4	603 609 Y609	1 L 5 L 1 L	604 611	30 L 60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Toxic liquid, organic, n.o.s.*	2810	6.1		Toxic		A3 A4 A137	I II	E5 E4	603 609 Y609	1 L 5 L 1 L	604 611	30 L 60 L
							III	E1	611 Y611	60 L 2 L	618	220 L

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Toxic liquid, oxidizing, n.o.s.*	3122	6.1	5.1	Toxic & Oxidizer		A4	I	E0	FORBIDDEN		604	2.5 L
							A137	II	E4	609	1 L	611	5 L
										Y609	1 L		
≠	**Toxic liquid, water-reactive, n.o.s.***	3123	6.1	4.3	Toxic & Danger if wet		A4	I	E0	FORBIDDEN		699	1 L
							A137	II	E4	609	1 L	611	5 L
	Toxic solid, corrosive, inorganic, n.o.s.*	3290	6.1	8	Toxic & Corrosive		A5	I	E5	606	1 kg	607	25 kg
								II	E4	613	15 kg	615	50 kg
										Y613	1 kg		
	Toxic solid, corrosive, organic, n.o.s.*	2928	6.1	8	Toxic & Corrosive		A5	I	E5	606	1 kg	607	25 kg
								II	E4	613	15 kg	615	50 kg
										Y613	1 kg		
	Toxic solid, flammable, organic, n.o.s.*	2930	6.1	4.1	Toxic & Solid flammable		A5	I	E5	606	1 kg	607	15 kg
								II	E4	613	15 kg	615	50 kg
										Y613	1 kg		
	Toxic solid, inorganic, n.o.s.*	3288	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
							A5	II	E4	613	25 kg	615	100 kg
										Y613	1 kg		
								III	E1	619	100 kg	619	200 kg
										Y619	10 kg		
	Toxic solid, organic, n.o.s.*	2811	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
							A5	II	E4	613	25 kg	615	100 kg
										Y613	1 kg		
								III	E1	619	100 kg	619	200 kg
										Y619	10 kg		
	Toxic solid, oxidizing, n.o.s.*	3086	6.1	5.1	Toxic & Oxidizer		A5	I	E5	606	1 kg	607	15 kg
								II	E4	613	5 kg	615	25 kg
										Y613	1 kg		
	Toxic solid, self-heating, n.o.s.*	3124	6.1	4.2	Toxic & Spontaneous combustion		A5	I	E5	606	5 kg	607	15 kg
								II	E4	613	15 kg	615	50 kg
≠	**Toxic solid, water-reactive, n.o.s.***	3125	6.1	4.3	Toxic & Danger if wet		A5	I	E5	699	5 kg	699	15 kg
								II	E4	613	15 kg	615	50 kg
										Y613	1 kg		
	Toxins, extracted from living sources, liquid, n.o.s.*	3172	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
							A43	II	E4	609	5 L	611	60 L
										Y609	1 L		
								III	E1	611	60 L	618	220 L
										Y611	2 L		
	Toxins, extracted from living sources, solid, n.o.s.*	3462	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
							A43	II	E4	613	25 kg	615	100 kg
										Y613	1 kg		
								III	E1	619	100 kg	619	200 kg
										Y619	10 kg		

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Tracers for ammunition †	0212	1.3G							FORBIDDEN		FORBIDDEN	
Tracers for ammunition †	0306	1.4G		Explosive 1.4				E0	FORBIDDEN		133	75 kg
Tractors, see **Vehicle (flammable gas powered)** or **Vehicle (flammable liquid powered)**												
Tremolite, see **White asbestos,** etc.												
Triallylamine	2610	3	8	Liquid flammable & Corrosive			III	E1	309 Y309	5 L 1 L	310	60 L
Triallyl borate	2609	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
Triazine pesticide, liquid, flammable, toxic*, flash point less than 23°C	2764	3	6.1	Liquid flammable & Toxic		A4	I	E0	FORBIDDEN		303	30 L
							II	E2	305 Y305	1 L 1 L	307	60 L
Triazine pesticide, liquid, toxic*	2998	6.1		Toxic		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Triazine pesticide, liquid, toxic, flammable*, flash point not less than 23°C	2997	6.1	3	Toxic & Liquid flammable		A3	I	E5	603	1 L	604	30 L
						A4	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Triazine pesticide, solid, toxic*	2763	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613 Y613	25 kg 1 kg	615	100 kg
							III	E1	619 Y619	100 kg 10 kg	619	200 kg
Tri-(b-nitroxyethyl) ammonium nitrate	FORBIDDEN											
Tribromoborane, see **Boron tribromide**												
Tributylamine	2542	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Tributylphosphane	3254	4.2							FORBIDDEN		FORBIDDEN	
Trichloroacetaldehyde, see **Chloral, anhydrous, stabilized**												
Trichloroacetic acid	1839	8		Corrosive			II	E2	815 Y815	15 kg 5 kg	817	50 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Trichloroacetic acid solution	2564	8		Corrosive		A3	II	E2	809 Y809	1 L 0.5 L	813	30 L
							III	E1	819 Y819	5 L 1 L	821	60 L
Trichloroaceticaldehyde, see **Chloral, anhydrous, inhibited**												
Trichloroacetyl chloride	2442	8			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Trichlorobenzenes, liquid	2321	6.1		Toxic	US 4		III	E1	611 Y611	60 L 2 L	618	220 L
Trichlorobutene	2322	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
1,1,1-Trichloroethane	2831	6.1		Toxic			III	E1	605 Y605	60 L 2 L	612	220 L
Trichloroethylene	1710	6.1		Toxic	US 4		III	E1	605 Y605	60 L 2 L	612	220 L
Trichloroisocyanuric acid, dry	2468	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Trichloromethyl perchlorate	FORBIDDEN											
Trichloronitromethane, see **Chloropicrin**												
Trichlorosilane	1295	4.3	3 8						FORBIDDEN		FORBIDDEN	
1,3,5-Trichloro-s-triazine-2,4,6-trione, see **Trichloroisocyanuric acid, dry**												
2,4,6-Trichloro-1,3,5-triazine, see **Cyanuric chloride**												
Tricresyl phosphate with more than 3% ortho isomer	2574	6.1		Toxic			II	E4	610 Y610	5 L 1 L	612	60 L
Triethylamine	1296	3	8	Liquid flammable & Corrosive			II	E2	305 Y305	1 L 0.5 L	307	5 L
Triethyl borate, see **Ethyl borate**												
Triethylenetetramine	2259	8		Corrosive			II	E2	808 Y808	1 L 0.5 L	812	30 L

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Triethyl orthoformate, see **Ethyl orthoformate**												
Triethyl phosphite	2323	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Trifluoroacetic acid	2699	8		Corrosive			I	E0	807	0.5 L	809	2.5 L
Trifluoroacetyl chloride	3057	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Trifluorobromomethane, see **Bromotrifluoromethane**												
Trifluorochloroethane, see **1-Chloro-2,2,2-trifluoroethane**												
Trifluorochloroethylene, stabilized	1082	2.3	2.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Trifluorochloromethane, see **Chlorotrifluoromethane**												
1,1,1-Trifluoroethane	2035	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Trifluoromethane	1984	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
Trifluoromethane, refrigerated liquid	3136	2.2		Gas non-flammable				E1	202	50 kg	202	500 kg
2-Trifluoromethylaniline	2942	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
3-Trifluoromethylaniline	2948	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Triformoxime trinitrate	FORBIDDEN											
Triisobutylene	2324	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Triisopropyl borate	2616	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Trimethylacetyl chloride	2438	6.1	3 8						FORBIDDEN		FORBIDDEN	
Trimethylamine, anhydrous	1083	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3 US 4	A1		E0	FORBIDDEN		200	150 kg
Trimethylamine, aqueous solution, not more than 50% trimethylamine, by mass	1297	3	8	Liquid flammable & Corrosive		A3	I	E0	302	0.5 L	303	2.5 L
							II	E2	305 Y305	1 L 0.5 L	307	5 L
							III	E1	309 Y309	5 L 1 L	310	60 L
1,3,5-Trimethylbenzene	2325	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Trimethyl borate	2416	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Trimethylchlorosilane	1298	3	8	Liquid flammable & Corrosive			II	E2	306	1 L	304	5 L
Trimethylcyclohexylamine	2326	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
Trimethylene chlorobromide, see **1-Bromo-3-chloropropane**												
Trimethylene glycol diperchlorate	FORBIDDEN											
Trimethylhexamethylenediamines	2327	8		Corrosive			III	E1	818 Y818	5 L 1 L	820	60 L
Trimethylhexamethylene diisocyanate	2328	6.1		Toxic			III	E1	611 Y611	60 L 2 L	618	220 L
Trimethylol nitromethane trinitrate	FORBIDDEN											
2,4,4-Trimethylpentene-1, see **Diisobutylene, isomeric compounds**												
2,4,4-Trimethylpentene-2, see **Diisobutylene, isomeric compounds**												

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									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Trimethyl phosphite	2329	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
1,3,5-Trimethyl-2,4,6-trinitrobenzene	FORBIDDEN											
Trinitroacetic acid	FORBIDDEN											
Trinitroacetonitrile	FORBIDDEN											
Trinitroamine cobalt	FORBIDDEN											
Trinitroaniline	0153	1.1D							FORBIDDEN		FORBIDDEN	
Trinitroanisole	0213	1.1D							FORBIDDEN		FORBIDDEN	
Trinitrobenzene, dry or wetted with less than 30% water, by mass	0214	1.1D							FORBIDDEN		FORBIDDEN	
Trinitrobenzenesulphonic acid	0386	1.1D							FORBIDDEN		FORBIDDEN	
Trinitrobenzene, wetted with not less than 30% water, by mass	1354	4.1		Solid flammable	BE 3	A40	I	E0	416	0.5 kg	416	0.5 kg
Trinitrobenzene, wetted with not less than 10% water, by mass	3367	4.1		Solid flammable		A40	I	E0	416	0.5 kg	416	0.5 kg
Trinitrobenzoic acid, dry or wetted with less than 30% water, by mass	0215	1.1D							FORBIDDEN		FORBIDDEN	
Trinitrobenzoic acid, wetted with not less than 30% water, by mass	1355	4.1		Solid flammable	BE 3	A40	I	E0	416	0.5 kg	416	0.5 kg
Trinitrobenzoic acid, wetted with not less than 10% water, by mass	3368	4.1		Solid flammable		A40	I	E0	416	0.5 kg	416	0.5 kg
Trinitrochlorobenzene	0155	1.1D							FORBIDDEN		FORBIDDEN	
Trinitrochlorobenzene, wetted with not less than 10% water, by mass	3365	4.1		Solid flammable		A40	I	E0	416	0.5 kg	416	0.5 kg
Trinitro-m-cresol	0216	1.1D							FORBIDDEN		FORBIDDEN	
2,4,6-Trinitro-1,3-diazobenzene	FORBIDDEN											
Trinitroethanol	FORBIDDEN											
Trinitroethylnitrate	FORBIDDEN											
Trinitrofluorenone	0387	1.1D							FORBIDDEN		FORBIDDEN	
Trinitromethane	FORBIDDEN											
Trinitronaphthalene	0217	1.1D							FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Trinitrophenetole	0218	1.1D							FORBIDDEN		FORBIDDEN	
Trinitrophenol, dry or wetted with less than 30% water, by mass	0154	1.1D							FORBIDDEN		FORBIDDEN	
Trinitrophenol, wetted with not less than 30% water, by mass	1344	4.1		Solid flammable	BE 3	A40	I	E0	416	1 kg	412	15 kg
Trinitrophenol, wetted with not less than 10% water, by mass	3364	4.1		Solid flammable		A40	I	E0	416	0.5 kg	416	0.5 kg
2,4,6-Trinitrophenyl guanidine (dry)	FORBIDDEN											
Trinitrophenylmethylnitramine	0208	1.1D							FORBIDDEN		FORBIDDEN	
2,4,6-Trinitrophenyl nitramine	FORBIDDEN											
2,4,6-Trinitrophenyl trimethylol methyl nitramine trinitrate (dry)	FORBIDDEN											
Trinitroresorcinol, dry or wetted with less than 20% water, or mixture of alcohol and water, by mass	0219	1.1D							FORBIDDEN		FORBIDDEN	
Trinitroresorcinol, wetted with not less than 20% water, or mixture of alcohol and water, by mass	0394	1.1D							FORBIDDEN		FORBIDDEN	
2,4,6-Trinitroso-3-methyl nitraminoanisole	FORBIDDEN											
Trinitrotetramine cobalt nitrate	FORBIDDEN											
Trinitrotoluene, dry or wetted with less than 30% water, by mass	0209	1.1D							FORBIDDEN		FORBIDDEN	
Trinitrotoluene and hexanitrostilbene mixture	0388	1.1D							FORBIDDEN		FORBIDDEN	
Trinitrotoluene and trinitrobenzene mixture	0388	1.1D							FORBIDDEN		FORBIDDEN	
Trinitrotoluene mixture containing trinitrobenzene and hexanitrostilbene	0389	1.1D							FORBIDDEN		FORBIDDEN	
Trinitrotoluene, wetted with not less than 30% water, by mass	1356	4.1		Solid flammable	BE 3	A40	I	E0	416	0.5 kg	416	0.5 kg
Trinitrotoluene, wetted with not less than 10% water, by mass	3366	4.1		Solid flammable		A40	I	E0	416	0.5 kg	416	0.5 kg
2,4,6-Trinitro-1,3,5-triazido benzene (dry)	FORBIDDEN											

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Tripropylamine	2260	3	8	Liquid flammable & Corrosive			III	E1	309 Y309	5 L 1 L	310	60 L
Tripropylene	2057	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Tris-(1-aziridinyl) phosphine oxide solution	2501	6.1		Toxic		A3	II	E4	609 Y609	5 L 1 L	611	60 L
							III	E1	611 Y611	60 L 2 L	618	220 L
Tris, bis-bifluoroamino diethoxy propane (TVOPA)	FORBIDDEN											
Tritonal	0390	1.1D							FORBIDDEN		FORBIDDEN	
Tropilidene, see **Cycloheptatriene**												
Tungsten hexafluoride	2196	2.3	8		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2			FORBIDDEN		FORBIDDEN	
Turpentine	1299	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Turpentine substitute †	1300	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Tyre assemblies inflated, unserviceable, damaged or above maximum rated pressure	—	2.2				A59			FORBIDDEN		FORBIDDEN	
U												
Undecane	2330	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
Urea hydrogen peroxide	1511	5.1	8	Oxidizer & Corrosive			III	E1	517 Y517	25 kg 5 kg	519	100 kg
Urea nitrate, dry or wetted with less than 20% water, by mass	0220	1.1D							FORBIDDEN		FORBIDDEN	
Urea nitrate, wetted with not less than 20% water, by mass	1357	4.1		Solid flammable	BE 3	A40 A101	I	E0	416	1 kg	412	15 kg
Urea nitrate, wetted with not less than 10% water, by mass	3370	4.1		Solid flammable		A40	I	E0	416	0.5 kg	416	0.5 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
V												
Valeral, see **Valeraldehyde**												
Valeraldehyde	2058	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
n-Valeraldehyde, see **Valeraldehyde**												
Valeric aldehyde, see **Valeraldehyde**												
Valeryl chloride	2502	8	3	Corrosive & Liquid flammable			II	E2	809 Y809	1 L 0.5 L	813	30 L
Vanadium compound, n.o.s.	3285	6.1		Toxic		A3	I	E5	606	5 kg	607	50 kg
						A5	II	E4	613 Y613	25 kg 1 kg	615	100 kg
							III	E1	619 Y619	100 kg 10 kg	619	200 kg
Vanadium (IV) oxide sulphate, see **Vanadyl sulphate**												
Vanadium oxysulphate, see **Vanadyl sulphate**												
Vanadium oxytrichloride	2443	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		813	30 L
Vanadium pentoxide, non-fused form	2862	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Vanadium tetrachloride	2444	8		Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	I	E0	FORBIDDEN		809	2.5 L
Vanadium trichloride	2475	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg
Vanadyl sulphate	2931	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Vehicle, flammable gas powered	3166	9		Miscellaneous		A67 A70 A87 A118 A120 A134		E0	FORBIDDEN		900	No limit
Vehicle, flammable liquid powered	3166	9		Miscellaneous		A67 A70 A87 A118 A120 A134		E0	900	No limit	900	No limit
Vehicles, self-propelled, see **Battery-powered equipment** or **Battery-powered vehicle** or **Vehicle (flammable gas powered)** or **Vehicle (flammable liquid powered)**												
Villiaumite, see **Sodium fluoride**												
Vinyl acetate, stabilized	1301	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Vinylbenzene, see **Styrene monomer, stabilized**												
Vinyl bromide, stabilized	1085	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Vinyl butyrate, stabilized	2838	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Vinyl chloride, stabilized	1086	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3 US 4	A1		E0	FORBIDDEN		200	150 kg
Vinyl chloroacetate	2589	6.1	3	Toxic & Liquid flammable			II	E4	609 Y609	5 L 1 L	611	60 L
Vinyl ethyl ether, stabilized	1302	3		Liquid flammable			I	E3	306	1 L	304	30 L

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft: Packing instruction	Passenger aircraft: Max. net quantity per package	Cargo aircraft: Packing instruction	Cargo aircraft: Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Vinyl fluoride, stabilized	1860	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Vinylidene chloride, stabilized	1303	3		Liquid flammable			I	E3	302	1 L	303	30 L
Vinyl isobutyl ether, stabilized	1304	3		Liquid flammable			II	E2	305 Y305	5 L 1 L	307	60 L
Vinyl methyl ether, stabilized	1087	2.1		Gas flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
Vinyl nitrate polymer	FORBIDDEN											
Vinylpyridines, stabilized	3073	6.1	3 8	Toxic & Liquid flammable & Corrosive			II	E4	609 Y609	1 L 0.5 L	611	30 L
Vinyltoluenes, stabilized	2618	3		Liquid flammable			III	E1	309 Y309	60 L 10 L	310	220 L
≠ **Vinyltrichlorosilane**	1305	3	8	Liquid flammable & Corrosive	AU 1 CA 7 GB 3 IR 3 NL 1 US 3		II	E2	306	1 L	304	5 L
W												
Warheads for guided missiles, see **Warheads, rocket**												
Warheads, rocket with burster or expelling charge †	0370	1.4D		Explosive 1.4				E0	FORBIDDEN		130	75 kg
Warheads, rocket with burster or expelling charge †	0371	1.4F							FORBIDDEN		FORBIDDEN	
Warheads, rocket with bursting charge †	0286	1.1D							FORBIDDEN		FORBIDDEN	
Warheads, rocket with bursting charge †	0287	1.2D							FORBIDDEN		FORBIDDEN	
Warheads, rocket with bursting charge †	0369	1.1F							FORBIDDEN		FORBIDDEN	

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Warheads, torpedo with bursting charge †	0221	1.1D							FORBIDDEN		FORBIDDEN	
Water-reactive liquid, n.o.s.*	3148	4.3		Danger if wet		A3	I	E0	FORBIDDEN		408	1 L
							II	E2	413	1 L	414	5 L
							III	E1	414	5 L	425	60 L
Water-reactive liquid, corrosive, n.o.s.*	3129	4.3	8	Danger if wet & Corrosive		A3	I	E0	FORBIDDEN		408	1 L
							II	E2	413	1 L	414	5 L
							III	E1	414	5 L	425	60 L
Water-reactive liquid, toxic, n.o.s.*	3130	4.3	6.1	Danger if wet & Toxic		A3	I	E0	FORBIDDEN		408	1 L
							II	E2	413	1 L	414	5 L
							III	E1	414	5 L	425	60 L
Water-reactive solid, n.o.s.*	2813	4.3		Danger if wet		A3	I	E0	FORBIDDEN		411	15 kg
							II	E2	415	15 kg	417	50 kg
									Y415	5 kg		
							III	E1	419	25 kg	420	100 kg
									Y419	10 kg		
Water-reactive solid, corrosive, n.o.s.*	3131	4.3	8	Danger if wet & Corrosive		A3	I	E0	FORBIDDEN		411	15 kg
							II	E2	415	15 kg	417	50 kg
									Y415	5 kg		
							III	E1	419	25 kg	420	100 kg
									Y419	5 kg		
Water-reactive solid, flammable, n.o.s.*	3132	4.3	4.1	Danger if wet & Solid flammable		A3	I	E0	FORBIDDEN		411	15 kg
							II	E2	415	15 kg	417	50 kg
									Y415	5 kg		
							III	E1	419	25 kg	420	100 kg
									Y419	5 kg		
Water-reactive solid, oxidizing, n.o.s.*	3133	4.3	5.1		AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2 A3			FORBIDDEN		FORBIDDEN	
Water-reactive solid, self-heating, n.o.s.*	3135	4.3	4.2	Danger if wet & Spontaneous combustion		A3	I	E0	FORBIDDEN		411	15 kg
							II	E2	415	15 kg	417	50 kg
							III	E1	419	25 kg	420	100 kg
Water-reactive solid, toxic, n.o.s.*	3134	4.3	6.1	Danger if wet & Toxic		A3	I	E0	FORBIDDEN		411	15 kg
							II	E2	415	15 kg	417	50 kg
									Y415	1 kg		
							III	E1	419	25 kg	420	100 kg
									Y419	10 kg		
Wheelchair, electric with batteries, see **Battery-powered equipment** or **Battery-powered vehicle**												

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
White arsenic, see **Arsenic trioxide**												
White asbestos (chrysotile, actinolite, anthophyllite, tremolite) †	2590	9		Miscellaneous	US 4	A61	III	E1	909	200 kg	909	200 kg
White spirit, see **Turpentine substitute**												
Wood preservatives, liquid	1306	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
X												
Xanthates	3342	4.2		Spontaneous combustion		A3	II III	E2 E1	415 419	15 kg 25 kg	417 420	50 kg 100 kg
≠ **Xenon**	2036	2.2		Gas non-flammable		A69		E1	200	75 kg	200	150 kg
Xenon, refrigerated liquid	2591	2.2		Gas non-flammable				E1	202	50 kg	202	500 kg
Xylenes	1307	3		Liquid flammable		A3	II	E2	305 Y305	5 L 1 L	307	60 L
							III	E1	309 Y309	60 L 10 L	310	220 L
Xylenols, liquid	3430	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Xylenols, solid	2261	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Xylidines, liquid	1711	6.1		Toxic			II	E4	609 Y609	5 L 1 L	611	60 L
Xylidines, solid	1711	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Xylidines, solid	3452	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Xylols, see **Xylenes**												
Xylyl bromide, liquid	1701	6.1		Toxic	AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		612	60 L
Xylyl bromide, solid	3417	6.1		Toxic			II	E4	613	25 kg	615	100 kg
p-Xylyl diazide	FORBIDDEN											

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Z												
Zinc ammonium nitrite	1512	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Zinc arsenate	1712	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Zinc arsenate and zinc arsenite mixture	1712	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Zinc arsenite	1712	6.1		Toxic			II	E4	613 Y613	25 kg 1 kg	615	100 kg
Zinc ashes	1435	4.3		Danger if wet		A3	III	E1	419 Y419	25 kg 10 kg	420	100 kg
Zinc bisulphite solution, see **Bisulphites, aqueous solution, n.o.s.**												
Zinc bromate	2469	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
Zinc chlorate	1513	5.1		Oxidizer			II	E2	509 Y509	5 kg 2.5 kg	512	25 kg
Zinc chloride, anhydrous	2331	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg
Zinc chloride solution	1840	8		Corrosive		A3	III	E1	818 Y818	5 L 1 L	820	60 L
Zinc cyanide	1713	6.1		Toxic	US 4		I	E5	606	5 kg	607	50 kg
Zinc dithionite	1931	9		Miscellaneous		A48	III	E1	906	100 kg	906	200 kg
Zinc dust	1436	4.3	4.2	Danger if wet & Spontaneous combustion		A3	I	E0	FORBIDDEN		411	15 kg
							II	E2	415	15 kg	417	50 kg
							III	E1	419	25 kg	420	100 kg
Zinc fluorosilicate	2855	6.1		Toxic			III	E1	619 Y619	100 kg 10 kg	619	200 kg
Zinc hexafluorosilicate, see **Zinc fluorosilicate**												
Zinc hydrosulphite	1931	9		Miscellaneous		A48	III	E1	906	100 kg	906	200 kg
Zinc nitrate	1514	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Zinc permanganate	1515	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Zinc peroxide	1516	5.1		Oxidizer			II	E2	508 Y508	5 kg 2.5 kg	511	25 kg
Zinc phosphide	1714	4.3	6.1	Danger if wet & Toxic			I	E0	FORBIDDEN		412	15 kg

Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Zinc powder	1436	4.3	4.2	Danger if wet & Spontaneous combustion		A3	I	E0	FORBIDDEN		411	15 kg
							II	E2	415	15 kg	417	50 kg
							III	E1	419	25 kg	420	100 kg
Zinc resinate	2714	4.1		Solid flammable			III	E1	419 Y419	25 kg 10 kg	420	100 kg
Zinc selenate, see **Selenates**												
Zinc selenite, see **Selenites**												
Zinc silicofluoride, see **Zinc fluorosilicate**												
Zirconium, dry, coiled wire, finished metal sheets, strip (thinner than 254 microns but not thinner than 18 microns)	2858	4.1		Solid flammable		A88	III	E1	419 Y419	25 kg 10 kg	420	100 kg
Zirconium, dry, finished sheets, strip or coiled wire (thinner than 18 microns)	2009	4.2		Spontaneous combustion		A3	III	E1	419	25 kg	420	100 kg
Zirconium hydride	1437	4.1		Solid flammable			II	E2	416 Y416	15 kg 5 kg	418	50 kg
Zirconium nitrate	2728	5.1		Oxidizer			III	E1	516 Y516	25 kg 10 kg	518	100 kg
Zirconium picramate, dry or wetted with less than 20% water, by mass	0236	1.3C							FORBIDDEN		FORBIDDEN	
Zirconium picramate, wetted with not less than 20% water, by mass	1517	4.1		Solid flammable	BE 3	A40	I	E0	416	1 kg	412	15 kg
Zirconium powder, dry	2008	4.2		Spontaneous combustion		A3			FORBIDDEN		FORBIDDEN	
							II	E2	416	15 kg	418	50 kg
							III	E1	416	25 kg	418	100 kg
Zirconium powder, wetted with not less than 25% water (a visible excess of water must be present) (a) mechanically produced, particle size less than 53 microns; (b) chemically produced, particle size less than 840 microns	1358	4.1		Solid flammable		A35	II	E2	416 Y416	15 kg 5 kg	418	50 kg
Zirconium scrap	1932	4.2			AU 1 CA 7 GB 3 IR 3 NL 1 US 3	A2 A3			FORBIDDEN		FORBIDDEN	

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
≠	**Zirconium suspended in a flammable liquid †**	1308	3		Liquid flammable	AU 1 CA 7 GB 3 IR 3 NL 1 US 2	A1 A3 A108	I	E0	FORBIDDEN		303	30 L
								II	E2	305 Y305	5 L 1 L	307	60 L
								III	E1	309 Y309	60 L 10 L	310	220 L
	Zirconium tetrachloride	2503	8		Corrosive			III	E1	822 Y822	25 kg 5 kg	823	100 kg

Chapter 3

SPECIAL PROVISIONS

Parts of this Chapter are affected by State Variations AU 2, CA 7, CA 8, GB 3, IR 3, JM 1, NL 1, US 11, ZA 1; see Table A-1

≠ Table 3-2 lists the special provisions referred to in column 7 of Table 3-1 and the information contained in them is additional to that shown for the relevant entry. Where the wording of the special provision is equivalent to that in the UN Model Regulations, the UN special provision number is shown in parentheses.

Table 3-2. Special provisions

TIs	*UN*	
A1		This commodity may be transported on passenger aircraft, only with the prior approval of the appropriate authority of the State of Origin under the written conditions established by that authority. The conditions must include the quantity limitations and packing requirements and these must comply with S-3;1.2.2 of the Supplement. A copy of the document of approval, showing the quantity limitations and packing requirements, must accompany the consignment. The commodity may be carried on cargo aircraft in accordance with columns 12 and 13 of Table 3-1. When States, other than the State of Origin, have notified ICAO that they require prior approval of shipments made under this special provision, approval must also be obtained from these States, as appropriate.
A2		This commodity may be transported on passenger aircraft and on cargo aircraft, only with the prior approval of the appropriate authority of the State of Origin under the written conditions established by the authority. Where States, other than the State of Origin, have notified ICAO that they require prior approval of shipments made under this special provision, approval must also be obtained from the States of transit, overflight and destination and of the State of the Operator, as appropriate. In each case the conditions must include the quantity limitations and packing requirements and these must comply with S-3;1.2.3 of the Supplement. A copy of the document(s) of approval, showing the quantity limitations and the packing and labelling requirements, must accompany the consignment.
A3	(223)	If the chemical or physical properties of a substance covered by this description are such that, when tested, it does not meet the established defining criteria for the class or division listed in column 3, or any other class or division, it is not subject to these Instructions.
A4		Liquids having a vapour inhalation toxicity of Packing Group I are forbidden on both passenger and cargo aircraft. Liquids having a mist inhalation toxicity of Packing Group I are forbidden on a passenger aircraft. They may be carried on cargo aircraft providing they are packed in accordance with the packing instructions for the Packing Group I substance and the maximum net quantity per package does not exceed 5 L.
A5		Solids having an inhalation toxicity of Packing Group I are forbidden on passenger aircraft. They may be carried on cargo aircraft providing they are packed in accordance with the packing instructions for the Packing Group I substance and the maximum net quantity per package does not exceed 15 kg.
A6	(43)	When offered for carriage as pesticides, these substances must be carried under the relevant pesticide entry and in accordance with the relevant pesticide provisions (see 2;6.2.3 and 2;6.2.4).
A7		Not used.
A8	(322)	When transported in non-friable tablet form, these goods are assigned to Packing Group III.
A9		Alcoholic beverages containing not more than 70 per cent alcohol by volume, when packed in receptacles of 5 litres or less, are not subject to these Instructions when carried as cargo.
A10	(39)	This substance is not subject to these Instructions when it contains less than 30 per cent or not less than 90 per cent silicon.
A11	(305)	These substances are not subject to these Instructions when in concentrations of not more than 50 mg/kg.

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≠	A12	(45)	Antimony sulphides and oxides which contain not more than 0.5 per cent of arsenic calculated on the total mass are not subject to these Instructions.
	A13	(47)	Ferricyanides and ferrocyanides are not subject to these Instructions.
	A14		The label conforming to Figure 5-14 may be used until 31 December 2010.
	A15	(59)	These substances are not subject to these Instructions when they contain not more than 50 per cent magnesium.
	A16	(62)	This substance is not subject to these Instructions when it does not contain more than 4 per cent sodium hydroxide.
	A17		These substances must not be classified and transported unless authorized by the appropriate authority of the State of Origin on the basis of results from Series 2 tests and a Series 6(c) test on packages as prepared for transport.
	A18	(66)	Mercurous chloride and cinnabar are not subject to these Instructions.
	A19	(225)	Fire extinguishers under this entry may include installed actuating cartridges (cartridges, power device of Division 1.4C or 1.4S), without changing the classification of Division 2.2 provided the total quantity of deflagrating (propellant) explosives does not exceed 3.2 grams per extinguishing unit.
	A20		During the course of transport this substance must be protected from direct sunlight and all sources of heat and be placed in an adequately ventilated area. A statement to this effect must be included in the Dangerous Goods Transport Document.
	A21		This entry only applies to vehicles and equipment which are powered by wet batteries, sodium batteries or lithium batteries and which are transported with these batteries installed. Examples of such vehicles and equipment are electrically-powered cars, lawn mowers, wheelchairs and other mobility aids. Vehicles that also contain an internal combustion engine must be consigned under the entry Vehicle (flammable gas powered) or Vehicle (flammable liquid powered), as appropriate. Hybrid electric vehicles powered by both an internal combustion engine and wet batteries, sodium batteries or lithium batteries, transported with the battery(ies) installed, must be consigned under the entries UN 3166 **Vehicle, flammable gas powered** or UN 3166 **Vehicle, flammable liquid powered**, as appropriate.
	A22		The classification of this substance will vary with particle size and packaging, but borderlines have not been experimentally determined. The appropriate classification must be made using the procedure for the classification of explosives.
	A23	(325)	In the case of non-fissile or fissile excepted uranium hexafluoride, the material must be classified under UN 2978.
	A24		The total quantity of explosive substance contained in the shaped charges and the detonating cord must not exceed 10 kg per assembled perforating gun.
	A25	(205)	This entry must not be used for Pentachlorophenol (UN 3155).
	A26		Refrigerating machines include air conditioning units and machines or other appliances which have been designed for the specific purpose of keeping food or other items at low temperature in an internal compartment. Refrigerating machines and refrigerating machine components are considered not subject to these Instructions if containing less than 12 kg of a gas in Division 2.2 or if containing less than 12 L ammonia solution (UN 2672).
	A27	(276)	This includes any substance which is not covered by any of the other classes but which has narcotic, noxious or other properties such that, in the event of spillage or leakage on an aircraft, extreme annoyance or discomfort could be caused to crew members so as to prevent the correct performance of assigned duties.
	A28	(135)	The dihydrated sodium salt of dichloroisocyanuric acid is not subject to these Instructions.
	A29	(138)	p-Bromobenzyl cyanide is not subject to these Instructions.
	A30	(273)	Maneb and maneb preparations stabilized against self-heating need not be classified in Division 4.2 when it can be demonstrated by testing that a cubic metre of the substance does not self-ignite and that the temperature at the centre of the sample does not exceed 200°C, when the sample is maintained at a temperature of not less than 75°C ± 2°C for a period of 24 hours.

A31 (141) Products which have undergone sufficient heat treatment so they present no hazard during transport are not subject to these Instructions.

≠ A32 Air bag inflators, air bag modules or seat-belt pretensioners installed in conveyances or in completed conveyance components such as steering columns, door panels, seats, etc., which are not capable of inadvertent activation are not subject to these Instructions. The words “not restricted” and the special provision number A32 must be provided on the air waybill when an air waybill is issued.

A33 (103) Ammonium nitrites and mixtures of an inorganic nitrite with an ammonium salt are prohibited.

A34 (113) The transport of chemically unstable mixtures is prohibited.

A35 This substance is not subject to these Instructions when:

— mechanically produced, particle size more than 53 microns; or
— chemically produced, particle size more than 840 microns.

A36 The provisions of Special Provision A2 apply to this entry for Packing Group I only and the provisions of Special Provision A1 apply to this entry for Packing Group II only, as applicable.

A37 This entry is not intended to include Ammonium permanganate, the transport of which is prohibited under any circumstances.

A38 (207) Polymeric beads and moulding compounds may be made from polystyrene, poly(methyl methacrylate) or other polymeric material.

A39 This substance possesses some dangerous explosive properties when transported in large volumes.

A40 (28) This substance may be transported under provisions of Division 4.1 only if it is so packed that the percentage of diluent will not fall below that stated at any time during transport.

A41 Permeation devices that contain dangerous goods and that are used for calibrating air quality monitoring devices are not subject to these Instructions provided the following requirements are met:

a) Each device must be constructed of a material compatible with the dangerous goods it contains;

b) The total contents of dangerous goods in each device is limited to 2 millilitres and the device must not be liquid full at 55°C;

c) Each permeation device must be placed in a sealed, high impact-resistant, tubular inner packaging of plastic or equivalent material. Sufficient absorbent material must be contained in the inner packaging to completely absorb the contents of the device. The closure of the inner packaging must be securely held in place with wire, tape or other positive means;

d) Each inner packaging must be contained in a secondary packaging constructed of metal, or plastic having a minimum thickness of 1.5 mm. The secondary packaging must be hermetically sealed;

e) The secondary packaging must be securely packed in strong outer packaging. The completed package must be capable of withstanding, without breakage or leakage of any inner packaging and without significant reduction in effectiveness:

i) the following free drops onto a rigid, non-resilient, flat and horizontal surface from a height of 1.8 m:

— one drop flat on the bottom;
— one drop flat on the top;
— one drop flat on the long side;
— one drop flat on the short side;
— one drop on a corner at the junction of three intersecting edges; and

ii) a force applied to the top surface for a duration of 24 hours, equivalent to the total weight of identical packages if stacked to a height of 3 m (including the test sample).

Note.— Each of the above tests may be performed on different but identical packages.

f) The gross mass of the completed package must not exceed 30 kg.

A42 (249) Ferrocerium (lighter flints), stabilized against corrosion, with a minimum iron content of 10 per cent are not subject to these Instructions.

A43 (210) Toxins from plant, animal or bacterial sources which contain infectious substances, or toxins that are contained in infectious substances, must be classified as Division 6.2.

≠ A44 The entry chemical kit or first aid kit is intended to apply to boxes, cases, etc., containing small quantities of one or more compatible items of dangerous goods which are used, for example, for medical, analytical or testing or repair purposes.

The only dangerous goods which are permitted in the kits are substances which may be transported as:

a) excepted quantities as specified in column 9 of Table 3-1, provided the inner packagings and quantities are as prescribed in 5.1.2 and 5.2.1 a); or

b) limited quantities under 3;4.1.2.

≠ A45 Not used.

Note.— See Packing Instructions 965-970.

A46 Mixtures of solids which are not subject to these Instructions and flammable liquids may be transported under this entry without first applying the classification criteria of Division 4.1, providing there is no free liquid visible at the time the substance is packaged and the packaging must pass a leakproofness test at the Packing Group II level. Small inner packagings consisting of sealed packets or articles containing less than 10 mL of a Packing Group II or III flammable liquid absorbed into a solid material are not subject to these Instructions provided there is no free liquid in the packet or articles.

A47 (219) Genetically modified micro-organisms and genetically modified organisms, which meet the definition of an infectious substance and the criteria for inclusion in Division 6.2 in accordance with 2;6, must be transported as UN 2814, UN 2900 or UN 3373, as appropriate.

A48 Packaging tests are not considered necessary.

A49 Other inert material or inert material mixture may be used at the discretion of the appropriate authority of the State of Origin, provided this inert material has identical phlegmatizing properties.

A50 Mixtures of solids which are not subject to these Instructions and toxic liquids may be transported under this entry without first applying the classification criteria of Division 6.1, providing there is no free liquid visible at the time the substance is packaged and the packaging must pass a leakproofness test at the Packing Group II level. This entry must not be used for solids containing a Packing Group I liquid.

A51 Irrespective of the limit specified in column 11 of Table 3-1, aircraft batteries up to a limit of 100 kg gross mass per package may be transported. Transport in accordance with this special provision must be noted on the dangerous goods transport document.

A52 (228) Mixtures not meeting the criteria for flammable gases (Division 2.1) must be transported under UN 3163.

A53 (37) This substance is not subject to these Instructions when coated.

A54 (32) This substance is not subject to these Instructions when in any other form.

A55 (142) Solvent extracted soya bean meal containing not more than 1.5 per cent oil and not more than 11 per cent moisture, which is substantially free of flammable solvent, is not subject to these Instructions.

A56 This entry applies to articles which contain Class 1 explosive substances and which may also contain dangerous goods of other classes. These articles are used as lifesaving vehicle air bag inflators or air bag modules or seat belt pretensioners.

The quantities given in columns 11 and 13 of Table 3-1 refer to the net mass of the finished article.

Note.— For the carriage of a vehicle, see Packing Instruction 900.

A57 Packagings must be so constructed that explosion is not possible by reason of increased internal pressure.

A58 (144) An aqueous solution containing not more than 24 per cent alcohol by volume is not subject to these Instructions.

A59 A tire assembly unserviceable or damaged is not subject to these Instructions if the tire is completely deflated. A tire assembly with a serviceable tire is not subject to these Instructions provided the tire is not inflated to a gauge pressure exceeding the maximum rated pressure for that tire. However, such tires (including valve assemblies) must be protected from damage during transport, which may require the use of a protective cover.

A60 (215) This entry only applies to the technically pure substance or to formulations derived from it having an SADT higher than 75°C and therefore does not apply to formulations which are self-reactive substances. (For self-reactive substances, see 2;4.2.3. Table 2-6). Homogeneous mixtures containing not more than 35 per cent by mass of azocarbonamide and at least 65 per cent of inert substance are not subject to these Instructions unless criteria of other classes or divisions are met.

A61 (168) Asbestos which is immersed or fixed in a natural or artificial binder (such as cement, plastics, asphalt, resins or mineral ore) in such a way that no escape of hazardous quantities of respirable asbestos fibres can occur during transport is not subject to these Instructions. Manufactured articles, containing asbestos and not meeting this requirement, are nevertheless not subject to these Instructions, when packed so that no escape of hazardous quantities of respirable asbestos fibres can occur during transport.

A62 (178) This designation must be used only when no other appropriate designation exists in the list and then only with the approval of the appropriate authority of the State of Origin.

A63 Not used.

A64 (306) This entry may only be used for substances that do not exhibit explosive properties of Class 1 when tested in accordance with test series 1 and 2 of Class 1 (see UN *Manual of Tests and Criteria*, Part I).

A65 (270) Aqueous solutions of Division 5.1 inorganic solid nitrate substances are considered as not meeting the criteria of Division 5.1 if the concentration of the substances in solution at the minimum temperature encountered in transport is not greater than 80 per cent of the saturation limit.

≠ A66 Polyester resin kits consist of two components: a base material (Class 3, Packing Group II or III) and an activator (Division 5.2). The organic peroxide must be type D, E or F, not requiring temperature control. Packing Group II or III is assigned according to the criteria for Class 3, applies to the base material.

≠ A67 Non-spillable batteries meeting the requirements of Packing Instruction 806 are not subject to these Instructions if, at a temperature of 55°C, the electrolyte will not flow from a ruptured or cracked case. The battery must not contain any free or unabsorbed liquid. Any electrical battery or battery powered device, equipment or vehicle having the potential of dangerous evolution of heat must be prepared for transport so as to prevent:

a) a short circuit (e.g. in the case of batteries, by the effective insulation of exposed terminals; or, in the case of equipment, by disconnection of the battery and protection of exposed terminals); and

b) unintentional activation.

The words “not restricted” and the special provision number A67 must be provided on the air waybill when an air waybill is issued.

A68 (272) This substance must not be transported under the provisions of Division 4.1 unless specifically authorized by the appropriate national authority. (See UN 0143.)

≠ A69 Articles, each containing not more than 100 mg of mercury, gallium or inert gas and packaged so that the quantity of mercury, gallium or inert gas per package does not exceed 1 g, are not subject to these Instructions when carried as cargo. The words “not restricted” and the special provision number A69 must be provided on the air waybill when an air waybill is issued.

≠ A70 Internal combustion engines being shipped either separately or incorporated into a machine or other apparatus, the fuel tank of which has never contained any fuel and the fuel system of which is completely empty of fuel, or that are powered by a fuel that does not meet the classification criteria for any class or division, and without batteries or other dangerous goods, are not subject to these Instructions. The words “not restricted” and the special provision number A70 must be provided on the air waybill when an air waybill is issued.

A71 (38) This substance is not subject to these Instructions when it contains not more than 0.1 per cent calcium carbide.

A72 (163) A substance specifically listed by name in Table 3-1 must not be transported under this entry. Materials transported under this entry may contain 20 per cent or less nitrocellulose provided the nitrocellulose contains not more than 12.6 per cent nitrogen.

A73 (237) The membrane filters, including paper separators, coating, or backing materials, etc., that are present in transport, must not be liable to propagate a detonation as tested by one of the tests described in the UN *Manual of Tests and Criteria*, Part I, Test Series 1(a).

In addition, the appropriate authority may determine, on the basis of the results of suitable burning rate tests taking account of the standard tests in the UN *Manual of Tests and Criteria,* Part III, subsection 33.2.1, that

nitrocellulose membrane filters in the form in which they are to be transported are not subject to the provisions of these Instructions applicable to flammable solids in Division 4.1.

A74 (169) Phthalic anhydride in the solid state and tetrahydrophthalic anhydrides, with not more than 0.05 per cent maleic anhydride, are not subject to these Instructions. Phthalic anhydride molten at a temperature above its flash point, with not more than 0.05 per cent maleic anhydride, must be classified under UN 3256.

A75 Articles such as sterilization devices, when containing less than 30 mL per inner packaging with not more than 150 mL per outer packaging, may be transported on passenger and cargo aircraft in accordance with the provisions in 3;5, irrespective of the value in column 9 and the indication of "forbidden" in columns 10 to 13 of the Dangerous Goods List (Table 3-1), provided such packagings were first subjected to comparative fire testing. Comparative fire testing must show no difference in burning rate between a package as prepared for transport (including the substance to be transported) and an identical package filled with water.

A76 (326) In the case of fissile uranium hexafluoride, the material must be classified under UN 2977.

A77 Mixtures of solids which are not subject to these Instructions and corrosive liquids may be transported under this entry without first applying the classification criteria of Class 8, providing there is no free liquid visible at the time the substance is packaged and the packaging must pass a leakproofness test at the Packing Group II level.

A78 Radioactive material with a subsidiary risk must:

a) be labelled with subsidiary risk labels corresponding to each subsidiary risk exhibited by the material in accordance with the relevant provisions of 5;3.2; corresponding placards must be affixed to transport units in accordance with the relevant provisions of 5;3.6;

b) be allocated to Packing Groups I, II or III, as and if appropriate, by application of the grouping criteria provided in Part 2 corresponding to the nature of the predominant subsidiary risk.

The description required in 5;4.1.5.7.1 b) must include a description of these subsidiary risks (e.g. "Subsidiary risk: 3,6.1"), the name of the constituents which most predominantly contribute to this (these) subsidiary risk(s) and, where applicable, the packing group.

Radioactive material with a subsidiary risk of Division 4.2 (Packing Group I) must be transported in Type B packages. Radioactive material with a subsidiary risk of Division 2.1 is forbidden from transport on passenger aircraft, and radioactive material with a subsidiary risk of Division 2.3 is forbidden from transport on passenger or cargo aircraft except with the prior approval of the appropriate authority of the State of Origin under the conditions established by that authority. A copy of the document of approval, showing the quantity limitations and the packaging requirements, must accompany the consignment.

≠ A79 (307) This entry may only be used for uniform mixtures containing ammonium nitrate as the main ingredient within the following composition limits:

a) not less than 90 per cent ammonium nitrate with not more than 0.2 per cent total combustible/organic material calculated as carbon and with added matter, if any, which is inorganic and inert towards ammonium nitrate; or

b) less than 90 per cent but more than 70 per cent ammonium nitrate with other inorganic materials or more than 80 per cent but less than 90 per cent ammonium nitrate mixed with calcium carbonate and/or dolomite and/or mineral calcium sulphate and not more than 0.4 per cent total combustible/organic material calculated as carbon; or

c) nitrogen type ammonium nitrate based fertilizers containing mixtures of ammonium nitrate and ammonium sulphate with more than 45 per cent but less than 70 per cent ammonium nitrate and not more than 0.4 per cent total combustible/organic material calculated as carbon such that the sum of the percentage composition of ammonium nitrate and ammonium sulphate exceeds 70 per cent.

A80 (220) The technical name of the flammable liquid component only of this solution or mixture must be shown in parenthesis immediately following the proper shipping name.

A81 The quantity limits shown in columns 11 and 13 do not apply to body parts, organs or whole bodies.

A82 (177) Barium sulphate is not subject to these Instructions.

A83 (208) The commercial grade of calcium nitrate fertilizer, when consisting mainly of a double salt (calcium nitrate and ammonium nitrate) containing not more than 10 per cent ammonium nitrate and at least 12 per cent water of crystallization, is not subject to these Instructions.

A84 (182) The group of alkali metals includes lithium, sodium, potassium, rubidium and caesium.

A85 (183) The group of alkaline earth metals includes magnesium, calcium, strontium and barium.

A86 (241) The formulation must be prepared so that it remains homogeneous and does not separate during transport. Formulations with low nitrocellulose contents are not subject to these Instructions provided that 1) they do not exhibit dangerous properties when tested for their liability to detonate, deflagrate or explode when heated under defined confinement by tests of test series 1(a), 2(b) and 2(c) respectively in the UN *Manual of Tests and Criteria* and 2) they are not flammable solids when tested in accordance with test N1 in the UN *Manual of Tests and Criteria*, Part III, subsection 3.3.2.1.4 (chips, if necessary, crushed and sieved to a particle size of less than 1.25 mm).

A87 Articles which are not fully enclosed by packaging, crates or other means that prevent ready identification are not subject to the marking requirements of 5;2 or the labelling requirements of 5;3.

A88 Prototype lithium batteries and cells to be tested that are packed with not more than 24 cells or 12 batteries per packaging that have not been tested to the requirements in subsection 38.3 of the UN *Manual of Tests and Criteria* may be transported aboard cargo aircraft if approved by the appropriate authority of the State of Origin and the following requirements are met:

a) the cells and batteries must be transported in an outer packaging that is a metal, plastic or plywood drum or a metal, plastic or wooden box and that meets the criteria for Packing Group I packagings; and

b) each cell and battery must be individually packed in an inner packaging inside an outer packaging and surrounded by cushioning material that is non-combustible, and non-conductive. Cells and batteries must be protected against short circuiting.

A89 (186) In determining the ammonium nitrate content, all nitrate ions for which a molecular equivalent of ammonium ions is present in the mixture must be calculated as ammonium nitrate.

A90 (193) This entry may only be used for uniform ammonium nitrate based fertilizer mixtures of the nitrogen, phosphate or potash type, containing not more than 70 per cent ammonium nitrate and not more than 0.4 per cent total combustible/organic material calculated as carbon or with not more than 45 per cent ammonium nitrate and unrestricted combustible material. Fertilizers within these composition limits are not subject to these Instructions if shown by a Trough Test (see UN *Manual of Tests and Criteria*, Part III, subsection 38.2) not to be liable to self-sustaining decomposition.

≠ A91 (198) A nitrocellulose solution containing not more than 20 per cent nitrocellulose may be transported under the requirements for “Paint” or “Printing ink” as applicable; see UN 1210, 1263, 3066, 3469 and 3470.

≠ A92 (199) Lead compounds which, when mixed in a ratio of 1:1000 with 0.07 M hydrochloric acid and stirred for 1 hour at a temperature of 23°C ±2°C, exhibit a solubility of 5 per cent or less (see ISO 3711:1990 “*Lead chromate pigments and lead chromate-molybdate pigments — Specifications and methods of test”*) are considered insoluble and are not subject to these Instructions unless they meet the criteria for inclusion in another hazard class or division.

≠ A93 A heat-producing article is not subject to these Instructions when the heat-producing component or the energy source is removed to prevent unintentional functioning during transport. The words “not restricted” and the special provision number A93 must be provided on the air waybill when an air waybill is issued.

A94 Batteries or cells containing sodium must not contain dangerous goods other than sodium, sulphur and/or polysulphides. Batteries or cells must not be offered for transport at a temperature such that liquid elemental sodium is present in the battery or cell unless approved and under the conditions established by the appropriate national authority.

Cells must consist of hermetically sealed metal casings which fully enclose the dangerous goods and which are so constructed and closed as to prevent the release of the dangerous goods under normal conditions of transport.

Batteries must consist of cells secured within and fully enclosed by a metal casing so constructed and closed as to prevent the release of the dangerous goods under normal conditions of transport.

A95 (203) This entry is not to be used for Polychlorinated biphenyls (UN 2315).

A96 (196) Only formulations which in laboratory testing neither detonate in the cavitated state nor deflagrate, which show no effect when heated under confinement and which exhibit no explosive power may be transported under this entry. The formulation must also be thermally stable (i.e. the SADT is 60°C or higher for a 50 kg package). Formulations not meeting these criteria must be transported under the appropriate provisions of Division 5.2.

≠ A97 These entries may be used for substances which are hazardous to the environment but do not meet the classification criteria of any other class or other substance within Class 9. This must be based on the criteria as indicated in 2;9.2.1 a). This designation may also be used for wastes not otherwise subject to these Instructions but which are covered under the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*.

≠ A98 Aerosols, gas cartridges and receptacles, small, containing gas with a capacity not exceeding 50 ml, containing no constituents subject to these Instructions other than a Division 2.2 gas, are not subject to these Instructions unless their release could cause extreme annoyance or discomfort to crew members so as to prevent the correct performance of assigned duties. The words “not restricted” and the special provision number A98 must be provided on the air waybill when an air waybill is issued.

A99 Irrespective of the limit specified in column 13 of Table 3-1, a lithium battery or battery assembly that has successfully passed the tests specified in the UN *Manual of Tests and Criteria*, Part III, subsection 38.3, and that meets the requirements of Packing Instruction 903 as prepared for transport may have a mass exceeding 35 kg G, if approved by the appropriate authority of the State of Origin. A copy of the document of approval must accompany the consignment.

A100 (243) Gasoline, motor spirit and petrol for use in spark-ignition engines (e.g. in automobiles, stationary engines and other engines) must be assigned to this entry regardless of variations in volatility.

A101 (227) When phlegmatized with water and inorganic inert material, the content of urea nitrate may not exceed 75 per cent by mass and the mixture must not be capable of being detonated by the series 1 type (a) test in the UN *Manual of Tests and Criteria*, Part I.

A102 (244) This listing includes aluminium dross, aluminium skimmings, spent cathodes, spent potliner and aluminium salt slags.

A103 Flammable liquefied gases must be contained within refrigerating machine components. These components must be designed and tested to at least three times the working pressure of the machinery. The refrigerating machines must be designed and constructed to contain the liquefied gas and preclude the risk of bursting or cracking of the pressure-retaining components during normal conditions of transport. Refrigerating machines and refrigerating machine components are considered not subject to these Instructions if containing less than 100 g flammable, non-toxic, liquefied gas.

A104 A toxic subsidiary risk label, although not required by these Instructions, may be applied.

A105 (242) Sulphur is not subject to these Instructions when it has been formed to a specific shape (e.g. prills, granules, pellets, pastilles or flakes).

A106 This entry may only be used for samples of chemicals taken for analysis in connection with the implementation of the Chemical Weapons Convention.

They may be transported on a passenger or cargo aircraft providing prior approval has been granted by the appropriate authority of the State of Origin or the Director General of the Organization for the Prohibition of Chemical Weapons and providing the samples comply with the requirements shown against the entry for chemical samples in Table S-3-1 of the Supplement.

The substance is assumed to meet the criteria of Packing Group I for Division 6.1. Subsidiary risk labelling is not required.

A copy of the document of approval showing the quantity limitations and the packing requirements must accompany the consignment.

Note.— The transport of substances under this description must be in accordance with chain of custody and security procedures specified by the Organization for the Prohibition of Chemical Weapons.

A107 This entry only applies to machinery or apparatus containing dangerous goods as a residue or as an integral element of the machinery or apparatus. It must not be used for machinery or apparatus for which a proper shipping name already exists in Table 3-1.

A108 The provisions of Special Provision A1 apply to this entry for Packing Group I only.

A109 This commodity may be transported on cargo aircraft, only with the prior approval of the appropriate authority of the State of Origin under the written conditions established by that authority. The conditions must include the quantity limitations and packing requirements and these must comply with S-3;1.2.4 of the Supplement. A copy of the document of approval, showing the quantity limitations and packing requirements, must accompany the consignment.

Where States, other than the State of Origin, have notified ICAO that they require prior approval of shipments made under this special provision, approval must also be obtained from these States, as appropriate.

A110 (226) Formulations of these substances containing not less than 30 per cent non-volatile, non-flammable phlegmatizer are not subject to these Instructions.

A111 Oxygen generators, chemical, that have passed their expiration date, are unserviceable or that have been used are forbidden for transport.

≠ A112 Consumer commodities may only include substances of Class 2 (non-toxic aerosols only), Class 3, Packing Group II or III, Division 6.1 (Packing Group III only), UN 3077, UN 3082 and UN 3175, provided such substances do not have a subsidiary risk. Dangerous goods that are forbidden for transport aboard passenger aircraft must not be transported as consumer commodities.

A113 (279) The substance is assigned to this classification or Packing Group based on human experience rather than the strict application of classification criteria set out in the Instructions.

A114 (283) Articles, containing gas, intended to function as shock absorbers, including impact energy absorbing devices, or pneumatic springs are not subject to these Instructions provided:

a) each article has a gas space capacity not exceeding 1.6 litres and a charge pressure not exceeding 280 bar where the product of the capacity (litres) and charge pressure (bars) does not exceed 80 (i.e. 0.5 litre gas space and 160 bar change pressure, 1 litre gas space and 80 bar charge pressure, 1.6 litre gas space and 50 bar charge pressure, 0.28 litre gas space and 280 bar charge pressure);

b) each article has a minimum burst pressure of 4 times the charge pressure at 20°C for products not exceeding 0.5 litre gas space capacity and 5 times charge pressure for products greater than 0.5 litre gas space capacity;

c) each article is manufactured from material which will not fragment upon rupture;

d) each article is manufactured in accordance with a quality assurance standard acceptable to the appropriate national authority; and

e) the design type has been subjected to a fire test demonstrating that pressure in the article is relieved by means of a fire-degradable seal or other pressure-relief device such that the article will not fragment and the article does not rocket.

A115 (280) This entry applies to articles which are used as lifesaving vehicle air bag inflators, or air bag modules or seat belt pretensioners, and which contain dangerous goods of Class 1 or dangerous goods of other classes and when transported as component parts and when these articles as presented for transport have been tested in accordance with test series 6 (c) of Part I of the UN *Manual of Tests and Criteria*, with no explosion of the device, no fragmentation of the device casing or pressure vessel, no projection hazard and no thermal effect which would significantly hinder firefighting or other emergency response efforts in the immediate vicinity.

A116 An oxygen generator, chemical, when containing an explosive actuating device must only be transported under this entry when excluded from Class 1 in accordance with 2;1.1 b).

A117 Wastes transported under UN 3291 are wastes derived from the medical treatment of humans or animals or from bio-research, where there is a relatively low probability that infectious substances are present. Waste infectious substances which can be specified must be assigned to UN 2814 or UN 2900. Decontaminated wastes which previously contained infectious substances may be considered as not subject to these Instructions unless the criteria of another class or division are met.

A118 Items classified as explosive must be removed from vehicles and transported in accordance with the provisions of these Instructions unless authorized by the appropriate national authority under the written conditions established by that authority. In such circumstances, vehicles may be transported on cargo aircraft only.

Note.— This special provision does not apply where the explosives are a smoke candle installed as a permanent part of the vehicle or are part of an assembly classified as dangerous goods of other than Class 1, e.g. Air bag inflators, Air bag modules and Seat-belt pretensioners (UN 3268), Fire extinguishers (UN 1044). Additionally, this special provision does not apply in the case of Air bag modules and Air bag inflators and Seat-belt pretensioners (UN 0503) installed in the vehicle.

A119 Irrespective of the limit specified in column 13 of Table 3-1, a handling device meeting the requirements of Packing Instruction 917 as prepared for transport may have a gross mass not exceeding 1 000 kg.

A120 This entry includes but is not limited to automobiles, motorcycles, aircraft, boats, snowmobiles, jet skis, etc.

A121 Not used.

A122 (286) Nitrocellulose membrane filters covered by this entry, each with a mass not exceeding 0.5 g, are not subject to these Instructions when contained individually in an article or a sealed packet.

≠ A123 This entry applies to Batteries, electric storage, not otherwise listed in Table 3-1. Examples of such batteries are: alkali-manganese, zinc-carbon, nickel-metal hydride and nickel-cadmium batteries. Any electrical battery or battery-powered device, equipment or vehicle having the potential of a dangerous evolution of heat must be prepared for transport so as to prevent:

a) a short circuit (e.g. in the case of batteries, by the effective insulation of exposed terminals; or, in the case of equipment, by disconnection of the battery and protection of exposed terminals); and

b) unintentional activation.

The words “not restricted” and the special provision number A123 must be provided on the air waybill when an air waybill is issued.

A124 (292) Mixtures containing not more than 23.5 per cent oxygen by volume may be transported under this entry when no other oxidizing gases are present. A Division 5.1 subsidiary risk label is not required for any concentrations within this limit.

A125 (293) The following definitions apply to matches:

a) Fusee matches are matches the heads of which are prepared with a friction-sensitive igniter composition and a pyrotechnic composition which burns with little or no flame, but with intense heat;

b) Safety matches are combined with or attached to the box, book or card that can be ignited by friction only on a prepared surface;

c) Strike anywhere matches are matches that can be ignited by friction on a solid surface;

d) Wax Vesta matches are matches that can be ignited by friction either on a prepared surface or on a solid surface.

A126 Not used.

A127 Not used.

A128 (153) This entry only applies if it is demonstrated, on the basis of tests, that the substances, when in contact with water are not combustible nor show a tendency to auto-ignition and that the mixture of gases evolved is not flammable.

A129 (252) Provided the ammonium nitrate remains in solution under all conditions of transport, aqueous solutions of ammonium nitrate, with not more than 0.2 per cent combustible material, in a concentration not exceeding 80 per cent are not subject to these Instructions.

A130 When this material meets the definitions and criteria of other classes or divisions as defined in Part 2, it must be classified in accordance with the predominant subsidiary risk. Such material must be declared under the proper shipping name and UN number appropriate for the material in that predominant Class or division, with the addition of the name applicable to this radioactive material according to column 1 of the Dangerous Goods List, and must be transported in accordance with the provisions applicable to that UN number. In addition, all other requirements specified in 1;6.1.5 must apply.

A131 Sterilization devices, when containing less than 30 mL per inner packaging with not more than 300 mL per outer packaging, may be transported on passenger and cargo aircraft in accordance with the provisions in 3;5, irrespective of the value in column 9 and the indication of “Forbidden” in columns 10 to 13 of the Dangerous Goods List (Table 3-1). In addition, after filling, each inner packaging must be determined to be leak-tight by placing the inner packaging in a hot water bath at a temperature, and for a period of time, sufficient to ensure that an internal pressure equal to the vapour pressure of ethylene oxide at 55°C is achieved. Any inner packaging showing evidence of leakage, distortion or other defect under this test may not be transported under the terms of this special provision. In addition to the packaging required by 3;5, inner packagings must be placed in a sealed plastics bag compatible with ethylene oxide and capable of containing the contents in the event of breakage or leakage of the inner packaging. Glass inner packagings must be placed within a protective shield capable of preventing the glass from puncturing the plastics bag in the event of damage to the packaging (e.g. crushing).

A132 (204) Articles containing smoke-producing substance(s) corrosive according to the criteria for Class 8 must be labelled with a “Corrosive” subsidiary risk label.

A133 Substances must not be transported under this entry unless approved by the appropriate national authority on the basis of the results of appropriate tests according to Part I of the UN *Manual of Tests and Criteria*. Packaging must ensure that the percentage of diluent does not fall below that stated in the appropriate authority approval at any time during transport.

A134 (312) Vehicles which contain an internal combustion engine must be consigned under the entries UN 3166 **Vehicle, flammable gas powered** or UN 3166 **Vehicle, flammable liquid powered**, as appropriate. These entries include hybrid electric vehicles powered by both an internal combustion engine and wet batteries, sodium batteries or lithium batteries, transported with the battery(ies) installed.

A135 (313) Substances and mixtures meeting the criteria for Class 8 must be labelled with a “Corrosive” subsidiary risk label.

A136 (314) a) These substances are liable to exothermic decomposition at elevated temperatures. Decomposition can be initiated by heat or by impurities (e.g. powdered metals (iron, manganese, cobalt, magnesium) and their compounds).

b) During the course of transport, these substances must be shaded from direct sunlight and all sources of heat and be placed in adequately ventilated areas.

A137 (315) This entry must not be used for Division 6.1 substances that meet the inhalation toxicity criteria for Packing Group I described in 2;6.2.2.4.3.

A138 (316) This entry applies only to calcium hypochlorite, dry, when transported in non-friable tablet form.

A139 (317) “Fissile-excepted” applies only to those packages complying with 6;7.10.2.

A140 (318) For the purposes of documentation, the proper shipping name must be supplemented with the technical name (see 1.2.7). Technical names need not be shown on the package. When the infectious substances to be transported are unknown, but suspected of meeting the criteria for inclusion in category A and assignment to UN 2814 or UN 2900, the words “suspected category A infectious substance” must be shown, in parentheses, following the proper shipping name on the transport document, but not on the outer packagings.

A141 Not used.

A142 Not used.

A143 (321) These storage systems must always be considered as containing hydrogen.

A144 Protective breathing equipment (PBE) containing a small chemical oxygen generator for use by aircrew members may be transported on passenger aircraft in accordance with Packing Instruction 523 subject to the following conditions:

a) the PBE must be serviceable and contained in the manufacturer’s original unopened inner packaging (i.e. vacuum sealed bag and protective container);

b) the PBE may only be consigned by, or on behalf of, an operator in the event that a PBE(s) has been rendered unserviceable or has been used and there is a need to replace such items so as to restore the number of PBEs on an aircraft to that required by pertinent airworthiness requirements and operating regulations;

c) a maximum of two PBE may be contained in a package;

d) the statement “Aircrew protective breathing equipment (smoke hood) in accordance with Special Provision A144” must be:

(i) included on the dangerous goods transport document;

(ii) marked adjacent to the proper shipping name on the package.

All other requirements applicable to chemical oxygen generators must apply except that the “cargo aircraft only” handling label must not be displayed.

A145 Waste aerosols are prohibited from air transport.

≠ A146 (328) This entry applies to fuel cell cartridges including when contained in equipment or packed with equipment. Fuel cell cartridges installed in or integral to a fuel cell system are regarded as contained in equipment. Fuel cell cartridge means an article that stores fuel for discharge into the fuel cell through a valve(s) that controls the discharge of fuel into the fuel cell. Fuel cell cartridges, including when contained in equipment, must be designed and constructed to prevent fuel leakage under normal conditions of transport.

Fuel cell cartridge design types using liquids as fuels must pass an internal pressure test at a pressure of 100 kPa (gauge) without leakage.

Except for fuel cell cartridges containing hydrogen in metal hydride which must be in compliance with A162, each fuel cell cartridge design type, including fuel cell cartridges installed in or integral to a fuel cell system, must be shown to pass a 1.2 metre drop test onto an unyielding surface in the orientation most likely to result in failure of the containment system with no loss of contents.

A147 (329) Where substances have a flash point of 60°C or less, the package(s) must bear a “FLAMMABLE LIQUID” subsidiary risk label in addition to the hazard label(s) required by these Instructions.

≠ A148 (330) Not used.

A149 Not used.

A150 An additional subsidiary risk hazard label may be required by a Note found adjacent to the technical name entry in Table 2-7.

A151 When dry ice is used as a refrigerant for other than dangerous goods loaded in a unit load device or other type of pallet, the quantity limits per package shown in columns 11 and 13 of Table 3-1 for dry ice do not apply. In such case, the unit load device or other type of pallet must be identified to the operator and must allow the venting of the carbon dioxide gas to prevent a dangerous build-up of pressure.

≠ A152 Insulated packagings containing refrigerated liquid nitrogen fully absorbed in a porous material and intended for transport, at low temperature, of non-dangerous products are not subject to these Instructions provided the design of the insulated packaging would not allow the build-up of pressure within the container and would not permit the release of any refrigerated liquid nitrogen irrespective of the orientation of the insulated packaging. The words “not restricted” and the special provision number A152 must be provided on the air waybill when an air waybill is issued.

≠ A153 Not used.

A154 Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

+ A155 (332) Magnesium nitrate hexahydrate is not subject to these Instructions.

+ A156 (333) Ethanol and gasoline, motor spirit or petrol mixtures for use in spark-ignition engines (e.g. in automobiles, stationary engines and other engines) must be assigned to this entry regardless of variations in volatility.

+ A157 (334) A fuel cell cartridge may contain an activator provided it is fitted with two independent means of preventing unintended mixing with the fuel during transport.

+ A158 (335) Mixtures of solids which are not subject to these Instructions and environmentally hazardous liquids or solids must be classified as UN 3077 and may be transported under this entry, provided there is no free liquid visible at the time the substance is loaded or at the time the packaging is closed. Sealed packets and articles containing less than 10 mL of an environmentally hazardous liquid, absorbed into a solid material but with no free liquid in the packet or article, or containing less than 10 g of an environmentally hazardous solid, are not subject to these Instructions.

+ A159 (336) A single package of non-combustible solid LSA-II or LSA-III material must not contain an activity greater than 3000 A_2.

+ A160 (337) Type B(U) and Type B(M) packages, must not contain activities greater than the following:

a) For low dispersible radioactive material: as authorized for the package design as specified in the certificate of approval;

b) For special form radioactive material: 3000 A_1 or 100 000 A_2, whichever is the lower; or

c) For all other radioactive material: 3000 A_2.`

+ A161 (338) Each fuel cell cartridge transported under this entry and designed to contain a liquefied flammable gas must:

a) be capable of withstanding, without leakage or bursting, a pressure of at least two (2) times the equilibrium pressure of the contents at 55°C;

b) not contain more than 200 mL of liquefied flammable gas with a vapour pressure not exceeding 1 000 kPa at 55°C; and

c) pass the hot water bath test prescribed in 6;5.4.1.

+ A162 (339) Fuel cell cartridges containing hydrogen in a metal hydride transported under this entry must have a water capacity less than or equal to 120 mL.

The pressure in the fuel cell cartridge must not exceed 5 MPa at 55°C. The design type must withstand, without leaking or bursting, a pressure of two (2) times the design pressure of the cartridge at 55°C or 200 kPa more than the design pressure of the cartridge at 55°C, whichever is greater. The pressure at which this test is conducted is referred to in the drop test and the hydrogen cycling test as the “minimum shell burst pressure”.

Fuel cell cartridges must be filled in accordance with procedures provided by the manufacturer. The manufacturer must provide the following information with each fuel cell cartridge:

a) inspection procedures to be carried out before initial filling and before refilling of the fuel cell cartridge;

b) safety precautions and potential hazards to be aware of;

c) method for determining when the rated capacity has been achieved;

d) minimum and maximum pressure range;

e) minimum and maximum temperature range; and

f) any other requirements to be met for initial filling and refilling including the type of equipment to be used for initial filling and refilling.

The fuel cell cartridges must be designed and constructed to prevent fuel leakage under normal conditions of transport. Each cartridge design type, including cartridges integral to a fuel cell, must be subjected to and must pass the following tests:

Drop test

A 1.8 metre drop test onto an unyielding surface in four different orientations:

a) vertically, on the end containing the shut-off valve assembly;

b) vertically, on the end opposite to the shut-off valve assembly;

c) horizontally, onto a steel apex with a diameter of 38 mm, with the steel apex in the upward position; and

d) at a 45° angle on the end containing the shut-off valve assembly.

There must be no leakage, determined by using a soap bubble solution or other equivalent means on all possible leak locations, when the cartridge is charged to its rated charging pressure. The fuel cell cartridge must then be hydrostatically pressurized to destruction. The recorded burst pressure must exceed 85 per cent of the minimum shell burst pressure.

Fire test

A fuel cell cartridge filled to rated capacity with hydrogen must be subjected to a fire engulfment test. The cartridge design, which may include a vent feature integral to it, is deemed to have passed the fire test if:

a) the internal pressure vents to zero gauge pressure without rupture of the cartridge; or

b) the cartridge withstands the fire for a minimum of 20 minutes without rupture.

Hydrogen cycling test

This test is intended to ensure that a fuel cell cartridge design stress limits are not exceeded during use.

The fuel cell cartridge must be cycled from not more than 5 per cent rated hydrogen capacity to not less than 95 per cent rated hydrogen capacity and back to not more than 5 per cent rated hydrogen capacity. The rated charging pressure must be used for charging and temperatures must be held within the operating temperature range. The cycling must be continued for at least 100 cycles.

Following the cycling test, the fuel cell cartridge must be charged and the water volume displaced by the cartridge must be measured. The cartridge design is deemed to have passed the hydrogen cycling test if the water volume displaced by the cycled cartridge does not exceed the water volume displaced by an uncycled cartridge charged to 95 per cent rated capacity and pressurized to 75 per cent of its minimum shell burst pressure.

Production leak test

Each fuel cell cartridge must be tested for leaks at 15°C ± 5°C, while pressurized to its rated charging pressure. There must be no leakage, determined by using a soap bubble solution or other equivalent means on all possible leak locations.

Each fuel cell cartridge must be permanently marked with the following information:

a) the rated charging pressure in megapascals (MPa);

b) the manufacturer's serial number of the fuel cell cartridges or unique identification number; and

c) the date of expiry based on the maximum service life (year in four digits; month in two digits).

\+ A163 (340) Chemical kits, first-aid kits and polyester resin kits containing dangerous goods in inner packagings which do not exceed the quantity limits for excepted quantities applicable to individual substances as specified in column 9 of Table 3-1 may be transported in accordance with 3;5. Division 5.2 substances, although not individually permitted as excepted quantities in Table 3-1, are permitted in such kits and are assigned Code E2 (see 5.1.2).

\+ A164 Any electrical battery or battery-powered device, equipment or vehicle having the potential of a dangerous evolution of heat must be prepared for transport so as to prevent:

a) a short circuit (e.g. in the case of batteries, by the effective insulation of exposed terminals; or, in the case of equipment, by disconnection of the battery and protection of exposed terminals); and

b) unintentional activation.

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Chapter 4

DANGEROUS GOODS IN LIMITED QUANTITIES

Note.— The UN Recommendations contain provisions for limited quantities of dangerous goods. These recognize that many dangerous goods when in reasonably limited quantities present a reduced hazard during transport and can safely be carried in good quality packagings of the types specified in the Recommendations but which have not been tested and marked accordingly. The provisions contained in this paragraph are based on those in the UN Recommendations and allow limited quantities of dangerous goods to be transported in packagings which, although not tested and marked in accordance with Part 6 of these Instructions, do meet the construction requirements of that part.

4.1 APPLICABILITY

4.1.1 Limited quantities of dangerous goods may only be carried in accordance with the limitations and provisions of this chapter and must meet all the applicable requirements of the Technical Instructions unless otherwise provided for below.

4.1.2 Only dangerous goods which are permitted on passenger aircraft and which meet the criteria of the following classes, divisions and packing groups (if appropriate) may be carried under these provisions for dangerous goods in limited quantities:

≠

Class 2	Only UN 1950 in Divisions 2.1 and 2.2, and UN 2037 in Divisions 2.1 and 2.2 without a subsidiary risk
Class 3	Packing Groups II and III
Division 4.1	Packing Groups II and III but excluding all self-reactive substances irrespective of packing group
Division 4.3	Packing Groups II and III, solids only
Division 5.1	Packing Groups II and III
Division 5.2	Only when contained in a chemical kit or a first-aid kit
Division 6.1	Packing Groups II and III
Class 8	Packing Groups II and III but excluding UN 2794, 2795, 2803, 2809 and 3028
Class 9	Only UN 1941, 1990, 2071, 3077, 3082 and 3316

Note.— Many articles or substances, including the following, are NOT permitted under these limited quantity provisions:

a) those permitted only on cargo aircraft;

b) those in Packing Group I;

c) those in Class 1 or 7 or Divisions 2.1 (other than aerosols), 2.3 or 6.2;

d) those in Division 4.2 or with a subsidiary risk 4.2.

4.1.3 The limitations and provisions of this chapter for the transport of dangerous goods in limited quantities apply equally to both passenger and cargo aircraft.

4.2 PACKING AND PACKAGINGS

4.2.1 The general packing requirements of 4;1.1 applicable to passenger aircraft must be met except that the requirements of 4;1.1.2, 4;1.1.8 c), 4;1.1.8 e) and 4;1.1.16 do not apply.

4.2.2 Packagings, including closures, which have been used more than once (i.e. they have been refilled and are being reshipped after having previously been emptied) must be inspected thoroughly and must be in such condition that they will protect their contents and perform their containment functions as efficiently as new packagings. Cushioning and absorbent materials if used previously must remain capable of performing their primary functions.

4.2.3 Single packagings, including composite packagings, are not permitted.

4.2.4 Limited quantities of dangerous goods must be packed in accordance with the applicable limited quantity packing instruction identified by the prefix letter “Y” indicated in column 10 of Table 3-1.

Note.— The packing instruction prefixed with the letter “Y” bears the same number as the packing instruction applicable to normal quantities permitted by passenger aircraft for the entry concerned or packing group of that entry.

4.2.5 Inner packagings must meet the requirements of 6;3.2. Outer packagings must be so designed that they meet the construction requirements in 6;3.1 which apply to the type of outer packaging to be used for the article or substance.

4.3 QUANTITY LIMITATIONS

4.3.1 The net quantity per package must not exceed the quantity specified in column 11 of Table 3-1 against the packing instruction number identified by the prefix letter “Y” in column 10.

4.3.2 The gross mass per package must not exceed 30 kg.

4.3.3 When different dangerous goods are contained in one outer packaging, the quantities of such dangerous goods must be so limited that:

a) for classes other than Classes 2 and 9, the total net quantity in the package does not exceed the value of 1, where “Q” is calculated using the formula:

$$Q = \frac{n_1}{M_1} + \frac{n_2}{M_2} + \frac{n_3}{M_3} + \ldots$$

where n_1, n_2, etc., are the net quantities of the different dangerous goods and M_1, M_2 etc., are the maximum net quantities for these different dangerous goods shown in Table 3-1 against the relevant “Y” packing instructions; and

b) for Classes 2 and 9:

1) when packed together without goods of other classes, the gross mass of the package does not exceed 30 kg; or

2) when packed together with goods of other classes, the gross mass of the package does not exceed 30 kg and the total net quantity in the package of goods other than in Classes 2 or 9 does not exceed the value of 1 when calculated according to a) above.

c) carbon dioxide, solid (dry ice), UN 1845 may be packed together with goods of other classes, provided that the gross mass of the package does not exceed 30 kg. The quantity of dry ice does not need to be taken into account in the calculation of the “Q” value. However, the packaging containing the carbon dioxide, solid (dry ice) and the outer packaging must permit the release of carbon dioxide gas.

4.3.4 Where the different dangerous goods in the outer packaging consist only of those with the same UN number, packing group and physical state (i.e. solid or liquid), the calculation in 4.3.3 a) does not need to be made. However, the total net quantity in the package must not exceed the maximum net quantity according to Table 3-1.

4.4 PACKAGE TESTING

4.4.1 Each package offered for transport must be capable of withstanding a 1.2 m drop test on to a rigid, non-resilient, flat and horizontal surface, in the position most likely to cause damage. The criteria for passing the test is that the outer packaging must not exhibit any damage liable to affect safety during transport and there must be no leakage from the inner packaging(s).

4.4.2 Each package offered for transport must be capable of withstanding, without breakage or leakage of any inner packaging and without significant reduction of effectiveness, a force applied to the top surface for a duration of 24 hours equivalent to the total weight of identical packages if stacked to a height of 3 m (including the test sample).

4.5 PACKAGE MARKING

4.5.1 Packages containing limited quantities of dangerous goods must be marked as required by the applicable paragraphs of 5;2, except that 5;2.4.4.1 does not apply.

4.5.2 Packages containing limited quantities of dangerous goods and prepared in accordance with this chapter must be marked “limited quantity(ies)” or “LTD QTY”.

4.6 DANGEROUS GOODS TRANSPORT DOCUMENT

The dangerous goods transport document required by 5;4.1 must contain the words “limited quantity” or “LTD QTY” to indicate that the consignment contains limited quantities of dangerous goods.

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Chapter 5

DANGEROUS GOODS PACKED IN EXCEPTED QUANTITIES

Parts of this Chapter are affected by State Variation JP 23; see Table A-1

5.1 EXCEPTED QUANTITIES

5.1.1 Excepted quantities of dangerous goods of certain classes, other than articles, meeting the provisions of this chapter are not subject to any other provisions of these Instructions except for:

a) the training requirements in 1;4;

b) the classification procedures and packing group criteria in Part 2; and

c) the packaging requirements of 4;1.1.1, 4;1.1.3.1, 4;1.1.5, 4;1.1.6 and 4;1.1.7.

Note.— In the case of radioactive material, the requirements for radioactive material in excepted packages in 1;6.1.5 apply.

5.1.2 Dangerous goods which may be carried as excepted quantities in accordance with this chapter are shown in column 9 of the dangerous goods list by means of an alphanumeric code as indicated in Table 3-3 below:

Table 3-3. Excepted quantity codes for Table 3-1

Code	*Maximum quantity per inner packaging*	*Maximum quantity per outer packaging*
E0	Not permitted as Excepted Quantity	
E1	30 g/30 mL	1 kg/1 L
E2	30 g/30 mL	500 g/500 mL
E3	30 g/30 mL	300 g/300 mL
E4	1 g/1 mL	500 g/500 mL
E5	1 g/1 mL	300 g/300 mL

5.1.2.1 For gases, the volume indicated for inner packagings refers to the water capacity of the inner receptacle and the volume indicated for outer packagings refers to the combined water capacity of all inner packagings within a single outer package.

5.1.3 Where dangerous goods in excepted quantities for which different codes are assigned are packaged together, the total quantity per outer packaging must be limited to that corresponding to the most restrictive Code.

5.2 PACKAGINGS

5.2.1 Packagings used for the transport of dangerous goods in excepted quantities must be in compliance with the following:

a) there must be an inner packaging and each inner packaging must be constructed of plastic (when used for liquid dangerous goods it must have a thickness of not less than 0.2 mm), or of glass, porcelain, stoneware, earthenware or metal (see also 4;1.1.3.1) and the closure of each inner packaging must be held securely in place with wire, tape or other positive means; any receptacle having a neck with moulded screw threads must have a leak proof threaded type cap. The closure must be resistant to the contents;

b) each inner packaging must be securely packed in an intermediate packaging with cushioning material in such a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents. The intermediate packaging must completely contain the contents in case of breakage or leakage, regardless of package orientation. For liquid dangerous goods, the intermediate packaging must contain sufficient absorbent material to absorb the entire contents of the inner packaging. In such cases, the absorbent material may be the cushioning material. Dangerous goods must not react dangerously with cushioning, absorbent material and packaging material or reduce the integrity or function of the materials;

c) the intermediate packaging must be securely packed in a strong, rigid outer packaging (wooden, fibreboard or other equally strong material);

d) each package type must be in compliance with the provisions in 5.3;

e) each package must be of such a size that there is adequate space to apply all necessary markings; and

f) overpacks may be used and may also contain packages of dangerous goods or goods not subject to these Instructions.

5.3 TESTS FOR PACKAGES

5.3.1 The complete package as prepared for transport, with inner packagings filled to not less than 95 per cent of their capacity for solids or 98 per cent for liquids, must be capable of withstanding, as demonstrated by testing which is appropriately documented, without breakage or leakage of any inner packaging and without significant reduction in effectiveness:

a) drops onto a rigid, non-resilient flat and horizontal surface from a height of 1.8 m:

1) where the sample is in the shape of a box, it must be dropped in each of the following orientations:

— flat on the base;
— flat on the top;
— flat on the longest side;
— flat on the shortest side;
— on a corner;

2) where the sample is in the shape of a drum, it must be dropped in each of the following orientations:

— diagonally on the top chime, with the centre of gravity directly above the point of impact;
— diagonally on the base chime;
— flat on the side.

Note.— Each of the above drops may be performed on different but identical packages.

b) a force applied to the top surface for a duration of 24 hours, equivalent to the total weight of identical packages if stacked to a height of 3 m (including the drop sample).

5.3.2 For the purposes of testing, the substances to be transported in the packaging may be replaced by other substances except where this would invalidate the results of the tests. For solids, when another substance is used, it must have the same physical characteristics (mass, grain size, etc.) as the substance to be carried. In the drop tests for liquids, when another substance is used, its relative density (specific gravity) and viscosity must be similar to those of the substance to be transported.

5.4 MARKING OF PACKAGES

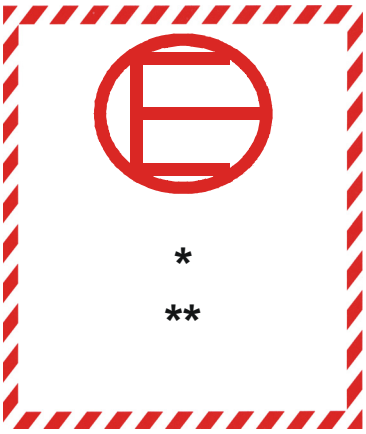
5.4.1 Packages containing excepted quantities of dangerous goods prepared in accordance with this chapter must be durably and legibly marked with the mark shown in Figure 3-1. The primary hazard class or, when assigned, the division of each of the dangerous goods contained in the package must be shown in the mark. Where the name of the shipper or consignee is not shown elsewhere on the package, this information must be included within the mark.

5.4.2 The dimensions of the mark must be a minimum of 100 mm $\times$ 100 mm.

5.4.3 An overpack containing dangerous goods in excepted quantities must display the markings required by 5.4.1, unless such markings on packages within the overpack are clearly visible.

5.5 DOCUMENTATION

If a document such as an air waybill accompanies dangerous goods in excepted quantities, it must include the statement “Dangerous Goods in Excepted Quantities” and indicate the number of packages.



Hatching and symbol of the same colour, black or red, on white or suitable contrasting background

* Place for class or, when assigned, the division number(s)

** Place for name of shipper or consignee, if not shown elsewhere on the package

Figure 3-1. Excepted quantities mark

Part 4

PACKING INSTRUCTIONS

INTRODUCTORY NOTES

Note 1.— Packing groups

For packing purposes, dangerous goods of all classes, other than Classes 1, 2 and 7 and Divisions 5.2 and 6.2, have been divided among three packing groups according to the degree of danger they present. The packing groups have the following meanings:

Packing Group I — Substances presenting high danger
Packing Group II — Substances presenting medium danger
Packing Group III — Substances presenting low danger

Some substances in Class 9 and liquids in Division 5.1 have been assigned to packing groups by experience rather than through application of technical criteria. The packing group to which a substance is assigned is listed in Table 3-1. The criteria for the packing groups are given in Part 2, Chapters 3, 4, 5, 6 and 8.

Note 2.— Temperature variations

For the information of users of these Instructions, the extremes of temperature which may be encountered in international transportation are in the order of –40°C and 55°C. Since receptacles or packagings may be filled at low temperatures and then exposed in transit in tropical areas, the increase in temperature may tend to cause discharge of liquid contents or bursting of the receptacles or packagings during transit, unless a suitable ullage (outage) has been provided and the receptacles or packagings meet the pressure requirement specified in 1.1.6 of this Part.

Note 3.— Pressure variations

Due to altitude, pressure reductions will be encountered under flight conditions which may in extreme conditions be of the order of 68 kPa. Since receptacles or packagings will generally be filled at normal atmospheric pressure of approximately 100 kPa, these pressure reductions will tend to cause discharge of liquid contents or bursting of the receptacles or packagings during flight, unless each receptacle or packaging and its closures meet the packaging test requirements.

Note 4.— Vibrations

Vibrations in commercial aircraft to which packagings may be exposed range from 5 mm amplitude at 7 Hz (corresponding to 1 g acceleration), to 0.05 mm amplitude at 200 Hz (corresponding to 8 g acceleration).

Note 5.— Nomenclature

A nomenclature of some packaging terms used in the Instructions is given in 1;3.1. Explanations of the codes used in this Part to designate types of inner and outer packagings may be found in Tables 6-2 and 6-3.

Note 6.— Portable tanks

With the approval of the appropriate authority of the State of Origin, certain dangerous goods may also be carried on cargo aircraft in portable tanks in accordance with the provisions of Part S-4, Chapter 12 of the Supplement.

Note 7.— Carriage of oxygen with aquatic animals

With the approval of the appropriate authority of the State of Origin, of Destination and of the Operator, for the purpose of providing life support to aquatic animals during transport, a cylinder containing Oxygen compressed, UN 1072, may be carried to oxygenate the water in accordance with the provisions of Table S-3-1 and Special Provision A202 (which appear in the Supplement).

Note 8.— Packagings for explosives, self-reactive substances and organic peroxides

Unless specific provision to the contrary is made in these Instructions, the packagings used for goods of Class 1, self-reactive substances of Division 4.1 and organic peroxides of Division 5.2 should comply with the provisions for the medium danger (Packing Group II) category.

Note 9.— Additional requirements for the air mode

The transport of dangerous goods by air is subject to requirements additional to those of other modes of transport (e.g. quantity limitations, requirements for absorbent material, pressure differential requirements, appropriate closure procedures, specific packing instruction requirements).

+ Note 10.— Carriage of flames

With the approval of the appropriate authority of the State of Origin, or transit (where applicable), of Destination and of the Operator, lamps fuelled by UN 1223 — **Kerosene** or UN 3295 — **Hydrocarbons, liquid, n.o.s.**, carried by a passenger to transport a symbolic flame (e.g. Olympic flame, Peace flame) may be carried in accordance with the provisions of Special Provision A224 (which appears in the Supplement to this document).

+ *Editorial Note.— Packing Instructions 215 to 217, 374 to 376, 495 to 497, 873 to 875 and 965 to 970 are presented in the new format which will be adopted in the 2011-2012 edition of these Instructions (see Attachment 4).*

Chapter 1

GENERAL PACKING REQUIREMENTS

Parts of this Chapter are affected by State Variations IT 7, JP 20, JP 24; see Table A-1

1.1 GENERAL REQUIREMENTS APPLICABLE TO ALL CLASSES EXCEPT CLASS 7

1.1.1 Dangerous goods must be packed in good quality packagings, which must be strong enough to withstand the shocks and loadings normally encountered during transport, including removal from a pallet, unit load device or overpack for subsequent manual or mechanical handling. Packagings must be constructed and closed so as to prevent any loss of contents when prepared for transport, which may be caused under normal conditions of transport, by vibration, or by changes in temperature, humidity or pressure (resulting from altitude, for example). Packagings (including inner packagings and receptacles) must be closed in accordance with the information provided by the manufacturer. No dangerous residue must adhere to the outside of packages during transport. These provisions apply, as appropriate, to new, reused, reconditioned or re-manufactured packagings.

Note.— The nature of transport dictates that many packages are likely to be moved between different modes of transport with the attendant increase in handling, e.g. from vehicles into warehouses and then onto aircraft. Additionally, packages consigned on a pallet may be removed from that pallet to assist handling and loading which may be carried out manually. To avoid damage and leakage from packages during transport, shippers should take this into account in selecting an appropriate packaging or in making the decision about the suitability of an already packaged item. In this respect, it is recommended that single steel or aluminium packagings (1A1, 1A2, 1B1, 1B2, 3A1, 3A2, 3B1, 3B2), when transported in narrow-bodied aircraft and not otherwise protected by, for example, placement in a unit load device, be provided additional protection against the abrasive effects experienced in loading the aircraft through overpacking, palletization or other means of protecting the bottom head and chime. Also, small single packagings, with a capacity of 2 L or less, should be overpacked to facilitate handling and to permit adequate securing of the dangerous goods aboard the aircraft.

1.1.2 New, remanufactured, reused or reconditioned packagings which are listed in Tables 6-2 and 6-3, must meet the applicable requirements of Part 6 of these Instructions. Such packagings must be manufactured and tested under a quality assurance programme which satisfies the appropriate national authority, in order to ensure that such packagings meet those applicable requirements. Where packagings are required to be tested in accordance with 6;4, their subsequent use must be as specified in the applicable test report and conform in all respects with the design type which was tested, including the method of packing and size and type of any inner packagings, except as provided for in 1.1.9.1 and 6;4.1.7. Before being filled and handed over for transport, every packaging must be inspected to ensure that it is free from corrosion, contamination or other damage. Any packaging which shows signs of reduced strength as compared with the approved design type must no longer be used or must be so reconditioned that it is able to withstand the design type tests.

+ *Note.— ISO 16106:2006 Packaging — Transport packages for dangerous goods — Dangerous goods packagings, intermediate bulk containers (IBCs) and large packagings — Guidelines for the application of ISO 9001 provides acceptable guidance on procedures which may be followed.*

1.1.3 Compatibility requirements

1.1.3.1 Parts of packagings which are in direct contact with dangerous goods:

a) must not be affected or significantly weakened by those dangerous goods; and

b) must not cause a dangerous effect, e.g. catalyzing a reaction or reacting with the dangerous goods.

Where necessary, they must be provided with a suitable inner coating or treatment.

1.1.3.2 Materials, such as some plastics, which can be significantly softened or rendered brittle or permeable by the temperatures likely to be experienced during transport or because of the chemical action of the contents or the use of a refrigerant, must not be used. Even though certain packagings are specified in individual packing instructions, it is, nevertheless, the responsibility of the shipper to ensure that such packagings are, in every way, compatible with the articles or substances to be contained within such packagings. This particularly applies to corrosivity, permeability, softening, premature aging and embrittlement.

Particular attention should be paid to the following:

a) the effect of fluorine on glass;

b) the effects of corrosion on metals such as steel and aluminium; and

c) consideration of the interaction (such as swelling, permeation, chemical degradation and environmental stress cracking) of substances with polymer materials such as polyethylene and polypropylene.

1.1.3.3 Shippers must ensure that all appropriate measures have been taken to ensure that the packagings used are compatible with the dangerous goods to be transported. Evidence of such measures or assessments must be made available to the competent authority upon request.

1.1.4 The body and the closure of any packaging must be so constructed as to be able adequately to resist the effects of temperature and vibration occurring in normal conditions of transport. Stoppers, corks or other such friction-type closures must be held securely, tightly and effectively in place by positive means (for example, by the use of adhesive tape, friction sleeves, welding or soldering, positive locking wires). The closure device must be so designed that it is unlikely that it can be incorrectly or incompletely closed, and must be such that it may be checked easily to determine that it is completely closed.

1.1.5 When filling packagings for liquids sufficient ullage (outage) must be left to ensure that neither leakage nor permanent distortion of the packaging will occur as a result of an expansion of the liquid caused by temperatures likely to prevail during transport. Liquids must not completely fill a packaging at a temperature of 55°C.

1.1.6 Packagings for which retention of liquid is a basic function must be capable of withstanding without leakage an internal pressure which produces a pressure differential of not less than 95 kPa (not less than 75 kPa for liquids in Packing Group III of Class 3 or Division 6.1), or a pressure related to the vapour pressure of the liquid to be conveyed, whichever is the greater. The pressure related to the vapour pressure must be determined as either:

a) the total gauge pressure measured in the packaging (i.e. the vapour pressure of the filling substance and the partial pressure of the air or other inert gases, less 100 kPa) at 55°C, multiplied by a safety factor of 1.5; this total gauge pressure should be determined on the basis of a degree of filling in accordance with 1.1.5 and a filling temperature of 15°C; or

b) 1.75 times the vapour pressure at 50°C less 100 kPa, but with a minimum of 95 kPa.

This is expressed as:

$P = (V_{p50} \times 1.75) – 100$ kPa with a minimum of 95 kPa

where

P = Pressure requirement in kPa (gauge)

V_{p50} = Vapour pressure at 50°C; or

c) 1.5 times the vapour pressure at 55°C less 100 kPa, but with a minimum of 95 kPa.

This is expressed as:

$P = (V_{p55} \times 1.5) – 100$ kPa with a minimum of 95 kPa

where

P = Pressure requirement in kPa (gauge)

V_{p55} = Vapour pressure at 55°C.

Note.— The capability of a packaging to withstand an internal pressure without leakage that produces the specified pressure differential should be determined by testing samples of inner packagings of combination packagings and single packagings. Pressure differential is the difference between the pressure exerted on the inside of the packaging and the pressure on the outside. The appropriate test method should be selected based on packaging type. Acceptable test methods include any method that produces the required pressure differential between the inside and outside of a single packaging or an inner packaging of a combination packaging. The test may be conducted using internal hydraulic or pneumatic pressure (gauge) or external vacuum test methods. Internal hydraulic or pneumatic pressure can be applied in most cases as the required pressure differential can be achieved under most circumstances. An external vacuum test is not acceptable if the specified pressure differential is not achieved and maintained. The external vacuum test is a generally acceptable method for rigid packagings but is not normally acceptable for:

— *flexible packagings;*

— *packagings filled and closed under an absolute atmospheric pressure lower than 95 kPa or for liquids in Packing Group III of Class 3 or Division 6.1 with an absolute pressure of 75 kPa;*

— *packagings intended for the transport of high vapour pressure liquids (i.e. vapour pressure greater than 111 kPa at 50°C or 130 kPa at 55°C and accordingly greater than 100 kPa at 50°C or 117 kPa at 55°C for liquids in Packing Group III of Class 3 or Division 6.1.*

1.1.6.1 Notwithstanding the foregoing, dangerous goods may be contained in an inner packaging which does not itself meet the pressure requirement provided that the inner packaging is packed within a supplementary packaging which does meet the pressure requirement and all the other requirements of this Chapter and the applicable packing instruction.

1.1.7 Dangerous goods must not be packed together in the same outer packaging with dangerous or other goods if they react dangerously with each other and cause:

a) combustion and/or evolution of considerable heat;

b) evolution of flammable, toxic or asphyxiant gases;

c) the formation of corrosive substances; or

d) the formation of unstable substances.

1.1.8 Subject to 1.1.7 an outer packaging may contain more than one item of dangerous goods provided that:

a) the inner packaging used for each item of dangerous goods and the quantity contained therein complies with the relevant part of the packing instruction applicable to that item;

b) the outer packagings used are permitted by all the packing instructions applicable to each item of dangerous goods;

c) the package as prepared for shipment meets the specification performance tests for the most restrictive packing group of a substance or article contained in the package;

d) the dangerous goods do not require segregation according to Table 7-1, unless otherwise provided for in these Instructions; and

e) the quantities of different dangerous goods contained in one outer packaging must be such that "Q" does not exceed the value of 1, where "Q" is calculated using the formula:

$$Q = \frac{n_1}{M_1} + \frac{n_2}{M_2} + \frac{n_3}{M_3} + \ldots$$

where n_1, n_2, etc. are the net quantities of the different dangerous goods and M_1, M_2, etc. are the maximum net quantities for these different dangerous goods according to Table 3-1 for passenger or cargo aircraft as applicable. However, the following dangerous goods do not need to be taken into account in the calculation of the "Q" value:

1) carbon dioxide, solid (dry ice), UN 1845;

2) those where columns 11 and 13 of Table 3-1 indicate "No limit";

3) those with the same UN number, packing group, and physical state (i.e. solid or liquid), providing they are the only dangerous goods in the package and the total net quantity does not exceed the maximum net quantity according to Table 3-1.

+ 4) those where columns 11 and 13 of Table 3-1 indicate a maximum gross mass per package.

+ f) for packages containing dangerous goods where the letter "G" follows the quantity shown in column 11 or 13 of Table 3-1, the gross mass of the completed package does not exceed the lowest applicable gross mass.

An outer packaging containing Division 6.2 (Infectious Substances) may contain material for refrigeration, or freezing or packaging material such as absorbent material.

Note.— For packages containing radioactive material, see 9.1.3.

1.1.9 Inner packagings must be so packed, secured or cushioned in an outer packaging in such a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents into the outer packaging. Inner packagings containing liquids must be packaged with their closures upward and placed within outer packagings consistent with the orientation markings prescribed in 5;3.2.11 b) of these Instructions. Inner packagings that are liable to break or be punctured easily, such as those made of glass, porcelain or stoneware or of certain plastic material, must be secured in outer packagings with suitable cushioning material. Any leakage of the contents must not substantially impair the protective properties of the cushioning material or of the outer packaging.

1.1.9.1 Where an outer packaging of a combination packaging has been successfully tested with different types of inner packagings, a variety of such different inner packagings may also be assembled in this outer packaging or large packaging. In addition, provided an equivalent level of performance is maintained, the following variations in inner packagings are allowed without further testing of the package:

a) inner packagings of equivalent or smaller size may be used provided:

1) the inner packagings are of similar design to the tested inner packagings (e.g. shape — round, rectangular);

2) the material of construction of the inner packagings (glass, plastics, metal, etc.) offers resistance to impact and stacking forces equal to or greater than that of the originally tested inner packaging;

3) the inner packagings have the same or smaller openings and the closure is of similar design (screw cap, friction lid, etc.);

4) sufficient additional cushioning material is used to take up void spaces and to prevent significant movement of the inner packagings; and

5) inner packagings are oriented within the outer packaging in the same manner as in the tested package; and

b) a lesser number of the tested inner packagings, or of the alternative types of inner packagings identified in a) above, may be used provided sufficient cushioning is added to fill the void space(s) and to prevent significant movement of the inner packagings.

1.1.10 Unless otherwise provided in the packing instructions, liquids in Class 3, 4 or 8, or Division 5.1, 5.2 or 6.1 that are packaged in glass, earthenware, plastic or metal inner packagings must be packaged using absorbent material as follows:

a) Packing Group I liquids on passenger aircraft must be packaged using material capable of absorbing the entire contents of the inner packagings containing such liquids;

b) Packing Group I liquids on cargo aircraft and Packing Group II liquids and liquids in Division 5.2 on passenger and cargo aircraft must be packaged using a sufficient quantity of absorbent material to absorb the entire contents of any one of the inner packagings containing such liquids and, where they are of different sizes and quantities, sufficient absorbent material to absorb the contents of the inner packaging with the greatest quantity.

1.1.10.1 Absorbent material is not required if the inner packagings are so protected that breakage of them and leakage of their contents from the outer packaging will not occur during normal conditions of transport. Where absorbent material is required and an outer packaging is not liquid tight, a means of containing the liquid in the event of a leakage must be provided in the form of a leakproof liner, plastic bag or other equally efficient means of containment.

1.1.10.2 Absorbent material must not react dangerously with the liquid.

1.1.11 The nature and the thickness of the outer packaging must be such that friction during transport does not generate any heat likely to alter dangerously the chemical stability of the contents.

1.1.12 Venting of packagings to reduce internal pressure, which may develop by the evolution of gas from the contents, is not permitted for air transport, except as otherwise specified in these Instructions.

1.1.13 Combination packagings containing liquid dangerous goods, excluding flammable liquids in inner packagings of 120 mL or less, or infectious substances in primary receptacles not exceeding 50 mL, must be packed so that the closures on the inner packagings are upward and the upright position of the package must be indicated on it by the “Package orientation” label shown in 5;3.2.11 b). The words “This side up” or “This end up” may also be displayed on the top cover of the package.

1.1.14 Except as provided in 5;3.5.1.1 a), a package must be of such size that there is adequate space to affix all necessary labels and markings.

1.1.15 An empty packaging that has contained a dangerous substance must be treated in the same manner as is required by these Instructions for a package filled with that substance unless adequate measures have been taken to nullify any hazard.

Note.— Purging and thorough flushing of the packaging with a neutralizing agent is an acceptable method of nullifying the hazard.

1.1.16 Packagings tested as prescribed in 6;4.5 and marked with the hydraulic test pressure prescribed in 6;2.1.1 d) 1) must be filled only with a liquid having a vapour pressure:

a) such that the total gauge pressure in the packaging (i.e. the vapour pressure of the filling substance plus the partial pressure of air or other inert gases, less 100 kPa) at 55°C, determined on the basis of a maximum degree of filling in accordance with 1.1.5 and a filling temperature of 15°C, will not exceed two-thirds of the marked test pressure; or

b) at 50°C less than four-sevenths of the sum of the marked test pressure plus 100 kPa; or

c) at 55°C less than two-thirds of the sum of the marked test pressure plus 100 kPa (see Table 4-1).

However, where the packaging is selected on the basis of 1.1.16 a) the hydraulic test pressure marked in accordance with 6;2.1.1 d) 1) must be not less than 100 kPa (not less than 80 kPa for liquids in Packing Group III of Class 3 or Division 6.1).

1.1.17 Packagings used for solids which may become liquid at temperatures encountered during air transport must also be capable of containing that substance in the liquid state.

Note.— Packagings for solids (both inner and single) which may be permitted by the applicable packing instruction should not be used if they are unsuitable for containing liquids (e.g. paper or plastic bags as inner packagings, unlined fibre drums as single packagings, should not be used).

Table 4-1. Examples of required marked test pressures calculated as in 1.1.16 c)

UN No.	*Name*	*Class*	*Packing Group*	*V_{p55} (kPa)*	*V_{p55} × 1.5 (kPa)*	*(V_{p55} × 1.5) minus 100 (kPa)*	*Required minimum test pressure (gauge) under 6;4.5.3 c) (kPa)*	*Minimum test pressure (gauge) to be marked on the packaging (kPa)*
2056	Tetrahydrofuran	3	II	70	105	5	100	100
2247	n-Decane	3	III	1.4	2.1	–97.9	100	100
1593	Dichloromethane	6.1	III	164	246	146	146	150
1155	Diethyl ether	3	I	199	299	199	199	250

Note 1.— For pure liquids the vapour pressure at 55°C (V_{p55}) can often be obtained from scientific tables.

Note 2.— The maximum vapour pressures in 1.1.16 b) and c) refer to the basis of the formula while the minimum hydraulic test pressure in the last sentence of 1.1.16 refers to the aircraft altitude.

Note 3.— This table refers to the use of 1.1.16 c) only, which means that the marked test pressure must exceed 1.5 times the vapour pressure at 55°C less 100 kPa. When, for example, the test pressure for n-Decane is determined according to 6;4.5.3 a) the minimum marked test pressure of 80 kPa applies.

Note 4.— For Diethyl ether the required minimum test pressure under 6;4.5.4 is 250 kPa.

1.1.18 Every packaging intended to contain liquids must successfully undergo a suitable leakproofness test and be capable of meeting the appropriate test level indicated in 6;4.4.2:

a) before it is first used for transport;

b) after remanufacturing or reconditioning, before it is reused for transport.

For this test, packagings need not have their own closures fixed.

The inner receptacle of composite packagings may be tested without the outer packaging provided the test results are not affected. This test is not necessary for inner packagings of combination packagings.

1.1.19 The closures of packagings containing wetted or diluted substances must be such that the percentage of liquid (water, solvent or phlegmatizer) does not fall below the prescribed limits during transport.

1.1.20 For plastic drums and jerricans, unless otherwise approved by the appropriate national authority, the period of use permitted for the transport of dangerous goods must be not more than five years from the date of manufacture of the receptacles, except where a shorter period of use is prescribed because of the nature of the substance to be transported.

1.2 PACKING GROUP

Unless otherwise provided for, the specification packagings (i.e. those listed in Table 6-2) detailed in the packing instructions must meet the performance test requirements of the relevant packing group shown in column 8 of Table 3-1 for the particular substance or article.

1.3 TRANSITIONAL PACKAGING ARRANGEMENTS FOR RADIOACTIVE MATERIAL

For the arrangements for the use of packagings for radioactive material manufactured under earlier requirements, see 6;7.23.

1.4 SALVAGE PACKAGINGS

1.4.1 Damaged, defective, leaking or non-conforming packages, or dangerous goods that have spilled or leaked may be transported in salvage packagings (see 1;3.1.1) meeting the requirements of 1.4.2 and 6;4.8. These salvage packagings may be used provided that appropriate measures are taken to prevent excessive movement of the damaged or leaking packages

within the salvage packaging and that when the salvage packaging contains liquids, sufficient absorbent material is added to eliminate the presence of free liquid. Prior approval from the appropriate national authority must be obtained to ship salvage packagings.

1.4.2 Salvage packagings must be single packagings of a material resistant to any chemical or other action of the leaking or spilled dangerous goods. Not more than one damaged, defective or leaking package of dangerous goods may be packed in any one of such single packagings.

1.4.3 Damaged, defective or leaking packages of dangerous goods of Classes 1, 2 and 7 and Division 6.2 (other than Clinical waste and Medical waste falling under UN 3291) must not be transported in salvage packagings.

1.4.4 Damaged, defective or leaking packages of self-reactive substances of Division 4.1 or substances of Division 5.2 must not be transported in metal salvage packagings meeting Packing Group I requirements.

Chapter 2

GENERAL

2.1 Each of the succeeding Chapters of this Part is devoted to the specific packing instructions applicable to an individual class of dangerous goods. In some cases the Chapters start with general requirements which apply to all goods in that class.

2.2 The Dangerous Goods List (Table 3-1) shows for each article or substance, in columns 10 and 12, the number of the packing instruction that must be used.

2.3 The packing instruction numbers are prominently displayed on the outer edge of each page for easy reference. Each instruction shows, where applicable, the acceptable single and combination packagings. For combination packagings, tables show the acceptable outer packagings and associated inner packagings with the maximum net quantity permitted in each inner packaging. The maximum quantity per inner packaging may be further limited by the maximum quantity per package specified in Table 3-1. Where provisions for particular articles or substances apply, tables show the inner packagings with associated quantity limitations and single packagings which are acceptable for the individual commodities (identified by their UN Number). If a commodity is identified in the table applicable to inner packagings of combination packagings but not in the table applicable to single packagings, it means that the particular commodity is not permitted in single packagings. Where appropriate, particular packing requirements are also indicated for each commodity; these requirements are detailed at the end of that packing instruction. Particular packing requirements apply to both inner packagings of combination packagings and single packagings as appropriate.

2.4 Unless otherwise specified, each packaging must conform to the applicable requirements of Part 6. Generally packing instructions do not provide guidance on compatibility and the user must not select a packaging without checking that the substance is compatible with the packaging material selected (e.g. most fluorides are unsuitable for glass receptacles). Where glass receptacles are permitted in the packing instructions porcelain, earthenware and stoneware packagings are also allowed.

2.5 The following packagings must not be used when the substances being transported are liable to become liquid during transport:

Drums:	1D and 1G
Boxes:	4C1, 4C2, 4D, 4F, 4G and 4H1
Bags:	5L1, 5L2, 5L3, 5H1, 5H2, 5H3, 5H4, 5M1 and 5M2
Composite packagings:	6HC, 6HD2, 6HG1, 6HG2, 6HD1, 6PC, 6PD1, 6PD2, 6PG1, 6PG2 and 6PH1.

2.6 Where the packing instructions in this Part authorize the use of a particular type of outer packaging (e.g. 4G, 1A2), packagings bearing the same packaging identification code followed by the letters “V”, “U” or “W” marked in accordance with the requirements of 6;4.1.7 h) (e.g. 4GV, 4GU or 4GW; 1A2V, 1A2U or 1A2W) may also be used under the same conditions and limitations applicable to the use of that type of packaging according to the relevant packing instruction. For example, a combination packaging marked with the packaging code “4GV” may be used whenever a combination packaging marked “4G” is authorized, provided the requirements in the relevant packing instruction regarding types of inner packagings and quantity limitations are respected.

2.7 Cylinders may be used for liquids and solids when indicated in a packing instruction. The cylinder must meet the standards set out below.

2.7.1 Unless otherwise indicated in these Instructions, cylinders conforming to:

a) the applicable requirements of 6;5; or

b) the national or international standards on the design, construction, testing, manufacturing and inspection, as applied by the country in which the cylinders are manufactured, provided that the provisions of 2.7 and 6;5.3.3 are met.

2.7.2 Every design type of cylinder must be approved by the competent authority of the country of manufacture or as indicated in 6;5.

2.7.3 Unless otherwise indicated, cylinders having a minimum test pressure of 0.6 MPa must be used.

2.7.4 Unless otherwise indicated, cylinders may be provided with an emergency pressure relief device designed to avoid bursting in case of overfill or fire accidents.

Cylinder valves must be designed and constructed in such a way that they are inherently able to withstand damage without release of the contents or must be protected from damage which could cause inadvertent release of the contents of the cylinder, by one of the methods as given in 4.1.1.8 a) to e).

2.7.5 The level of filling must not exceed 95 per cent of the capacity of the cylinder at 50°C. Sufficient ullage (outage) must be left to ensure that the cylinder will not be liquid full at a temperature of 55°C.

2.7.6 Unless otherwise indicated cylinders must be subjected to a periodic inspection and test every 5 years. The periodic inspection must include an external examination, an internal examination or alternative method as approved by the competent authority, a pressure test or equivalent effective non-destructive testing with the agreement of the competent authority including an inspection of all accessories (e.g. tightness of valves, emergency relief valves of fusible elements). Cylinders must not be filled after they become due for periodic inspection and test but may be transported after the expiry of the time limit. Cylinder repairs must meet the requirements of 4.1.1.11.

≠ 2.7.7 Prior to filling, the filler must perform an inspection of the cylinder and ensure that the cylinder is authorized for the substances to be transported and that the provisions of these Instructions have been met. Shut-off valves must be closed after filling and remain closed during transport. The shipper must verify that the closures and equipment are not leaking.

2.7.8 Refillable cylinders must not be filled with a substance different from that previously contained unless the necessary operations for change of service have been performed.

2.7.9 Marking of cylinders for liquids and solids according to 2.7 (not conforming to the requirements of 6;5) must be in accordance with the requirements of the competent authority of the country of manufacturing.

2.8 The appropriate authority of the State of Origin may approve the use of a packaging alternative to those provided in a particular packing instruction indicated in Table 3-1 for listed dangerous goods provided:

a) the alternative packaging complies with the general requirements of 4;1;

b) when the particular packaging instruction indicated in Table 3-1 specifies packagings which are listed in Tables 6-2 and 6-3, the alternative packaging must meet the applicable requirements of Part 6;

c) for the type of alternative packaging, the expressions “Not used in these Instructions” or “Specialized use only” do not appear in Table 6-2 under the “Paragraph” column heading;

d) the appropriate authority of the State of Origin determines that the alternative packaging achieves at least the same level of safety as if the substance were packed in accordance with a method specified in the particular packing instruction indicated in Table 3-1;

e) the maximum net quantity of dangerous goods in the packaging does not exceed the quantity specified in the appropriate column of Table 3-1; and

f) a copy of the document of approval accompanies each consignment.

2.9 UNPACKAGED ARTICLES OTHER THAN CLASS 1 ARTICLES

The appropriate authority of the State of Origin may approve the transport of large and robust articles which cannot be packaged in accordance with the requirements of 6;1 to 6;4, where they have to be transported empty, uncleaned and unpackaged, providing they comply with the requirements in Part S-4, Chapter 3 of the Supplement.

Chapter 3

CLASS 1 — EXPLOSIVES

Parts of this Chapter are affected by State Variation BE 2; see Table A-1

3.1 PACKING GROUP

Packagings must conform to the requirements of 6;1 and must meet the test requirements of 6;4.1 for Packing Group II, subject to 1.1.17 and 6;1.2.7. However, packagings, other than metal packagings, meeting the test criteria of Packing Group I may be used.

3.2 GENERAL REQUIREMENTS

3.2.1 The general packing requirements of 4;1 must be met.

3.2.2 All packagings for Class 1 explosives must be so designed and constructed that:

a) they will protect the explosives, prevent them from escaping and cause no increase in the risk of unintended ignition or initiation when subjected to normal conditions of transport including foreseeable changes in temperature, humidity and pressure;

b) the complete package can be handled safely in normal conditions of transport; and

c) the packages will withstand any loading imposed on them by foreseeable stacking to which they will be subject during transport so that they do not add to the risk presented by the explosives, the containment function of the packagings is not harmed, and they are not distorted in a way or to an extent which will reduce their strength or cause instability of a stack.

3.2.3 All explosive substances and articles, as prepared for transport, must have been classified in accordance with the procedures detailed in 2;1.5.

3.3 GENERAL PACKING PROVISIONS

3.3.1 The general provisions detailed below are in addition to those in Part 4, Chapter 1.

3.3.1.1 The closure device of packagings containing liquid explosives must ensure a double protection against leakage.

3.3.1.2 The closure device of metal drums must include a suitable gasket; if a closure device includes a screw-thread, the ingress of explosive substances into the screw-thread must be prevented.

3.3.1.3 Packagings for water soluble substances must be water-resistant.

3.3.1.4 When the packaging includes a double envelope filled with water which may freeze during transport, a sufficient quantity of an anti-freeze agent must be added to the water to prevent freezing. Anti-freeze that could create a fire hazard because of its inherent flammability must not be used.

3.3.1.5 Nails, staples and other closure devices made of metal without protective covering must not penetrate to the inside of the outer packaging unless the inner packaging adequately protects the explosives against contact with the metal.

3.3.1.6 Inner packagings, fittings and cushioning materials and the placing of explosive substances or articles in packages must be accomplished in a manner which prevents the explosive substances or articles from becoming loose in the outer packaging under normal conditions of transport. Metallic components of articles must be prevented from making contact with metal packagings. Articles containing explosive substances not enclosed in an outer casing must be separated from each other in order to prevent friction and impact. Padding, trays, partitioning in the inner or outer packaging, mouldings or receptacles may be used for this purpose.

3.3.1.7 Packagings must be made of materials compatible with, and impermeable to, the explosives contained in the package, so that neither interaction between the explosives and the packaging materials, nor leakage, causes the explosive to become unsafe to transport, or the hazard division or compatibility group to change.

3.3.1.8 The ingress of explosive substances into the recesses of seamed metal packagings must be prevented.

3.3.1.9 Plastic packagings must not be liable to generate or accumulate sufficient static electricity so that a discharge could cause the packaged explosive substances or articles to initiate, ignite or function.

3.3.1.10 Explosive substances must not be packed in inner or outer packagings where the differences in internal and external pressures, due to thermal or other effects, could cause an explosion or rupture of the package.

3.3.1.11 Whenever loose explosive substances or the explosive substance of an uncased or partly cased article may come into contact with the inner surface of metal packagings (1A2, 1B2, 4A, 4B and metal receptacles), the metal packaging must be provided with an inner liner or coating (see 1.1.3).

3.3.1.12 Packing Instruction 101 may be used for any explosive provided the package has been approved by an appropriate national authority regardless of whether the packaging complies with the packing instruction assignment in the Dangerous Goods List.

3.3.1.13 Electro-explosive devices must be adequately protected against electro-magnetic radiation and stray currents.

3.3.1.14 Large and robust explosive articles, normally intended for military use, without their means of initiation or without their means of initiation containing at least two effective protective features, may be carried unpackaged. When such articles have propelling charges or are self-propelled, their ignition systems must be protected against stimuli encountered during normal conditions of transport. A negative result in Test Series 4 on an unpackaged article indicates that the article can be considered for transport unpackaged. Such unpackaged articles may be fixed to cradles or contained in crates or other suitable handling, storage or launching devices in such a way that they will not become loose during normal conditions of transport.

3.3.1.14.1 Where such large explosive articles are, as part of their operational safety and suitability tests, subjected to test regimes that meet the intentions of these Instructions and such tests have been successfully undertaken, the appropriate national authority may approve such articles to be transported under these Instructions.

Note 1.— The term receptacle used in the Inner and Intermediate packaging columns of this table includes boxes, bottles, cans, drums, jars and tubes, including any means of closure.

Note 2.— Reels are devices made of plastics, wood, fibreboard, metal or other suitable material comprising a central spindle with, or without, side walls at each end of the spindle. Articles and substances can be wound onto the spindle and may be retained by side walls.

Note 3.— Trays are sheets of metal, plastics, wood, fibreboard or other suitable material which are placed in the inner, intermediate or outer packaging and achieve a close-fit in such packaging. The surface of the tray may be shaped so that packagings or articles can be inserted, held secure and separated from each other.

3.4 PACKING INSTRUCTIONS

101	PACKING INSTRUCTION 101	101
Inner packagings	*Intermediate packagings*	*Outer packagings*
As specified by the appropriate national authority.		
The State's distinguishing sign for motor vehicles in international traffic of the country for which the authority acts must be marked on the dangerous goods transport document as follows: "Packaging approved by the competent authority of ..."		
Note.— In this instance the term "competent authority" is used for intermodal compatibility; it refers to the appropriate national authority.		

114 PACKING INSTRUCTION 114 114

a) solid wetted

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags plastic textile woven plastic Receptacles metal plastic	Bags plastic textile, plastic coated or lined Receptacles metal plastic	Boxes fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) plywood (4D) reconstituted wood (4F) solid plastic (4H2) steel (4A) Drums aluminium, removable head (1B2) fibre (1G) plastic, removable head (1H2) plywood (1D) steel, removable head (1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 0077, 0234, 0235 and 0236, packagings must be lead-free.
— For UN 0342, inner packagings are not required when metal (1A2 or 1B2) or plastic (1H2) drums are used as outer packagings.
— Intermediate packagings are not required if leakproof removable head drums are used as the outer packaging.

b) solid dry

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags paper, kraft plastic textile, siftproof woven plastic, siftproof Receptacles fibreboard metal paper plastic woven plastic, siftproof	Not necessary	Boxes fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) plywood (4D) reconstituted wood (4F) Drums aluminium, removable head (1B2) fibre (1G) plastic, removable head (1H2) plywood (1D) steel, removable head (1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 0077, 0132, 0234, 0235 and 0236, packagings must be lead-free.
— For UN 0160 and 0161, when metal drums (1A2 or 1B2) are used as the outer packaging, metal packagings must be so constructed that the risk of explosion, by reason of increase in internal pressure from internal or external causes, is prevented.
— For UN 0160 and 0161, inner packagings are not required if drums are used as the outer packaging.

130 PACKING INSTRUCTION 130 130

Inner packagings	*Intermediate packagings*	*Outer packagings*
Not necessary	Not necessary	Boxes aluminium (4B) expanded plastic (4H1) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) plywood (4D) reconstituted wood (4F) solid plastic (4H2) steel (4A) Drums aluminium, removable head (1B2) fibre (1G) plastic, removable head (1H2) plywood (1D) steel, removable head (1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— The following applies to UN 0006, 0009, 0010, 0015, 0016, 0018, 0019, 0034, 0035, 0038, 0039, 0048, 0056, 0137, 0138, 0168, 0169, 0171, 0181, 0182, 0183, 0186, 0221, 0238, 0243, 0244, 0245, 0246, 0254, 0280, 0281, 0286, 0287, 0297, 0299, 0300, 0301, 0303, 0321, 0328, 0329, 0344, 0345, 0346, 0347, 0362, 0363, 0370, 0412, 0424, 0425, 0434, 0435, 0436, 0437, 0438, 0451, 0459 and 0488. Large and robust explosive articles, normally intended for military use, without their means of initiation or with their means of initiation containing at least two effective protective features, may be carried unpackaged. When such articles have propelling charges or are self-propelled, their ignition systems must be protected against stimuli encountered during normal conditions of transport. A negative result in Test Series 4 on an unpackaged article indicates that the article can be considered for transport unpackaged. Such unpackaged articles may be fixed to cradles or contained in crates or other suitable handling, storage or launching devices in such a way that they will not become loose during normal conditions of transport. Where such large explosive articles are as part of their operational safety and suitability tests subjected to test regimes that meet the intentions of these Instructions and such tests have been successfully undertaken, the appropriate national authority may approve such articles to be transported under these Instructions.

— For UN 0457, 0458, 0459 and 0460, whenever loose explosive substances or the explosive substance of an uncased or partly cased article may come into contact with the inner surface of metal packagings (1A2, 1B2, 4A, 4B and metal receptacles), the metal packaging must be provided with an inner liner or coating.

131 PACKING INSTRUCTION 131 131

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags paper plastic Receptacles fibreboard metal plastic wood Reels	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) plywood (4D) reconstituted wood (4F) steel (4A) Drums aluminium, removable head (1B2) fibre (1G) plastic, removable head (1H2) plywood (1D) steel, removable head (1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 0029, 0267 and 0455, bags and reels must not be used as inner packagings.

133 PACKING INSTRUCTION 133 133

Inner packagings	*Intermediate packagings*	*Outer packagings*
Receptacles fibreboard metal plastic wood Trays, fitted with dividing partitions fibreboard plastic wood	Receptacles fibreboard metal plastic wood	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) plywood (4D) reconstituted wood (4F) solid plastic (4H2) steel (4A)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— Receptacles are only required as intermediate packagings when the inner packagings are trays.
— For UN 0043, 0212, 0225, 0268 and 0306, trays must not be used as inner packagings.

134 PACKING INSTRUCTION 134 134

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags water-resistant Receptacles fibreboard metal plastic wood Sheets fibreboard, corrugated Tubes fibreboard	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) plywood (4D) reconstituted wood (4F) solid plastic (4H2) steel (4A) Drums aluminium, removable head (1B2) fibre (1G) plastic, removable head (1H2) plywood (1D) steel, removable head (1A2)

135 PACKING INSTRUCTION 135 135

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags paper plastic Receptacles fibreboard metal plastic wood Sheets paper plastic	Not necessary	Boxes aluminium (4B) expanded plastic (4H1) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) plywood (4D) reconstituted wood (4F) solid plastic (4H2) steel (4A) Drums aluminium, removable head (1B2) fibre (1G) plastic, removable head (1H2) plywood (1D) steel, removable head (1A2)

136	PACKING INSTRUCTION 136	136
Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags plastic textile Boxes fibreboard plastic wood Dividing partitions in the outer packagings	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) plywood (4D) reconstituted wood (4F) solid plastic (4H2) steel (4A) Drums aluminium, removable head (1B2) fibre (1G) plastic, removable head (1H2) plywood (1D) steel, removable head (1A2)

137	PACKING INSTRUCTION 137	137
Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags plastic Boxes fibreboard Tubes fibreboard metal plastic Dividing partitions in the outer packagings	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) plywood (4D) reconstituted wood (4F) steel (4A)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 0059, 0439, 0440 and 0441, when the shaped charges are packed singly, the conical cavity must face downwards and the package marked “THIS SIDE UP”. When the shaped charges are packed in pairs, the conical cavities must face inwards to minimize the jetting effect in the event of accidental initiation.

138	PACKING INSTRUCTION 138	138

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags plastic	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) plywood (4D) reconstituted wood (4F) solid plastic (4H2) steel (4A) Drums aluminium, removable head (1B2) fibre (1G) plastic, removable head (1H2) plywood (1D) steel, removable head (1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— If the ends of the articles are sealed, inner packagings are not necessary.

139	PACKING INSTRUCTION 139	139

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags plastic Receptacles fibreboard metal plastic wood Reels Sheets paper plastic	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) plywood (4D) reconstituted wood (4F) solid plastic (4H2) steel (4A) Drums aluminium, removable head (1B2) fibre (1G) plastic, removable head (1H2) plywood (1D) steel, removable head (1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 0065, 0102, 0104, 0289 and 0290, the ends of the detonating cord must be sealed, for example by a plug firmly fixed so that the explosive cannot escape. The ends of "**Cord, detonating,** flexible", must be fastened securely.
— For UN 0065 and 0289, inner packagings are not required when they are in coils.

140 PACKING INSTRUCTION 140 140

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags plastic Reels Sheets paper, kraft plastic	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) plywood (4D) reconstituted wood (4F) solid plastic (4H2) steel (4A) Drums aluminium, removable head (1B2) fibre (1G) plastic, removable head (1H2) plywood (1D) steel, removable head (1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— If the ends of UN 0105 are sealed, no inner packagings are required.
— For UN 0101, the packaging must be siftproof except when the fuse is covered by a paper tube and both ends of the tube are covered with removable caps.
— For UN 0101, steel or aluminium boxes or drums must not be used.

141 PACKING INSTRUCTION 141 141

Inner packagings	*Intermediate packagings*	*Outer packagings*
Receptacles fibreboard metal plastic wood Trays, fitted with dividing partitions plastic wood Dividing partitions in the outer packagings	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) plywood (4D) reconstituted wood (4F) solid plastic (4H2) steel (4A) Drums aluminium, removable head (1B2) fibre (1G) plastic, removable head (1H2) plywood (1D) steel, removable head (1A2)

142	PACKING INSTRUCTION 142	142
Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags paper plastic Receptacles fibreboard metal plastic wood Sheets paper Trays, fitted with dividing partitions plastic	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) plywood (4D) reconstituted wood (4F) solid plastic (4H2) steel (4A) Drums aluminium, removable head (1B2) fibre (1G) plastic, removable head (1H2) plywood (1D) steel, removable head (1A2)

143	PACKING INSTRUCTION 143	143
Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags paper, kraft plastic textile textile, rubberized Receptacles fibreboard metal plastic Trays, fitted with dividing partitions plastic wood	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) plywood (4D) reconstituted wood (4F) solid plastic (4H2) steel (4A) Drums aluminium, removable head (1B2) fibre (1G) plastic, removable head (1H2) plywood (1D) steel, removable head (1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 0271, 0272, 0415 and 0491, when metal packagings are used, metal packagings must be so constructed that the risk of explosion, by reason of increase in internal pressure from internal or external causes, is prevented.
— Instead of the above inner and outer packagings, composite packagings (6HH2) (plastic receptacle with outer solid box) may be used.

Chapter 4

CLASS 2 — GASES

Parts of this Chapter are affected by State Variations CA 17, US 6, US 15; see Table A-1

4.1 SPECIAL PACKING PROVISIONS FOR DANGEROUS GOODS OF CLASS 2

4.1.1 General requirements

4.1.1.1 This section provides general requirements applicable to the use of cylinders and closed cryogenic receptacles for the transport of Class 2 gases (e.g. UN 1072 **Oxygen, compressed**). Cylinders and closed cryogenic receptacles must be constructed and closed so as to prevent any loss of contents which might be caused under normal conditions of transport, including by vibration, or by changes in temperature, humidity or pressure (resulting from change in altitude, for example).

≠ 4.1.1.2 Parts of cylinders and closed cryogenic receptacles that are in direct contact with dangerous goods must not be affected or weakened by those dangerous goods and must not cause a dangerous effect (e.g. catalysing a reaction or reacting with the dangerous goods). In addition to the requirements specified in the relevant packing instruction, which take precedence, the applicable provisions of ISO 11114-1:1997 and ISO 11114-2:2000 must be met.

4.1.1.3 Cylinders and closed cryogenic receptacles, including their closures, must be selected that are able to contain a gas or a mixture of gases according to the requirements of 6;5.1.2 and the requirements of the specific packing instructions of this Part.

4.1.1.4 Refillable cylinders must not be filled with a gas or gas mixture different from that previously contained unless the necessary operations for change of gas service have been performed. The change of service for compressed and liquefied gases must be in accordance with ISO 11621:1997, as applicable. In addition, a cylinder that previously contained a Class 8 corrosive substance or a substance of another class with a corrosive subsidiary risk must not be authorized for the transport of a Class 2 substance unless the necessary inspection and testing as specified in 6;5.1.6 have been performed.

4.1.1.5 Prior to filling, the filler must perform an inspection of the cylinder or closed cryogenic receptacle and ensure that the cylinder or closed cryogenic receptacle is authorized for the gas to be transported and that the provisions of these Instructions have been met. Shut-off valves must be closed after filling and remain closed during transport. The shipper must verify that the closures and equipment are not leaking.

4.1.1.6 Cylinders and closed cryogenic receptacles must be filled according to the working pressures, filling ratios and provisions specified in the appropriate packing instruction for the specific substance. Reactive gases and gas mixtures must be filled to a pressure such that if complete decomposition of the gas occurs, the working pressure of the cylinder must not be exceeded.

4.1.1.7 Cylinders and closed cryogenic receptacles, including their closures, must conform to the design, construction, inspection and testing requirements detailed in 6;5. When outer packagings are prescribed, the cylinders must be firmly secured therein. Unless otherwise specified in the detailed packing instructions, one or more inner packagings may be enclosed in an outer packaging.

4.1.1.8 Valves must be designed and constructed in such a way that they are inherently able to withstand damage without release of the contents or must be protected from damage, which could cause inadvertent release of the contents of the cylinder and closed cryogenic receptacle, by one of the following methods:

a) Valves are placed inside the neck of the cylinder and closed cryogenic receptacle and protected by a threaded plug or cap;

b) Valves are protected by caps. Caps must possess vent holes of a sufficient cross-sectional area to evacuate the gas if leakage occurs at the valves;

c) Valves are protected by shrouds or guards;

d) Not used; or

e) Cylinders and closed cryogenic receptacles are transported in an outer packaging. The packaging as prepared for transport must be capable of meeting the drop test specified in 6;4.3 at the Packing Group I performance level.

For cylinders and closed cryogenic receptacles with valves as described in b) and c), the requirements of ISO 11117:1998 must be met; for valves with inherent protection, the requirements of Annex B of ISO 10297:1999 must be met.

4.1.1.9 Non-refillable cylinders and closed cryogenic receptacles must:

a) be transported in an outer packaging, such as a box, or crate, or in shrink-wrapped trays or stretch-wrapped trays;

b) not used;

c) not be repaired after being put into service.

4.1.1.10 Refillable cylinders, other than closed cryogenic receptacles, must be periodically inspected according to the provisions of 6;5.1.6 and Packing Instruction 200. Cylinders and closed cryogenic receptacles must not be filled after they become due for periodic inspection but may be transported after the expiry of the time limit.

4.1.1.11 Repairs must be consistent with the fabrication and testing requirements of the applicable design and construction standards and are only permitted as indicated in the relevant periodic inspection standards specified in 6;5.2.4. Cylinders, other than the jacket of closed cryogenic receptacles, must not be subjected to repairs of any of the following:

a) weld cracks or other weld defects;

b) cracks in walls;

c) leaks or defects in the material of the wall, head or bottom.

4.1.1.12 Cylinders and closed cryogenic receptacles must not be offered for filling:

a) when damaged to such an extent that the integrity of the cylinder and closed cryogenic receptacle or its service equipment may be affected;

b) unless the cylinder and closed cryogenic receptacle and its service equipment have been examined and found to be in good working order; or

c) unless the required certification, retest, and filling markings are legible.

4.1.1.13 Filled cylinders and closed cryogenic receptacles must not be offered for transport:

a) when leaking;

b) when damaged to such an extent that the integrity of the cylinder and closed cryogenic receptacle or its service equipment may be affected;

c) unless the cylinder and closed cryogenic receptacle and its service equipment have been examined and found to be in good working order; or

d) unless the required certification, retest, and filling markings are legible.

4.2 PACKING INSTRUCTIONS

200 PACKING INSTRUCTION 200 200

For cylinders, the general packing requirements of 1.1 and 4.1.1 must be met.

Cylinders, constructed as specified in 6;5 are authorized for the transport of a specific substance when specified in the following tables (Table 1 and Table 2). Cylinders other than UN marked and certified cylinders may be used if the design, construction, testing, approval and markings conform to the requirements of the appropriate national authority in which they are approved and filled. The substances contained must be permitted in cylinders and permitted for air transport according to these Instructions. Cylinders for which prescribed periodic tests have become due must not be charged and offered for transport until such retests have been successfully completed. Valves must be suitably protected or must be designed and constructed in such a manner that they are able to withstand damage without leakage as specified in Annex B of ISO 10297:1999. Cylinders with capacities of one litre or less must be packaged in outer packaging constructed of suitable material of adequate strength and design in relation to the packaging capacity and its intended use, and secured or cushioned so as to prevent significant movement within the outer packaging during normal conditions of transport. For some substances, the special packing provisions may prohibit a particular type of cylinder. The following requirements must be met:

1) Pressure relief devices must be fitted on cylinders used for the transport of UN 1013 **Carbon dioxide** and UN 1070 **Nitrous oxide**. Other cylinders must be fitted with a pressure relief device if specified by the appropriate national authority of the country of use. The type of pressure relief device, the set to discharge pressure and relief capacity of pressure relief devices, if required, must be specified by the appropriate national authority of the country of use. Manifolding of cylinders is not permitted.

2) The following two tables cover compressed gases (Table 1) and liquefied and dissolved gases (Table 2). They provide:

   a) the UN number, name and description, and classification of the substance;
   b) the LC_{50} for toxic substances;
   c) the types of cylinders authorized for the substance, shown by the letter "X";
   d) the maximum test period for periodic inspection of the cylinders;
   e) the minimum test pressure of the cylinders;
   f) the maximum working pressure of the cylinders for compressed gases (where no value is given, the working pressure must not exceed two-thirds of the test pressure) or the maximum filling ratio(s) dependent on the test pressure(s) for liquefied and dissolved gases;
   g) special packing provisions that are specific to a substance.

3) In no case must cylinders be filled in excess of the limit permitted in the following requirements:

   a) For compressed gases, the working pressure must be not more than two-thirds of the test pressure of the cylinders. Restrictions to this upper limit on working pressure are imposed by special packing provision "o". In no case must the internal pressure at 65°C exceed the test pressure.

   b) For high pressure liquefied gases, the filling ratio must be such that the settled pressure at 65°C does not exceed the test pressure of the cylinders.

      The use of test pressures and filling ratios other than those in the table is permitted provided that the above criterion is met, except where special packing provision "o" applies.

      For high pressure liquefied gases and gas mixtures for which relevant data are not available, the maximum filling ratio (FR) must be determined as follows:

      $$FR = 8.5 \times 10^{-4} \times d_g \times P_h$$

      where FR = maximum filling ratio
      d_g = gas density (at 15°C, 1 bar)(in g/l)
      P_h = minimum test pressure (in bar).

      If the density of the gas is unknown, the maximum filling ratio must be determined as follows:

      $$FR = \frac{P_h \times MM \times 10^{-3}}{R \times 338}$$

      where FR = maximum filling ratio
      P_h = minimum test pressure (in bar)
      MM = molecular mass (in g/mol)
      R = 8.31451×10^{-2} bar.l/mol.K (gas constant).

      For gas mixtures, the average molecular mass is to be taken, taking into account the volumetric concentrations of the various components.

   c) For low pressure liquefied gases, the maximum mass of contents per litre of water capacity (filling factor) must equal 0.95 times the density of the liquid phase at 50°C; in addition, the liquid phase must not fill the cylinder at any temperature up to 60°C. The test pressure of the cylinder must be at least equal to the vapour pressure (absolute) of the liquid at 65°C, minus 100 kPa (1 bar).

      For low pressure liquefied gases for which filling data is not provided in the table, the maximum filling ratio must be determined as follows:

      $$FR = (0.0032 \times BP - 0.24) \times d_1$$

      where FR = maximum filling ratio
      BP = boiling point (in Kelvin)
      d_1 = density of the liquid at boiling point (in kg/l).

   d) For UN 1001, **Acetylene, dissolved**, and UN 3374 **Acetylene, solvent free**, see p).

4) Keys for the column "Special packing provisions":

   Material compatibility

   a) Aluminium alloy cylinders are forbidden.
   b) Copper valves are forbidden.
   c) Metal parts in contact with the contents must not contain more than 65 per cent copper.
   d) When steel cylinders are used, only those bearing the "H" mark are permitted.

5) Gas mixtures containing any of the following gases must not be offered for transport in aluminium alloy cylinders unless approved by the appropriate national authority of the State of Origin:

UN 1037 **Ethyl chloride**
UN 1063 **Methyl chloride**
UN 1063 **Refrigerant gas R 40**
UN 1085 **Vinyl bromide, stabilized**
UN 1086 **Vinyl chloride, stabilized**
UN 1860 **Vinyl fluoride, stabilized**
UN 1912 **Methyl chloride and methylene chloride mixture**

Gas specific provisions:

l) UN 1040 **Ethylene oxide** may also be packed in hermetically sealed glass ampoules (IP.8) or metal inner packagings (IP.3 and IP.3A) suitably cushioned in fibreboard, wooden or metal boxes meeting the Packing Group I performance level. The maximum quantity permitted in any glass inner packaging is 30 g, and the maximum quantity permitted in any metal inner packaging is 200 g. After filling, each inner packaging must be determined to be leak-tight by placing the inner packaging in a hot water bath at a temperature, and for a period of time, sufficient to ensure that an internal pressure equal to the vapour pressure of ethylene oxide at 55°C is achieved. The maximum net mass in any outer packaging must not exceed 2.5 kg. When cylinders are used, they must be of the seamless or welded steel types that are equipped with suitable pressure relief devices. Each cylinder must be tested for leakage with an inert gas before each refilling and must be insulated with three coats of heat retardant paint or in any equally efficient manner. The maximum net quantity per cylinder must not exceed 25 kg.

m) Cylinders must be filled to a working pressure not exceeding 5 bar.

o) In no case must the working pressure or filling ratio shown in the table be exceeded.

p) For UN 1001 **Acetylene, dissolved**, and UN 3374 **Acetylene, solvent free**: cylinders must be filled with a homogeneous monolithic porous mass; the working pressure and the quantity of acetylene must not exceed the values prescribed in the approval or in ISO 3807-1:2000 or ISO 3807-2:2000, as applicable.

For UN 1001 **Acetylene, dissolved**, cylinders must contain a quantity of acetone or suitable solvent as specified in the approval (see ISO 3807-1:2000 or ISO 3807-2:2000, as applicable); cylinders fitted with pressure relief devices must be transported vertically.

The test pressure of 52 bar applies only to cylinders conforming to ISO 3807-2:2000.

s) Aluminium alloy cylinders must be:

— Equipped only with brass or stainless steel valves; and
— Cleaned in accordance with ISO 11621:1997 and not contaminated with oil.

Periodic inspection:

u) The interval between periodic tests may be extended to 10 years for aluminium alloy cylinders when the alloy of the cylinder has been subjected to stress corrosion testing as specified in ISO 7866:1999.

v) The interval between periodic inspections for steel cylinders may be extended to 15 years if approved by the appropriate national authority of the country of use.

w) Ethyl chloride may be carried in securely sealed glass ampoules (IP.8) containing not more than 5 g of ethyl chloride with a ullage of not less than 7.5 per cent at 21°C. Ampoules must be cushioned with efficient non-combustible material in partitioned cartons with not more than 12 ampoules per carton. The cartons must be tightly packed to prevent movement in wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G) or plastic boxes (4H1, 4H2) that meet the performance testing requirements of 6;4 at the Packing Group II performance level. Not more than 300 g of ethyl chloride is permitted per package.

Requirements for N.O.S. descriptions and for mixtures:

z) The construction materials of the cylinders and their accessories must be compatible with the contents and must not react to form harmful or dangerous compounds therewith.

The test pressure and filling ratio must be calculated in accordance with the relevant requirements of PI 200.

The necessary steps must be taken to prevent dangerous reactions (i.e. polymerization or decomposition) during transport. If necessary, stabilization or addition of an inhibitor may be required.

Note.— For the carriage of oxygen to provide life support to aquatic animals, see Note 7 of the Introductory Notes to this Part.

Table 1. COMPRESSED GASES

UN No.	Name and description	Class or Division	Subsidiary risk	LC_{50} ml/m^3	Cylinders	Test period, years	Test pressure, bar*	Maximum working pressure, bar*	Special packing provisions*
1002	**Air, compressed**	2.2			X	10			
1006	**Argon, compressed**	2.2			X	10			
1046	**Helium, compressed**	2.2			X	10			
1049	**Hydrogen, compressed**	2.1			X	10			d
1056	**Krypton, compressed**	2.2			X	10			
1065	**Neon, compressed**	2.2			X	10			
1066	**Nitrogen, compressed**	2.2			X	10			
1071	**Oil gas, compressed**	2.3	2.1		X	5			
1072	**Oxygen, compressed**	2.2	5.1		X	10			s
1954	**Compressed gas, flammable, n.o.s.**	2.1			X	10			z
1956	**Compressed gas, n.o.s.**	2.2			X	10			z
1957	**Deuterium, compressed**	2.1			X	10			d
1964	**Hydrocarbon gas mixture, compressed, n.o.s.**	2.1			X	10			z
1971	**Methane, compressed or natural gas, compressed** with high methane content	2.1			X	10			
2034	**Hydrogen and methane mixture, compressed**	2.1			X	10			
3156	**Compressed gas, oxidizing, n.o.s.**	2.2	5.1		X	10			z

* Where the entries are blank, the working pressure must not exceed two-thirds of the test pressure.

Table 2. LIQUEFIED GASES AND DISSOLVED GASES

UN No.	Name and description	Class or Division	Subsidiary risk	LC_{50} ml/m^3	Cylinders	Test period, years	Test pressure, bar	Filling ratio	Special packing provisions
1001	**Acetylene, dissolved**	2.1			X	10	60 52		c, p
1009	**Bromotrifluoromethane (refrigerant gas R 13b1)**	2.2			X	10	42 120 250	1.13 1.44 1.60	
1010	**Butadienes, stabilized** (1,2-butadiene)	2.1			X	10	10	0.59	
1010	**Butadienes, stabilized** (1,3-butadiene)	2.1			X	10	10	0.55	z
1010	**Butadienes and hydrocarbon mixture, stabilized** containing more than 40% butadienes	2.1			X	10			v z
≠ 1011	**Butane**	2.1			X	10	10	0.52	v
1012	**Butylene** (butylenes mixture)	2.1			X	10	10	0.50	z
1012	**Butylene** (1-butylene)	2.1			X	10	10	0.53	
1012	**Butylene** (cis-2-butylene)	2.1			X	10	10	0.55	
1012	**Butylene** (trans-2 butylene)	2.1			X	10	10	0.54	
≠ 1013	**Carbon dioxide**	2.2			X	10	190 250	0.68 0.76	

	UN No.	Name and description	Class or Division	Subsidiary risk	LC_{50} ml/m^3	Cylinders	Test period, years	Test pressure, bar	Filling ratio	Special packing provisions
≠	1018	**Chlorodifluoromethane (refrigerant gas R 22)**	2.2			X	10	27	1.03	
≠	1020	**Chloropentafluoroethane (refrigerant gas R 115)**	2.2			X	10	25	1.05	
≠	1021	**1-Chloro-1,2,2,2-tetrafluoroethane (refrigerant gas R 124)**	2.2			X	10	11	1.20	
≠	1022	**Chlorotrifluoromethane (refrigerant gas R 13)**	2.2			X	10	100 120 190 250	0.83 0.90 1.04 1.11	
≠	1027	**Cyclopropane**	2.1			X	10	18	0.55	
≠	1028	**Dichlorodifluoromethane (refrigerant gas R 12)**	2.2			X	10	16	1.15	
	1029	**Dichlorofluoromethane (refrigerant gas R 21)**	2.2			X	10	10	1.23	
≠	1030	**1,1-Difluoroethane (Refrigerant gas R 152 a)**	2.1			X	10	16	0.79	
	1032	**Dimethylamine, anhydrous**	2.1			X	10	10	0.59	b
	1033	**Dimethyl ether**	2.1			X	10	18	0.58	
≠	1035	**Ethane**	2.1			X	10	95 120 300	0.25 0.30 0.40	
	1036	**Ethylamine**	2.1			X	10	10	0.61	b
≠	1037	**Ethyl chloride**	2.1			X	10	10	0.80	a, w
	1039	**Ethyl methyl ether**	2.1			X	10	10	0.64	
	1041	**Ethylene oxide and carbon dioxide mixture** with more than 9% ethylene oxide but not more than 87%	2.1			X	10	190 250	0.66 .75	
	1043	**Fertilizer ammoniating solution** with free ammonia	2.2			X	5			b, z
	1055	**Isobutylene**	2.1			X	10	10	0.52	
	1058	**Liquefied gases,** non-flammable, charged with nitrogen, carbon dioxide or air	2.2			X	10	Test pressure = 1.5 × working pressure		
	1060	**Methylacetylene and propadiene mixture, stabilized or**	2.1			X	10			c, z
	1060	**Methylacetylene and propadiene mixture, stabilized** (propadiene with 1% to 4% methylacetylene)	2.1			X	10	22	0.52	c
	1061	**Methylamine, anhydrous**	2.1			X	10	13	0.58	b
	1063	**Methyl chloride (refrigerant gas R 40)**	2.1			X	10	17	0.81	a
	1070	**Nitrous oxide**	2.2	5.1		X	10	180 225 250	0.68 0.74 0.75	
	1075	**Petroleum gases, liquefied**	2.1			X	10			v, z

	UN No.	Name and description	Class or Division	Subsidiary risk	LC_{50} ml/m^3	Cylinders	Test period, years	Test pressure, bar	Filling ratio	Special packing provisions
≠	1077	**Propylene**	2.1			X	10	27	0.43	
	1078	**Refrigerant gas, n.o.s.**	2.2			X	10			z
≠	1080	**Sulphur hexafluoride**	2.2			X	10	70 140 160	1.06 1.34 1.38	
	1081	**Tetrafluoroethylene, stabilized**	2.1			X	10	200		m, o
	1083	**Trimethylamine, anhydrous**	2.1			X	10	10	0.56	b
	1085	**Vinyl bromide, stabilized**	2.1			X	10	10	1.37	a
	1086	**Vinyl chloride, stabilized**	2.1			X	10	12	0.81	a
	1087	**Vinyl methyl ether, stabilized**	2.1			X	10	10	0.67	
	1858	**Hexafluoropropylene (refrigerant gas R 1216)**	2.2			X	10	22	1.11	
	1860	**Vinyl fluoride, stabilized**	2.1			X	10	250	0.64	a
	1912	**Methyl chloride and methylene chloride mixture**	2.1			X	10	17	0.81	a
	1952	**Ethylene oxide and carbon dioxide mixture** with not more than 9% ethylene oxide	2.2			X	10	190 250	0.66 0.75	
	1958	**1,2-dichloro-1,1,2,2-tetrafluoroethane (refrigerant gas R 114)**	2.2			X	10	10	1.30	
	1959	**1,1-difluoroethylene (refrigerant gas R 1132a)**	2.1			X	10	250	0.77	
≠	1962	**Ethylene**	2.1			X	10	225 300	0.34 0.38	
	1965	**Hydrocarbon gas mixture, liquefied, n.o.s.**	2.1			X	10			v, z
	1968	**Insecticide gas, n.o.s.**	2.2			X	10			z
	1969	**Isobutane**	2.1			X	10	10	0.49	v
≠	1973	**Chlorodifluoromethane and chloropentafluoroethane mixture** with fixed boiling point, with approximately 49% chlorodifluoromethane **(refrigerant gas R 502)**	2.2			X	10	31	1.01	
	1974	**Chlorodifluorobromo-methane (refrigerant gas R 12b1)**	2.2			X	10	10	1.61	
≠	1976	**Octafluorocyclobutane (refrigerant gas R C318)**	2.2			X	10	11	1.32	
≠	1978	**Propane**	2.1			X	10	23	0.43	v
≠	1982	**Tetrafluoromethane (refrigerant gas R 14)**	2.2			X	10	200 300	0.71 0.90	
	1983	**1-chloro-2,2,2-trifluoroethane (refrigerant gas R 133a)**	2.2			X	10	10	1.18	
≠	1984	**Trifluoromethane (refrigerant gas R 23)**	2.2			X	10	190 250	0.88 0.96	
≠	2035	**1,1,1-trifluoroethane (refrigerant gas R 143a)**	2.1			X	10	35	0.73	

	UN No.	Name and description	Class or Division	Subsidiary risk	LC_{50} ml/m^3	Cylinders	Test period, years	Test pressure, bar	Filling ratio	Special packing provisions
≠	2036	**Xenon**	2.2			X	10	130	1.28	
	2044	**2,2-dimethylpropane**	2.1			X	10	10	0.53	
	2073	**Ammonia solution,** relative density less than 0.880 at 15°C in water,	2.2							
		with more than 35% but not more than 40% ammonia				X	5	10	0.80	b
		with more than 40% but not more than 50% ammonia				X	5	12	0.77	b
≠	2193	**Hexafluoroethane (refrigerant gas R 116)**	2.2			X	10	200	1.13	
	2200	**Propadiene, stabilized**	2.1			X	10	22	0.50	
	2419	**Bromotrifluoroethylene**	2.1			X	10	10	1.19	
	2422	**Octafluorobut-2-ene (refrigerant gas R 1318)**	2.2			X	10	12	1.34	
≠	2424	**Octafluoropropane (refrigerant gas R 218)**	2.2			X	10	25	1.04	
	2451	**Nitrogen trifluoride**	2.2	5.1		X	10	200	0.50	
	2452	**Ethylacetylene, stabilized**	2.1			X	10	10	0.57	c
	2453	**Ethyl fluoride (refrigerant gas R 161)**	2.1			X	10	30	0.57	
≠	2454	**Methyl fluoride (refrigerant gas R 41)**	2.1			X	10	300	0.63	
	2517	**1-chloro-1,1-difluoroethane (refrigerant gas R 142b)**	2.1			X	10	10	0.99	
≠	2599	**Chlorotrifluoromethane and trifluoromethane azeotropic mixture** with approximately 60% chlorotrifluoromethane (refrigerant gas R 503)	2.2			X	10	31 42 100	0.12 0.17 0.64	
	2601	**Cyclobutane**	2.1			X	10	10	0.63	
	2602	**Dichlorodifluoro-methane and difluoroethane azeotropic mixture** with approximately 74% dichlorodifluoromethane (refrigerant gas R 500)	2.2			X	10	22	1.01	
	3070	**Ethylene oxide and dichlorodifluoro-methane mixture** with not more than 12.5% ethylene oxide	2.2			X	10	18	1.09	
	3153	**Perfluoro(methyl vinyl ether)**	2.1			X	10	20	0.75	
	3154	**Perfluoro(ethyl vinyl ether)**	2.1			X	10	10	0.98	
	3157	**Liquefied gas, oxidizing, n.o.s.**	2.2	5.1		X	10			z
≠	3159	**1,1,1,2-tetrafluoroethane (refrigerant gas R 134a)**	2.2			X	10	18	1.05	
	3161	**Liquefied gas, flammable, n.o.s.**	2.1			X	10			z
	3163	**Liquefied gas, n.o.s.**	2.2			X	10			z
≠	3220	**Pentafluoroethane (refrigerant gas R 125)**	2.2			X	10	49 35	0.95 0.87	

	UN No.	Name and description	Class or Division	Subsidiary risk	LC_{50} ml/m^3	Cylinders	Test period, years	Test pressure, bar	Filling ratio	Special packing provisions
	3252	**Difluoromethane (refrigerant gas R 32)**	2.1			X	10	48	0.78	
≠	3296	**Heptafluoropropane (refrigerant gas R 227)**	2.2			X	10	13	1.21	
	3297	**Ethylene oxide and chlorotetrafluoroethane mixture** with not more than 8.8% ethylene oxide	2.2			X	10	10	1.16	
	3298	**Ethylene oxide and pentafluoroethane mixture** with not more than 7.9% ethylene oxide	2.2			X	10	26	1.02	
	3299	**Ethylene oxide and tetrafluoroethane mixture** with not more than 5.6% ethylene oxide	2.2			X	10	17	1.03	
	3337	**Refrigerant gas R 404a**	2.2			X	10	36	0.82	
≠	3338	**Refrigerant gas R 407a**	2.2			X	10	32	0.94	
≠	3339	**Refrigerant gas R 407b**	2.2			X	10	33	0.93	
≠	3340	**Refrigerant gas R 407c**	2.2			X	10	30	0.95	
	3354	**Insecticide gas, flammable, n.o.s.**	2.1			X	10			z
	3374	**Acetylene, solvent free**	2.1			X	5	60 52		c, p

201 PACKING INSTRUCTION 201 201

The general packing requirements of 4;1 must be met.

Hydrocarbon gas-powered small devices, including replacement cartridges, and lighters for cigarettes and lighter refills must comply with the requirements of the country in which they are filled. They must be provided with protection against inadvertent discharge. Lighters must not contain more than 10 g of liquefied petroleum gas. Hydrocarbon gas-powered small devices and lighter refills must not contain more than 65 g of liquefied petroleum gas. The liquid portion of the gas must not exceed 85 per cent of the capacity of the fuel vessel at 15°C. The articles, including closures, must be capable of withstanding an internal pressure of twice the pressure in the fuel vessel at 55°C. Where refill cartridges are in the form of aerosol dispensers, the pressure in the aerosol must not exceed 1 500 kPa at 55°C and the requirements of subparagraphs b) to e) of Packing Instruction 203 must be met. The articles must be tightly packed to prevent inadvertent operation in wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G) or plastic boxes (4H1, 4H2) of Packing Group II. The net quantity of liquefied petroleum gas in each package must not exceed 1 kg on passenger aircraft and 15 kg on cargo aircraft. Articles which meet the above requirements are permitted only when the valve and ignition mechanisms are designed or securely sealed, taped or otherwise fastened to prevent operation or leakage of contents during transport.

Articles permitted under this packing instruction may also include, within the same outer packaging, replacement cartridges exceeding 65 g each, containing liquefied petroleum gas, provided such cartridges comply with all the requirements of Packing Instruction 200, they are not manifolded or connected to the article and they cannot cause the failure or functioning of the article during transport. Such consignments must be carried on cargo aircraft.

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202 PACKING INSTRUCTION 202 202

This instruction applies to Class 2 refrigerated liquefied gases in open and closed cryogenic receptacles.

1. Open cryogenic receptacles must be metal or glass vacuum insulated vessels or flasks vented to the atmosphere to prevent any increase in pressure within the package and must be designed and constructed to permit the release of the gas.

2. The use of safety relief valves, check valves, frangible discs or similar devices in the vent lines is not permitted.

3. Receptacles must be equipped with devices which prevent the release of liquid.

4. Fill and discharge openings must be protected against the entry of foreign materials which might increase the internal pressure.

5. The maximum water capacity for metal receptacles is 50 litres and for glass receptacles it is 5 litres.

6. The open receptacle must have a secure base and must be designed so that it will remain stable and will not topple under normal conditions of transport.

7. The glass vessel or flask must be protected by shock absorbent material or structure and placed in a strong outer packaging that permits the release of the gas. The package must be designed so that the upright position of the glass vessel or flask is guaranteed under normal conditions of transport. Packagings must conform to the requirements of 6;3.1 and meet Packing Group II performance test requirements in accordance with 6;4 and be marked in compliance with 6;2.

8. Open cryogenic receptacles are permitted for nitrogen, argon, krypton and xenon refrigerated liquids.

Closed cryogenic receptacles

For closed cryogenic receptacles, the general requirements of 4;1 and 4;4 must be met.

Closed cryogenic receptacles constructed as specified in 6;5 are authorized for the transport of refrigerated liquefied gases.

The closed cryogenic receptacles must be so insulated that they do not become coated with frost.

Air, argon, carbon dioxide, helium, krypton, neon, nitrogen, nitrous oxide, oxygen, trifluoromethane and xenon refrigerated liquids may be carried to the extent permitted in these Instructions and in packagings meeting the requirements as set. These requirements also apply to empty packagings unless all parts are at ambient temperatures.

1) Test pressure

   Refrigerated liquids must be filled in closed cryogenic receptacles with the following minimum test pressures:

   a) For closed cryogenic receptacles with vacuum insulation, the test pressure must not be less than 1.3 times the sum of the maximum internal pressure of the filled receptacle, including during filling and discharge, plus 100 kPa (1 bar);

   b) For other closed cryogenic receptacles, the test pressure must be not less than 1.3 times the maximum internal pressure of the filled receptacle taking into account the pressure developed during filling and discharge.

2) Degree of filling

   For refrigerated liquefied gases the volume of liquid phase at the filling temperature and at a pressure of 100 kPa (1 bar) must not exceed 98 per cent of the water capacity.

3) Pressure-relief devices

   Every closed cryogenic receptacle, having a nominal capacity in excess of 550 L, must be provided with at least 2 pressure-relief devices. The pressure-relief device must be of the type that will resist dynamic forces including surge.

   Closed cryogenic receptacles, having a nominal capacity of 550 L or less, must be provided with at least 1 pressure-relief device, and may in addition have a frangible disc in parallel with the spring loaded device in order to meet the requirements of 6;5.1.3.6.5. The pressure-relief device must be of the type that will resist dynamic forces including surge.

   Note.— The pressure-relief devices must meet the requirements of 6;5.1.3.6.4 and 6;5.1.3.6.5.

4) Compatibility

Materials used to ensure the leakproofness of the joints or for the maintenance of the closures must be compatible with the contents. In the case of receptacles intended for the transport of oxidizing gases (i.e. with a subsidiary risk of 5.1), these materials must not react with these gases in a dangerous manner.

Note.— Insulated packagings containing refrigerated liquid nitrogen fully absorbed in a porous material and intended for transport*, at low temperature, of non-dangerous products are not subject to these Instructions provided the design of the insulated packaging would not allow the build-up of pressure within the container and would not permit the release of any refrigerated liquid nitrogen irrespective of the orientation of the insulated packaging.*

203 PACKING INSTRUCTION 203 203

This Instruction applies to UN 1950 and 2037.

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

Metal aerosols and non-refillable receptacles containing gas (gas cartridges)

Non-refillable metal aerosols and non-refillable receptacles containing gas (gas cartridges) must not exceed 1 000 mL capacity.

The following conditions must be met:

a) the pressure in the receptacle must not exceed 1 500 kPa at 55°C and each receptacle must be capable of withstanding without bursting a pressure of at least 1.5 times the equilibrium pressure of the contents at 55°C;

b) if the pressure in the receptacle exceeds 970 kPa at 55°C but does not exceed 1 105 kPa at 55°C, an IP.7, IP.7A or IP.7B metal receptacle must be used;

c) if the pressure in the receptacle exceeds 1 105 kPa at 55°C but does not exceed 1 245 kPa at 55°C, an IP.7A or IP.7B metal receptacle must be used;

d) if the pressure in the receptacle exceeds 1 245 kPa at 55°C, an IP.7B metal receptacle must be used;

e) IP.7B metal receptacles having a minimum burst pressure of 1 800 kPa may be equipped with an inner capsule charged with a non-flammable, non-toxic compressed gas to provide the propellant function. In this case, the pressures indicated in a), b), c) or d) do not apply to the pressure within the capsule for an aerosol. The quantity of gas contained in the capsule must be so limited such that the minimum burst pressure of the receptacle would not be exceeded if the entire gas content of the capsule were released into the outer metal receptacle;

f) the liquid content must not completely fill the closed receptacle at 55°C;

g) each receptacle exceeding 120 mL capacity must have been heated until the pressure in the receptacle is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect.

Plastic aerosols (IP.7C)

≠ Non-refillable plastic aerosols must not exceed 120 mL capacity, except when the propellant is a non-flammable, non-toxic gas and the contents are not dangerous goods in accordance with the provisions of the Technical Instructions, in which case the quantity must not exceed 500 mL.

The following conditions must be met:

a) the contents must not completely fill the closed receptacle at 55°C;

b) the pressure in the container may not exceed 970 kPa at 55°C; and

c) each receptacle must be leak tested in accordance with the provisions of 6;3.2.8.1.6.

All aerosols

a) the valves, if fitted, must be protected by a cap or other suitable means during transport;

b) receptacles must be tightly packed, so as to prevent movement, in wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G) or plastic boxes (4H1, 4H2) of Packing Group II.

Y203 PACKING INSTRUCTION Y203 Y203

This Instruction applies to UN 1950 and 2037.

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Metal aerosols and non-refillable receptacles containing gas (gas cartridges)

Non-refillable metal aerosols and non-refillable receptacles containing gas (gas cartridges) must not exceed 1 000 mL capacity.

The following conditions must be met:

a) the pressure in the receptacle must not exceed 1 245 kPa at 55°C and each receptacle must be capable of withstanding without bursting a pressure of at least 1.5 times the equilibrium pressure of the contents at 55°C;

b) if the pressure in the receptacle exceeds 970 kPa at 55°C but does not exceed 1 105 kPa at 55°C, an IP.7, IP.7A or IP.7B metal receptacle must be used;

c) if the pressure in the receptacle exceeds 1 105 kPa at 55°C, an IP.7A or IP.7B metal receptacle must be used;

d) if the pressure in the receptacle exceeds 1 245 kPa at 55°C, an IP.7B metal receptacle must be used;

e) IP.7B metal receptacles having a minimum burst pressure of 1 800 kPa may be equipped with an inner capsule charged with a non-flammable, non-toxic compressed gas to provide the propellant function. In this case, the pressures indicated in a), b), c) or d) do not apply to the pressure within the capsule for an aerosol. The quantity of gas contained in the capsule must be so limited such that the minimum burst pressure of the receptacle would not be exceeded if the entire gas content of the capsule were released into the outer metal receptacle;

f) the liquid content must not completely fill the closed receptacle at 55°C;

g) each receptacle exceeding 120 mL capacity must have been heated until the pressure in the receptacle is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect.

Plastic aerosols *(IP.7C)*

≠ Non-refillable plastic aerosols must not exceed 120 mL capacity, except when the propellant is a non-flammable, non-toxic gas and the contents are not dangerous goods in accordance with the provisions of the Technical Instructions, in which case the quantity must not exceed 500 mL.

The following conditions must be met:

a) the contents must not completely fill the closed receptacle at 55°C;

b) the pressure in the container may not exceed 970 kPa at 55°C; and

c) each receptacle must be leak tested in accordance with the provisions of 6;3.2.8.1.6.

All aerosols

a) the valves, if fitted, must be protected by a cap or other suitable means during transport;

b) receptacles must be tightly packed, so as to prevent movement, in wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G) or plastic boxes (4H1, 4H2) of Packing Group II.

OUTER:

Boxes
- Fibreboard
- Plastic
- Plywood
- Reconstituted wood
- Wooden

204 PACKING INSTRUCTION 204 204

The general packing requirements of 4;1 must be met.

Aerosols, non-flammable, containing biological products or a medical preparation which will be deteriorated by a heat test, are acceptable in inner non-refillable receptacles not exceeding 575 mL capacity each, providing all the following conditions are met:

a) the pressure in the aerosol must not exceed 970 kPa at 55°C;

b) the liquid contents must not completely fill the closed receptacle at 55°C;

c) one aerosol out of each lot of 500 or less must be heated until the pressure in the aerosol is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect;

d) the valves must be protected by a cap or other suitable means during transport;

e) aerosols must be tightly packed, so as to prevent movement, in wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G) or plastic boxes (4H1, 4H2) of Packing Group II.

Y204 PACKING INSTRUCTION Y204 Y204

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Aerosols, non-flammable, containing only a non-toxic substance or substances and biological products or a medical preparation which will be deteriorated by a heat test, are acceptable in inner non-refillable receptacles not exceeding 575 mL capacity each, providing all the following conditions are met:

a) the pressure in the aerosol must not exceed 970 kPa at 55°C;

b) the liquid contents must not completely fill the closed receptacle at 55°C;

c) one aerosol out of each lot of 500 or less must be heated until the pressure in the aerosol is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect;

d) the valves must be protected by a cap or other suitable means during transport;

e) aerosols must be tightly packed, so as to prevent movement, in one of the following boxes:

OUTER:

Boxes
- Fibreboard
- Plastic
- Plywood
- Reconstituted wood
- Wooden

206 PACKING INSTRUCTION 206 206

The general packing requirements of 4;1 must be met.

A gas sample may only be accepted for transport as a non-pressurized gas providing it is at a pressure corresponding to ambient atmospheric pressure at the time the containment system is closed and this must not exceed 105 kPa absolute.

Non-pressurized gases must be contained in hermetically sealed glass (IP.1 or IP.8) or metal (IP.3 or IP.3A) inner packagings, the capacities of which do not exceed those shown below:

IP.1: 1 L
IP.8: 0.5 L
IP.3: 1 L
IP.3A: 1 L

except that for “Gas sample, non-pressurized, flammable, n.o.s.”, being transported on a cargo aircraft only, the limit for IP.1, IP.3 or IP.3A is increased to 2.5 L.

The inner packaging(s) must be packed so as to prevent movement in steel drums (1A2), aluminium drums (1B2), wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G) or plastic boxes (4H1, 4H2) of Packing Group II.

208 PACKING INSTRUCTION 208 208

The general packing requirements of 4;1 must be met.

Articles, pressurized pneumatic or hydraulic containing a non-flammable, non-liquefied and non-toxic gas and constructed from materials which will not fragment under pressure, may be carried under the following conditions:

a) when installed in construction equipment and assembled machinery, articles must be designed and constructed with a burst pressure of not less than 5 times their charged pressure at 21°C when shipped;

Note.— Labelling, marking, dangerous goods transport document and information to pilot-in-command are not required.

b) when tightly packed to prevent movement in strong outer packagings and charged to not more than 1 380 kPa at 21°C, the following conditions also apply:

1) each article must have a fluid space not exceeding 41 L under stored pressure;

2) each article must be tested without failure or damage to at least 3 times its charged pressure at 21°C but not less than 830 kPa before initial shipment and before each refilling and re-shipment;

c) when tightly packed to prevent movement in strong outer packagings and charged with a pressure exceeding 1 380 kPa at 21°C the following conditions also apply:

1) each article must have a fluid space not exceeding 41 L under stored pressure;

2) each article must be tested without failure or damage to at least 3 times its charged pressure at 21°C, but not less than 830 kPa before initial shipment and before each refilling and re-shipment;

3) each article must be designed and constructed with a burst pressure of not less than 5 times its charged pressure at 21°C when shipped.

211 PACKING INSTRUCTION 211 211

The general packing requirements of 4;1 must be met.

Refrigerating machines or components containing non-toxic liquefied gases or Ammonia solutions (UN 2672) must meet the following requirements:

a) each cylinder must not contain more than 450 kg of a Division 2.2 gas without subsidiary risk or 25 kg of Ammonia solutions (UN 2672);

b) machines or components having two or more charged cylinders may not contain an aggregate of more than 910 kg of a Division 2.2 gas without subsidiary risk or more than 45 kg of Ammonia solutions (UN 2672);

c) each cylinder must be equipped with a safety device meeting the requirements of a recognized national standard;

d) each cylinder must be equipped with a shut-off valve at each opening except openings used for safety devices and with no other connection. These valves must be closed prior to and during transport;

e) cylinders must be manufactured, inspected and tested in accordance with a recognized UN or national standard;

f) all parts subject to refrigerant pressure during shipment must be tested in accordance with a recognized UN or national standard;

g) the liquid portion of the refrigerant, if any, must not completely fill any pressure vessel at 55°C;

h) the amount of refrigerant, if liquefied, must not exceed the filling density prescribed by applicable State regulations.

212 PACKING INSTRUCTION 212 212

The general packing requirements of 4;1 must be met.

Aerosols, non-flammable, which are tear gas devices are permitted in inner non-refillable metal receptacles not exceeding 1 000 mL capacity each providing all the following conditions are met:

a) the pressure in the aerosol must not exceed 1 500 kPa at 55°C and each receptacle must be capable of withstanding without bursting a pressure of at least 1.5 times the equilibrium pressure of the contents at 55°C;

b) if the pressure in the aerosol does not exceed 1 105 kPa at 55°C, an IP.7, IP.7A or IP.7B metal receptacle must be used;

c) if the pressure in the aerosol exceeds 1 105 kPa at 55°C but does not exceed 1 245 kPa at 55°C, an IP.7A or IP.7B metal receptacle must be used;

d) if the pressure in the aerosol exceeds 1 245 kPa at 55°C, an IP.7B metal receptacle must be used;

e) IP.7B metal receptacles having a minimum burst pressure of 1 800 kPa may be equipped with an inner capsule charged with a non-flammable, non-toxic compressed gas to provide the propellant function. In this case, the pressures indicated in a), b), c) or d) do not apply to the pressure within the capsule. The quantity of gas contained in the capsule must be so limited such that the minimum burst pressure of the receptacle would not be exceeded if the entire gas content of the capsule were released into an aerosol;

f) the liquid content must not completely fill the closed receptacle at 55°C;

g) each aerosol must have been heated until the pressure in the aerosol is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect;

h) the valves must be protected by a cap or other suitable means during transport;

i) aerosols must be individually placed into spiral wound tubes fitted with metal ends or a double-faced fibreboard box with suitable padding, which must be tightly packed in wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G) or plastic boxes (4H1, 4H2) of Packing Group II. Maximum net quantity per package is 50 kg.

213 PACKING INSTRUCTION 213 213

The general packing requirements of 4;1 must be met.

Fire extinguishers with compressed or liquefied gas must be packed in strong outer packagings so that they cannot be accidentally activated.

Fire extinguishers may include installed actuating cartridges (cartridges, power device of Division 1.4C or 1.4S), without changing the classification of Division 2.2, provided the total quantity of deflagrating (propellant) explosives does not exceed 3.2 g per extinguishing unit.

214 PACKING INSTRUCTION 214 214

This Instruction applies to storage systems containing hydrogen absorbed in a metal hydride (UN 3468) individually or when contained in equipment and apparatus when transported on cargo aircraft.

The storage systems must be constructed and marked by the manufacturer indicating they meet the requirements of Annex B of IEC PAS 62282-6-1.

Storage systems employing cylinders other than UN marked and certified cylinders may be used if the design, construction, testing, approval and markings conform to the requirements of the appropriate national authority of the State in which they are approved and filled.

Storage systems for which prescribed periodic tests have become due must not be filled and offered for transport until such retests have been successfully completed.

Storage systems with a water capacity of less than 1 L must be packaged in rigid outer packagings constructed of suitable material of adequate strength and design in relation to the packaging capacity and its intended use. They must be adequately secured or cushioned so as to prevent damage during normal conditions of transport.

Storage systems must be filled in accordance with procedures provided by the manufacturer of the system in accordance with clause B4.17.2 of IEC PAS 62282-6-1.

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PACKING INSTRUCTION 215

Passenger and cargo aircraft for UN 3478 and 3479 only

General requirements

Part 4;1.1.1, 1.1.2 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3478 **Fuel cell cartridges** containing liquefied flammable gas UN 3479 **Fuel cell cartridges** containing hydrogen in metal hydride	1 kg of fuel cell cartridges	15 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— Fuel cell cartridges must be securely cushioned in the outer packagings.
— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) Plastic (4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium (1B2) Fibreboard (1G) Plastic (1H2) Plywood (1D) Steel (1A2)	Steel (3A2) Plastics (3H2) Aluminium (3B2)

+

PACKING INSTRUCTION 216

Passenger and cargo aircraft for UN 3478 and 3479 (contained in equipment) only

General requirements

Part 4;1.1.1 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3478 **Fuel cell cartridges contained in equipment,** containing liquefied flammable gas UN 3479 **Fuel cell cartridges contained in equipment,** containing hydrogen in metal hydride	1 kg of fuel cell cartridges	15 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— Fuel cell cartridges that are contained in equipment must be protected against short circuit and the equipment must be protected against inadvertent operation.
— Equipment must be securely cushioned in the outer packagings.
— Fuel cell systems must not charge batteries during transport.
— On passenger aircraft, each fuel cell system and each fuel cell cartridge must conform to IEC PAS 62282-6-1 Ed. 1 or a standard approved by the appropriate authority of the State of Origin.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
	Strong outer packagings	

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PACKING INSTRUCTION 217

Passenger and cargo aircraft for UN 3478 and 3479 (packed with equipment) only

General requirements

Part 4;1.1.1 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3478 **Fuel cell cartridges packed with equipment,** containing liquefied flammable gas UN 3479 **Fuel cell cartridges packed with equipment,** containing hydrogen in metal hydride	1 kg of fuel cell cartridges	15 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— When fuel cell cartridges are packed with equipment, they must be packed in intermediate packagings together with the equipment they are capable of powering.
— The maximum number of fuel cell cartridges in the intermediate packaging must be the minimum number required to power the equipment, plus 2 spares.
— The fuel cell cartridges and the equipment must be packed with cushioning material or divider(s) or inner packaging so that the fuel cell cartridges are protected against damage that may be caused by the movement or placement of the equipment and the cartridges within the packaging.

OUTER PACKAGINGS

Boxes *Drums* *Jerricans*

Strong outer packagings

Chapter 5

CLASS 3 — FLAMMABLE LIQUIDS

5.1 PACKING INSTRUCTIONS

301 PACKING INSTRUCTION 301 301

The general packing requirements of 4;1 must be met.

Aircraft hydraulic power unit fuel tanks containing a mixture of anhydrous hydrazine and methyl hydrazine (M86 fuel) and designed for installation as complete units in aircraft are acceptable, subject to either of the following conditions:

a) the unit must consist of an aluminium pressure vessel made from tubing and having welded heads. Primary containment of the fuel within this vessel must consist of a welded aluminium bladder having a maximum internal volume of 46 L. The outer vessel must have a minimum design gauge pressure of 1 275 kPa and a minimum burst gauge pressure of 2 755 kPa. Each vessel must be leak-checked during manufacture and before shipment and must be found leakproof. The complete inner unit must be securely packed in non-combustible cushioning material, such as vermiculite, in a strong outer tightly closed metal packaging which will adequately protect all fittings. Maximum quantity of fuel per unit and package is 42 L; or

b) the unit must consist of an aluminium pressure vessel. Primary containment of the fuel within this vessel must consist of a welded hermetically sealed fuel compartment with an elastomeric bladder having a maximum internal volume of 46 L. The pressure vessel must have a minimum design gauge pressure of 2 860 kPa and a minimum burst gauge pressure of 5 170 kPa. Each vessel must be leak-checked during manufacture and before shipment and must be found leakproof. The complete inner unit must be securely packed in non-combustible cushioning material, such as vermiculite, in a strong outer tightly closed metal packaging which will adequately protect all fittings. Maximum quantity of fuel per unit and package is 42 L.

302 PACKING INSTRUCTION 302 302

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

Combination packagings with inner plastic packagings are not permitted for liquids with a boiling point of 35°C or less.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	0.5 L
Plastic (IP.2)	1 L
Metal (IP.3, IP.3A)	1 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
solid plastic (4H2)		
steel (4A)		
wooden (4C1, 4C2)		

303 PACKING INSTRUCTION 303 303

The general packing requirements of 4;1 must be met.

Combination packagings with inner plastic packagings are not permitted for liquids with a boiling point of 35°C or less.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 L
Plastic (IP.2)	5 L
Metal (IP.3, IP.3A)	5 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
solid plastic (4H2)		
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Cylinders that meet the requirements of 4;2.7 are permitted
Drums
- aluminium (1B1)
- steel (1A1)

Jerricans, steel (3A1)

304 PACKING INSTRUCTION 304 304

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Aluminium IP.3A (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
1089	0.5	No	2.5	2.5	0.5	13
1196	0.5	1	1	No	0.5	5
1250	0.5	1	1	No	0.5	5
1280	1	No	1	No	0.5	13
1298	1	0.5	1	No	0.5	5,13
1302	1	No	2.5	2.5	0.5	13
1305	1	0.5	1	No	0.5	5,13
1723	1	1	No	No	0.5	2,13
1921	0.5	No	1	No	0.5	13
2356	0.5	No	2.5	2.5	0.5	3,13
2371	1	No	2.5	2.5	0.5	–
2456	0.5	No	2.5	2.5	0.5	3,13
2481	1	No	2.5	2.5	0.5	5
2483	1	No	2.5	2.5	0.5	5
2749	1	No	2.5	No	0.5	5,13
2983	No	No	2.5	No	0.5	6,8

OUTER:

Boxes	*Drums*	*Jerricans*
fibreboard (4G)	aluminium (1B2)	plastic (3H2)
plywood (4D)	fibre (1G)	steel (3A2)
reconstituted wood (4F)	plastic (1H2)	
solid plastic (4H2)	plywood (1D)	
wooden (4C1, 4C2)	steel (1A2)	

SINGLE PACKAGINGS:

UN No.	*Steel drums 1A1*	*Aluminium drums 1B1*	*Steel jerricans 3A1*	*Composites (plastic) — all*	*Cylinders (as permitted by 4;2.7)*	*Particular packing requirements*
1089	Yes	Yes	Yes	No	Yes	–
1196	Yes	No	Yes	Yes	Yes	5
1250	Yes	No	Yes	Yes	Yes	5
1280	Yes	No	Yes	No	Yes	–
1298	Yes	No	Yes	Yes	Yes	5
1302	Yes	Yes	Yes	No	Yes	–
1305	Yes	No	Yes	Yes	Yes	5
1723	No	No	No	Yes	No	–
1921	Yes	No	Yes	No	Yes	–
2356	Yes	Yes	Yes	No	Yes	3
2371	Yes	Yes	Yes	No	Yes	–
2456	Yes	Yes	Yes	No	Yes	3
2481	Yes	Yes	Yes	No	Yes	5
2483	Yes	Yes	Yes	No	Yes	5
2749	Yes	No	Yes	No	Yes	5
2983	Yes	No	No	No	Yes	–

PARTICULAR PACKING REQUIREMENTS:

2 Plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
3 Pure aluminium or aluminium alloys are permitted only for halogenated hydrocarbons that will not react with aluminium.
5 Steel packagings must be corrosion-resistant or with protection against corrosion.
6 Glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
8 Only metal cylinders that meet the requirements of 4;2.7 are permitted.
13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

305 PACKING INSTRUCTION 305 305

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 L
Plastic (IP.2)	5 L
Metal (IP.3, IP.3A)	5 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

Y305 PACKING INSTRUCTION Y305 Y305

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	0.5 L
Plastic (IP.2)	0.5 L
Metal (IP.3, IP.3A)	0.5 L
Glass ampoule (IP.8)	0.5 L

For UN 1106, UN 1125, UN 1158, UN 1160, UN 1214, UN 1235, UN 1289, UN 1296, UN 1297, UN 1815, UN 1922, UN 2266, UN 2353, UN 2359, UN 2379, UN 2383, UN 2386, UN 2395, UN 2399, UN 2401, UN 2535, UN 2733, UN 2924, UN 2945, UN 3274, UN 3286 and UN 3469, glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plywood	plastic	steel
reconstituted wood	plywood	
solid plastic	steel	
steel		
wooden		

306 PACKING INSTRUCTION 306 306

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Aluminium IP.3A (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
1111	1	1	1	1	0.5	2,13
1154	1	1	1	No	0.5	–
1167	0.5	No	1	1	0.5	–
1184	1	1	1	1	0.5	3
1196	0.5	0.5	0.5	No	0.5	5
1204	1	1	1	No	0.5	–
1228	1	1	1	1	0.5	2,13
1277	1	1	1	No	0.5	5
1279	1	5	5	No	0.5	–
1280	0.5	No	1	No	0.5	13
1298	0.5	0.5	0.5	No	0.5	5,13
1302	0.5	No	1	1	0.5	8,13
1717	1	1	1	No	0.5	2,5,13
1723	0.5	0.5	No	No	0.5	2,13
1921	0.5	No	No	No	0.5	13
2270	0.5	No	1	1	0.5	–
2347	1	1	1	1	0.5	2,13
2356	0.5	No	1	1	0.5	3,13
2360	1	No	1	1	0.5	–
2371	0.5	No	1	1	0.5	–
2402	1	1	1	1	0.5	2,13
2456	0.5	No	1	1	0.5	3,13
2478	1	1	1	1	0.5	5,13
2486	1	1	1	1	0.5	5,13
2493	1	1	No	No	0.5	–

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

PARTICULAR PACKING REQUIREMENTS:

2 Plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

3 Pure aluminium or aluminium alloys are permitted only for halogenated hydrocarbons that will not react with aluminium.

5 Steel packagings must be corrosion-resistant or with protection against corrosion.

8 Only metal cylinders that meet the requirements of 4;2.7 are permitted.

13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

Y306 PACKING INSTRUCTION Y306 Y306

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Aluminium IP.3A (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
1111	0.5	0.5	0.5	0.5	0.5	2,13
1154	0.5	0.5	0.5	No	0.5	13
1184	0.5	0.5	0.5	0.5	0.5	3
1204	0.5	0.5	0.5	No	0.5	–
1228	0.5	0.5	0.5	0.5	0.5	2,13
1277	0.5	0.5	0.5	No	0.5	5,13
1279	0.5	0.5	0.5	No	0.5	–
1717	0.5	0.5	0.5	No	0.5	2,5,13
1723	0.5	0.5	No	No	0.5	2,13
2270	0.5	No	0.5	0.5	0.5	13
2347	0.5	0.5	0.5	0.5	0.5	2,13
2360	0.5	No	0.5	0.5	0.5	–
2402	0.5	0.5	0.5	0.5	0.5	2,13
2478	0.5	0.5	0.5	0.5	0.5	5,13
2486	0.5	0.5	0.5	0.5	0.5	5,13
2493	0.5	0.5	No	No	0.5	13

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plywood	plastic	steel
reconstituted wood	plywood	
solid plastic	steel	
steel		
wooden		

PARTICULAR PACKING REQUIREMENTS:

2 Plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

3 Pure aluminium or aluminium alloys are permitted only for halogenated hydrocarbons that will not react with aluminium.

5 Steel packagings must be corrosion-resistant or with protection against corrosion.

13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

307 PACKING INSTRUCTION 307 307

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	2.5 L
Plastic (IP.2)	5 L
Metal (IP.3, IP.3A)	10 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Cylinders, as permitted by 4;2.7
Drums
- aluminium (1B1)
- plastic (1H1)
- steel (1A1)

Jerricans
- plastic (3H1)
- steel (3A1)

308 PACKING INSTRUCTION 308 308

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Aluminium IP.3A (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
1111	2.5	2.5	2.5	2.5	0.5	2,13
1154	2.5	5	5	No	0.5	13
1167	1	No	2.5	2.5	0.5	–
1184	2.5	5	10	10	0.5	3
1204	1	1	1	No	0.5	–
1228	2.5	2.5	2.5	2.5	0.5	2,13
1277	2.5	2.5	5	No	0.5	5
1278	2.5	2.5	5	No	0.5	–
1279	2.5	5	10	No	0.5	–
1717	2.5	2.5	2.5	No	0.5	2,5,13

2270	0.5	No	2.5	2.5	0.5	–
2347	2.5	2.5	2.5	2.5	0.5	2,13
2360	2.5	No	2.5	2.5	0.5	–
2363	1	1	1	1	0.5	2,13
2402	2.5	2.5	2.5	2.5	0.5	2,13
2478	2.5	1	2.5	2.5	0.5	5,13
2486	2.5	1	2.5	2.5	0.5	5,13
2493	2.5	2.5	No	No	0.5	–

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

UN No.	*Steel drums 1A1*	*Aluminium drums 1B1*	*Steel jerricans 3A1*	*Plastic drums 1H1*	*Plastic jerricans 3H1*	*Composites (plastic) — all*	*Cylinders (as permitted by 4;2.7)*	*Particular packing requirements*
1111	Yes	Yes	Yes	No	No	Yes	Yes	–
1154	Yes	No	Yes	Yes	Yes	Yes	Yes	–
1167	Yes	Yes	Yes	No	No	No	Yes	–
1184	Yes	Yes	Yes	Yes	Yes	Yes	Yes	3
1204	Yes	No	Yes	No	No	Yes	Yes	–
1228	Yes	Yes	Yes	No	No	Yes	Yes	–
1277	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1278	Yes	No	Yes	Yes	Yes	Yes	Yes	–
1279	Yes	No	Yes	Yes	Yes	Yes	Yes	–
1717	Yes	No	Yes	No	No	Yes	Yes	5
2270	Yes	Yes	Yes	No	No	No	Yes	–
2347	Yes	Yes	Yes	No	No	Yes	Yes	–
2360	Yes	Yes	Yes	No	No	No	Yes	–
2363	Yes	Yes	Yes	No	No	Yes	Yes	–
2402	Yes	Yes	Yes	No	No	Yes	Yes	–
2478	Yes	Yes	Yes	Yes	Yes	Yes	Yes	5
2486	Yes	Yes	Yes	Yes	Yes	Yes	Yes	5
2493	No	No	No	Yes	Yes	Yes	No	–

PARTICULAR PACKING REQUIREMENTS:

2 Plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

3 Pure aluminium or aluminium alloys are permitted only for halogenated hydrocarbons that will not react with aluminium.

5 Steel packagings must be corrosion-resistant or with protection against corrosion.

13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

309 PACKING INSTRUCTION 309 309

The general packing requirements of 4;1 must be met.

If the substance has a subsidiary corrosive risk, all of these packagings must meet Packing Group II performance requirements.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	2.5 L
Plastic (IP.2)	10 L
Metal (IP.3, IP.3A)	10 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
expanded plastic (4H1)	fibre (1G)	plastic (3H2)
fibreboard (4G)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
solid plastic (4H2)		
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Cylinders that meet the requirements of 4;2.7 are permitted
Drums
- aluminium (1B1, 1B2)
- plastic (1H1, 1H2)
- steel (1A1, 1A2)

Jerricans
- plastic (3H1, 3H2)
- steel (3A1, 3A2)

Y309 PACKING INSTRUCTION Y309 Y309

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	2.5 L
Plastic (IP.2)	5 L
Metal (IP.3, IP.3A)	5 L
Glass ampoule (IP.8)	0.5 L

For UN 1106, UN 1198, UN 1289, UN 1297, UN 2260, UN 2276, UN 2361, UN 2526, UN 2529, UN 2610, UN 2684, UN 2733, UN 2924 and UN 3469, glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
expanded plastic	fibre	plastic
fibreboard	plastic	steel
plywood	plywood	
reconstituted wood	steel	
solid plastic		
steel		
wooden		

310 PACKING INSTRUCTION 310 310

The general packing requirements of 4;1 must be met.

If the substance has a subsidiary corrosive risk, all of these packagings must meet Packing Group II performance requirements.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	5 L
Plastic (IP.2)	10 L
Metal (IP.3, IP.3A)	25 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
expanded plastic (4H1)	fibre (1G)	plastic (3H2)
fibreboard (4G)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
solid plastic (4H2)		
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Cylinders that meet the requirements of 4;2.7 are permitted
Drums
- aluminium (1B1, 1B2)
- plastic (1H1, 1H2)
- steel (1A1, 1A2)

Jerricans
- plastic (3H1, 3H2)
- steel (3A1, 3A2)

311 PACKING INSTRUCTION 311 311

Nitroglycerin solution in alcohol may be shipped as UN 3064 only if packed in IP.3 metal cans (other than aluminium) of not more than 1 L capacity each, overpacked in a wooden box (4C1, 4C2) containing not more than 5 L. Metal cans must be completely surrounded with absorbent cushioning material. Wooden boxes must be completely lined with a suitable material impervious to water and nitroglycerin. The general packing requirements of 4;1 must be met.

312 PACKING INSTRUCTION 312 312

A polyester resin kit and a fibreglass repair kit consist of two components: a base material in Class 3, Packing Group II or III, and an activator (organic peroxide).

The general packing requirements of 4;1 must be met.

The organic peroxide must be in IP.2 plastic packagings or IP.9 metal or plastic tubes and the quantity must not exceed those shown below:

IP.2 125 mL or 500 g
IP.9 60 mL or 250 g

The net quantity of organic peroxide per package must not exceed 125 mL or 500 g.

The flammable liquid must be in IP.1 glass or earthenware, IP.2 plastic, IP.3 or IP.3A metal packagings and the quantity must not exceed those shown below:

IP.1 1 kg
IP.2 4.75 kg
IP.3 4.75 kg
IP.3A 4.75 kg

The components may be placed in the same outer packaging provided they will not interact dangerously in the event of leakage. The inner packagings must be packed in steel drums (1A2), aluminium drums (1B2), plastic drums (1H2), steel jerricans (3A2), plastic jerricans (3H2), wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), plywood drums (1D), fibre drums (1G), fibreboard boxes (4G) or solid plastic boxes (4H2).

Y312 PACKING INSTRUCTION Y312 Y312

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

A polyester resin kit and a fibreglass repair kit consist of two components: a base material in Class 3, Packing Group II or III, and an activator (organic peroxide).

The organic peroxide must be in IP.2 plastic packagings or IP.9 metal or plastic tubes and the quantity must not exceed 30 mL or 100 g. The net quantity of organic peroxide per package must not exceed 125 mL or 500 g.

The flammable liquid must be in IP.1 glass or earthenware, IP.2 plastic, IP.3 or IP.3A metal packagings and the quantity must not exceed 900 g.

The components may be placed in the same outer packaging provided they will not interact dangerously in the event of leakage. The inner packagings must be packed in steel drums, aluminium drums, plastic drums, steel jerricans, plastic jerricans, wooden boxes, plywood boxes, reconstituted wood boxes, plywood drums, fibre drums, fibreboard boxes or solid plastic boxes.

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PACKING INSTRUCTION 374

Passenger and cargo aircraft for UN 3473 only

General requirements

Part 4;1.1.1, 1.1.2 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3473 **Fuel cell cartridges**	5 kg of fuel cell cartridges	50 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— Fuel cell cartridges must be securely cushioned in the outer packagings.
— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Steel (3A2)
Fibreboard (4G)	Fibreboard (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Plastic (1H2)	Aluminium (3B2)
Plastic (4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

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PACKING INSTRUCTION 375

Passenger and cargo aircraft for UN 3473 (contained in equipment) only

General requirements

Part 4;1.1.1 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3473 **Fuel cell cartridges contained in equipment**	5 kg of fuel cell cartridges	50 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— Fuel cell cartridges that are contained in equipment must be protected against short circuit and the equipment must be protected against inadvertent operation.
— Equipment must be securely cushioned in the outer packagings.
— Fuel cell systems must not charge batteries during transport.
— On passenger aircraft, each fuel cell system and each fuel cell cartridge must conform to IEC PAS 62282-6-1 Ed. 1 or a standard approved by the appropriate authority of the State of Origin.

OUTER PACKAGINGS

Boxes *Drums* *Jerricans*

Strong outer packagings

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PACKING INSTRUCTION 376

Passenger and cargo aircraft for UN 3473 (packed with equipment) only

General requirements

Part 4;1.1.1 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3473 **Fuel cell cartridges packed with equipment**	5 kg of fuel cell cartridges	50 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— When fuel cell cartridges are packed with equipment, they must be packed in intermediate packagings together with the equipment they are capable of powering.
— The maximum number of fuel cell cartridges in the intermediate packaging must be the minimum number required to power the equipment, plus 2 spares.
— The fuel cell cartridges and the equipment must be packed with cushioning material or divider(s) or inner packaging so that the fuel cell cartridges are protected against damage that may be caused by the movement or placement of the equipment and the cartridges within the packaging.

OUTER PACKAGINGS

Boxes *Drums* *Jerricans*

Strong outer packagings

Chapter 6

CLASS 4 — FLAMMABLE SOLIDS; SUBSTANCES LIABLE TO SPONTANEOUS COMBUSTION; SUBSTANCES WHICH, IN CONTACT WITH WATER, EMIT FLAMMABLE GASES

6.1 GENERAL REQUIREMENTS FOR SELF-REACTIVE SUBSTANCES

Unless otherwise provided in these Instructions, the packagings used for self-reactive substances of Division 4.1 must meet Packing Group II requirements. To avoid unnecessary confinement, metal packaging meeting Packing Group I requirements must not be used.

6.2 PACKING INSTRUCTIONS

400	PACKING INSTRUCTION 400	400

Films, nitrocellulose base must be packed in accordance with the general packing requirements of 4;1 and as follows:

a) in steel drums (1A2), aluminium drums (1B2), aluminium jerricans (3B2), steel jerricans (3A2), aluminium (4B), steel (4A), wooden (4C1, 4C2), plywood (4D) or reconstituted wood (4F) boxes or plywood drums (1D) of Packing Group II with each reel in a tightly closed metal can or strong cardboard or fibreboard inner packaging with cover held in place by adhesive tape or paper; or

b) in fibreboard (4G) or solid plastic (4H2) boxes or fibre drums (1G) of Packing Group II with a single tightly closed metal can or strong cardboard or fibreboard inner packaging with cover held in place by adhesive tape or paper; authorized only for not over 600 m of film.

Y400	PACKING INSTRUCTION Y400	Y400

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

Films, nitrocellulose base must be packed as follows:

a) in steel or aluminium drums, aluminium or steel jerricans, aluminium, steel, wooden, plywood or reconstituted wood boxes or plywood drums with each reel in a tightly closed metal can or strong cardboard or fibreboard inner packaging with cover held in place by adhesive tape or paper, up to a maximum net quantity of 1 kg of film in each inner packaging; or

b) in fibreboard or solid plastic boxes or fibre drums with a single tightly closed metal can or strong cardboard or fibreboard inner packaging with cover held in place by adhesive tape or paper; authorized only for not over 600 m or 1kg (whichever is the more restrictive) of film in one outer packaging.

401 PACKING INSTRUCTION 401 401

The general packing requirements of 4;1 must be met.

Nitrocellulose membrane filters must be packed as follows:

a) in fibreboard (4G) boxes of Packing Group II; or

b) in other packagings of Packing Group II, provided that explosion is not possible by reason of increased internal pressure.

Y401 PACKING INSTRUCTION Y401 Y401

The requirements of 3;4 must be met.

Single packagings are not permitted.

Nitrocellulose membrane filters must be packed in tightly closed metal, plastics, or strong cardboard or fibreboard inner packagings. Inner packagings must be securely packed in aluminium or steel drums, aluminium or steel jerricans, aluminium, steel, wooden, plywood, reconstituted wood, fibreboard or plastics boxes, plywood or fibre drums.

404 PACKING INSTRUCTION 404 404

Matches, safety (book, card or strike on box) must be of a type that will not ignite spontaneously under normal conditions of air transport and can be readily ignited by friction only by striking on the manufacturer's box, book or card. Matches must be packed in accordance with the general packing requirements of 4;1 and be tightly packed to prevent movement within the package and ignition by rubbing against an adjoining box, book or card; they must be securely wrapped in paper or foil, or packed in tightly closed inner packagings. Not more than 50 books of matches may be packed in one inner packaging. Inner packagings must be securely packed in steel drums (1A2), aluminium drums (1B2), steel jerricans (3A2), aluminium jerricans (3B2), steel (4A), aluminium (4B), wooden (4C1, 4C2), plywood (4D), reconstituted wood (4F), fibreboard (4G) or solid plastic (4H2) boxes, plywood (1D) or fibre (1G) drums of Packing Group II. Alternatively, book safety matches only, up to a maximum of 50 books, may be packed in a strong fibreboard carton, which is made of straw-board, covered with kraft paper, having a securely glued inside lining consisting of aluminium foil at least 0.01 mm thick, the carton to have a full depth lid with all joints secured with gummed paper tape; no additional outer packaging is required.

Y404 PACKING INSTRUCTION Y404 Y404

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

Matches, safety (book, card or strike on box) must be of a type that will not ignite spontaneously under normal conditions of air transport and can be readily ignited by friction only by striking on the manufacturer's box, book or card. Matches must be tightly packed to prevent movement within the package and ignition by rubbing against an adjoining box, book or card; they must be securely wrapped in paper or foil, or packed in tightly closed inner packagings. Not more than 50 books of matches may be packed in one inner packaging. Inner packagings must be securely packed in aluminium or steel drums, aluminium or steel jerricans, aluminium, steel, wooden, plywood, reconstituted wood, fibreboard or plastic boxes, plywood or fibre drums. Alternatively, book safety matches only, up to a maximum of 50 books, may be packed in a strong fibreboard carton, which is made of straw-board, covered with kraft paper, having a securely glued inside lining consisting of aluminium foil at least 0.01 mm thick, the carton to have a full depth lid with all joints secured with gummed paper tape; no additional outer packaging is required.

407 PACKING INSTRUCTION 407 407

The general packing requirements of 4;1 must be met.

408 PACKING INSTRUCTION 408 408

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 L
Plastic (IP.2)	1 L
Metal (IP.3, IP.3A)	1 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

409 PACKING INSTRUCTION 409 409

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Metal (not aluminium) IP.3 (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
1183	1	1	0.5	5,13
1242	1	1	0.5	5,13
1389	1	1	0.5	5,13
1391	1	1	0.5	5,13
1392	1	1	0.5	5,13
1411	1	1	0.5	8,13
1420	1	1	0.5	5,13
1421	1	1	0.5	5,13
1422	1	1	0.5	5,13
1928	1	1	0.5	8,13
3399	1	1	0.5	8,13

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

PARTICULAR PACKING REQUIREMENTS:

5 Steel packagings must be corrosion-resistant or with protection against corrosion.
8 Only metal cylinders that meet the requirements of 4;2.7 are permitted.
13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

410 PACKING INSTRUCTION 410 410

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	0.5 kg
Plastic (IP.2)	0.5 kg
Metal (IP.3, IP.3A)	0.5 kg
Plastic bag (IP.5)	0.5 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

411 PACKING INSTRUCTION 411 411

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 kg
Plastic (IP.2)	2.5 kg
Metal (IP.3, IP.3A)	2.5 kg
Plastic bag (IP.5)	2.5 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Drums
aluminium (1B1, 1B2)
plastic (1H1, 1H2)
steel (1A1, 1A2)
Jerricans
plastic (3H1, 3H2) — not permitted for Division 4.2
steel (3A1, 3A2)

412 PACKING INSTRUCTION 412 412

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Aluminium IP.3A (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1320	1	1	No	No	0.5	9
1321	1	1	No	No	0.5	9
1322	1	1	No	No	0.5	9
1336	1	2.5	No	No	0.5	9
1337	1	1	No	No	0.5	9
1344	1	2.5	No	No	0.5	9
1348	1	1	No	No	0.5	9
1349	1	1	No	No	0.5	9
1357	1	2.5	No	No	0.5	9
1360	1	1	1	1	0.5	9
1397	1	1	1	1	0.5	9
1402	1	1	2.5	No	0.5	9
1404	1	1	1	1	0.5	–
1407	1	No	1	No	0.5	5,9,22
1409	1	1	2.5	No	0.5	–
1410	0.5	1	1	1	0.5	–
1413	1	1	1	1	0.5	–
1414	1	1	1	1	0.5	–
1415	1	No	1	No	0.5	5,10,22
1419	0.5	1	1	No	0.5	–
1423	0.5	No	1	No	0.5	5,9,10,22
1426	1	1	1	1	0.5	–
1427	1	1	1	1	0.5	–
1428	1	No	1	No	0.5	5,9,22
1432	1	1	1	1	0.5	–

1433	1	1	1	1	0.5	–
1517	1	1	No	No	0.5	–
1714	1	1	1	1	0.5	–
1870	1	1	1	1	0.5	–
2010	1	1	1	1	0.5	–
2011	1	1	1	1	0.5	–
2012	1	1	1	1	0.5	–
2013	1	1	1	1	0.5	–
2257	1	No	1	No	0.5	5,9,22
2463	1	1	1	1	0.5	–
3208	1	No	1	No	0.5	5,9,22
3209	1	No	1	No	0.5	5,9,22
3317	1	1	No	No	0.5	9
3401	1	No	1	No	0.5	5,9,22
3402	1	1	2.5	No	0.5	9
3403	1	No	1	No	0.5	5,9,22
3404	1	No	1	No	0.5	5,9,22

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

UN No.	*Steel drums 1A1, 1A2*	*Aluminium drums 1B1, 1B2*	*Steel jerricans 3A1, 3A2*	*Plastic drums 1H1, 1H2*	*Plastic jerricans 3H1, 3H2*	*Composites (plastic) — all*	*Particular packing requirements*
1320	No	No	No	Yes	Yes	Yes	–
1321	No	No	No	Yes	Yes	Yes	–
1322	No	No	No	Yes	Yes	Yes	–
1336	No	No	No	Yes	Yes	Yes	–
1337	No	No	No	Yes	Yes	Yes	–
1344	No	No	No	Yes	Yes	Yes	–
1348	No	No	No	Yes	Yes	Yes	–
1349	No	No	No	Yes	Yes	Yes	–
1357	No	No	No	Yes	Yes	Yes	–
1360	Yes	Yes	Yes	Yes	Yes	Yes	–
1397	Yes	Yes	Yes	Yes	Yes	Yes	–
1402	Yes	No	Yes	Yes	Yes	Yes	–
1404	Yes	Yes	Yes	Yes	Yes	Yes	–
1407	Yes	No	Yes	No	No	No	5,22
1409	Yes	No	Yes	Yes	Yes	Yes	–
1410	Yes	Yes	Yes	Yes	Yes	Yes	–
1413	Yes	Yes	Yes	Yes	Yes	Yes	–
1414	Yes	Yes	Yes	Yes	Yes	Yes	–
1415	Yes	No	Yes	No	No	No	5,22
1419	Yes	No	Yes	Yes	Yes	Yes	–
1423	Yes	No	Yes	No	No	No	5,22
1426	Yes	Yes	Yes	Yes	Yes	Yes	–
1427	Yes	Yes	Yes	Yes	Yes	Yes	–
1428	Yes	No	Yes	No	No	No	5,22
1432	Yes	Yes	Yes	Yes	Yes	Yes	–

1433	Yes	Yes	Yes	Yes	Yes	Yes	–
1517	No	No	No	Yes	Yes	Yes	–
1714	Yes	Yes	Yes	Yes	Yes	Yes	–
1870	Yes	Yes	Yes	Yes	Yes	Yes	–
2010	Yes	Yes	Yes	Yes	Yes	Yes	–
2011	Yes	Yes	Yes	Yes	Yes	Yes	–
2012	Yes	Yes	Yes	Yes	Yes	Yes	–
2013	Yes	Yes	Yes	Yes	Yes	Yes	–
2257	Yes	No	Yes	No	No	No	5,22
2463	Yes	Yes	Yes	Yes	Yes	Yes	–
3208	Yes	No	Yes	No	No	No	5,22
3209	Yes	No	Yes	No	No	No	5,22
3317	No	No	No	Yes	Yes	Yes	–
3401	Yes	No	Yes	No	No	No	5,22
3402	Yes	No	Yes	Yes	Yes	Yes	–
3403	Yes	No	Yes	No	No	No	5,22
3404	Yes	No	Yes	No	No	No	5,22

PARTICULAR PACKING REQUIREMENTS:

5 Steel packagings must be corrosion-resistant or with protection against corrosion.
9 Glass or earthenware inner packagings and glass ampoules must be packed with cushioning material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
10 Copper cartridges only are permitted when the substance is not in dispersion.
22 If the substance is in dispersion in organic liquid, the organic liquid must have a flash point above 50°C.

413 PACKING INSTRUCTION 413 413

The general packing requirements of 4;1 must be met.

Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 L
Plastic (IP.2)	1 L
Metal (IP.3, IP.3A)	2.5 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

414 PACKING INSTRUCTION 414 414

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	2.5 L
Plastic (IP.2)	2.5 L
Metal (IP.3, IP.3A)	5 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Drums
- aluminium (1B1)
- plastic (1H1)
- steel (1A1)

Jerricans
- plastic (3H1)
- steel (3A1)

415 PACKING INSTRUCTION 415 415

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 kg
Plastic (IP.2)	2.5 kg
Metal (IP.3, IP.3A)	2.5 kg
Plastic bag (IP.5)	1 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

Y415 PACKING INSTRUCTION Y415 Y415

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	0.5 kg
Plastic (IP.2)	0.5 kg
Metal (IP.3, IP.3A)	0.5 kg
Plastic bag (IP.5)	0.5 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plywood	plastic	steel
reconstituted wood	plywood	
solid plastic	steel	
steel		
wooden		

416 PACKING INSTRUCTION 416 416

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Aluminium IP.3A (kg)*	*Plastic bag IP.5 (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1310	0.5	No	No	No	No	0.5	–
1320	0.5	0.5	No	No	No	0.5	9
1321	0.5	0.5	No	No	No	0.5	9
1322	0.5	0.5	No	No	No	0.5	9
1326	0.5	2.5	2.5	No	0.5	0.5	–
1336	0.5	0.5	No	No	No	0.5	9
1337	0.5	0.5	No	No	No	0.5	9
1339	0.5	No	2.5	No	No	0.5	–
1340	0.5	No	2.5	No	No	0.5	–
1341	0.5	No	2.5	No	No	0.5	–
1343	0.5	No	2.5	No	No	0.5	–
1344	0.5	0.5	No	No	No	0.5	9
1348	0.5	0.5	No	No	No	0.5	9
1352	0.5	2.5	2.5	No	0.5	0.5	–
1354	0.5	0.5	No	No	No	0.5	9
1355	0.5	0.5	No	No	No	0.5	9
1356	0.5	0.5	No	No	No	0.5	9
1357	0.5	0.5	No	No	No	0.5	9
1358	0.5	2.5	2.5	No	0.5	0.5	–
1369	1	2.5	2.5	No	No	0.5	–

	1378	1	No	1	No	No	0.5	9
	1382	1	2.5	2.5	No	No	0.5	–
	1384	0.5	1	2.5	2.5	No	0.5	–
	1385	1	2.5	2.5	No	No	0.5	–
	1390	1	1	1	1	No	0.5	2,5,9
	1394	1	1	2.5	No	No	0.5	–
	1402	1	1	2.5	No	No	0.5	9
	1409	1	2.5	2.5	No	No	0.5	–
	1417	0.5	0.5	1	1	No	0.5	–
	1431	1	1	1	No	No	0.5	5
	1437	0.5	0.5	2.5	No	No	0.5	–
	1517	0.5	0.5	No	No	No	0.5	–
	1571	0.5	0.5	No	No	No	0.5	9
	1871	0.5	2.5	2.5	No	1	0.5	–
	1923	0.5	1	2.5	2.5	No	0.5	–
	1929	0.5	1	2.5	2.5	No	0.5	–
	2004	0.5	1	2.5	2.5	No	0.5	9
	2008	0.5	1	2.5	No	No	0.5	–
	2318	1	1	1	1	No	0.5	5
	2545	0.5	1	2.5	No	No	0.5	–
	2546	0.5	1	2.5	No	No	0.5	–
	2555	1	1	1	1	1	0.5	–
	2556	1	1	1	1	1	0.5	–
	2557	1	1	1	1	1	0.5	–
	2624	0.5	0.5	1	1	No	0.5	–
	2805	1	1	1	1	No	0.5	–
	2852	0.25	No	No	No	No	0.1	–
	2881	1	No	1	No	No	0.5	9
	3182	0.5	0.5	2.5	No	No	0.5	–
	3205	1	1	1	No	No	0.5	5
	3206	1	1	1	No	No	0.5	5
	3208	1	No	1	No	No	0.5	5,22
	3209	1	No	1	No	No	0.5	5,22
	3317	0.5	0.5	No	No	No	0.5	9
	3364	0.5	0.5	No	No	No	0.5	9
	3365	0.5	0.5	No	No	No	0.5	9
	3366	0.5	0.5	No	No	No	0.5	9
	3367	0.5	0.5	No	No	No	0.5	9
	3368	0.5	0.5	No	No	No	0.5	9
	3369	0.5	0.5	No	No	No	0.5	9
	3370	0.5	0.5	No	No	No	0.5	9
+	3474	0.5	0.5	No	No	No	0.5	—

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

PARTICULAR PACKING REQUIREMENTS:

2 Plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
5 Steel packagings must be corrosion-resistant or with protection against corrosion.
9 Glass or earthenware inner packagings and glass ampoules must be packed with cushioning material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
22 If the substance is in dispersion in organic liquid, the organic liquid must have a flash point above 50°C.

Y416 PACKING INSTRUCTION Y416 Y416

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Aluminium IP.3A (kg)*	*Plastic bag IP.5 (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1326	0.5	0.5	0.5	No	0.5	0.5	–
1339	0.5	No	0.5	No	No	0.5	–
1340	0.5	No	0.5	No	No	0.5	–
1341	0.5	No	0.5	No	No	0.5	–
1343	0.5	No	0.5	No	No	0.5	–
1352	0.5	0.5	0.5	No	0.5	0.5	–
1358	0.5	0.5	0.5	No	0.5	0.5	–
1390	0.5	0.5	0.5	0.5	No	0.5	2,5,9
1394	0.5	0.5	0.5	No	No	0.5	–
1402	0.5	0.5	0.5	No	No	0.5	9
1409	0.5	0.5	0.5	No	No	0.5	–
1417	0.5	0.5	0.5	0.5	No	0.5	–
1437	0.5	0.5	0.5	No	No	0.5	–
1871	0.5	0.5	0.5	No	0.5	0.5	–
2624	0.5	0.5	0.5	0.5	No	0.5	–
2805	0.5	0.5	0.5	0.5	No	0.5	–
3182	0.5	0.5	0.5	No	No	0.5	–
3208	0.5	No	0.5	No	No	0.5	5,22

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plywood	plastic	steel
reconstituted wood	plywood	
solid plastic	steel	
steel		
wooden		

PARTICULAR PACKING REQUIREMENTS:

2 Plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
5 Steel packagings must be corrosion-resistant or with protection against corrosion.
9 Glass or earthenware inner packagings and glass ampoules must be packed with cushioning material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
22 If the substance is in dispersion in organic liquid, the organic liquid must have a flash point above 50°C.

417 PACKING INSTRUCTION 417 417

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	2.5 kg
Plastic (IP.2)	5 kg
Metal (IP.3, IP.3A)	5 kg
Plastic bag (IP.5)	2.5 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Drums
- aluminium (1B1, 1B2)
- fibre (1G with inner plastic liner) — not permitted for Divisions 4.2 and 4.3
- plastic (1H1, 1H2)
- plywood (1D with inner plastic liner) — not permitted for Divisions 4.2 and 4.3
- steel (1A1, 1A2)

Jerricans
- plastic (3H1, 3H2)
- steel (3A1, 3A2)

418 PACKING INSTRUCTION 418 418

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Aluminium IP.3A (kg)*	*Plastic bag IP.5 (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1326	2.5	5	5	No	2.5	0.5	–
1339	0.5	5	5	No	No	0.5	–
1340	0.5	5	5	No	No	0.5	–
1341	0.5	5	5	No	No	0.5	–
1343	0.5	5	5	No	No	0.5	–
1352	2.5	5	5	No	2.5	0.5	–
1358	2.5	5	5	No	2.5	0.5	–
1369	2.5	5	5	No	No	0.5	–
1382	2.5	5	5	No	No	0.5	–
1384	1	2.5	5	5	No	0.5	–

1385	2.5	5	5	No	No	0.5	–
1390	2.5	2.5	2.5	2.5	No	0.5	2,5,9
1394	2.5	2.5	5	No	No	0.5	–
1402	2.5	2.5	5	No	No	0.5	9
1409	2.5	5	5	No	No	0.5	–
1417	1	1	5	5	No	0.5	9
1431	2.5	2.5	2.5	No	No	0.5	5
1437	1	1	5	No	No	0.5	–
1868	2.5	2.5	5	2.5	No	0.5	–
1871	1	5	5	No	No	0.5	–
1923	1	2.5	5	5	No	0.5	–
1929	1	2.5	5	5	No	0.5	–
2004	1	2.5	5	5	No	0.5	9
2008	1	2.5	5	No	No	0.5	–
2318	2.5	2.5	2.5	2.5	No	0.5	5
2545	1	2.5	5	No	No	0.5	–
2546	1	2.5	5	No	No	0.5	–
2555	1	1	1	1	2.5	0.5	–
2556	1	1	1	1	2.5	0.5	–
2557	1	1	1	1	2.5	0.5	–
2624	1	1	5	5	No	0.5	–
2805	2.5	2.5	2.5	2.5	No	0.5	9
2835	2.5	5	5	5	No	0.5	9
3182	1	1	5	No	No	0.5	–
3205	2.5	2.5	2.5	No	No	0.5	5
3206	2.5	2.5	2.5	No	No	0.5	5
3208	2.5	No	2.5	No	No	0.5	5,22
3209	2.5	No	2.5	No	No	0.5	5,22

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

UN No.	*Steel drums 1A1, 1A2*	*Aluminium drums 1B1, 1B2*	*Steel jerricans 3A1, 3A2*	*Fibre drums 1G sift-proof*	*Fibre drums 1G with inner plastic liner*	*Plastic drums 1H1, 1H2*	*Plastic jerricans 3H1, 3H2*	*Composites (plastic) — all*	*Particular packing requirements*
1326	Yes	No	Yes	No	No	Yes	Yes	Yes	–
1339	Yes	No	Yes	No	Yes	Yes	Yes	Yes	–
1340	Yes	No	Yes	No	Yes	Yes	Yes	Yes	–
1341	Yes	No	Yes	No	Yes	Yes	Yes	Yes	–
1343	Yes	No	Yes	No	Yes	Yes	Yes	Yes	–
1352	Yes	No	Yes	No	No	Yes	Yes	Yes	–
1358	Yes	No	Yes	No	No	Yes	Yes	Yes	–
1369	Yes	No	Yes	No	No	Yes	Yes	Yes	–
1382	Yes	No	Yes	No	No	Yes	Yes	Yes	–
1384	Yes	Yes	Yes	No	No	No	No	Yes	–

1385	Yes	No	Yes	No	No	Yes	Yes	Yes	–
1390	Yes	Yes	Yes	No	No	Yes	Yes	Yes	5
1394	Yes	No	Yes	No	No	Yes	Yes	Yes	–
1402	Yes	No	Yes	No	No	Yes	Yes	Yes	–
1409	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	–
1417	Yes	Yes	Yes	No	No	Yes	Yes	Yes	–
1431	Yes	No	Yes	No	No	Yes	Yes	Yes	5
1437	Yes	No	Yes	No	No	Yes	Yes	Yes	–
1868	Yes	Yes	Yes	No	No	Yes	Yes	Yes	–
1871	Yes	No	Yes	No	No	Yes	Yes	Yes	–
1923	Yes	Yes	Yes	No	No	Yes	Yes	Yes	–
1929	Yes	Yes	Yes	No	No	Yes	Yes	Yes	–
2004	Yes	Yes	Yes	No	No	Yes	Yes	Yes	–
2008	Yes	No	Yes	No	No	Yes	Yes	Yes	–
2318	Yes	Yes	Yes	No	No	Yes	Yes	Yes	5
2545	Yes	No	Yes	No	No	Yes	Yes	Yes	–
2546	Yes	No	Yes	No	No	Yes	Yes	Yes	–
2555	Yes	Yes	Yes	No	Yes	No	No	Yes	–
2556	Yes	Yes	Yes	No	Yes	No	No	Yes	–
2557	Yes	Yes	Yes	No	Yes	No	No	Yes	–
2624	Yes	Yes	Yes	No	No	Yes	Yes	Yes	–
2805	Yes	Yes	Yes	No	No	Yes	Yes	Yes	–
2835	Yes	Yes	Yes	No	No	Yes	Yes	Yes	–
3182	Yes	No	Yes	No	No	Yes	Yes	Yes	–
3205	Yes	No	Yes	No	No	Yes	Yes	Yes	5
3206	Yes	No	Yes	No	No	Yes	Yes	Yes	5
3208	Yes	No	Yes	No	No	No	No	No	5,22
3209	Yes	No	Yes	No	No	No	No	No	5,22

PARTICULAR PACKING REQUIREMENTS:

2 Plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
5 Steel packagings must be corrosion-resistant or with protection against corrosion.
9 Glass or earthenware inner packagings and glass ampoules must be packed with cushioning material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
22 If the substance is in dispersion in organic liquid, the organic liquid must have a flash point above 50°C.

419 PACKING INSTRUCTION 419 419

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	5 kg
Plastic (IP.2)	10 kg
Metal (IP.3, IP.3A)	10 kg
Plastic bag (IP.5)	5 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
expanded plastic (4H1)	fibre (1G)	plastic (3H2)
fibreboard (4G)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
solid plastic (4H2)		
steel (4A)		
wooden (4C1, 4C2)		

Y419 PACKING INSTRUCTION Y419 Y419

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 kg
Plastic (IP.2)	1 kg
Metal (IP.3, IP.3A)	1 kg
Plastic bag (IP.5)	1 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
expanded plastic	fibre	plastic
fibreboard	plastic	steel
plywood	plywood	
reconstituted wood	steel	
solid plastic		
steel		
wooden		

420 PACKING INSTRUCTION 420 420

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	5 kg
Plastic (IP.2)	10 kg
Metal (IP.3, IP.3A)	10 kg
Plastic bag (IP.5)	5 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
expanded plastic (4H1)	fibre (1G)	plastic (3H2)
fibreboard (4G)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
solid plastic (4H2)		
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Drums
- aluminium (1B1, 1B2)
- fibre (1G with inner plastic liner) — not permitted for Divisions 4.2 and 4.3
- plastic (1H1, 1H2)
- plywood (1D with inner plastic liner) — not permitted for Divisions 4.2 and 4.3
- steel (1A1, 1A2)

Jerricans
- plastic (3H1, 3H2)
- steel (3A1, 3A2)

421 PACKING INSTRUCTION 421 421

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Aluminium IP.3A (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1313	2.5	2.5	10	10	0.5	–
1314	2.5	2.5	10	10	0.5	–
1318	2.5	2.5	10	10	0.5	–
1338	1	2.5	10	10	0.5	–
1408	2.5	2.5	10	10	0.5	–

2881	2.5	No	5	No	0.5	9
3182	5	5	10	No	0.5	–
3205	5	5	10	No	0.5	5
3206	5	5	10	No	0.5	5
3208	5	No	10	No	0.5	5,22
3209	5	No	10	No	0.5	5,22

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
expanded plastic (4H1)	fibre (1G)	plastic (3H2)
fibreboard (4G)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
solid plastic (4H2)		
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

UN No.	*Steel drums 1A1, 1A2*	*Aluminium drums 1B1, 1B2*	*Steel jerricans 3A1, 3A2*	*Plastic drums 1H1, 1H2*	*Plastic jerricans 3H1, 3H2*	*Composites (plastic) — all*	*Particular packing requirements*
1313	Yes	Yes	Yes	Yes	Yes	Yes	–
1314	Yes	Yes	Yes	Yes	Yes	Yes	–
1318	Yes	Yes	Yes	Yes	Yes	Yes	–
1338	Yes	Yes	Yes	Yes	Yes	Yes	–
1408	Yes	Yes	Yes	Yes	Yes	Yes	–
2881	Yes	No	Yes	No	No	No	–
3182	Yes	No	Yes	Yes	Yes	Yes	–
3205	Yes	No	Yes	Yes	No	Yes	5
3206	Yes	No	Yes	Yes	No	Yes	5
3208	Yes	No	Yes	No	No	No	5,22
3209	Yes	No	Yes	No	No	No	5,22

PARTICULAR PACKING REQUIREMENTS:

5 Steel packagings must be corrosion-resistant or with protection against corrosion.
9 Glass or earthenware inner packagings and glass ampoules must be packed with cushioning material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
22 If the substance is in dispersion in organic liquid, the organic liquid must have a flash point above 50°C.

422 PACKING INSTRUCTION 422 422

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Aluminium IP.3A (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1313	1	No	5	5	0.5	–
1314	1	No	5	5	0.5	–
1318	1	No	5	5	0.5	–
1338	0.5	No	5	5	0.5	–
1408	1	1	5	5	0.5	–

2881	1	No	1	No	0.5	9
3182	1	1	5	No	0.5	–
3205	2.5	2.5	2.5	No	0.5	5
3206	2.5	2.5	2.5	No	0.5	5
3208	2.5	No	2.5	No	0.5	5,22
3209	2.5	No	2.5	No	0.5	5,22

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
solid plastic (4H2)		
steel (4A)		
wooden (4C1, 4C2)		

PARTICULAR PACKING REQUIREMENTS:

5 Steel packagings must be corrosion-resistant or with protection against corrosion.
9 Glass or earthenware inner packagings and glass ampoules must be packed with cushioning material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
22 If the substance is in dispersion in organic liquid, the organic liquid must have a flash point above 50°C.

Y422 PACKING INSTRUCTION Y422 Y422

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Aluminium IP.3A (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1313	1	No	1	1	0.5	–
1314	1	No	1	1	0.5	–
1318	1	No	1	1	0.5	–
1338	0.5	No	1	1	0.5	–
1408	1	1	1	1	0.5	–
3182	1	1	1	No	0.5	–
3208	1	No	1	No	0.5	5,22

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	steel
plywood	plywood	
reconstituted wood	steel	
solid plastic		
steel		
wooden		

PARTICULAR PACKING REQUIREMENTS:

5 Steel packagings must be corrosion-resistant or with protection against corrosion.
22 If the substance is in dispersion in organic liquid, the organic liquid must have a flash point above 50°C.

425 PACKING INSTRUCTION 425 425

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	5 L
Plastic (IP.2)	5 L
Metal (IP.3, IP.3A)	10 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Drums
- aluminium (1B1)
- plastic (1H1)
- steel (1A1)

Jerricans
- plastic (3H1)
- steel (3A1)

426 PACKING INSTRUCTION 426 426

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

All the packagings used must be airtight.

COMBINATION PACKAGINGS:

INNER:

Plastic (IP.2)	0.1 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
steel (4A)	steel (1A2)	steel (3A2)

427 PACKING INSTRUCTION 427 427

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Plastic IP.2 (L)*
3223	0.5
3225	0.5
3227	1
3229	1

OUTER:

Boxes	*Drums*
fibreboard (4G)	fibre (1G)
plywood (4D)	
solid plastic (4H2)	
wooden (4C1)	

428 PACKING INSTRUCTION 428 428

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Plastic IP.2 (L)*
3223	1
3225	1
3227	2.5
3229	2.5

OUTER:

Boxes	*Drums*
fibreboard (4G)	fibre (1G)
plywood (4D)	
solid plastic (4H2)	
wooden (4C1)	

429 PACKING INSTRUCTION 429 429

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Plastic IP.2 (kg)*	*Plastic bag IP.5 (kg)*
3224	0.5	0.5
3226	0.5	0.5
3228	1	1
3230	1	1

OUTER:

Boxes	*Drums*
fibreboard (4G) plywood (4D) solid plastic (4H2) wooden (4C1)	fibre (1G)

430 PACKING INSTRUCTION 430 430

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Plastic IP.2 (kg)*	*Plastic bag IP.5 (kg)*
3224	1	1
3226	1	1
3228	2.5	2.5
3230	2.5	2.5

OUTER:

Boxes	*Drums*
fibreboard (4G) plywood (4D) solid plastic (4H2) wooden (4C1)	fibre (1G)

431 PACKING INSTRUCTION 431 431

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Metal (not aluminium) IP.3 (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
3399	2.5	2.5	0.5	8,13

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

PARTICULAR PACKING REQUIREMENTS:

8 Only metal cylinders that meet the requirements of 4;2.7 are permitted.
13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

432 PACKING INSTRUCTION 432 432

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Metal (not aluminium) IP.3 (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
3399	5	5	0.5	8,13

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

UN No.	*Cylinders (as permitted by 4;2.7)*
3399	Yes

PARTICULAR PACKING REQUIREMENTS:

8 Only metal cylinders that meet the requirements of 4;2.7 are permitted.
13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

433 PACKING INSTRUCTION 433 433

Cells must be packed in accordance with the general packing requirements of 4;1 and be in steel drums (1A2), aluminium drums (1B2), plywood drums (1D), fibre drums (1G), plastic drums (1H2), aluminium jerricans (3B2), steel boxes (4A), aluminium boxes (4B), wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G) or solid plastic boxes (4H2). Packagings must meet Packing Group II requirements. Sufficient cushioning material must be provided to prevent contact between cells, and between cells and the internal surfaces of the outer packagings, and to ensure that no dangerous movement of the cells within the outer packaging occurs in transport.

Batteries may be offered for transport and transported unpacked, or in protective enclosures such as fully enclosed or wooden slatted crates that are not subject to the requirements of Part 6 of these Instructions.

434 PACKING INSTRUCTION 434 434

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	0.5 kg
Plastic (IP.2)	1 kg
Plastic bag (IP.5)	1 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
expanded plastic (4H1)	fibre (1G)	plastic (3H2)
fibreboard (4G)	plastic (1H2)	
plywood (4D)	plywood (1D)	
reconstituted wood (4F)		
solid plastic (4H2)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — 6HC, 6HD1, 6HD2, 6HG1, 6HG2, 6HH1, 6HH2
Drums
- fibre, sift-proof (1G)
- fibre (1G with inner plastic liner)
- plastic (1H1, 1H2)
- plywood (1D)

Jerricans
- plastic (3H1, 3H2)

Y434 PACKING INSTRUCTION Y434 Y434

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	0.5 kg
Plastic (IP.2)	0.5 kg
Plastic bag (IP.5)	0.5 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
expanded plastic	fibre	plastic
fibreboard	plastic	
plywood	plywood	
reconstituted wood		
solid plastic		
wooden		

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PACKING INSTRUCTION 495

Passenger and cargo aircraft for un 3476 only

General requirements

Part 4;1.1.1, 1.1.2 and 1.1.7 requirements must be met, including:

1) C**ompatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3476 **Fuel cell cartridges**	5 kg of fuel cell cartridges	50 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— Fuel cell cartridges must be securely cushioned in the outer packagings.
— The mass of each fuel cell cartridge must not exceed 1 kg.
— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium(4B)	Aluminium(1B2)	Steel (3A2)
Fibreboard (4G)	Fibreboard (1G)	Plastics(3H2)
Natural wood (4C1, 4C2)	Plastic (1H2)	Aluminium (3B2)
Plastic (4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

+

PACKING INSTRUCTION 496

Passenger and cargo aircraft for UN 3476 (contained in equipment) only

General requirements

Part 4;1.1.1 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3476 **Fuel cell cartridges contained in equipment**	5 kg of fuel cell cartridges	50 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— Fuel cell cartridges that are contained in equipment must be protected against short circuit and the equipment must be protected against inadvertent operation.
— Equipment must be securely cushioned in the outer packagings.
— The mass of each fuel cell cartridge must not exceed 1 kg.
— Fuel cell systems must not charge batteries during transport.
— On passenger aircraft, each fuel cell system and each fuel cell cartridge must conform to IEC PAS 62282-6-1 Ed. 1 or a standard approved by the appropriate authority of the State of Origin.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes *Drums* *Jerricans*

Strong outer packagings

+

PACKING INSTRUCTION 497

Passenger and cargo aircraft for UN 3476 (packed with equipment) only

General requirements

Part 4;1.1.1 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3476 **Fuel cell cartridges packed with equipment**	5 kg of fuel cell cartridges	50 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— When fuel cell cartridges are packed with equipment, they must be packed in intermediate packagings together with the equipment they are capable of powering.
— The maximum number of fuel cell cartridges in the intermediate packaging must be the minimum number required to power the equipment, plus two spares.
— The fuel cell cartridges and the equipment must be packed with cushioning material or divider(s) or inner packaging so that the fuel cell cartridges are protected against damage that may be caused by the movement or placement of the equipment and the cartridges within the packaging.
— The mass of each fuel cell cartridge must not exceed 1 kg.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
	Strong outer packagings	

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499	PACKING INSTRUCTION 499	499

Only packagings which are approved by the appropriate national authority for these substances may be used (see 4;2.8). A copy of this approval must accompany each consignment or an annotation that it has been granted must be included with the transport document.

Chapter 7

CLASS 5 — OXIDIZING SUBSTANCES; ORGANIC PEROXIDES

7.1 GENERAL REQUIREMENTS FOR ORGANIC PEROXIDES

7.1.1 Unless otherwise provided in these Instructions, the packaging used for goods of Division 5.2 must meet Packing Group II requirements. To avoid unnecessary confinement, metal packaging meeting Packing Group I requirements must not be used.

7.1.2 Venting of packages is not permitted for air transport.

7.1.3 The packaging of organic peroxides presenting an explosive subsidiary risk must comply with the provisions of 4;3.2.2 and 4;3.2.3.

7.2 PACKING INSTRUCTIONS

500	PACKING INSTRUCTION 500	500

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Plastic IP.2 (L)*
3103	0.5
3105	0.5
3107	1
3109	1

OUTER:

Boxes	*Drums*
fibreboard (4G) plywood (4D) solid plastic (4H2) wooden (4C1)	fibre (1G)

501 PACKING INSTRUCTION 501 501

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Aluminium IP.3A (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
1873	1	1	1	1	1	13
2014	0.5	0.5	No	0.5	0.5	2,13
2429	0.5	0.5	No	No	0.5	–
3098	0.5	0.5	0.5	No	0.5	2,13
3099	1	1	1	No	0.5	2,13
3139	0.1	0.1	0.1	No	0.1	2,13
3149	1	1	No	No	0.5	2,13
3210	0.5	0.5	No	No	0.5	–
3211	0.5	0.5	No	No	0.5	–
3405	1	1	1	No	0.5	2,13
3406	1	1	1	No	0.5	2,13
3407	1	1	1	No	0.5	2,13
3408	1	1	1	No	0.5	2,13

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

PARTICULAR PACKING REQUIREMENTS:

2 Plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

Y501 PACKING INSTRUCTION Y501 Y501

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Aluminium IP.3A (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
2014	0.1	0.1	No	0.1	0.1	2,13
2429	0.1	0.1	No	No	0.1	–
3098	0.1	0.1	0.1	No	0.1	2,13
3099	0.1	0.1	0.1	No	0.1	2,13
3139	0.1	0.1	0.1	No	0.1	2,13
3210	0.1	0.1	No	No	0.1	–
3211	0.1	0.1	No	No	0.1	–
3405	0.1	0.1	0.1	No	0.1	2,13
3406	0.1	0.1	No	No	0.1	2,13
3407	0.1	0.1	No	No	0.1	2,13
3408	0.1	0.1	No	No	0.1	2,13

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plywood	plastic	steel
reconstituted wood	plywood	
solid plastic	steel	
steel		
wooden		

PARTICULAR PACKING REQUIREMENTS:

2 Plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

502 PACKING INSTRUCTION 502 502

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Plastic IP.2 (L)*
3103	1
3105	1
3107	2.5
3109	2.5

OUTER:

Boxes	*Drums*
fibreboard (4G)	fibre (1G)
plywood (4D)	
solid plastic (4H2)	
wooden (4C1)	

503 PACKING INSTRUCTION 503 503

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 L
Plastic (IP.2)	1 L
Metal (IP.3, IP.3A)	1 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

Y503 PACKING INSTRUCTION Y503 Y503

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	0.1 L
Plastic (IP.2)	0.1 L
Metal (IP.3, IP.3A)	0.1 L
Glass ampoule (IP.8)	0.1 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plywood	plastic	steel
reconstituted wood	plywood	
solid plastic	steel	
steel		
wooden		

505 PACKING INSTRUCTION 505 505

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	2.5 L
Plastic (IP.2)	2.5 L
Metal (IP.3, IP.3A)	2.5 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

506 PACKING INSTRUCTION 506 506

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Aluminium IP.3A (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
2014	1	1	1	0.5	2,13
2429	1	1	No	0.5	–
3098	1	1	No	0.5	2,13
3099	1	1	No	0.5	2,13
3149	1	1	No	0.5	2,13
3210	1	1	No	0.5	–
3211	1	1	No	0.5	–
3405	1	1	No	0.5	2,13
3406	1	1	No	0.5	2,13
3407	1	1	No	0.5	2,13
3408	1	1	No	0.5	2,13

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

PARTICULAR PACKING REQUIREMENTS:

2 Plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

Y506 PACKING INSTRUCTION Y506 Y506

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Glass ampoule IP.8 (L)*
2429	0.5	0.5	0.5
3210	0.5	0.5	0.5
3211	0.5	0.5	0.5

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plywood	plastic	steel
reconstituted wood	plywood	
solid plastic	steel	
steel		
wooden		

507 PACKING INSTRUCTION 507 507

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Glass ampoule IP.8 (L)*
2429	5	5	0.5
3210	5	5	0.5
3211	5	5	0.5

OUTER:

Boxes	*Drums*	*Jerricans*
fibreboard (4G)	aluminium (1B2)	plastic (3H2)
plastic (4H1, 4H2)	fibre (1G)	steel (3A2)
plywood (4D)	plastic (1H2)	
reconstituted wood (4F)	plywood (1D)	
wooden (4C1, 4C2)	steel (1A2)	

SINGLE PACKAGINGS:

Composites (plastic) — all

508 PACKING INSTRUCTION 508 508

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 kg
Plastic (IP.2)	1 kg
Metal (IP.3, IP.3A)	1 kg
Paper (IP.4)	1 kg
Plastic bag (IP.5)	1 kg
Fibre (IP.6)	1 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

Y508 PACKING INSTRUCTION Y508 Y508

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	0.5 kg
Plastic (IP.2)	0.5 kg
Metal (IP.3, IP.3A)	0.5 kg
Paper (IP.4)	0.5 kg
Plastic bag (IP.5)	0.5 kg
Fibre (IP.6)	0.5 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plywood	plastic	steel
reconstituted wood	plywood	
solid plastic	steel	
steel		
wooden		

509 PACKING INSTRUCTION 509 509

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Plastic bag IP.5 (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1442	0.5	0.5	0.5	0.5	0.5	4
1445	0.5	0.5	0.5	0.5	0.5	4
1449	0.5	0.5	0.5	0.5	0.5	4
1452	0.5	0.5	0.5	0.5	0.5	4
1453	0.5	0.5	0.5	0.5	0.5	4
1458	0.5	0.5	0.5	0.5	0.5	4
1459	0.5	0.5	0.5	0.5	0.5	4
1461	0.5	0.5	0.5	0.5	0.5	4
1462	0.5	0.5	0.5	No	0.5	5
1471	0.5	0.5	0.5	0.5	0.5	4
1472	0.5	0.5	0.5	0.5	0.5	4
1479	1	1	1	No	0.5	–
1483	0.5	0.5	0.5	No	0.5	5
1485	0.5	0.5	0.5	0.5	0.5	4
1495	0.5	0.5	0.5	0.5	0.5	4

1496	0.5	0.5	0.5	0.5	0.5	4
1506	0.5	0.5	0.5	0.5	0.5	4
1513	0.5	0.5	0.5	0.5	0.5	4
1748	0.5	0.5	0.5	0.5	0.5	4,5
2741	0.5	0.5	0.5	0.5	0.5	4,5
3212	0.5	0.5	0.5	0.5	0.5	4,5

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

PARTICULAR PACKING REQUIREMENTS:

4 Plastic bags must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
5 Steel packagings must be corrosion-resistant or with protection against corrosion.

Y509 PACKING INSTRUCTION Y509 Y509

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Plastic bag IP.5 (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1442	0.5	0.5	0.5	0.5	0.5	4
1445	0.5	0.5	0.5	0.5	0.5	4
1449	0.5	0.5	0.5	0.5	0.5	4
1452	0.5	0.5	0.5	0.5	0.5	4
1453	0.5	0.5	0.5	0.5	0.5	4
1458	0.5	0.5	0.5	0.5	0.5	4
1459	0.5	0.5	0.5	0.5	0.5	4
1461	0.5	0.5	0.5	0.5	0.5	4
1462	0.5	0.5	0.5	No	0.5	5
1471	0.5	0.5	0.5	0.5	0.5	4
1472	0.5	0.5	0.5	0.5	0.5	4
1483	0.5	0.5	0.5	No	0.5	5
1485	0.5	0.5	0.5	0.5	0.5	4
1495	0.5	0.5	0.5	0.5	0.5	4
1496	0.5	0.5	0.5	0.5	0.5	4
1506	0.5	0.5	0.5	0.5	0.5	4
1513	0.5	0.5	0.5	0.5	0.5	4
1748	0.5	0.5	0.5	0.5	0.5	4,5
2741	0.5	0.5	0.5	0.5	0.5	4,5
3212	0.5	0.5	0.5	0.5	0.5	4,5

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plywood	plastic	steel
reconstituted wood	plywood	
solid plastic	steel	
steel		
wooden		

PARTICULAR PACKING REQUIREMENTS:

4 Plastic bags must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
5 Steel packagings must be corrosion-resistant or with protection against corrosion.

510 PACKING INSTRUCTION 510 510

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Plastic IP.2 (kg)*	*Plastic bag IP.5 (kg)*
3104	0.5	0.5
3106	0.5	0.5
3108	1	1
3110	1	1

OUTER:

Boxes	*Drums*
fibreboard (4G)	fibre (1G)
plywood (4D)	
solid plastic (4H2)	
wooden (4C1)	

511 PACKING INSTRUCTION 511 511

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	2.5 kg
Plastic (IP.2)	2.5 kg
Metal (IP.3, IP.3A)	5 kg
Paper (IP.4)	2.5 kg
Plastic bag (IP.5)	2.5 kg
Fibre (IP.6)	2.5 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Drums
- aluminium (1B1, 1B2)
- fibre (1G with inner plastic liner)
- plastic (1H1, 1H2)
- plywood (1D with inner plastic liner)
- steel (1A1, 1A2)

Jerricans
- plastic (3H1, 3H2)
- steel (3A1, 3A2)

512 PACKING INSTRUCTION 512 512

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Plastic bag IP.5 (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1442	2.5	2.5	2.5	1	0.5	4
1445	2.5	2.5	2.5	1	0.5	4
1449	1	1	1	1	0.5	4
1452	2.5	2.5	2.5	1	0.5	4
1453	2.5	2.5	2.5	1	0.5	4
1458	2.5	2.5	2.5	1	0.5	4
1459	2.5	2.5	2.5	1	0.5	4
1461	2.5	2.5	2.5	1	0.5	4
1462	1	1	1	No	0.5	5
1471	2.5	2.5	1	1	0.5	4
1472	1	1	1	1	0.5	4
1479	2.5	2.5	5	No	0.5	–
1483	2.5	2.5	2.5	No	0.5	5
1485	2.5	2.5	2.5	1	0.5	4
1491	1	1	1	No	0.5	–
1495	2.5	2.5	2.5	1	0.5	4
1496	1	1	1	1	0.5	4
1504	1	1	1	No	0.5	–
1506	2.5	2.5	2.5	1	0.5	4
1513	2.5	2.5	2.5	1	0.5	4
1748	2.5	2.5	2.5	1	0.5	4,5
2466	1	1	1	No	0.5	–
2547	1	1	1	No	0.5	–
2741	2.5	2.5	2.5	1	0.5	4,5
3212	2.5	2.5	2.5	1	0.5	4,5
3378	2.5	2.5	2.5	1	0.5	4,5

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

UN No.	*Steel drums 1A1, 1A2*	*Steel jerricans 3A1, 3A2*	*Plywood drums (1D) with inner plastic liner or Fibre drums (1G) with inner plastic liner*	*Plastic drums 1H1, 1H2*	*Plastic jerricans 3H1, 3H2*	*Composites (plastic) — all*	*Particular packing requirements*
1442	Yes	Yes	Yes	Yes	Yes	Yes	–
1445	Yes	Yes	Yes	Yes	Yes	Yes	–
1449	Yes	Yes	No	Yes	Yes	Yes	–
1452	Yes	Yes	Yes	Yes	Yes	Yes	–
1453	Yes	Yes	Yes	Yes	Yes	Yes	–
1458	Yes	Yes	Yes	Yes	Yes	Yes	–
1459	Yes	Yes	Yes	Yes	Yes	Yes	–
1461	Yes	Yes	Yes	Yes	Yes	Yes	–
1462	Yes	Yes	Yes	Yes	Yes	Yes	5
1471	Yes	Yes	Yes	Yes	Yes	Yes	–
1472	Yes	Yes	Yes	Yes	Yes	Yes	–
1479	Yes	Yes	No	Yes	Yes	Yes	–
1483	Yes	Yes	Yes	Yes	Yes	Yes	5
1485	Yes	Yes	Yes	Yes	Yes	Yes	–
1491	Yes	Yes	No	No	No	Yes	–
1495	Yes	Yes	Yes	Yes	Yes	Yes	–
1496	Yes	Yes	Yes	Yes	Yes	Yes	–
1504	Yes	Yes	No	No	No	Yes	–
1506	Yes	Yes	Yes	Yes	Yes	Yes	–
1513	Yes	Yes	Yes	Yes	Yes	Yes	–
1748	Yes	Yes	Yes	Yes	Yes	Yes	5
2466	Yes	Yes	No	Yes	Yes	Yes	–
2547	Yes	Yes	No	Yes	Yes	Yes	–
2741	Yes	Yes	Yes	Yes	Yes	Yes	5
3212	Yes	Yes	Yes	Yes	Yes	Yes	5
3378	Yes	Yes	Yes	Yes	Yes	Yes	5

PARTICULAR PACKING REQUIREMENTS:

4 Plastic bags must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
5 Steel packagings must be corrosion-resistant or with protection against corrosion.

513 PACKING INSTRUCTION 513 513

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Plastic IP.2 (kg)*	*Plastic bag IP.5 (kg)*
3104	1	1
3106	1	1
3108	2.5	2.5
3110	2.5	2.5

OUTER:

Boxes	*Drums*
fibreboard (4G)	fibre (1G)
plywood (4D)	
solid plastic (4H2)	
wooden (4C1)	

514 PACKING INSTRUCTION 514 514

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	2.5 L
Plastic (IP.2)	2.5 L
Aluminium (IP.3A)	2.5 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

Y514 PACKING INSTRUCTION Y514 Y514

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	0.5 L
Plastic (IP.2)	0.5 L
Aluminium (IP.3A)	0.5 L
Glass ampoule (IP.8)	0.5 L

For UN 3098, glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plastic	plastic	steel
plywood	plywood	
reconstituted wood	steel	
steel		
wooden		

515 PACKING INSTRUCTION 515 515

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	5 L
Plastic (IP.2)	5 L
Aluminium (IP.3A)	5 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
fibreboard (4G)	aluminium (1B2)	plastic (3H2)
plastic (4H1, 4H2)	fibre (1G)	steel (3A2)
plywood (4D)	plastic (1H2)	
reconstituted wood (4F)	plywood (1D)	
wooden (4C1, 4C2)	steel (1A2)	

SINGLE PACKAGINGS:

Composites (plastic) — all
Drums, aluminium (1B1)

516 PACKING INSTRUCTION 516 516

The general packing requirements of 3;4 must be met.

All of the following packagings must meet Packing Group II performance requirements.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	2.5 kg
Plastic (IP.2)	2.5 kg
Metal (IP.3, IP.3A)	2.5 kg
Paper (IP.4)	2.5 kg
Plastic bag (IP.5)	2.5 kg
Fibre (IP.6)	2.5 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

Y516 PACKING INSTRUCTION Y516 Y516

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 kg
Plastic (IP.2)	1 kg
Metal (IP.3, IP.3A)	1 kg
Paper (IP.4)	1 kg
Plastic bag (IP.5)	1 kg
Fibre (IP.6)	1 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plastic	plastic	steel
plywood	plywood	
reconstituted wood	steel	
steel		
wooden		

517 PACKING INSTRUCTION 517 517

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Plastic bag IP.5 (kg)*	*Fibre IP.6 (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1458	1	1	1	1	No	0.5	4
1459	1	1	1	1	No	0.5	4
1483	1	1	1	No	No	0.5	5
1511	0.5	0.5	0.5	0.5	0.5	0.5	5
1748	1	1	1	1	No	0.5	4
2208	2.5	2.5	2.5	2.5	2.5	0.5	–

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

PARTICULAR PACKING REQUIREMENTS:

4 Plastic bags must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
5 Steel packagings must be corrosion-resistant or with protection against corrosion.

Y517 PACKING INSTRUCTION Y517 Y517

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Plastic bag IP.5 (kg)*	*Fibre IP.6 (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1458	1	1	1	1	No	0.5	4
1459	1	1	1	1	No	0.5	4
1483	1	1	1	No	No	0.5	5
1511	0.5	0.5	0.5	0.5	0.5	0.5	5
1748	1	1	1	1	No	0.5	4
2208	1	1	1	1	1	0.5	–

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plastic	plastic	steel
plywood	plywood	
reconstituted wood	steel	
steel		
wooden		

PARTICULAR PACKING REQUIREMENTS:

4 Plastic bags must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
5 Steel packagings must be corrosion-resistant or with protection against corrosion.

518 PACKING INSTRUCTION 518 518

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	5 kg
Plastic (IP.2)	5 kg
Metal (IP.3, IP.3A)	5 kg
Paper (IP.4)	5 kg
Plastic bag (IP.5)	5 kg
Fibre (IP.6)	5 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Drums
- aluminium (1B1, 1B2)
- fibre (1G with inner plastic liner)
- plastic (1H1, 1H2)
- plywood (1D with inner plastic liner)
- steel (1A1, 1A2)

Jerricans
- plastic (3H1, 3H2)
- steel (3A1, 3A2)

519 PACKING INSTRUCTION 519 519

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Plastic bag IP.5 (kg)*	*Fibre IP.6 (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1458	5	5	5	5	No	0.5	4
1459	5	5	5	5	No	0.5	4
1483	5	5	5	No	No	0.5	5
1511	1	1	1	1	1	0.5	5
1748	5	5	5	5	No	0.5	4
2208	5	5	5	5	5	0.5	–

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

(Particular packing requirement 5 applies for UN 1483 and UN 1511)

Composites (plastic) — all
Drums
- fibre (1G with inner plastic liner)
- plastic (1H1, 1H2)
- plywood (1D with inner plastic liner)
- steel (1A1, 1A2)

Jerricans
- plastic (3H1, 3H2)
- steel (3A1, 3A2)

PARTICULAR PACKING REQUIREMENTS:

4 Plastic bags must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
5 Steel packagings must be corrosion-resistant or with protection against corrosion.

523 PACKING INSTRUCTION 523 523

The general packing requirements of 4;1, except for 1.1.12, must be met.

Oxygen generator, chemical containing oxidizing substances, including when fitted in associated equipment, e.g. passenger service units (PSUs), portable breathing equipment (PBE), must meet all the following conditions:

a) the generator, without its packaging, must be capable of withstanding a 1.8 m drop test onto a rigid, non-resilient, flat and horizontal surface, in the position most likely to cause actuation, without loss of its contents and without actuation. For PBE, which are in a vacuum-sealed bag as part of their containment system, this test may be conducted on the PBE in the vacuum-sealed bag;

b) when a generator is equipped with an actuating device, it must have at least two positive means of preventing unintentional actuation. For PBE, which are in a vacuum-sealed bag as part of their containment system, the vacuum-sealed bag may be considered the second positive means of preventing unintentional actuation;

c) the generator(s) must be transported in a package which will meet the following requirements when one generator in the package is actuated:

   1) other generators in the package will not be actuated;
   2) packaging material will not ignite; and
   3) the outside surface temperature of the completed package will not exceed 100°C;

   Note. — To enable test c) 1), 2) and 3) to be conducted on PBE, it is acceptable to break the vacuum-sealed bag to actuate the generator before placing it in the package.

d) the generator(s) must be tightly packed in steel drums (1A2), aluminium drums (1B2), plywood drums (1D), fibre drums (1G), plastic drums (1H2), steel jerricans (3A2), plastic jerricans (3H2), metal boxes (4A, 4B), wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G) or solid plastic boxes (4H2).

Chapter 8

CLASS 6 — TOXIC AND INFECTIOUS SUBSTANCES

8.1 PACKING INSTRUCTIONS

600 PACKING INSTRUCTION 600 600

Ammunition, tear-producing or toxic may be carried provided it is without ignition elements, bursting charges, detonating fuses or other explosive components and when packed according to the general packing requirements of 4;1 and in steel (4A), aluminium (4B) or wooden (4C1, 4C2) boxes, steel drums (1A2) or aluminium drums (1B2) or aluminium jerricans (3B2).

601 PACKING INSTRUCTION 601 601

Tear gas grenades or candles may be carried when packed according to the general packing requirements of 4;1 and in steel (4A), aluminium (4B) or metal strapped wooden (4C1, 4C2) boxes, steel drums (1A2), aluminium drums (1B2) or aluminium jerricans (3B2). Unless functioning elements are so packed that they cannot accidentally function, elements must not be assembled in grenades or devices, but must be packed in a separate compartment or in a separate wooden (4C1, 4C2) box and so cushioned that they cannot come into contact with each other or with the walls of the packaging during transport. Not more than 24 grenades and 24 functioning devices per package are authorized.

602 PACKING INSTRUCTION 602 602

This packing instruction applies to UN 2814 and UN 2900.

The following packagings are authorized provided the special packing provisions are met.

Packagings meeting the requirements of 6;6 and approved accordingly consisting of:

a) inner packagings comprising:

≠ 1) leakproof primary receptacle(s);

≠ 2) a leakproof secondary packaging;

3) other than for solid infectious substances, an absorbent material in sufficient quantity to absorb the entire contents placed between the primary receptacle(s) and the secondary packaging; if multiple fragile primary receptacles are placed in a single secondary packaging, they shall be either individually wrapped or separated so as to prevent contact between them;

≠ b) a rigid outer packaging. The smallest external dimension must be not less than 100 mm.

Additional requirements:

c) Inner packagings containing infectious substances must not be consolidated with inner packagings containing unrelated types of goods. Complete packages may be overpacked in accordance with the provisions of 1;3.1 and 5;2.4.10. Such an overpack may contain dry ice.

d) Other than for exceptional consignments, e.g. whole organs, which require special packaging, the following additional requirements must apply:

1) Substances consigned at ambient temperatures or at a higher temperature. Primary receptacles must be of glass, metal or plastics. Positive means of ensuring a leakproof seal must be provided, e.g. a heat seal, a skirted stopper or a metal crimp seal. If screw caps are used, they must be secured by positive means, e.g. tape, paraffin sealing tape or manufactured locking closure;

2) Substances consigned refrigerated or frozen. Ice, dry ice or other refrigerant must be placed around the secondary packaging(s) or, alternatively, in an overpack with one or more complete packages marked in accordance with 6;6.3. Interior supports must be provided to secure secondary packaging(s) or packages in position after the ice or dry ice has dissipated. If ice is used, the outer packaging or overpack must be leakproof. If dry ice is used, the outer packaging or overpack must permit the release of carbon dioxide gas. The primary receptacle and the secondary packaging must maintain their integrity at the temperature of the refrigerant used;

3) Substances consigned in liquid nitrogen. Plastic primary receptacles capable of withstanding very low temperature must be used. The secondary packaging must also be capable of withstanding very low temperatures and, in most cases, will need to be fitted over the primary receptacle individually. Provisions for the consignment of liquid nitrogen must also be fulfilled. The primary receptacle and the secondary packaging must maintain their integrity at the temperature of the liquid nitrogen;

4) Lyophilized substances may also be transported in primary receptacles that are flame-sealed glass ampoules or rubberstoppered glass vials fitted with metal seals.

e) Whatever the intended temperature of the consignment, the primary receptacle or the secondary packaging must be capable of withstanding, without leakage, an internal pressure producing a pressure differential of not less than 95 kPa and temperatures in the range –40°C to +55°C.

+ f) Alternative packagings for the transport of animal material may be authorized by the competent authority in accordance with the provisions of 4;2.8.

+ g) A quantity of 30 ml or less of dangerous goods included in Class 3, 8 or 9 may be packed in each primary receptacle containing infectious substances provided these substances meet the requirements of 3;5.

Note.— The capability of a packaging to withstand an internal pressure without leakage that produces the specified pressure differential should be determined by testing samples of primary receptacles or secondary packagings. Pressure differential is the difference between the pressure exerted on the inside of the receptacle or packaging and the pressure on the outside. The appropriate test method should be selected based on receptacle or packaging type. Acceptable test methods include any method that produces the required pressure differential between the inside and outside of a primary receptacle or a secondary packaging. The test may be conducted using internal hydraulic or pneumatic pressure (gauge) or external vacuum test methods. Internal hydraulic or pneumatic pressure can be applied in most cases as the required pressure differential can be achieved under most circumstances. An external vacuum test is not acceptable if the specified pressure differential is not achieved and maintained. The external vacuum test is a generally acceptable method for rigid receptacles and packagings but is not normally acceptable for:

— *flexible receptacles and flexible packagings;*

— *receptacles and packagings filled and closed under an absolute atmospheric pressure lower than 95 kPa.*

Special packing provisions

a) Shippers of infectious substances must ensure that packages are prepared in such a manner that they arrive at their destination in good condition and present no hazard to persons or animals during transport.

b) The definition in 1;3, and the general packing requirements of 4;1, apply to infectious substances packages.

c) An itemized list of contents must be enclosed between the secondary packaging and the outer packaging. When the infectious substances to be transported are unknown, but suspected of meeting the criteria for inclusion in Category A, the words “suspected Category A infectious substance” must be shown in parentheses following the proper shipping name on the itemized list of contents inside the outer packaging.

+ d) Before an empty packaging is returned to the shipper, or sent elsewhere, it must be disinfected or sterilized to nullify any hazard, and any label or marking indicating that it had contained an infectious substance must be removed or obliterated.

603 PACKING INSTRUCTION 603 603

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	0.5 L
Plastic (IP.2)	0.5 L
Metal (IP.3, IP.3A)	1 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

604 PACKING INSTRUCTION 604 604

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 L
Plastic (IP.2)	1 L
Metal (IP.3, IP.3A)	2.5 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Cylinders, as permitted by 4:2.7
Drums
- aluminium (1B1)
- steel (1A1)

Jerricans
- steel (3A1)

605 PACKING INSTRUCTION 605 605

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Aluminium IP.3A (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
1593	2.5	2.5	5	5	0.5	3
1649	0.5	No	1	No	0.5	8,13
1694	No	No	0.5	No	0.5	6,8
1710	2.5	2.5	5	5	0.5	3
1897	2.5	2.5	5	5	0.5	3
1935	1	1	2.5	No	0.5	–
2024	1	1	2.5	No	0.5	–
2788	0.5	0.5	0.5	No	0.5	13
2831	2.5	2.5	5	5	0.5	3

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

UN No.	*Steel drums 1A1*	*Aluminium drums 1B1*	*Steel jerricans 3A1*	*Plastic drums 1H1*	*Plastic jerricans 3H1*	*Composites (plastic) — all*	*Cylinders (as permitted by 4;2.7)*	*Particular packing requirements*
1593	Yes	Yes	Yes	Yes	Yes	Yes	Yes	3
1649	Yes	No	Yes	No	No	No	Yes	–
1710	Yes	Yes	Yes	Yes	Yes	Yes	Yes	3
1897	Yes	Yes	Yes	Yes	Yes	Yes	Yes	3
1935	Yes	No	Yes	No	No	Yes	Yes	–
2024	Yes	No	Yes	No	No	Yes	Yes	–
2788	Yes	No	Yes	No	No	Yes	Yes	–
2831	Yes	Yes	Yes	Yes	Yes	Yes	Yes	3

PARTICULAR PACKING REQUIREMENTS:

3 Pure aluminium or aluminium alloys are permitted only for halogenated hydrocarbons that will not react with aluminium.

6 Glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

8 Only metal cylinders that meet the requirements of 4;2.7 are permitted.

13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

Y605 PACKING INSTRUCTION Y605 Y605

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Aluminium IP.3A (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
1593	0.5	0.5	0.5	0.5	0.5	3
1710	0.5	0.5	0.5	0.5	0.5	3
1897	0.5	0.5	0.5	0.5	0.5	3
2831	0.5	0.5	0.5	0.5	0.5	3

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plywood	plastic	steel
reconstituted wood	plywood	
solid plastic	steel	
steel		
wooden		

PARTICULAR PACKING REQUIREMENTS:

3 Pure aluminium or aluminium alloys are permitted only for halogenated hydrocarbons that will not react with aluminium.

606 PACKING INSTRUCTION 606 606

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	0.5 kg
Plastic (IP.2)	1 kg
Metal (IP.3, IP.3A)	1 kg
Plastic bag (IP.5)	0.5 kg
Fibre (IP.6)	0.5 kg
Glass ampoule (IP.8)	0.5 kg
Paper, plastic/aluminium (IP.10)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

607 PACKING INSTRUCTION 607 607

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 kg
Plastic (IP.2)	2.5 kg
Metal (IP.3, IP.3A)	2.5 kg
Plastic bag (IP.5)	1 kg
Fibre (IP.6)	1 kg
Glass ampoule (IP.8)	0.5 kg
Paper, plastic/aluminium (IP.10)	1 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Drums
- aluminium (1B1, 1B2)
- fibre (1G with inner plastic liner)
- plastic (1H1, 1H2)
- plywood (1D with inner plastic liner)
- steel (1A1, 1A2)

Jerricans
- plastic (3H1, 3H2)
- steel (3A1, 3A2)

608 PACKING INSTRUCTION 608 608

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
2471	0.5	0.5	No	0.5	9
3146	0.5	0.5	0.5	0.5	9
3450	0.5	No	0.5	0.5	9

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

PARTICULAR PACKING REQUIREMENTS:

9 Glass or earthenware inner packagings and glass ampoules must be packed with cushioning material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

609 PACKING INSTRUCTION 609 609

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 L
Plastic (IP.2)	1 L
Metal (IP.3, IP.3A)	2.5 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

Y609 PACKING INSTRUCTION Y609 Y609

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	0.1 L
Plastic (IP.2)	0.1 L
Metal (IP.3, IP.3A)	0.1 L
Glass ampoule (IP.8)	0.1 L

For UN 2022, UN 2076, UN 2267, UN 2742, UN 2744, UN 2745, UN 2746, UN 2748, UN 2927, UN 3073, UN 3277 and UN 3289, glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plywood	plastic	steel
reconstituted wood	plywood	
solid plastic	steel	
steel		
wooden		

610 PACKING INSTRUCTION 610 610

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Aluminium IP.3A (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
1638	1	1	2.5	No	0.5	–
1702	1	1	2.5	2.5	0.5	3
1737	0.5	0.5	0.5	No	0.5	5
1738	0.5	0.5	0.5	No	0.5	5
1750	1	1	1	No	0.5	5,13
1846	1	1	2.5	2.5	0.5	3
1888	1	1	2.5	2.5	0.5	3
1916	0.5	0.5	1	No	0.5	–
1935	0.5	0.5	1	No	0.5	–
2024	0.5	0.5	1	No	0.5	–
2574	0.5	No	1	1	0.5	13
2788	0.5	0.5	0.5	No	0.5	13
3071	1	1	2.5	2.5	0.5	2,13

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

PARTICULAR PACKING REQUIREMENTS:

2 Plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

3 Pure aluminium or aluminium alloys are permitted only for halogenated hydrocarbons that will not react with aluminium.

5 Steel packagings must be corrosion-resistant or with protection against corrosion.

13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

Y610 PACKING INSTRUCTION Y610 Y610

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Aluminium IP.3A (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
1638	0.1	0.1	0.1	No	0.1	–
1702	0.1	0.1	0.1	0.1	0.1	3
1750	0.1	0.1	0.1	No	0.1	5,13
1846	0.1	0.1	0.1	0.1	0.1	3
1888	0.1	0.1	0.1	0.1	0.1	3
1916	0.1	0.1	0.1	No	0.1	–
2574	0.1	No	0.1	0.1	0.1	13
2788	0.1	0.1	0.1	No	0.1	13
3071	0.1	0.1	0.1	0.1	0.1	2,13

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plywood	plastic	steel
reconstituted wood	plywood	
solid plastic	steel	
steel		
wooden		

PARTICULAR PACKING REQUIREMENTS:

2 Plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
3 Pure aluminium or aluminium alloys are permitted only for halogenated hydrocarbons that will not react with aluminium.
5 Steel packagings must be corrosion-resistant or with protection against corrosion.
13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

611 PACKING INSTRUCTION 611 611

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	2.5 L
Plastic (IP.2)	2.5 L
Metal (IP.3, IP.3A)	5 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Cylinders that meet the requirements of 4;2.7 are permitted
Drums
- aluminium (1B1)
- plastic (1H1)
- steel (1A1)

Jerricans
- plastic (3H1)
- steel (3A1)

Y611 PACKING INSTRUCTION Y611 Y611

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	0.5 L
Plastic (IP.2)	0.5 L
Metal (IP.3, IP.3A)	0.5 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plywood	plastic	steel
reconstituted wood	plywood	
solid plastic	steel	
steel		
wooden		

612 PACKING INSTRUCTION 612 612

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Aluminium IP.3A (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
1545	1	No	2.5	2.5	0.5	5,13
1593	5	5	10	10	0.5	3
1638	2.5	2.5	5	No	0.5	–
1701	1	1	2.5	No	0.5	2,5,13
1702	2.5	2.5	5	5	0.5	3
1710	5	5	10	10	0.5	3
1737	1	1	2.5	No	0.5	5,13
1738	1	1	2.5	No	0.5	5,13
1750	2.5	2.5	2.5	No	0.5	5,13
1846	2.5	2.5	5	5	0.5	3
1888	2.5	2.5	5	5	0.5	3
1897	5	5	10	10	0.5	3
1916	1	1	2.5	No	0.5	–
1935	2.5	2.5	5	No	0.5	–
2024	2.5	2.5	5	No	0.5	–
2474	1	1	2.5	No	0.5	5
2574	1	No	2.5	2.5	0.5	13
2788	1	1	2.5	No	0.5	13
2831	5	5	10	10	0.5	3
3071	2.5	2.5	5	5	0.5	2,13
3416	1	No	2.5	No	0.5	13

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

UN No.	*Steel drums 1A1*	*Aluminium drums 1B1*	*Steel jerricans 3A1*	*Plastic drums 1H1*	*Plastic jerricans 3H1*	*Composites (plastic) — all*	*Cylinders (as permitted by 4;2.7)*	*Particular packing requirements*
1545	Yes	Yes	Yes	No	No	No	Yes	5
1593	Yes	Yes	Yes	Yes	Yes	Yes	Yes	3
1638	Yes	No	Yes	Yes	Yes	Yes	Yes	–
1701	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1702	Yes	Yes	Yes	Yes	Yes	Yes	Yes	3
1710	Yes	Yes	Yes	Yes	Yes	Yes	Yes	3
1737	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1738	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1750	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1846	Yes	Yes	Yes	Yes	Yes	Yes	Yes	3

1888	Yes	Yes	Yes	Yes	Yes	Yes	Yes	3
1897	Yes	Yes	Yes	Yes	Yes	Yes	Yes	3
1916	Yes	No	Yes	Yes	Yes	Yes	Yes	–
1935	Yes	No	Yes	Yes	Yes	Yes	Yes	–
2024	Yes	No	Yes	Yes	Yes	Yes	Yes	–
2474	Yes	No	Yes	Yes	Yes	Yes	Yes	5
2574	Yes	Yes	Yes	No	No	No	Yes	–
2788	Yes	No	Yes	Yes	Yes	Yes	Yes	–
2831	Yes	Yes	Yes	Yes	Yes	Yes	Yes	3
3071	Yes	Yes	Yes	No	No	Yes	Yes	–
3416	Yes	No	Yes	No	No	No	Yes	–

PARTICULAR PACKING REQUIREMENTS:

2 Plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
3 Pure aluminium or aluminium alloys are permitted only for halogenated hydrocarbons that will not react with aluminium.
5 Steel packagings must be corrosion-resistant or with protection against corrosion.
13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

Y612 PACKING INSTRUCTION Y612 Y612

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Aluminium IP.3A (L)*	*Glass ampoule IP.8 (L)*
1935	0.5	0.5	0.5	No	0.5
2024	0.5	0.5	0.5	No	0.5

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plywood	plastic	steel
reconstituted wood	plywood	
solid plastic	steel	
steel		
wooden		

613 PACKING INSTRUCTION 613 613

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 kg
Plastic (IP.2)	2.5 kg
Metal (IP.3, IP.3A)	2.5 kg
Paper (IP.4)	1 kg
Plastic bag (IP.5)	1 kg
Fibre (IP.6)	1 kg
Glass ampoule (IP.8)	0.5 kg
Paper, plastic/aluminium (IP.10)	1 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

Y613 PACKING INSTRUCTION Y613 Y613

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	0.5 kg
Plastic (IP.2)	0.5 kg
Metal (IP.3, IP.3A)	0.5 kg
Paper (IP.4)	0.5 kg
Plastic bag (IP.5)	0.5 kg
Fibre (IP.6)	0.5 kg
Glass ampoule (IP.8)	0.5 kg
Paper, plastic/aluminium (IP.10)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plastic	plastic	steel
plywood	plywood	
reconstituted wood	steel	
steel		
wooden		

614 PACKING INSTRUCTION 614 614

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1751	1	2.5	2.5	0.5	5
3146	1	1	2.5	0.5	9

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
solid plastic (4H2)		
steel (4A)		
wooden (4C1, 4C2)		

PARTICULAR PACKING REQUIREMENTS:

5 Steel packagings must be corrosion-resistant or with protection against corrosion.
9 Glass or earthenware inner packagings and glass ampoules must be packed with cushioning material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

Y614 PACKING INSTRUCTION Y614 Y614

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1751	0.5	0.5	0.5	0.5	5
3146	0.5	0.5	0.5	0.5	9

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	steel
plywood	plywood	
reconstituted wood	steel	
solid plastic		
steel		
wooden		

PARTICULAR PACKING REQUIREMENTS:

5 Steel packagings must be corrosion-resistant or with protection against corrosion.
9 Glass or earthenware inner packagings and glass ampoules must be packed with cushioning material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

615 PACKING INSTRUCTION 615 615

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	2.5 kg
Plastic (IP.2)	5 kg
Metal (IP.3, IP.3A)	5 kg
Paper (IP.4)	2.5 kg
Plastic bag (IP.5)	2.5 kg
Fibre (IP.6)	2.5 kg
Glass ampoule (IP.8)	0.5 kg
Paper, plastic/aluminium (IP.10)	2.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Drums
- aluminium (1B1, 1B2)
- fibre (1G with inner plastic liner)
- plastic (1H1, 1H2)
- plywood (1D with inner plastic liner)
- steel (1A1, 1A2)

Jerricans
- plastic (3H1, 3H2)
- steel (3A1, 3A2)

616 PACKING INSTRUCTION 616 616

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Aluminium IP.3A (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1697	2.5	No	5	No	0.5	–
1751	2.5	5	5	No	0.5	5
3048	1	1	1	1	0.5	9
3146	2.5	2.5	2.5	No	0.5	9
3458	5	10	10	10	0.5	–

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
solid plastic (4H2)		
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

UN No.	*Steel drums 1A1, 1A2*	*Aluminium drums 1B1, 1B2*	*Steel jerricans 3A1, 3A2*	*Plastic drums 1H1, 1H2*	*Plastic jerricans 3H1, 3H2*	*Composites (plastic) — all*	*Particular packing requirements*
1697	Yes	No	Yes	No	No	No	–
1751	Yes	No	Yes	Yes	Yes	Yes	5
3048	Yes	Yes	Yes	Yes	Yes	Yes	–
3146	Yes	No	Yes	No	No	Yes	–
3458	Yes	Yes	Yes	Yes	Yes	Yes	–

PARTICULAR PACKING REQUIREMENTS:

5 Steel packagings must be corrosion-resistant or with protection against corrosion.

9 Glass or earthenware inner packagings and glass ampoules must be packed with cushioning material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

Y616 PACKING INSTRUCTION Y616 Y616

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	Glass or earthenware IP.1 (kg)	Plastic IP.2 (kg)	Metal (not aluminium) IP.3 (kg)	Aluminium IP.3A (kg)	Glass ampoule IP.8 (kg)
2730	1	1	1	1	0.5
3458	1	1	1	1	0.5

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	steel
plywood	plywood	
reconstituted wood	steel	
solid plastic		
steel		
wooden		

617 PACKING INSTRUCTION 617 617

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 L
Plastic (IP.2)	1 L
Metal (not aluminium) (IP.3)	2.5 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

Y617 PACKING INSTRUCTION Y617 Y617

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	0.1 L
Plastic (IP.2)	0.1 L
Metal (not aluminium) (IP.3)	0.1 L
Glass ampoule (IP.8)	0.1 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plywood	plastic	steel
reconstituted wood	plywood	
solid plastic	steel	
steel		
wooden		

618 PACKING INSTRUCTION 618 618

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	5 L
Plastic (IP.2)	5 L
Metal (IP.3, IP.3A)	10 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Cylinders that meet the requirements of 4;2.7 are permitted
Drums
- aluminium (1B1)
- plastic (1H1)
- steel (1A1)

Jerricans
- plastic (3H1)
- steel (3A1)

619 PACKING INSTRUCTION 619 619

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	5 kg
Plastic (IP.2)	10 kg
Metal (IP.3, IP.3A)	10 kg
Paper (IP.4)	5 kg
Plastic bag (IP.5)	5 kg
Fibre (IP.6)	5 kg
Glass ampoule (IP.8)	0.5 kg
Paper, plastic/aluminium (IP.10)	5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Bags
- paper (5M2)
- plastic film (5H4)
- woven plastic (5H2, 5H3)

Composites (plastic) — all

Drums
- aluminium (1B1, 1B2)
- fibre (1G with inner plastic liner)
- plastic (1H1, 1H2)
- plywood (1D with inner plastic liner)
- steel (1A1, 1A2)

Jerricans
- plastic (3H1, 3H2)
- steel (3A1, 3A2)

Y619 PACKING INSTRUCTION Y619 Y619

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 kg
Plastic (IP.2)	1 kg
Metal (IP.3, IP.3A)	1 kg
Paper (IP.4)	1 kg
Plastic bag (IP.5)	1 kg
Fibre (IP.6)	1 kg
Glass ampoule (IP.8)	0.5 kg
Paper, plastic/aluminium (IP.10)	1 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plastic	plastic	steel
plywood	plywood	
reconstituted wood	steel	
steel		
wooden		

620 PACKING INSTRUCTION 620 620

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	5 L
Plastic (IP.2)	5 L
Metal (not aluminium) (IP.3)	10 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Cylinders that meet the requirements of 4;2.7 are permitted
Drums
- plastic (1H1)
- steel (1A1)

Jerricans
- plastic (3H1)
- steel (3A1)

622 PACKING INSTRUCTION 622 622

The general packing requirements of 4;1 must be met.

Consignments must be prepared in such a manner that they arrive at their destination in good condition and present no hazard to persons or animals during transport.

Consignments must be packed in steel drums (1A2), aluminium drums (1B2), plywood drums (1D), fibre drums (1G), plastic drums (1H2), steel jerricans (3A2), plastic jerricans (3H2), wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F) or fibreboard boxes (4G). Packagings must meet Packing Group II requirements.

The packaging tests may be those appropriate for solids when there is sufficient absorbent material to absorb the entire amount of liquid present and the packaging is capable of retaining liquids.

In all other circumstances, the packaging tests must be those appropriate for liquids.

Packagings intended to contain sharp objects such as broken glass and needles must be resistant to puncture and retain liquids under the performance test conditions for the packaging.

650 PACKING INSTRUCTION 650 650

This packing instruction applies to UN 3373.

1) The packaging must be of good quality, strong enough to withstand the shocks and loadings normally encountered during transport, including transhipment between transport units and between transport units and warehouses as well as any removal from a pallet or overpack for subsequent manual or mechanical handling. Packagings must be constructed and closed to prevent any loss of contents that might be caused under normal conditions of transport by vibration or by changes in temperature, humidity or pressure.

2) The packaging must consist of three components:

   a) a primary receptacle;

   b) a secondary packaging; and

   c) a rigid outer packaging.

3) Primary receptacles must be packed in secondary packagings in such a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents into the secondary packaging. Secondary packagings must be secured in outer packagings with suitable cushioning material. Any leakage of the contents must not compromise the integrity of the cushioning material or of the outer packaging.

4) For transport, the mark illustrated below must be displayed on the external surface of the outer packaging on a background of a contrasting colour and must be clearly visible and legible. The mark must be in the form of a square set at an angle of 45° (diamond-shaped) with each side having a length of at least 50 mm, the width of the line must be at least 2 mm, and the letters and numbers must be at least 6 mm high. The proper shipping name “Biological substance, Category B” in letters at least 6 mm high must be marked on the outer packaging adjacent to the diamond-shaped mark.

5) At least one surface of the outer packaging must have a minimum dimension of 100 mm × 100 mm.

6) The completed package must be capable of successfully passing the drop test in 6;6.5.3 as specified in 6;6.5.2 of the Instructions except that the height of the drop must not be less than 1.2 m. Following the appropriate drop sequence, there must be no leakage from the primary receptacle(s) which must remain protected by absorbent material, when required, in the secondary packaging.

7) For liquid substances:

   a) The primary receptacle(s) must be leakproof and must not contain more than 1 litre;

   b) The secondary packaging must be leakproof;

   c) If multiple fragile primary receptacles are placed in a single secondary packaging, they must be either individually wrapped or separated to prevent contact between them;

   d) Absorbent material must be placed between the primary receptacle(s) and the secondary packaging. The absorbent material must be in quantity sufficient to absorb the entire contents of the primary receptacle(s) so that any release of the liquid substance will not compromise the integrity of the cushioning material or of the outer packaging;

   e) The primary receptacle or the secondary packaging must be capable of withstanding, without leakage, an internal pressure of 95 kPa (0.95 bar);

   f) The outer package must not contain more than 4 litres. This quantity excludes ice, dry ice or liquid nitrogen when used to keep specimens cold.

      Note.— The capability of a packaging to withstand an internal pressure without leakage that produces the specified pressure differential should be determined by testing samples of primary receptacles or secondary packagings. Pressure differential is the difference between the pressure exerted on the inside of the receptacle or packaging and the pressure on the outside. The appropriate test method should be selected based on receptacle or packaging type. Acceptable test methods include any method that produces the required pressure differential between the inside and outside of a primary receptacle or a secondary packaging. The test may be conducted using internal hydraulic or pneumatic pressure (gauge) or external vacuum test methods. Internal hydraulic or pneumatic pressure can be applied in most cases as the required pressure differential can be achieved under most circumstances. An external vacuum test is not acceptable if the specified pressure differential is not achieved and maintained. The external vacuum test is a generally acceptable method for rigid receptacles and packagings but is not normally acceptable for:

      — *flexible receptacles and flexible packagings;*

      — *receptacles and packagings filled and closed under an absolute atmospheric pressure lower than 95 kPa.*

8) For solid substances:

   a) The primary receptacle(s) must be siftproof and must not exceed the outer packaging mass limit;

   b) The secondary packaging must be siftproof;

   c) If multiple fragile primary receptacles are placed in a single secondary packaging, they must be either individually wrapped or separated to prevent contact between them;

   d) Except for packages containing body parts, organs or whole bodies, the outer package must not contain more than 4 kg. This quantity excludes ice, dry ice or liquid nitrogen when used to keep specimens cold;

   e) If there is any doubt as to whether or not residual liquid may be present in the primary receptacle during transport, then a packaging suitable for liquids, including absorbent materials, must be used.

9) Refrigerated or frozen specimens: ice, dry ice and liquid nitrogen:

   a) When dry ice or liquid nitrogen is used to keep specimens cold, all applicable requirements of these Instructions must be met. When used, ice or dry ice must be placed outside the secondary packagings or in the outer packaging or an overpack. Interior supports must be provided to secure the secondary packagings in the original position after the ice or dry ice has dissipated. If ice is used, the outside packaging or overpack must be leakproof. If carbon dioxide, solid (dry ice) is used, the packaging must be designed and constructed to permit the release of carbon dioxide gas to prevent a build-up of pressure that could rupture the packagings;

   b) The primary receptacle and the secondary packaging must maintain their integrity at the temperature of the refrigerant used as well as the temperatures and the pressures which could result if refrigeration were lost.

10) When packages are placed in an overpack, the package markings required by this packing instruction must either be clearly visible or the markings must be reproduced on the outside of the overpack and the overpack must be marked with the word “Overpack”.

11) Infectious substances assigned to UN 3373 which are packed and marked in accordance with this packing instruction are not subject to any other requirement in these Instructions except for the following:

a) the name and address of the shipper and of the consignee must be provided on each package;

≠ b) the name and telephone number of a person responsible must be provided on a written document (such as an air waybill) or on the package;

c) classification must be in accordance with 2;6.3.2;

d) the incident reporting requirements in 7;4.4 must be met;

e) the inspection for damage or leakage requirements in 7;3.1.3 and 7;3.1.4; and

f) passengers and crew members are prohibited from transporting infectious substances either as, or in, carry-on baggage or checked baggage or on their person.

Note.— When the shipper or consignee is also the “person responsible” as referred to in b), the name and address need be marked only once in order to satisfy the name and marking provisions in both a) and b).

≠ 12) Clear instructions on filling and closing such packages must be provided to the shipper or to the person who prepares the package (e.g. patient) by packaging manufacturers and subsequent distributors to enable the package to be correctly prepared for transport.

13) Other dangerous goods must not be packed in the same packaging as Division 6.2 infectious substances unless they are necessary for maintaining the viability, stabilizing or preventing degradation or neutralizing the hazards of the infectious substances. A quantity of 30 ml or less of dangerous goods included in Class 3, 8 or 9 may be packed in each primary receptacle containing infectious substances provided these substances meet the requirements of 3;5. When these small quantities of dangerous goods are packed with infectious substances in accordance with this packing instruction no other requirements in these Instructions need be met.

\+ **Additional requirements:**

1) Alternative packagings for the transport of animal material may be authorized by the competent authority in accordance with the provisions of 4;2.8.

\+

PACKING INSTRUCTION 699

Passenger and cargo aircraft for UN 3123 and UN 3125 only

Only packagings which are approved by the appropriate national authority for these substances may be used (see 4;2.8). A copy of this approval must accompany each consignment or an annotation that it has been granted must be included with the transport document.

≠

Chapter 9

CLASS 7 — RADIOACTIVE MATERIAL

Parts of this Chapter are affected by State Variations CA 1, CA 2, CA 4, JP 2, JP 17; see Table A-1

9.1 GENERAL

9.1.1 Radioactive material, packagings and packages must meet the requirements of 6;7. The quantity of radioactive material in a package must not exceed the limits specified in 2;7.2.4. The types of packages for radioactive materials covered by these Instructions are:

a) Excepted package (see 1;6.1.5);

b) Industrial package Type 1 (Type IP-1 package);

c) Industrial package Type 2 (Type IP-2 package);

d) Industrial package Type 3 (Type IP-3 package);

e) Type A package;

f) Type B(U) package;

g) Type B(M) package;

h) Type C package.

Packages containing fissile material or uranium hexafluoride are subject to additional requirements.

9.1.2 The non-fixed contamination on the external surfaces of any package must be kept as low as practicable and, under routine conditions of transport, must not exceed the following limits:

a) 4 Bq/cm^2 for beta and gamma emitters and low toxicity alpha emitters; and

b) 0.4 Bq/cm^2 for all other alpha emitters.

These limits are applicable when averaged over any area of 300 cm^2 of any part of the surface.

9.1.3 A package, other than an excepted package, must not contain any other items except such articles and documents as are necessary for the use of the radioactive material. This requirement must not preclude the transport of low specific activity material or surface contaminated objects with other items. The transport of such articles and documents in a package, or of low specific activity material or surface contaminated objects with other items may be permitted provided that there is no interaction between them and the packaging or its radioactive contents that would reduce the safety of the package.

9.1.4 Except as provided in 7;3.2.5, the level of non-fixed contamination on the external and internal surfaces of overpacks and freight containers, must not exceed the limits specified in 9.1.2.

9.1.5 Radioactive material meeting the criteria of other Classes or Divisions as defined in Part 2 must be allocated to Packing Group I, II or III, as appropriate, by the application of the grouping criteria provided in Part 2 corresponding to the nature of the predominant subsidiary risk. It must also be capable of meeting the appropriate packaging performance criteria for the subsidiary risk.

9.1.6 Before the first shipment of any package, the following requirements must be fulfilled:

a) If the design pressure of the containment system exceeds 35 kPa (gauge), it must be ensured that the containment system of each package conforms to the approved design requirements relating to the capability of that system to maintain its integrity under that pressure;

b) For each Type B(U), Type B(M) and Type C package and for each package containing fissile material, it must be ensured that the effectiveness of its shielding and containment and, where necessary, the heat transfer characteristics and the effectiveness of the confinement system, are within the limits applicable to or specified for the approved design;

c) For packages containing fissile material, where, in order to comply with the requirements of 6;7.10.1 neutron poisons are specifically included as components of the package, checks must be performed to confirm the presence and distribution of those neutron poisons.

9.1.7 Before each shipment of any package, the following requirements must be fulfilled:

a) For any package it must be ensured that all the requirements specified in the relevant provisions of these Instructions have been satisfied;

b) It must be ensured that lifting attachments which do not meet the requirements of 6;7.1.2 have been removed or otherwise rendered incapable of being used for lifting the package, in accordance with 6;7.1.3;

c) For each package requiring competent authority approval, it must be ensured that all the requirements specified in the approval certificates have been satisfied;

d) Each Type B(U), Type B(M) and Type C package must be held until equilibrium conditions have been approached closely enough to demonstrate compliance with the requirements for temperature and pressure unless an exemption from these requirements has received unilateral approval;

e) For each Type B(U), Type B(M) and Type C package, it must be ensured by inspection and/or appropriate tests that all closures, valves, and other openings of the containment system through which the radioactive contents might escape are properly closed and, where appropriate, sealed in the manner for which the demonstrations of compliance with the requirements of 6;7.7.7 and 6;7.9.3 were made;

f) For each special form radioactive material, it must be ensured that all the requirements specified in the approval certificate and the relevant provisions of these Instructions have been satisfied;

g) For packages containing fissile material, the measurement specified in 6;7.10.4 b) and the tests to demonstrate closure of each package as specified in 6;7.10.7 must be performed where applicable;

h) For each low dispersible radioactive material, it must be ensured that all the requirements specified in the approval certificate and the relevant provisions of these Instructions have been satisfied.

9.1.8 The shipper must also have a copy of any instructions with regard to the proper closing of the package and any preparation for shipment before making any shipment under the terms of the certificates.

9.1.9 Except for consignments under exclusive use, the transport index of any package or overpack must not exceed 10, nor must the criticality safety index of any package or overpack exceed 50.

9.1.10 Except for packages or overpacks transported under exclusive use and special arrangement under the conditions specified in 7;2.9.5.3, the maximum radiation level at any point on any external surface of a package or overpack must not exceed 2 mSv/h.

9.1.11 The maximum radiation level at any point on any external surface of a package or overpack under exclusive use must not exceed 10 mSv/h.

9.2 REQUIREMENTS AND CONTROLS FOR TRANSPORT OF LSA MATERIAL AND SCO

9.2.1 The quantity of LSA material or SCO in a single Industrial package Type 1 (Type IP-1), Industrial package Type 2 (Type IP-2), or Industrial package Type 3 (Type IP-3), must be so restricted that the external radiation level at 3 m from the unshielded material does not exceed 10 mSv/h.

9.2.2 LSA material and SCO which is or contains fissile material must meet the applicable requirements in 7;2.9.4.1, 7;2.9.4.2 and 6;7.10.1.

9.2.3 LSA material and SCO in groups LSA-I and SCO-I must not be transported unpackaged.

9.2.4 LSA material and SCO must be packaged in accordance with Table 4-2.

9.3 PACKAGES CONTAINING FISSILE MATERIAL

Unless not classified as fissile in accordance with 2;7.2.3.5, packages containing fissile material must not contain:

a) a mass of fissile material different from that authorized for the package design;

b) any radionuclide or fissile material different from those authorized for the package design; or

c) contents in a form or physical or chemical state, or in a spatial arrangement, different from those authorized for the package design;

as specified in their certificates of approval, where appropriate.

Table 4-2. Industrial package requirements for LSA material and SCO

Radioactive contents	*Industrial package type*	
	Exclusive use	*Not under exclusive use*
LSA-I Solid Liquid	 Type IP-1 Type IP-1	 Type IP-1 Type IP-2
LSA-II Solid Liquid and gas	 Type IP-2 Type IP-2	 Type IP-2 Type IP-3
LSA-III	Type IP-2	Type IP-3
SCO-I	Type IP-1	Type IP-1
SCO-II	Type IP-2	Type IP-2

Chapter 10

CLASS 8 — CORROSIVE SUBSTANCES

10.1 PACKING INSTRUCTIONS

800	PACKING INSTRUCTION 800	800

Batteries must be packed in accordance with the general packing requirements of 4;1 and be in wooden (4C1, 4C2), plywood (4D), fibreboard (4G) or reconstituted wood (4F) boxes, plywood drums (1D), fibre drums (1G), plastic drums (1H2), plastic jerricans (3H2) or solid plastic boxes (4H2) of Packing Group II and must incorporate an acid/alkali-proof liner of sufficient strength and adequately sealed to positively preclude leakage in the event of spillage. The batteries must be packed so that the fill openings and vents, if any, are upward; they must be incapable of short-circuiting and be securely cushioned in the packagings. The upright position of the package must be indicated on it by the "Package orientation" label shown in 5;3.2.11 b). The words "This side up" or "This end up" may also be displayed on the top of the package.

If batteries are shipped as an integral component of assembled equipment, they must be securely installed and fastened in an upright position and protected against contact with other articles so as to prevent short circuits. Batteries must be removed and packed according to this packing instruction if the assembled equipment is likely to be carried in other than an upright position.

For batteries, electric storage, packed with battery fluid in the same outer packaging, see UN 2796 and UN 2797.

801	PACKING INSTRUCTION 801	801

Bombs, smoke may be carried provided they are without ignition elements, bursting charges, detonating fuses or other explosive components and when packed according to the general packing requirements of 4;1 and in wooden (4C1, 4C2), plywood (4D) or reconstituted wood (4F) boxes, or plywood drums (1D).

802	PACKING INSTRUCTION 802	802

Batteries, dry, containing potassium hydroxide solid must be packed in accordance with the general packing requirements of 4;1 and be in wooden (4C1, 4C2), plywood (4D), fibreboard (4G), solid plastic (4H2) or reconstituted wood (4F) boxes of Packing Group II. The batteries must be securely cushioned in the packagings.

803 PACKING INSTRUCTION 803 803

The general packing requirements of 4;1 must be met.

Mercury must be packed in inner packagings of earthenware or glass (IP.1) or plastic (IP.2) containing not more than 3.5 kg of mercury, or inner packagings which are glass ampoules (IP.8) containing not more than 0.5 kg of mercury, or iron or steel "quicksilver flasks" containing not more than 35 kg of mercury. The inner packagings or flasks must be packed in steel drums (1A2), steel jerricans (3A2), wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G), plastic boxes (4H2), plywood drums (1D) or fibre drums (1G) of Packing Group I. When inner packagings of earthenware, glass or plastic are used they must be packed in the outer packaging with sufficient cushioning material to prevent breakage. Either the inner packagings or the outer packagings must have inner linings or bags of strong leakproof and puncture-resistant material impervious to mercury, completely surrounding the contents, so that the escape of mercury will be prevented irrespective of the position of the package.

Mercury may also be packed in a single packaging which may only be a welded steel bottle with an inner vaulted bottom, an opening not exceeding 20 mm and a closure which must be a bolt with a conical thread.

804 PACKING INSTRUCTION 804 804

Gallium must be packed in accordance with the general packing requirements, for packagings intended to contain liquids, in 4;1.

Gallium must be packed in semi-rigid plastic inner packagings (IP.2) of not more than 2.5 kg capacity each. The inner packagings must be individually enclosed in a sealed leakproof bag of strong puncture-resistant material and the bags must be packed in steel drums (1A2), steel jerricans (3A2), wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G), plastic boxes (4H2), plywood drums (1D) or fibre drums (1G) of Packing Group I. The outer packagings must have inner linings of strong leakproof and puncture-resistant material. The bags and linings must be chemically resistant to gallium.

When a refrigerant, such as dry ice, is used to maintain gallium in a solid state during transport, the outer packagings may be overpacked in a further strong, water-resistant packaging which contains the refrigerant. If dry ice is used, this packaging must be designed and constructed so as to permit the release of carbon dioxide gas.

When a refrigerant is used, all the packagings must be chemically and physically resistant to the effects of the refrigerant and must have impact resistance at the low temperatures produced by that refrigerant.

805 PACKING INSTRUCTION 805 805

The general packing requirements of 4;1 must be met.

a) Except as otherwise provided for in b), manufactured articles or apparatuses of which metallic mercury is a component part, such as manometers, pumps, thermometers, switches, must be in strong outer packagings, having sealed inner liners or bags of strong leakproof and puncture-resistant material impervious to mercury which will prevent the escape of mercury from the package irrespective of its position. Mercury switches and relays are excepted from the requirement for a sealed inner liner or bag providing they are of the totally enclosed leakproof type in sealed metal or plastic units.

b) Electron tubes, mercury vapour tubes and similar tubes must be packed as follows:

   1) tubes which are packed in strong outer packagings with all seams and joints sealed with self-adhesive, pressure-sensitive tape which will prevent the escape of mercury from the package, may be accepted up to a total net quantity of 450 g of mercury per package;

   2) tubes with more than 450 g of mercury are permitted only when packed in strong outer packagings, having sealed inner liners or bags of strong leakproof and puncture-resistant material impervious to mercury which will prevent the escape of mercury from the package irrespective of its position;

   3) tubes which do not contain more than 5 g of mercury each and which are packed in the manufacturer's original packagings, may be accepted up to a total net quantity of 30 g of mercury per package; and

4) tubes which are completely jacketed in sealed leakproof metal cases may be accepted in the manufacturer's original packagings.

c) For electron tubes, mercury vapour tubes and similar tubes the shipper must indicate the quantity of mercury on the dangerous goods transport document.

Thermometers, switches and relays, each containing a total quantity of not more than 15 g of mercury, are excepted from the requirements of these Instructions if they are installed as an integral part of a machine or apparatus and so fitted that shock or impact damage, leading to leakage of mercury, is unlikely to occur under conditions normally incident to transport.

806 PACKING INSTRUCTION 806 806

Batteries can be considered as non-spillable provided that they are capable of withstanding the vibration and pressure differential tests given below, without leakage of battery fluid.

Vibration test: The battery is rigidly clamped to the platform of a vibration machine and a simple harmonic motion having an amplitude of 0.8 mm (1.6 mm maximum total excursion) is applied. The frequency is varied at the rate of 1 Hz/min between the limits of 10 Hz to 55 Hz. The entire range of frequencies and return is traversed in 95 ± 5 minutes for each mounting position (direction of vibration) of the battery. The battery must be tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for equal time periods.

Pressure differential test: Following the vibration test, the battery is stored for six hours at 24°C ±4°C while subjected to a pressure differential of at least 88 kPa. The battery must be tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for at least six hours in each position.

Batteries must be protected against short circuits and must be securely packed in strong outer packagings.

Note.— Non-spillable type batteries which are an integral part of and necessary for the operation of mechanical or electronic equipment must be securely fastened in the battery holder on the equipment and protected in such a manner as to prevent damage and short circuits.

807 PACKING INSTRUCTION 807 807

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Aluminium IP.3A (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
1758	0.5	0.5	0.5	No	0.25	2,5,13
1760	0.5	0.5	0.5	No	0.25	2,13
1777	0.5	0.5	0.5	0.5	0.25	2,5,7,13,21
1790	No	0.5	0.5	No	No	2,5
1903	0.5	0.5	0.5	No	0.25	2,13
2031	1	1	No	No	0.5	2,13
2054	0.5	0.5	0.5	No	0.25	2,13
2240	0.5	0.5	0.5	No	0.25	2,5,13
2401	0.5	0.5	0.5	0.5	0.25	7,13
2604	0.5	0.5	0.5	0.5	0.25	13

2699	0.5	0.5	0.5	No	0.25	2,5,13,21
2734	0.5	0.5	0.5	No	0.25	2,13
2735	0.5	0.5	0.5	No	0.25	2,13
2801	0.5	0.5	0.5	No	0.25	2,13
2879	0.5	0.5	0.5	No	0.25	2,5,13
2920	0.5	0.5	0.5	No	0.25	2,13
2922	0.5	0.5	0.5	No	0.25	2,13
3145	0.5	0.5	0.5	No	0.25	2,13
3264	0.5	0.5	0.5	No	0.25	2,13
3265	0.5	0.5	0.5	No	0.25	2,13
3266	0.5	0.5	0.5	No	0.25	2,13
3267	0.5	0.5	0.5	No	0.25	2,13
3301	0.5	0.5	0.5	No	0.25	2,13

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

PARTICULAR PACKING REQUIREMENTS:

2 Plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
5 Steel packagings must be corrosion-resistant or with protection against corrosion.
7 When aluminium or aluminium alloys are used they must be resistant to corrosion.
13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
21 Glass or earthenware inner packagings and glass ampoules are permitted if this item is free from hydrofluoric acid.

Y807 PACKING INSTRUCTION Y807 Y807

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Aluminium IP.3A (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
2031	0.1	0.1	No	No	0.1	2,13

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plywood	plastic	steel
reconstituted wood	plywood	
solid plastic	steel	
steel		
wooden		

PARTICULAR PACKING REQUIREMENTS:

2 Plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

808 PACKING INSTRUCTION 808 808

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 L
Plastic (IP.2)	1 L
Metal (IP.3, IP.3A)	1 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

Y808 PACKING INSTRUCTION Y808 Y808

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	0.1 L
Plastic (IP.2)	0.1 L
Metal (IP.3, IP.3A)	0.1 L
Glass ampoule (IP.8)	0.1 L

Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plywood	plastic	steel
reconstituted wood	plywood	
solid plastic	steel	
steel		
wooden		

809 PACKING INSTRUCTION 809 809

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Aluminium IP.3A (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
1715	1	1	1	1	0.5	2,5,7,13
1719	1	1	1	No	0.5	–
1739	1	1	No	No	0.5	13
1758	1	1	1	No	0.5	2,5,13
1760	1	1	1	No	0.5	2,13
1764	1	1	1	No	0.5	2,5,13
1765	1	1	1	No	0.5	2,5,13
1768	No	1	1	No	No	2,5
1774	1	1	No	No	0.5	–
1775	1	1	1	No	0.5	2,5,21
1776	1	1	1	No	0.5	2,5,21
1777	1	1	1	1	0.5	2,5,7,13,21
1778	1	1	1	No	0.5	2,5,21
1782	1	1	1	No	0.5	2,5,21
1786	No	1	1	No	No	2,5
1787	1	1	No	No	0.5	2,13
1788	1	1	No	No	0.5	2,13
1789	1	1	No	No	0.5	2,13
1790	No	1	1	No	No	2,5
1791	1	1	1	No	0.5	5
1796	1	No	1	No	0.5	5,13
1798	1	No	No	No	0.5	13
1803	1	1	No	No	0.5	–
1814	1	1	1	No	0.5	–
1818	1	1	No	No	0.5	2,13
1824	1	1	1	No	0.5	–
1826	1	No	1	No	0.5	5,13
1828	1	1	1	1	0.5	5,7,13
1830	1	1	1	No	0.5	5,13
1903	1	1	1	No	0.5	2,13
1908	1	1	1	No	0.5	2,13
1940	1	1	1	No	0.5	5
2030	1	1	1	No	0.5	2,5,13
2031	1	No	No	No	0.5	13
2054	1	1	1	No	0.5	2,13
2240	1	1	1	No	0.5	2,5,13
2258	1	1	1	No	0.5	2,13
2308	1	1	1	No	0.5	2,5,13
2401	1	1	1	1	0.5	7,13
2439	No	1	1	No	No	–
2444	1	1	1	No	0.5	2,5,13
2502	1	1	1	No	0.5	2,5,13
2564	1	1	1	No	0.5	2,5,13
2604	1	1	1	1	0.5	–
2677	1	1	1	No	0.5	–
2679	1	1	1	No	0.5	–
2681	1	1	1	No	0.5	–
2692	1	1	1	No	0.5	2,5,13

2699	1	1	1	No	0.5	5,13,21
2734	1	1	1	No	0.5	2,13
2735	1	1	1	No	0.5	2,13
2789	1	1	1	1	0.5	2,5,7,13
2790	1	1	1	1	0.5	2,5,7,13
2796	1	1	1	No	0.5	5,13
2797	1	1	1	No	0.5	–
2801	1	1	1	No	0.5	2,13
2817	No	1	1	No	No	–
2837	1	1	1	No	0.5	–
2879	1	1	1	No	0.5	2,5,13
2920	1	1	1	No	0.5	2,13
2922	1	1	1	No	0.5	2,13
3093	1	1	1	No	0.5	2,5,13
3094	1	1	1	No	0.5	2,5,13
3145	1	1	1	No	0.5	2,13
3264	1	1	1	No	0.5	2,13
3265	1	1	1	No	0.5	2,13
3266	1	1	1	No	0.5	2,13
3267	1	1	1	No	0.5	2,13
3301	1	1	1	No	0.5	2,13
3320	1	1	1	No	0.5	–
3421	No	1	1	No	No	–
3471	No	1	1	No	No	–

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

PARTICULAR PACKING REQUIREMENTS:

2 Plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
5 Steel packagings must be corrosion-resistant or with protection against corrosion.
7 When aluminium or aluminium alloys are used they must be resistant to corrosion.
13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
21 Glass or earthenware inner packagings and glass ampoules are permitted if this item is free from hydrofluoric acid.

Y809 PACKING INSTRUCTION Y809 Y809

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Aluminium IP.3A (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
1715	0.1	0.1	0.1	0.1	0.1	2,5,7,13
1719	0.1	0.1	0.1	No	0.1	13
1764	0.1	0.1	0.1	No	0.1	2,5,13
1765	0.1	0.1	0.1	No	0.1	2,5,13
1768	No	0.1	0.1	No	No	2,5
1774	0.1	0.1	No	No	0.1	13
1775	0.1	0.1	0.1	No	0.1	2,5,13,21
1776	0.1	0.1	0.1	No	0.1	2,5,13,21
1778	0.1	0.1	0.1	No	0.1	2,5,13,21
1782	0.1	0.1	0.1	No	0.1	2,5,13,21
1787	0.1	0.1	No	No	0.1	2,13
1788	0.1	0.1	No	No	0.1	2,13
1789	0.1	0.1	No	No	0.1	2,13
1790	No	0.1	0.1	No	No	2,5
1791	0.1	0.1	0.1	No	0.1	5,13
1830	0.1	0.1	0.1	No	0.1	5,13
1803	0.1	0.1	No	No	0.1	13
1814	0.1	0.1	0.1	No	0.1	13
1818	0.1	0.1	No	No	0.1	2,13
1824	0.1	0.1	0.1	No	0.1	13
1908	0.1	0.1	0.1	No	0.1	2,13
1940	0.1	0.1	0.1	No	0.1	5,13
2258	0.1	0.1	0.1	No	0.1	2,13
2308	0.1	0.1	0.1	No	0.1	2,5,13
2439	No	0.1	0.1	No	No	–
2502	0.1	0.1	0.1	No	0.1	2,5,13
2564	0.1	0.1	0.1	No	0.1	2,5,13
2677	0.1	0.1	0.1	No	0.1	13
2679	0.1	0.1	0.1	No	0.1	13
2681	0.1	0.1	0.1	No	0.1	13
2789	0.1	0.1	0.1	0.1	0.1	2,5,7,13
2790	0.1	0.1	0.1	0.1	0.1	2,5,7,13
2796	0.1	0.1	0.1	No	0.1	5,13
2797	0.1	0.1	0.1	No	0.1	13
2817	No	0.1	0.1	No	No	–
2837	0.1	0.1	0.1	No	0.1	13
3093	0.1	0.1	0.1	No	0.1	2,5,13
3320	0.1	0.1	0.1	No	0.1	13
3421	No	0.1	0.1	No	No	–
3471	No	0.1	0.1	No	No	–

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plywood	plastic	steel
reconstituted wood	plywood	
solid plastic	steel	
steel		
wooden		

PARTICULAR PACKING REQUIREMENTS:

2 Plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
5 Steel packagings must be corrosion-resistant or with protection against corrosion.
7 When aluminium or aluminium alloys are used they must be resistant to corrosion.
13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
21 Glass or earthenware inner packagings and glass ampoules are permitted if this item is free from hydrofluoric acid.

810 PACKING INSTRUCTION 810 810

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	0.5 kg
Plastic (IP.2)	0.5 kg
Metal (IP.3, IP.3A)	0.5 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

811 PACKING INSTRUCTION 811 811

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 kg
Plastic (IP.2)	2.5 kg
Metal (IP.3, IP.3A)	2.5 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Drums
- plastic (1H1, 1H2)
- steel (1A1, 1A2)

Jerricans
- plastic (3H1, 3H2)
- steel (3A1, 3A2)

812 PACKING INSTRUCTION 812 812

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	2.5 L
Plastic (IP.2)	2.5 L
Metal (IP.3, IP.3A)	2.5 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Cylinders that meet the requirements of 4;2.7 are permitted
Drums
- aluminium (1B1)
- plastic (1H1)
- steel (1A1)

Jerricans
- plastic (3H1)
- steel (3A1)

813 PACKING INSTRUCTION 813 813

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Aluminium IP.3A (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
1715	2.5	2.5	2.5	2.5	0.5	2,5,7,13
1719	2.5	2.5	2.5	No	0.5	–
1724	2.5	2.5	2.5	No	0.5	5
1728	2.5	2.5	2.5	No	0.5	5
1732	2.5	2.5	2.5	2.5	0.5	2,5,7,13,21
1747	2.5	2.5	2.5	No	0.5	5
1753	2.5	2.5	2.5	No	0.5	5
1762	2.5	2.5	2.5	No	0.5	5
1763	2.5	2.5	2.5	No	0.5	5
1764	2.5	2.5	2.5	No	0.5	2,5,13
1765	2.5	2.5	2.5	No	0.5	2,5,13
1766	2.5	2.5	2.5	No	0.5	5
1767	2.5	2.5	2.5	No	0.5	5
1768	No	2.5	2.5	No	No	2,5
1769	2.5	2.5	2.5	No	0.5	5
1771	2.5	2.5	2.5	No	0.5	5
1775	2.5	2.5	2.5	No	0.5	2,5,21
1776	2.5	2.5	2.5	No	0.5	2,5,21
1778	2.5	2.5	2.5	No	0.5	2,5,21
1781	2.5	2.5	2.5	No	0.5	5
1782	2.5	2.5	2.5	No	0.5	2,5,21
1784	2.5	2.5	2.5	No	0.5	5
1787	2.5	2.5	No	No	0.5	2,13
1788	2.5	2.5	No	No	0.5	2,13
1789	2.5	2.5	No	No	0.5	2,13
1790	No	2.5	2.5	No	No	2,5
1791	2.5	2.5	2.5	No	0.5	5
1796	2.5	No	2.5	No	0.5	5,13
1799	2.5	2.5	2.5	No	0.5	5
1800	2.5	2.5	2.5	No	0.5	5
1801	2.5	2.5	2.5	No	0.5	5
1802	2.5	2.5	No	No	0.5	–
1803	2.5	2.5	No	No	0.5	–
1804	2.5	2.5	2.5	No	0.5	5
1808	2.5	2.5	2.5	No	0.5	2,5,13
1810	2.5	2.5	2.5	No	0.5	5

1814	2.5	2.5	2.5	No	0.5	–
1816	2.5	2.5	2.5	No	0.5	5
1818	2.5	2.5	No	No	0.5	2,13
1824	2.5	2.5	2.5	No	0.5	–
1826	2.5	No	2.5	No	0.5	5,13
1830	2.5	2.5	2.5	No	0.5	5,13
1832	2.5	2.5	2.5	No	0.5	5,13
1837	2.5	2.5	2.5	No	0.5	5,13
1838	2.5	2.5	No	No	0.5	2,13
1906	2.5	2.5	2.5	No	0.5	5,13
1908	2.5	2.5	2.5	No	0.5	2,13
1940	2.5	2.5	2.5	No	0.5	–
2029	0.5	0.5	2.5	2.5	0.5	2,5,7,13
2031	2.5	2.5	No	No	0.5	2,13
2258	2.5	2.5	2.5	No	0.5	2,13
2308	2.5	2.5	2.5	No	0.5	2,5,13
2435	2.5	2.5	2.5	No	0.5	5
2439	No	2.5	2.5	No	No	–
2443	2.5	2.5	2.5	No	0.5	2,5,13
2502	2.5	2.5	2.5	No	0.5	–
2564	2.5	2.5	2.5	No	0.5	2,5,13
2672	5	5	10	No	0.5	–
2677	2.5	2.5	2.5	No	0.5	–
2679	2.5	2.5	2.5	No	0.5	–
2681	2.5	2.5	2.5	No	0.5	–
2789	2.5	2.5	2.5	2.5	0.5	2,5,7,13
2790	2.5	2.5	2.5	2.5	0.5	5,7,13
2796	2.5	2.5	2.5	No	0.5	5,13
2797	2.5	2.5	2.5	No	0.5	–
2817	No	2.5	2.5	No	No	–
2837	2.5	2.5	2.5	No	0.5	–
3093	2.5	2.5	2.5	No	0.5	2,5,13
3094	2.5	2.5	2.5	No	0.5	2,5,13
3320	2.5	2.5	2.5	No	0.5	–
3421	No	2.5	2.5	No	No	–
3471	No	2.5	2.5	No	No	–

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

UN No.	*Steel drums 1A1*	*Aluminium drums 1B1*	*Steel jerricans 3A1*	*Plastic drums 1H1*	*Plastic jerricans 3H1*	*Composites (plastic) — all*	*Cylinders (as permitted by 4;2.7)*	*Particular packing requirements*
1715	Yes	Yes	Yes	Yes	Yes	Yes	Yes	5,7
1719	Yes	No	Yes	Yes	Yes	Yes	Yes	–
1724	Yes	No	Yes	No	No	Yes	Yes	5
1728	Yes	No	Yes	No	No	Yes	Yes	5
1732	Yes	Yes	Yes	No	No	Yes	Yes	5,7
1747	Yes	No	Yes	No	No	Yes	Yes	5
1753	Yes	No	Yes	No	No	Yes	Yes	5
1762	Yes	No	Yes	No	No	Yes	Yes	5
1763	Yes	No	Yes	No	No	Yes	Yes	5
1764	Yes	No	Yes	Yes	Yes	Yes	Yes	5

1765	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1766	Yes	No	Yes	No	No	Yes	Yes	5
1767	Yes	No	Yes	No	No	Yes	Yes	5
1768	Yes	No	Yes	No	No	Yes	Yes	5
1769	Yes	No	Yes	No	No	Yes	Yes	5
1771	Yes	No	Yes	No	No	Yes	Yes	5
1775	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1776	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1778	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1781	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1782	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1784	Yes	No	Yes	No	No	Yes	Yes	5
1787	No	No	No	No	No	Yes	Yes	–
1788	No	No	No	No	No	Yes	Yes	–
1789	No	No	No	Yes	Yes	Yes	Yes	–
1790	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1791	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1796	Yes	No	Yes	No	No	No	Yes	5
1799	Yes	No	Yes	No	No	Yes	Yes	5
1800	Yes	No	Yes	No	No	Yes	Yes	5
1801	Yes	No	Yes	No	No	Yes	Yes	5
1803	No	No	No	No	No	Yes	Yes	–
1804	Yes	No	Yes	No	No	Yes	Yes	5
1808	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1810	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1811	Yes	No	Yes	Yes	Yes	Yes	Yes	–
1814	Yes	No	Yes	Yes	Yes	Yes	Yes	–
1816	Yes	No	Yes	No	No	Yes	Yes	5
1818	No	No	No	Yes	Yes	Yes	No	–
1824	Yes	No	Yes	Yes	Yes	Yes	Yes	–
1826	Yes	No	Yes	No	No	No	Yes	5
1830	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1832	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1837	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1838	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1906	Yes	No	Yes	Yes	Yes	Yes	Yes	5
1908	No	No	No	Yes	Yes	Yes	No	–
1940	Yes	No	Yes	Yes	Yes	Yes	Yes	–
2029	Yes	Yes	Yes	No	No	Yes	Yes	5,7
2258	Yes	No	Yes	Yes	Yes	Yes	Yes	–
2308	Yes	No	Yes	Yes	Yes	Yes	Yes	5
2435	Yes	No	Yes	No	No	Yes	Yes	5
2439	Yes	No	Yes	Yes	Yes	Yes	Yes	–
2443	Yes	No	Yes	No	No	Yes	Yes	5
2502	Yes	No	Yes	Yes	Yes	Yes	Yes	–
2564	Yes	No	Yes	Yes	Yes	Yes	Yes	5
2672	Yes	No	Yes	Yes	Yes	Yes	Yes	–
2677	Yes	No	Yes	Yes	Yes	Yes	Yes	–
2679	Yes	No	Yes	Yes	Yes	Yes	Yes	–
2681	Yes	No	Yes	Yes	Yes	Yes	Yes	–
2789	Yes	Yes	Yes	Yes	Yes	Yes	Yes	5,7
2790	Yes	Yes	Yes	Yes	Yes	Yes	Yes	5,7
2796	Yes	No	Yes	Yes	Yes	Yes	Yes	5
2797	Yes	No	Yes	Yes	Yes	Yes	Yes	–
2817	Yes	No	Yes	Yes	Yes	Yes	Yes	–
2837	Yes	No	Yes	Yes	Yes	Yes	Yes	–
3093	Yes	No	Yes	Yes	Yes	Yes	Yes	5
3094	Yes	No	Yes	Yes	Yes	Yes	Yes	5
3320	Yes	No	Yes	Yes	Yes	Yes	Yes	–
3471	Yes	No	Yes	Yes	Yes	Yes	Yes	–

PARTICULAR PACKING REQUIREMENTS:

2 Plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
5 Steel packagings must be corrosion-resistant or with protection against corrosion.
7 When aluminium or aluminium alloys are used they must be resistant to corrosion.
13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
21 Glass or earthenware inner packagings and glass ampoules are permitted if this item is free from hydrofluoric acid.

814 PACKING INSTRUCTION 814 814

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 kg
Plastic (IP.2)	2.5 kg
Metal (IP.3, IP.3A)	2.5 kg
Plastic bag (IP.5)	1 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

Y814 PACKING INSTRUCTION Y814 Y814

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	0.5 kg
Plastic (IP.2)	0.5 kg
Metal (IP.3, IP.3A)	0.5 kg
Plastic bag (IP.5)	0.5 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plastic	plastic	steel
plywood	plywood	
reconstituted wood	steel	
steel		
wooden		

815 PACKING INSTRUCTION 815 815

The general packing requirements of 4;1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Aluminium IP.3A (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1727	1	2.5	2.5	No	0.5	21
1740	1	2.5	2.5	No	0.5	21
1807	1	2.5	2.5	No	0.5	5
1811	1	2.5	2.5	No	0.5	21
1839	1	2.5	2.5	No	0.5	5
1938	1	2.5	2.5	No	0.5	5
2439	1	2.5	2.5	No	0.5	21
2509	1	2.5	2.5	No	0.5	5
2869	1	2.5	2.5	No	0.5	5
2949	1	2.5	2.5	2.5	0.5	5

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

PARTICULAR PACKING REQUIREMENTS:

5 Steel packagings must be corrosion-resistant or with protection against corrosion.
21 Glass or earthenware inner packagings and glass ampoules are permitted if this item is free from hydrofluoric acid.

Y815 PACKING INSTRUCTION Y815 Y815

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Aluminium IP.3A (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1727	0.5	0.5	0.5	No	0.5	21
1740	0.5	0.5	0.5	No	0.5	21
1807	0.5	0.5	0.5	No	0.5	5
1811	0.5	0.5	0.5	No	0.5	21
1839	0.5	0.5	0.5	No	0.5	5
1938	0.5	0.5	0.5	No	0.5	5
2439	0.5	0.5	0.5	No	0.5	21
2509	0.5	0.5	0.5	No	0.5	5
2869	0.5	0.5	0.5	No	0.5	5
2949	0.5	0.5	0.5	0.5	0.5	5

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plastic	plastic	steel
plywood	plywood	
reconstituted wood	steel	
steel		
wooden		

PARTICULAR PACKING REQUIREMENTS:

5 Steel packagings must be corrosion-resistant or with protection against corrosion.
21 Glass or earthenware inner packagings and glass ampoules are permitted if this item is free from hydrofluoric acid.

816 PACKING INSTRUCTION 816 816

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	2.5 kg
Plastic (IP.2)	5 kg
Metal (IP.3, IP.3A)	5 kg
Plastic bag (IP.5)	2.5 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Drums
- aluminium (1B1, 1B2)
- fibre (1G with inner plastic liner)
- plastic (1H1, 1H2)
- plywood (1D with inner plastic liner)
- steel (1A1, 1A2)

Jerricans
- plastic (3H1, 3H2)
- steel (3A1, 3A2)

817 PACKING INSTRUCTION 817 817

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Aluminium IP.3A (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1727	2.5	5	5	No	0.5	21
1740	2.5	5	5	No	0.5	21
1792	2.5	5	No	No	0.5	–
1806	2.5	5	5	No	0.5	5
1807	2.5	5	5	No	0.5	5
1811	2.5	5	5	No	0.5	21
1839	2.5	5	5	No	0.5	5
1938	2.5	5	5	No	0.5	5
1939	2.5	5	No	No	0.5	–
2439	2.5	5	5	No	0.5	21

2509	2.5	5	5	No	0.5	5
2691	2.5	5	5	No	0.5	5
2869	2.5	5	5	No	0.5	5
2949	2.5	5	5	5	0.5	5

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

UN No.	*Steel drums 1A1, 1A2*	*Aluminium drums 1B1, 1B2*	*Steel jerricans 3A1, 3A2*	*Plastic drums 1H1, 1H2*	*Plastic jerricans 3H1, 3H2*	*Composites (plastic) — all*	*Particular packing requirements*
1727	Yes	No	Yes	Yes	Yes	Yes	–
1740	Yes	No	Yes	Yes	Yes	Yes	–
1806	Yes	No	Yes	Yes	Yes	Yes	5
1807	Yes	No	Yes	Yes	Yes	Yes	5
1811	Yes	No	Yes	Yes	Yes	Yes	–
1839	Yes	No	Yes	Yes	Yes	Yes	5
1938	Yes	No	Yes	Yes	Yes	Yes	5
1939	No	No	No	Yes	Yes	Yes	–
2439	Yes	No	Yes	Yes	Yes	Yes	–
2509	Yes	No	Yes	Yes	Yes	Yes	5
2691	Yes	No	Yes	Yes	Yes	Yes	5
2869	Yes	No	Yes	Yes	Yes	Yes	5
2949	Yes	Yes	Yes	Yes	Yes	Yes	5

PARTICULAR PACKING REQUIREMENTS:

5 Steel packagings must be corrosion-resistant or with protection against corrosion.
21 Glass or earthenware inner packagings and glass ampoules are permitted if this item is free from hydrofluoric acid.

818 PACKING INSTRUCTION 818 818

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	2.5 L
Plastic (IP.2)	2.5 L
Metal (IP.3, IP.3A)	5 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
expanded plastic (4H1)	fibre (1G)	plastic (3H2)
fibreboard (4G)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
solid plastic (4H2)		
steel (4A)		
wooden (4C1, 4C2)		

Y818 PACKING INSTRUCTION Y818 Y818

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	0.5 L
Plastic (IP.2)	0.5 L
Metal (IP.3, IP.3A)	0.5 L
Glass ampoule (IP.8)	0.5 L

Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
expanded plastic	fibre	plastic
fibreboard	plastic	steel
plywood	plywood	
reconstituted wood	steel	
solid plastic		
steel		
wooden		

819 PACKING INSTRUCTION 819 819

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
1719	2.5	2.5	2.5	0.5	–
1774	2.5	2.5	No	0.5	–
1787	2.5	2.5	No	0.5	13
1788	2.5	2.5	No	0.5	13
1789	2.5	2.5	No	0.5	13
1791	2.5	2.5	2.5	0.5	5
1805	2.5	2.5	2.5	0.5	5
1814	2.5	2.5	2.5	0.5	–
1824	2.5	2.5	2.5	0.5	–
1908	2.5	2.5	2.5	0.5	13
2564	2.5	2.5	2.5	0.5	5,13
2672	2.5	2.5	5	0.5	–
2677	2.5	2.5	2.5	0.5	–
2679	2.5	2.5	2.5	0.5	–
2681	2.5	2.5	2.5	0.5	–
2817	2.5	2.5	2.5	0.5	21
2837	2.5	2.5	2.5	0.5	–
3320	2.5	2.5	2.5	0.5	–
3421	2.5	2.5	2.5	0.5	21
3471	2.5	2.5	2.5	0.5	21

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
expanded plastic (4H1)	fibre (1G)	plastic (3H2)
fibreboard (4G)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
solid plastic (4H2)		
steel (4A)		
wooden (4C1, 4C2)		

PARTICULAR PACKING REQUIREMENTS:

5 Steel packagings must be corrosion-resistant or with protection against corrosion.
13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
21 Glass or earthenware inner packagings and glass ampoules are permitted if this item is free from hydrofluoric acid.

Y819 PACKING INSTRUCTION Y819 Y819

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
1719	0.5	0.5	0.5	0.5	13
1787	0.5	0.5	No	0.5	13
1788	0.5	0.5	No	0.5	13
1789	0.5	0.5	No	0.5	13
1791	0.5	0.5	0.5	0.5	5,13
1805	0.5	0.5	0.5	0.5	5,13
1814	0.5	0.5	0.5	0.5	13
1824	0.5	0.5	0.5	0.5	13
1908	0.5	0.5	0.5	0.5	13
2564	0.5	0.5	0.5	0.5	5,13
2672	0.5	0.5	0.5	0.5	13
2677	0.5	0.5	0.5	0.5	13
2679	0.5	0.5	0.5	0.5	13
2681	0.5	0.5	0.5	0.5	13
2817	0.5	0.5	0.5	0.5	13,21
2837	0.5	0.5	0.5	0.5	13
3320	0.5	0.5	0.5	0.5	13
3421	0.5	0.5	0.5	0.5	13,21
3471	0.5	0.5	0.5	0.5	13,21

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
expanded plastic	fibre	plastic
fibreboard	plastic	steel
plywood	plywood	
reconstituted wood	steel	
solid plastic		
steel		
wooden		

PARTICULAR PACKING REQUIREMENTS:

5 Steel packagings must be corrosion-resistant or with protection against corrosion.

13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

21 Glass or earthenware inner packagings and glass ampoules are permitted if this item is free from hydrofluoric acid.

820 PACKING INSTRUCTION 820 820

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	5 L
Plastic (IP.2)	5 L
Metal (IP.3, IP.3A)	10 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
expanded plastic (4H1)	fibre (1G)	plastic (3H2)
fibreboard (4G)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
solid plastic (4H2)		
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Cylinders that meet the requirements of 4;2.7 are permitted
Drums
- aluminium (1B1)
- plastic (1H1)
- steel (1A1)

Jerricans
- plastic (3H1)
- steel (3A1)

821 PACKING INSTRUCTION 821 821

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (L)*	*Plastic IP.2 (L)*	*Metal (not aluminium) IP.3 (L)*	*Glass ampoule IP.8 (L)*	*Particular packing requirements*
1719	5	5	5	0.5	–
1787	5	5	No	0.5	13
1788	5	5	No	0.5	13
1789	5	5	No	0.5	13
1791	5	5	5	0.5	5
1805	5	5	5	0.5	5
1814	5	5	5	0.5	–
1824	5	5	5	0.5	–
1908	5	5	5	0.5	13
2564	5	5	5	0.5	5,13

2677	5	5	5	0.5	–
2679	5	5	5	0.5	–
2681	5	5	5	0.5	–
2817	5	5	5	0.5	21
2837	5	5	5	0.5	–
3320	5	5	5	0.5	–
3421	5	5	5	0.5	21
3471	5	5	5	0.5	21

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
expanded plastic (4H1)	fibre (1G)	plastic (3H2)
fibreboard (4G)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
solid plastic (4H2)		
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

UN No.	*Steel drums 1A1*	*Steel jerricans 3A1*	*Plastic drums 1H1*	*Plastic jerricans 3H1*	*Composites (plastic) — all*	*Cylinders (as permitted by 4;2.7)*	*Particular packing requirements*
1719	Yes	Yes	Yes	Yes	Yes	Yes	5
1787	No	No	No	No	Yes	No	–
1788	No	No	No	No	Yes	No	–
1789	No	No	Yes	Yes	Yes	No	–
1791	Yes	Yes	Yes	Yes	Yes	Yes	5
1805	Yes	Yes	Yes	Yes	Yes	Yes	5
1814	Yes	Yes	Yes	Yes	Yes	Yes	–
1824	Yes	Yes	Yes	Yes	Yes	Yes	–
1908	Yes	Yes	Yes	Yes	Yes	Yes	–
2564	Yes	Yes	Yes	Yes	Yes	Yes	5
2677	Yes	Yes	Yes	Yes	Yes	Yes	5
2679	Yes	Yes	Yes	Yes	Yes	Yes	–
2681	Yes	Yes	Yes	Yes	Yes	Yes	5
2817	Yes	Yes	Yes	Yes	Yes	Yes	5
2837	Yes	Yes	Yes	Yes	Yes	Yes	–
3320	Yes	Yes	Yes	Yes	Yes	Yes	–
3421	Yes	Yes	Yes	Yes	Yes	Yes	–
3471	Yes	Yes	Yes	Yes	Yes	Yes	–

PARTICULAR PACKING REQUIREMENTS:

5 Steel packagings must be corrosion-resistant or with protection against corrosion.
13 Glass or earthenware inner packagings and glass ampoules must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.
21 Glass or earthenware inner packagings and glass ampoules are permitted if this item is free from hydrofluoric acid.

822 PACKING INSTRUCTION 822 822

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	2.5 kg
Plastic (IP.2)	2.5 kg
Metal (IP.3, IP.3A)	5 kg
Plastic bag (IP.5)	2.5 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

Y822 PACKING INSTRUCTION Y822 Y822

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 kg
Plastic (IP.2)	1 kg
Metal (IP.3, IP.3A)	1 kg
Plastic bag (IP.5)	1 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plastic	plastic	steel
plywood	plywood	
reconstituted wood	steel	
steel		
wooden		

823 PACKING INSTRUCTION 823 823

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	5 kg
Plastic (IP.2)	5 kg
Metal (IP.3, IP.3A)	10 kg
Plastic bag (IP.5)	5 kg
Glass ampoule (IP.8)	0.5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Drums
- aluminium (1B1, 1B2)
- fibre (1G with inner plastic liner)
- plastic (1H1, 1H2)
- plywood (1D with inner plastic liner)
- steel (1A1, 1A2)

Jerricans
- plastic (3H1, 3H2)
- steel (3A1, 3A2)

825 PACKING INSTRUCTION 825 825

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1740	2.5	5	5	0.5	21
2869	2.5	5	5	0.5	5
3453	2.5	5	5	0.5	5

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

PARTICULAR PACKING REQUIREMENTS:

5 Steel packagings must be corrosion-resistant or with protection against corrosion.
21 Glass or earthenware inner packagings and glass ampoules are permitted if this item is free from hydrofluoric acid.

Y825 PACKING INSTRUCTION Y825 Y825

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1740	1	1	1	0.5	21
2869	1	1	1	0.5	5
3453	1	1	1	0.5	5

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plastic	plastic	steel
plywood	plywood	
reconstituted wood	steel	
steel		
wooden		

PARTICULAR PACKING REQUIREMENTS:

5 Steel packagings must be corrosion-resistant or with protection against corrosion.
21 Glass or earthenware inner packagings and glass ampoules are permitted if this item is free from hydrofluoric acid.

826 PACKING INSTRUCTION 826 826

The general packing requirements of 4;1 must be met.

All of the following packagings must meet Packing Group II performance requirements.

COMBINATION PACKAGINGS:

INNER:

UN No.	*Glass or earthenware IP.1 (kg)*	*Plastic IP.2 (kg)*	*Metal (not aluminium) IP.3 (kg)*	*Glass ampoule IP.8 (kg)*	*Particular packing requirements*
1740	5	10	10	0.5	21
2869	5	10	10	0.5	5
3453	5	10	10	0.5	5

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

UN No.	*Steel drums 1A1, 1A2*	*Steel jerricans 3A1, 3A2*	*Plastic drums 1H1, 1H2*	*Plastic jerricans 3H1, 3H2*	*Composites (plastic) — all*	*Particular packing requirements*
1740	Yes	Yes	Yes	Yes	Yes	–
2869	Yes	Yes	Yes	Yes	Yes	5

PARTICULAR PACKING REQUIREMENTS:

5 Steel packagings must be corrosion-resistant or with protection against corrosion.
21 Glass or earthenware inner packagings and glass ampoules are permitted if this item is free from hydrofluoric acid.

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PACKING INSTRUCTION 873

Passenger and cargo aircraft for UN 3477 only

General requirements

Part 4;1.1.1, 1.1.2 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3477 **Fuel cell cartridges**	5 kg of fuel cell cartridges	50 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— Fuel cell cartridges must be securely cushioned in the outer packagings.
— The mass of each fuel cell cartridge must not exceed 1 kg.
— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium(4B)	Aluminium(1B2)	Steel (3A2)
Fibreboard (4G)	Fibreboard (1G)	Plastics(3H2)
Natural wood (4C1, 4C2)	Plastic (1H2)	Aluminium (3B2)
Plastic (4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

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PACKING INSTRUCTION 874

Passenger and cargo aircraft for UN 3477 (contained in equipment) only

General requirements

Part 4;1.1.1 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3477 **Fuel cell cartridges contained in equipment**	5 kg of fuel cell cartridges	50 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— Fuel cell cartridges that are contained in equipment must be protected against short circuit and the equipment must be protected against inadvertent operation.
— Equipment must be securely cushioned in the outer packagings.
— The mass of each fuel cell cartridge must not exceed 1 kg.
— Fuel cell systems must not charge batteries during transport.
— On passenger aircraft, each fuel cell system and each fuel cell cartridge must conform to IEC PAS 62282-6-1 Ed. 1 or a standard approved by the appropriate authority of the State of Origin.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes *Drums* *Jerricans*

Strong outer packagings

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PACKING INSTRUCTION 875

Passenger and cargo aircraft for UN 3477 (packed with equipment) only

General requirements

Part 4;1.1.1 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3477 **Fuel cell cartridges packed with equipment**	5 kg of fuel cell cartridges	50 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— When fuel cell cartridges are packed with equipment, they must be packed in intermediate packagings together with the equipment they are capable of powering.
— The maximum number of fuel cell cartridges in the intermediate packaging must be the minimum number required to power the equipment, plus two spares.
— The fuel cell cartridges and the equipment must be packed with cushioning material or divider(s) or inner packaging so that the fuel cell cartridges are protected against damage that may be caused by the movement or placement of the equipment and the cartridges within the packaging.
— The mass of each fuel cell cartridge must not exceed 1 kg.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes *Drums* *Jerricans*

Strong outer packagings

Chapter 11

CLASS 9 — MISCELLANEOUS DANGEROUS GOODS

900 PACKING INSTRUCTION 900 900

Vehicles, machines or equipment containing internal combustion engines or batteries must meet the following requirements:

a) except as otherwise provided for in this packing instruction, fuel tanks must be drained of fuel and tank caps fitted securely. Special precautions are necessary to ensure complete drainage of the fuel system of vehicles, machines or equipment incorporating internal combustion engines, such as lawn mowers and outboard motors, where such machines or equipment could possibly be handled in other than an upright position. When it is not possible to handle in other than an upright position, vehicles, except those with diesel engines, must be drained of fuel as far as practicable, and if any fuel remains, it must not exceed one-quarter of the tank capacity. Vehicles equipped with diesel engines are excepted from the requirement to drain the fuel tanks, provided that a sufficient ullage space has been left inside the tank to allow fuel expansion without leakage, and the tank caps are tightly closed. A careful check must be made to ensure there are no fuel leakages;

b) 1) for flammable gas-powered vehicles, machines or equipment, pressurized vessels containing the flammable gas must be completely emptied of flammable gas. Lines from vessels to gas regulators, and gas regulators themselves, must also be drained of all trace of flammable gas. To ensure that these conditions are met, gas shut-off valves must be left open and connections of lines to gas regulators must be left disconnected upon delivery of the vehicle to the operator. Shut-off valves must be closed and lines reconnected at gas regulators before loading the vehicle aboard the aircraft;

or alternatively,

2) flammable gas-powered vehicles, machines or equipment that have pressure receptacles (fuel tanks) equipped with electrically operated valves that close automatically in case the power is disconnected, or with manual shut-off valves, may be transported under the following conditions:

i) the valves must be in the closed position and in the case of electrically operated valves, power to those valves must be disconnected;

ii) after closing the valves, the vehicle, equipment or machinery must be operated until it stops from lack of fuel before being loaded aboard the aircraft;

iii) in no part of the closed system must the remaining pressure of compressed gases exceed 5 per cent of the maximum allowable working pressure of the system, or more than 2 000 kPa (20 bar), whichever is the lower;

iv) there must not be any residual liquefied gas in the system, including the fuel tank;

c) if non-spillable batteries, as defined in Packing Instruction 806, are installed, they must be securely fastened in the battery holder of the vehicle, machine or equipment and be protected in such a manner as to prevent damage and short circuits;

d) if spillable batteries are installed, they must be securely fastened in the battery holder of the vehicle, machine or equipment and be protected in such a manner as to prevent damage and short circuits. However, if it is possible for the vehicle, machine or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 433 or 800 as applicable;

e) dangerous goods required for the operation of the vehicle, machine or equipment, such as fire extinguishers, tire inflation canisters, safety devices, must be securely mounted in the vehicle, machine or equipment. Aircraft may also contain other articles and substances which would otherwise be classified as dangerous goods but which are installed in that aircraft in accordance with the pertinent airworthiness requirements and operating regulations. If fitted, life-rafts, emergency escape slides and other inflation devices must be protected such that they cannot be activated accidentally. Vehicles containing dangerous goods identified in Table 3-1 as forbidden on passenger aircraft may only be transported on cargo aircraft;

f) in the event that vehicles, machines or equipment containing internal combustion engines are being shipped in a dismantled state such that fuel lines have been disconnected, those fuel lines must be sealed securely;

g) vehicles equipped with theft-protection devices, installed radio communications equipment or navigational system must have such devices, equipment or system disabled;

h) if lithium batteries are installed, they must be of a type that has successfully passed the tests specified in the UN *Manual of Tests and Criteria*, Part III, subsection 38.3, must be securely fastened in the vehicle, machinery or equipment and must be protected in such a manner so as to prevent damage and short circuits; and

i) if sodium batteries are installed they must conform to the requirements of Special Provision A94, must be securely fastened in the vehicle, machinery or equipment and must be protected in such a manner so as to prevent damage and short circuits.

When internal combustion engines are being shipped separately, all fuel, coolant or hydraulic systems remaining in or on the engine must be drained as far as practicable and all disconnected fluid pipes must be sealed with leakproof caps, which are positively retained.

Replacements for the dangerous goods permitted in a) to i) must not be carried under this packing instruction.

902 PACKING INSTRUCTION 902 902

Magnetized material will be accepted only when:

a) devices such as magnetrons and light meters have been packed so that the polarities of the individual units oppose one another;

b) permanent magnets, where possible, have keeper bars installed;

c) the magnetic field strength at a distance of 4.6 m from any point on the surface of the assembled consignment:

1) does not exceed 0.418 A/m; or

2) produces a magnetic compass deflection of 2 degrees or less.

+ Magnetized material may be shipped in a unit load device or other type of pallet prepared by a single shipper provided that the shipper has made prior arrangements with the operator. The shipper must provide the operator with written documentation stating the number of packages of magnetized material contained in each unit load device or other type of pallet.

+ *Note.— For loading instructions, see 7;2.10.*

Determination of shielding requirements

The magnetic field strength of magnetized materials must be measured using measuring devices having a sensitivity sufficient to measure magnetic fields greater than 0.0398 A/m within a tolerance of plus or minus 5 per cent, or with a magnetic compass sensitive enough to read a 2 degree variation, preferably in 1 degree increments or finer. If the maximum field strength observed at a distance of 2.1 m is less than 0.159 A/m or there is no significant compass deflection (less than 0.5 degree), the article is not restricted as a magnetized material. Methods of determining if a magnetized article meets the definition of a magnetized material include:

a) When an oersted meter is used, it is placed on one of two points positioned 4.6 m apart and located in an area that is free from magnetic interference other than the earth's magnetic field. The oersted meter is then aligned with the second point and "balanced" to a zero reading. The magnetic article is then placed on the other point and the magnetic field strength is measured by reading the meter while rotating the package 360 degrees in its horizontal plane. If the maximum field strength observed is 0.418 A/m or less, the article is acceptable for air transport. When the maximum field strength exceeds 0.418 A/m, shielding should be applied until a reading of 0.418 A/m or less has been attained.

b) When a magnetic compass is used as a sensing device, it should be placed on one of two points positioned 4.6 m apart which are aligned in an East/West direction and in an area that is free from any magnetic interference other than the earth's magnetic field. The packaged item to be tested is placed on the other point and rotated 360 degrees in its horizontal plane for indication of compass deflection. When the maximum compass deflection observed is 2 degrees or less, the article is acceptable for air transport. When the maximum compass deflection of an item exceeds 2 degrees, shielding must be applied until the maximum deflection is not more than 2 degrees.

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904 PACKING INSTRUCTION 904 904

≠ Solid carbon dioxide (dry ice) in packages when offered for transport by air must be packed in accordance with the general packing requirements of Part 4, Chapter 1 and be in packaging designed and constructed to permit the release of carbon dioxide gas to prevent a build-up of pressure that could rupture the packaging. Arrangements between shipper and operator(s) must be made for each shipment, to ensure that ventilation safety procedures are followed. The dangerous goods transport document requirements of Part 5, Chapter 1 are not applicable provided alternative written documentation is supplied describing the contents. The information required is as follows and should be shown in the following order: UN 1845, (**Dry ice** or **Carbon dioxide, solid**, 9 (the word "Class" may be included prior to the number "9")), the number of packages and the net quantity of dry ice in each package. The information must be included with the description of the goods. The net mass of the **Carbon dioxide, solid** (**Dry ice**) must be marked on the outside of the package.

Dry ice used as a refrigerant for other than dangerous goods may be shipped in a unit load device or other type of pallet prepared by a single shipper provided that the shipper has made prior arrangements with the operator. In such case, the unit load device, or other type of pallet must allow the venting of the carbon dioxide gas to prevent a dangerous build-up of pressure. The shipper must provide the operator with written documentation stating the total quantity of the dry ice contained in the unit load device or other type of pallet.

Note.— For loading restrictions see 7;2.11; for special marking requirement see 5;2.4.7.

905 PACKING INSTRUCTION 905 905

The description "Life-saving appliances, self-inflating" (UN 2990) is intended to apply to life-saving appliances that present a hazard if the self-inflating device is activated accidentally.

Life-saving appliances, such as life-rafts, life vests, aircraft survival kits or aircraft evacuation slides, may only contain the dangerous goods listed below:

≠ a) Division 2.2 gases must be contained in cylinders which conform to the requirements of the appropriate national authority of the country in which they are approved and filled. Such cylinders may be connected to the life-saving appliance. These cylinders may include installed actuating cartridges (cartridges, power device of Division 1.4C and 1.4S) provided the aggregate quantity of deflagrating (propellant) explosives does not exceed 3.2 grams per unit. When the cylinders are shipped separately, they shall be classified as appropriate for the Division 2.2 gas contained and need not be marked, labelled or described as explosive articles;

b) signal devices (Class 1), which may include smoke and illumination signal flares; signal devices must be packed in plastic or fibreboard inner packagings;

c) small quantities of flammable substances, corrosive solids and organic peroxides (Class 3, Class 8, Division 4.1 and 5.2), which may include a repair kit and not more than 30 strike-anywhere matches. The organic peroxide may only be a component of a repair kit and the kit must be packed in strong inner packaging. The strike-anywhere matches must be packed in a cylindrical metal or composition packaging with a screw-type closure and be cushioned to prevent movement;

d) electric storage batteries (Class 8) and lithium batteries (Class 9); and

e) first aid kits which may include flammable, corrosive and toxic articles or substances.

The appliances must be packed, so that they cannot be accidentally activated, in strong outer packagings and, except for life vests, the dangerous goods must be in inner packagings packed so as to prevent movement. The dangerous goods must be an integral part of the appliance without which it would not be operational and in quantities which do not exceed those appropriate for the actual appliance when in use.

Passenger restraint systems consisting of a cylinder charged with a non-liquefied, non-flammable compressed gas and no more than two actuating cartridges per passenger restraint system that meet the requirements of the State of Manufacture must be packed in strong outer packagings so they cannot be accidentally activated.

Life-saving appliances may also include articles and substances not subject to these Instructions which are an integral part of the appliance.

906 PACKING INSTRUCTION 906 906

The general packing requirements of 4;1 must be met.

907 PACKING INSTRUCTION 907 907

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	5 L
Plastic (IP.2)	5 L
Metal (IP.3, IP.3A)	10 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plywood (4D)	plastic (1H2)	steel (3A2)
reconstituted wood (4F)	plywood (1D)	
solid plastic (4H2)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Drums
- aluminium (1B1)
- plastic (1H1, 1H2) — not permitted for UN 1941
- steel (1A1)

Jerricans
- plastic (3H1, 3H2) — not permitted for UN 1941
- steel (3A1)

Y907 PACKING INSTRUCTION Y907 Y907

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	1 L
Plastic (IP.2)	1 L
Metal (IP.3, IP.3A)	2 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plywood	plastic	steel
reconstituted wood	plywood	
solid plastic	steel	
steel		
wooden		

908 PACKING INSTRUCTION 908 908

The general packing requirements of 4;1 must be met.

Polymeric beads or granules, expandable, impregnated with flammable gas or liquid as a blowing agent and plastic moulding materials in dough, sheet or extruded rope form must be packed in wooden (4C1, 4C2), plywood (4D), fibreboard (4G) or reconstituted wood (4F) boxes with sealed inner plastic liner, plywood drums (1D), fibre drums (1G) with sealed inner plastic liner or in metal (1A1, 1A2, 1B1, 1B2) packagings.

Note.— For loading restrictions see 7;2.12.

909 PACKING INSTRUCTION 909 909

The general packing requirements of 4;1 must be met.

Ammonium nitrate fertilizers (UN 2071) must be carried in:

a) rigid, siftproof packagings (1A2, 1B2, 3A2, 1D, 1G, 1H2, 3H2 or 4C2); or

b) 5L2, 5L3, 5H2, 5H3 or 5H4 bags.

White asbestos (UN 2590) must be carried in:

a) rigid, siftproof packagings (1A2, 1B2, 3A2, 1D, 1G, 1H2, 3H2, 4C2, 4D, 4G, 4F, 4H1 or 4H2); or

b) 5L2, 5L3, 5H2, 5H3 or 5H4 bags, which must be palletized and unitized by methods such as shrink-wrapping in plastic film or wrapping in fibreboard secured by strapping.

Y909 PACKING INSTRUCTION Y909 Y909

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	5 kg
Plastic (IP.2)	5 kg
Metal (IP.3, IP.3A)	5 kg
Paper (IP.4)	5 kg
Plastic bag (IP.5)	5 kg
Fibre (IP.6)	5 kg
Paper, plastic/aluminium (IP.10)	5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plastic	plastic	steel
plywood	plywood	
reconstituted wood	steel	
steel		
wooden		

910 PACKING INSTRUCTION 910 910

Consumer commodities are materials that are packaged and distributed in a form intended or suitable for retail sale for purposes of personal care or household use. These include items administered or sold to patients by doctors or medical administrations. Except as otherwise provided below, dangerous goods packed in accordance with this packing instruction do not need to comply with 4;1 or Part 6 of these Instructions; they must, however, comply with all other applicable requirements.

a) Each packaging must be designed and constructed to prevent leakage that may be caused by changes in altitude and temperature during air transport.

b) Inner packagings that are breakable (such as earthenware, glass or brittle plastic) must be packed to prevent breakage and leakage under conditions normally incident to transport. These completed packagings must be capable of withstanding a 1.2 m drop on solid concrete in the position most likely to cause damage.

c) When filling receptacles for liquids, sufficient ullage (outage) must be left to ensure that neither leakage nor permanent distortion of the receptacle will occur as a result of an expansion of the liquid caused by temperatures likely to prevail during transport. Unless specific requirements are prescribed in national rules or international agreements, liquids must not completely fill a receptacle at a temperature of 55°C. At this temperature a minimum ullage of 2 per cent should be left. The primary packaging (which may include composite packaging), for which retention of the liquid is a basic function, must be capable of withstanding, without leakage, an internal pressure which produces a pressure differential of not less than 75 kPa or a pressure related to the vapour pressure of the liquid to be conveyed, whichever is the greater. The pressure related to the vapour pressure must be determined by the method shown in 4;1.1.6. Tests on sample receptacles must be carried out to demonstrate the capability of the primary packaging to withstand the above pressure.

d) Stoppers, corks or other such friction-type closures must be held securely, tightly and effectively in place by positive means. The closure device must be so designed that it is extremely improbable that it can be incorrectly or incompletely closed and must be such that it may be easily checked to determine that it is completely closed.

≠ e) Inner packagings must be tightly packed in strong outer packagings and must be so packed, secured or cushioned as to prevent any breakage, puncture or leakage of contents into the outer packaging(s) during normal conditions of transport. Absorbent material must be provided for glass or earthenware inner packaging(s) containing consumer commodities in Class 2 or 3 or liquids of Division 6.1, in sufficient quantity to absorb the liquid contents of the largest of such inner packagings contained in the outer packaging. Absorbent and cushioning material must not react dangerously with the contents of the inner packagings. Notwithstanding the above, absorbent material may not be required if the inner packagings are so protected that breakage of the inner packagings and leakage of their contents from the outer packaging will not occur during normal conditions of transport.

\+ f) Inner packagings containing liquids, excluding flammable liquids in inner packagings of 120 mL or less, must be packed with their closures upward and the upright position of the package must be indicated by “Package orientation” labels (Figure 5-26). These labels, or pre-printed package orientation labels meeting the same specification as either Figure 5-26 or ISO Standard 780-1997, must be affixed to, or printed on, at least two opposite vertical sides of the package with the arrows pointing in the correct direction.

g) Each completed package as prepared for shipment must not exceed a gross mass of 30 kg G.

h) Class 2 substances must be further limited to aerosol products containing non-toxic compressed or liquefied gas(es) that are necessary to expel liquids, powders or pastes, packed in inner non-refillable non-metal receptacles not exceeding 120 mL capacity each, or in inner non-refillable metal receptacles not exceeding 820 mL capacity each (except that flammable aerosols must not exceed 500 mL capacity each), subject in either case to the following provisions:

1) the pressure in the aerosol must not exceed 1 500 kPa at 55°C and each receptacle must be capable of withstanding without bursting a pressure of at least 1.5 times the equilibrium pressure of the contents at 55°C;

2) if the pressure in the aerosol exceeds 970 kPa at 55°C but does not exceed 1 105 kPa at 55°C, an inner IP.7, IP.7A or IP.7B metal receptacle must be used;

3) if the pressure in the aerosol exceeds 1 105 kPa at 55°C but does not exceed 1 245 kPa at 55°C, an IP.7A or IP.7B metal receptacle must be used;

4) if the pressure in the aerosol exceeds 1 245 kPa at 55°C, an IP.7B metal receptacle must be used;

5) IP.7B metal receptacles having a minimum burst pressure of 1 800 kPa may be equipped with an inner capsule charged with a non-flammable, non-toxic compressed gas to provide the propellant function. In this case, the pressures indicated in 1), 2), 3) or 4) do not apply to the pressure within the capsule. The quantity of gas contained in the capsule must be so limited such that the minimum burst pressure of the receptacle would not be exceeded if the entire gas content of the capsule were released into an aerosol;

6) the liquid contents must not completely fill the closed receptacle at 55°C;

7) each aerosol exceeding 120 mL capacity must have been heated until the pressure in the aerosol is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect; and

8) the valves must be protected by a cap or other suitable means during transport.

i) For aerosols containing a biological or medical preparation which will be deteriorated by a heat test and which are non-toxic and non-flammable, packed in inner non-refillable receptacles not exceeding 575 mL capacity each, the following provisions are applicable:

1) the pressure in the aerosol must not exceed 970 kPa at 55°C;

2) the liquid contents must not completely fill the closed receptacle at 55°C;

3) one aerosol out of each lot of 500 or less must be heated until the pressure in the aerosol is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect; and

4) the valves must be protected by a cap or other suitable means during transport.

j) Except for aerosols, inner packagings must not exceed:

1) 500 mL for liquids; and

2) 500 g for solids.

≠ k) Consumer commodities shipped according to these provisions may be shipped in a unit load device or other type of pallet prepared by a single shipper provided they contain no other dangerous goods. The shipper must provide the operator with written documentation stating the number of packages of consumer commodities contained in each unit load device or other type of pallet.

l) The gross mass on the dangerous goods transport document must be shown as:

1) for one package, the actual gross mass of the package;

2) for more than one package, either the actual gross mass of each package or as the average mass of the packages. (For example, if there are 10 packages and the total gross mass of them is 100 kg, the dangerous goods transport document may show this as “average gross mass per package 10 kg”.)

911 PACKING INSTRUCTION 911 911

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	10 kg
Plastic (IP.2)	50 kg
Metal (IP.3, IP.3A)	50 kg
Paper (IP.4)	50 kg
Plastic bag (IP.5)	50 kg
Fibre (IP.6)	50 kg
Glass ampoule (IP.8)	0.5 kg
Paper, plastic/aluminium (IP.10)	5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Bags
- paper (5M2)
- plastic film (5H4)
- textile (5L3)
- woven plastic (5H3)

Boxes
- aluminium (4B)
- fibreboard (4G)
- plastic (4H2)
- plywood (4D)
- reconstituted wood (4F)
- steel (4A)
- wooden (4C1, 4C2)

Composites (plastic) — all

Drums
- aluminium (1B1, 1B2)
- fibre (1G)
- plastic (1H1, 1H2)
- plywood (1D)
- steel (1A1, 1A2)

Jerricans
- aluminium (3B1, 3B2)
- plastic (3H1, 3H2)
- steel (3A1, 3A2)

Y911 PACKING INSTRUCTION Y911 Y911

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	5 kg
Plastic (IP.2)	5 kg
Metal (IP.3, IP.3A)	5 kg
Paper (IP.4)	5 kg
Plastic bag (IP.5)	5 kg
Fibre (IP.6)	5 kg
Glass ampoule (IP.8)	0.5 kg
Paper, plastic/aluminium (IP.10)	5 kg

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plastic	plastic	steel
plywood	plywood	
reconstituted wood	steel	
steel		
wooden		

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913 PACKING INSTRUCTION 913 913

The general packing requirements of 4;1 must be met.

Genetically modified micro-organisms must be packed according to Packing Instruction 602, except that the packagings need not be tested as provided for in 6;6. The maximum quantity in a primary receptacle must not exceed 100 mL or 100 g.

914 PACKING INSTRUCTION 914 914

The general packing requirements of 4;1 must be met.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	10 L
Plastic (IP.2)	30 L
Metal (IP.3, IP.3A)	40 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	plastic (1H2)	steel (3A2)
plywood (4D)	plywood (1D)	
reconstituted wood (4F)	steel (1A2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

Composites (plastic) — all
Cylinders that meet the requirements of 4;2.7 are permitted
Drums
- aluminium (1B1, 1B2)
- plastic (1H1, 1H2)
- steel (1A1, 1A2)

Jerricans
- aluminium (3B1, 3B2)
- plastic (3H1, 3H2)
- steel (3A1, 3A2)

Y914 PACKING INSTRUCTION Y914 Y914

The requirements of 3;4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

Glass or earthenware (IP.1)	5 L
Plastic (IP.2)	5 L
Metal (IP.3, IP.3A)	5 L
Glass ampoule (IP.8)	0.5 L

OUTER:

Boxes	*Drums*	*Jerricans*
fibreboard	aluminium	plastic
plastic	fibre	steel
plywood	plastic	
reconstituted wood	plywood	
wooden	steel	

915 PACKING INSTRUCTION 915 915

The general packing requirements of 4;1 must be met except that the requirements of 4;1.1.8 and 4;1.1.16 do not apply.

Kits may contain dangerous goods which require segregation according to Table 7-1. The packing group assigned to the kit as a whole must be the most stringent packing group assigned to any individual substance contained in the kit.

≠ Inner packagings containing dangerous goods must not exceed 250 mL for liquids or 250 g for solids and must be protected from other materials in the kit. The total quantity of dangerous goods in any one kit must not exceed 1 L or 1 kg. The total quantity of dangerous goods in any one package must not exceed 10 kg.

≠ Kits must not be packed with other dangerous goods in the same outer packaging, with the exception of dry ice. If dry ice is used, the requirements in Packing Instruction 904 must be met.

Kits must be packed in one of the following:

— metal boxes (4A, 4B)
— wooden boxes (4C1, 4C2)
— plywood boxes (4D)
— reconstituted wood boxes (4F)
— fibreboard boxes (4G)
— plastic boxes (4H1, 4H2)

Y915 PACKING INSTRUCTION Y915 Y915

The requirements of 3;4 must be met except that 3;4.3.3 does not apply.

Single packagings are not permitted.

Kits may contain dangerous goods which require segregation according to Table 7-1.

≠ Inner packagings containing dangerous goods must not exceed 30 mL for liquids or 100 g for solids and must be protected from other materials in the kit. The total quantity of dangerous goods in any one kit and in any one package must not exceed 1 kg.

≠ Kits must not be packed with other dangerous goods in the same outer packaging, with the exception of dry ice. If dry ice is used, the requirements in Packing Instruction 904 must be met.

Kits must be packed in metal, wooden, plywood, reconstituted wood, fibreboard or plastic boxes.

916 PACKING INSTRUCTION 916 916

The general packing requirements of Part 4, Chapter 1 must be met except that the requirements of 4;1.1.2, 4;1.1.8, 4;1.1.10, 4;1.1.13 and 4;1.1.16 do not apply.

a) For other than fuel system components, machinery or apparatus may only contain:

1) dangerous goods permitted under 3;4.1.2; or

2) dangerous goods permitted under 3;4.1.2 and magnetized material meeting the requirements of Packing Instruction 902; or

\+ 3) gases of Division 2.2 without subsidiary risk but excluding refrigerated liquefied gases.

Note.— If machinery or apparatus contains only magnetized material meeting the requirements of Packing Instruction 902, it must be consigned as UN 2807.

If the machinery or apparatus contains more than one item of dangerous goods, the individual substances must not be capable of reacting dangerously together.

“Package orientation” labels (Figure 5-26), or pre-printed orientation labels meeting the same specification as either Figure 5-26 or ISO Standard 780-1997 must be affixed on at least two opposite vertical sides with the arrows pointing in the correct direction only when required to ensure liquid dangerous goods remain in their intended orientation. Irrespective of 5;3.2.10, machinery or apparatus containing magnetized material meeting the requirements of Packing Instruction 902 must also bear the “Magnetized material” label (Figure 5-24).

The nature of the containment must be such that:

a) damage to receptacles containing the dangerous goods during air transport is unlikely; and

b) in the event of damage to receptacles containing the dangerous goods, no leakage of the dangerous goods from the machinery or apparatus is possible. A leakproof liner may be required.

In addition:

c) Dangerous goods in machinery or apparatus must be packed in strong outer packagings unless the receptacles containing the dangerous goods are afforded adequate protection by the construction of the machinery or apparatus.

d) Receptacles containing dangerous goods must be so secured or cushioned as to prevent their breakage or leakage and so as to control their movement within the machinery or apparatus during normal conditions of transport. Cushioning material must not react dangerously with the contents of the receptacles. Any leakage of the contents must not substantially impair the protective properties of the cushioning material.

e) For Division 2.2 gases, cylinders for gases, their contents and filling ratios must conform to the requirements of PI 200.

f) The total net quantity of dangerous goods contained in one package, excluding magnetic material, must not exceed the following:

1) 1 kg in the case of solids;

2) 0.5 L in the case of liquids;

3) 0.5 kg in the case of Division 2.2 gases;

or any combination thereof.

g) Fuel system components must be emptied of fuel as far as practicable and all openings must be sealed securely. They must be packed:

1) in sufficient absorbent material to absorb the maximum amount of liquid which may possibly remain after emptying. Where the outer packaging is not liquid tight, a means of containing the liquid in the event of leakage must be provided in the form of a leakproof liner, plastic bag or other equally efficient means of containment;

2) in strong outer packagings.

917 PACKING INSTRUCTION 917 917

The general packing requirements of 4;1 must be met.

Air bag inflators, air bag modules and seat-belt pretensioners must be packed in packagings conforming to the Packing Group III performance level.

The packagings must be designed and constructed to prevent movement of the articles and inadvertent operation during normal conditions of transport. Any pressure vessel must be in accordance with the requirements of the appropriate national authority for the substance(s) contained in the pressure vessel(s).

Air bag inflators, air bag modules and seat-belt pretensioners may also be transported unpackaged on cargo aircraft in dedicated handling devices when transported from where they are manufactured to vehicle assembly plants. When transported in handling devices, the following conditions must be met:

a) air bag inflators, air bag modules or seat-belt pretensioners as fitted in the handling device must be capable of meeting the test criteria prescribed in Special Provision A115;

b) the handling device must be completely enclosed; and

c) each air bag inflator, air bag module or seat-belt pretensioner unit must be secured within the handling device to prevent movement in transport.

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PACKING INSTRUCTION 965

Passenger and cargo aircraft for UN 3480

This entry applies to lithium ion or lithium polymer batteries in Class 9 (Section I) and lithium ion or lithium polymer batteries subject to specific requirements of these Instructions (Section II).

SECTION I

Section I requirements apply to each cell or battery type that has been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

1) be of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3; and

2) incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport and be equipped with an effective means of preventing external short circuits.

Each battery containing cells or a series of cells connected in parallel must be equipped with an effective means, as necessary, to prevent dangerous reverse current flow (e.g. diodes, fuses).

General requirements

Part 4;1 requirements must be met.

Contents	*Package quantity (Section I)*	
	Passenger	*Cargo*
Lithium ion cells and batteries	5 kg G	35 kg G

ADDITIONAL PACKING REQUIREMENTS

— Lithium ion cells and batteries must be protected against short circuits.
— Packagings must meet the Packing Group II performance requirements.
— Lithium ion batteries with a mass of 12 kg or greater and having a strong, impact-resistant outer casing, or assemblies of such batteries, may be transported when packed in strong outer packagings and protective enclosures not subject to the requirements of Part 6 of these Instructions, if approved by the appropriate authority of the State of Origin. A copy of the document of approval must accompany the consignment.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastic (3H2)
Natural wood (4C1, 4C2)	Plastic (1H2)	Steel (3A2)
Plastic (4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

SECTION II

Lithium ion cells and batteries offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section.

Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Lithium ion cells and batteries may be offered for transport if they meet the following:

1) for lithium ion cells, the Watt-hour rating (see Attachment 2) is not more than 20 Wh;
2) for lithium ion batteries, the Watt-hour rating is not more than 100 Wh;

— the Watt-hour rating must be marked on the outside of the battery case except for those batteries manufactured before 1 January 2009, which may be transported in accordance with the provisions of this section and without the marking until 31 December 2010;

3) each cell or battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3.

General requirements

Batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.9 (except 1.1.9.1).

Contents	*Package quantity (Section II)*	
	Passenger	*Cargo*
Lithium ion cells and batteries	10 kg G	10 kg G

ADDITIONAL PACKING REQUIREMENTS

— Cells and batteries must be packed in inner packagings that completely enclose the cell or battery.
— Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
— Each package must be capable of withstanding a 1.2 m drop test in any orientation without:
  — damage to cells or batteries contained therein;
  — shifting of the contents so as to allow battery to battery (or cell to cell) contact;
  — release of contents.
— Each package must be labelled with a lithium battery handling label (Figure 5-31).
— Each consignment must be accompanied with a document such as an air waybill with an indication that:
  — the package contains lithium ion cells or batteries;
  — the package must be handled with care and that a flammability hazard exists if the package is damaged;
  — special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary; and
  — a telephone number for additional information.
— Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

OUTER PACKAGINGS

Boxes *Drums* *Jerricans*

Strong outer packagings

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PACKING INSTRUCTION 966

Passenger and cargo aircraft for UN 3481 (packed with equipment) only

This entry applies to lithium ion or lithium polymer batteries packed with equipment in Class 9 (Section I) and lithium ion or lithium polymer batteries packed with equipment subject to specific requirements of these Instructions (Section II).

SECTION I

Section I requirements apply to each cell or battery type that has been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

1) be of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3; and

2) incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport and be equipped with an effective means of preventing external short circuits.

Each battery containing cells or a series of cells connected in parallel must be equipped with an effective means, as necessary, to prevent dangerous reverse current flow (e.g. diodes, fuses).

General requirements

Part 4;1 requirements must be met.

Contents	*Package quantity (Section I)*	
	Passenger	*Cargo*
Quantity of lithium ion cells and batteries per overpack, excluding equipment	5 kg	35 kg

ADDITIONAL PACKING REQUIREMENTS

— Lithium ion cells and batteries must be protected against short circuits.
— The completed package for the cells or batteries must meet the Packing Group II performance requirements.
— The equipment and the packages of lithium cells or batteries must be placed in an overpack. The overpack must bear applicable marks and labels as set out in Part 5;1 and 5;2.4.10.
— For the purpose of this packing instruction, “equipment” means apparatus requiring the lithium ion batteries with which it is packed for its operation.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastic (3H2)
Natural wood (4C1, 4C2)	Plastic (1H2)	Steel (3A2)
Plastic (4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

SECTION II

Lithium ion cells and batteries (including lithium polymer) packed with equipment offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section.

Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Lithium ion cells and batteries may be offered for transport if they meet the following:

1) for lithium ion cells, the Watt-hour rating (see Attachment 2) is not more than 20 Wh;
2) for lithium ion batteries, the Watt-hour rating is not more than 100 Wh;
   — the Watt-hour rating must be marked on the outside of the battery case except for those batteries manufactured before 1 January 2009, which may be transported in accordance with the provisions of this section and without the marking until 31 December 2010;
3) each cell or battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3.

General requirements

Batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.9 (except 1.1.9.1).

ADDITIONAL PACKING REQUIREMENTS

— Cells and batteries must be packed in inner packagings that completely enclose the cell or battery.
— Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
— The maximum number of batteries in each package must be the minimum number required to power the equipment, plus two spares.
— Each package must be capable of withstanding a 1.2 m drop test in any orientation without:
   — damage to cells or batteries contained therein;
   — shifting of the contents so as to allow battery to battery (or cell to cell) contact;
   — release of contents.
— Each package must be labelled with a lithium battery handling label (Figure 5-31).
— Each consignment must be accompanied with a document such as an air waybill with an indication that:
   — the package contains lithium ion cells or batteries;

— the package must be handled with care and that a flammability hazard exists if the package is damaged;
— special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary; and
— a telephone number for additional information.

— Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Strong outer packagings		

+

PACKING INSTRUCTION 967

Passenger and cargo aircraft for UN 3481 (contained in equipment) only

This entry applies to lithium ion or lithium polymer batteries contained in equipment in Class 9 (Section I) and lithium ion or lithium polymer batteries contained in equipment subject to specific requirements of these Instructions (Section II).

SECTION I

Section I requirements apply to each cell or battery type that has been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

1) be of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3; and

2) incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport and be equipped with an effective means of preventing external short circuits.

Each battery containing cells or a series of cells connected in parallel must be equipped with an effective means, as necessary, to prevent dangerous reverse current flow (e.g. diodes, fuses).

General requirements

Part 4;1 requirements must be met.

Contents	*Net quantity per piece of equipment (Section I)*	
	Passenger	*Cargo*
Lithium ion batteries contained in equipment	5 kg	35 kg

ADDITIONAL PACKING REQUIREMENTS

— Outer packaging must be waterproof or made waterproof through the use of a liner, such as a plastic bag unless the equipment is made waterproof by nature of its construction.
— The equipment must be secured against movement within the outer packaging and be packed so as to prevent accidental operation during air transport.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Strong outer packagings		

SECTION II

Lithium ion cells and batteries (including lithium polymer) contained in equipment offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section.

Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Lithium ion cells and batteries may be offered for transport if they meet the following:

1) for lithium ion cells ,the Watt-hour rating (see Attachment 2) is not more than 20 Wh;
2) for lithium ion batteries, the Watt-hour rating is not more than 100 Wh;
   — the Watt-hour rating must be marked on the outside of the battery case except for those batteries manufactured before 1 January 2009, which may be transported in accordance with the provisions of this section and without the marking until 31 December 2010;
3) each cell or battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3.

General requirements

Equipment must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.9 (except 1.1.9.1).

ADDITIONAL PACKING REQUIREMENTS

— The equipment must be equipped with an effective means of preventing accidental activation.
— Cells and batteries must be protected so as to prevent short circuits.
— The equipment must be packed in strong outer packagings constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the battery is afforded equivalent protection by the equipment in which it is contained.
— Each package containing more than four cells or more than two batteries installed in equipment must be labelled with a lithium battery handling label (Figure 5-31).
— Each consignment with packages bearing the lithium battery handling label must be accompanied with a document such as an air waybill with an indication that:
   — the package contains lithium ion cells or batteries;
   — the package must be handled with care and that a flammability hazard exists if the package is damaged;
   — special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary; and
   — a telephone number for additional information.
— Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Strong outer packagings		

+

PACKING INSTRUCTION 968

Passenger and cargo aircraft for UN 3090

This entry applies to lithium metal or lithium alloy batteries in Class 9 (Section I) and lithium metal or lithium alloy batteries subject to specific requirements of these Instructions (Section II).

SECTION I

Section I requirements apply to each cell or battery type that has been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

1) be of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3; and

2) incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport and be equipped with an effective means of preventing external short circuits.

Each battery containing cells or a series of cells connected in parallel must be equipped with an effective means, as necessary, to prevent dangerous reverse current flow (e.g. diodes, fuses).

Cells, and batteries containing one or more cells, with a liquid cathode containing sulphur dioxide, sulphuryl chloride or thionyl chloride which have been discharged to the extent that the open circuit voltage is less than the lower of:

a) two volts; or
b) two-thirds of the voltage of the undischarged cell;

are forbidden from transport.

General requirements

Part 4;1 requirements must be met.

Contents	*Package quantity (Section I)*	
	Passenger	*Cargo*
Lithium metal cells and batteries	2.5 kg G	35 kg G

ADDITIONAL PACKING REQUIREMENTS

— Lithium metal cells and batteries must be protected against short circuits.
— Packagings must meet the Packing Group II performance requirements.
— Lithium batteries with a mass of 12 kg or greater and having a strong, impact-resistant outer casing, or assemblies of such batteries, may be transported when packed in strong outer packagings and protective enclosures not subject to the requirements of Part 6 of these Instructions, if approved by the appropriate authority of the State of Origin. A copy of the document of approval must accompany the consignment.
— For lithium metal cells and batteries prepared for transport on passenger aircraft as Class 9:
  — Cells and batteries offered for transport on passenger aircraft must be packed in intermediate or outer rigid metal packaging.
  — Cells and batteries must be surrounded by cushioning material that is non-combustible and non-conductive, and placed inside an outer packaging.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastic (3H2)
Natural wood (4C1, 4C2)	Plastic (1H2)	Steel (3A2)
Plastic (4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

SECTION II

Lithium metal or lithium alloy cells and batteries offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section.

Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Lithium metal or lithium alloy cells and batteries may be offered for transport if they meet the following:

1) for a lithium metal cell, the lithium content is not more than 1 g;
2) for a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2 g;
3) each cell or battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3.

General requirements

Batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.9 (except 1.1.9.1).

Contents	*Package quantity (Section II)*	
	Passenger	*Cargo*
Lithium metal cells and batteries	2.5 kg G	2.5 kg G

ADDITIONAL PACKING REQUIREMENTS

— Cells and batteries must be packed in inner packagings that completely enclose the cell or battery.
— Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
— Each package must be capable of withstanding a 1.2 m drop test in any orientation without:
  — damage to cells or batteries contained therein;
  — shifting of the contents so as to allow battery to battery (or cell to cell) contact;
  — release of contents.
— Each package must be labelled with a lithium battery handling label (Figure 5-31).
— Each consignment must be accompanied with a document such as an air waybill with an indication that:
  — the package contains lithium metal cells or batteries;
  — the package must be handled with care and that a flammability hazard exists if the package is damaged;
  — special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary; and
  — a telephone number for additional information.
— Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

OUTER PACKAGINGS

Boxes *Drums* *Jerricans*

Strong outer packagings

+

PACKING INSTRUCTION 969

Passenger and cargo aircraft for UN 3091 (packed with equipment) only

This entry applies to lithium metal or lithium alloy batteries packed with equipment in Class 9 (Section I) and lithium metal or lithium alloy batteries packed with equipment subject to specific requirements of these Instructions (Section II).

SECTION I

Section I requirements apply to each cell or battery type that has been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

1) be of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3; and

2) incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport and be equipped with an effective means of preventing external short circuits.

Each battery containing cells or a series of cells connected in parallel must be equipped with an effective means, as necessary, to prevent dangerous reverse current flow (e.g. diodes, fuses).

Cells, and batteries containing one or more cells, with a liquid cathode containing sulphur dioxide, sulphuryl chloride or thionyl chloride which have been discharged to the extent that the open circuit voltage is less than the lower of:

a) two volts; or
b) two-thirds of the voltage of the undischarged cell;

are forbidden from transport.

General requirements

Part 4;1 requirements must be met.

Contents	*Package quantity (Section I)*	
	Passenger	*Cargo*
Quantity of lithium metal cells and batteries per overpack, excluding equipment	5 kg	35 kg

ADDITIONAL PACKING REQUIREMENTS

- Lithium metal cells and batteries must be protected against short circuits.
- The completed package for the cells or batteries must meet the Packing Group II performance requirements.
- Each completed package containing lithium cells or batteries must be marked and labelled in accordance with the applicable requirements of 5;1, 5;2 and 5;3.
- The equipment and the packages of lithium cells or batteries must be placed in an overpack. The overpack must bear applicable marks and labels as set out in 5;1 and 5;2.4.10.
- For the purpose of this packing instruction, “equipment” means apparatus requiring the lithium batteries with which it is packed for its operation.
- For lithium metal cells and batteries prepared for transport on passenger aircraft as Class 9:
  - Cells and batteries offered for transport on passenger aircraft must be packed in intermediate or outer rigid metal packaging surrounded by cushioning material that is non-combustible and non-conductive and placed inside an outer packaging.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastic (3H2)
Natural wood (4C1, 4C2)	Plastic (1H2)	Steel (3A2)
Plastic (4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

SECTION II

Lithium metal cells and batteries packed with equipment offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section.

Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Lithium metal cells and batteries may be offered for transport if they meet the following:

1) for a lithium metal cell, the lithium content is not more than 1 g;
2) for a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2 g;
3) each cell or battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3.

General requirements

Batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.9 (except 1.1.9.1).

ADDITIONAL PACKING REQUIREMENTS

- Cells and batteries must be packed in inner packagings that completely enclose the cell or battery.
- Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
- The maximum number of batteries in each package must be the minimum number required to power the equipment, plus two spares.
- Each package must be capable of withstanding a 1.2 m drop test in any orientation without:
  - damage to cells or batteries contained therein;
  - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
  - release of contents.
- Each package must be labelled with a lithium battery handling label (Figure 5-31).

— Each consignment must be accompanied with a document such as an air waybill with an indication that:
  — the package contains lithium metal cells or batteries;
  — the package must be handled with care and that a flammability hazard exists if the package is damaged;
  — special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary; and
  — a telephone number for additional information.
— Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

OUTER PACKAGINGS

Boxes *Drums* *Jerricans*

Strong outer packagings

+

PACKING INSTRUCTION 970

Passenger and cargo aircraft for UN 3091 (contained in equipment) only

This entry applies to lithium metal or lithium alloy batteries contained in equipment in Class 9 (Section I) and lithium metal or lithium alloy batteries contained in equipment subject to specific requirements of these Instructions (Section II).

SECTION I

Section I requirements apply to each cell or battery type that has been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

1) be of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3; and

2) incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport and be equipped with an effective means of preventing external short circuits.

Each battery containing cells or a series of cells connected in parallel must be equipped with an effective means, as necessary, to prevent dangerous reverse current flow (e.g. diodes, fuses).

Cells, and batteries containing one or more cells, with a liquid cathode containing sulphur dioxide, sulphuryl chloride or thionyl chloride which have been discharged to the extent that the open circuit voltage is less than the lower of:

a) two volts; or
b) two-thirds of the voltage of the undischarged cell;

are forbidden from transport.

General requirements

Part 4;1 requirements must be met.

Package contents	*Net quantity per piece of equipment (Section I)*	
	Passenger	*Cargo*
Lithium metal batteries	5 kg	35 kg

ADDITIONAL PACKING REQUIREMENTS

— Outer packaging must be waterproof or made waterproof through the use of a liner, such as a plastic bag unless the equipment is made waterproof by nature of its construction.
— The equipment must be secured against movement within the outer packaging and be packed so as to prevent accidental operation during air transport.
— The quantity of lithium metal contained in any piece of equipment must not exceed 12 g per cell and 500 g per battery.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Strong outer packaging		

SECTION II

Lithium metal cells and batteries contained in equipment offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section.

Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Lithium metal cells and batteries may be offered for transport if they meet the following:

1) for a lithium metal cell, the lithium content is not more than 1 g;
2) for a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2 g.
3) each cell or battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3.

General requirements

Equipment containing batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.9 (except 1.1.9.1).

ADDITIONAL PACKING REQUIREMENTS

— The equipment must be equipped with an effective means of preventing accidental activation.
— Cells and batteries must be protected so as to prevent short circuits.
— The equipment must be packed in strong outer packagings constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the battery is afforded equivalent protection by the equipment in which it is contained.
— Each package containing more than four cells or more than two batteries installed in equipment must be labelled with a lithium battery handling label (Figure 5-31).
— Each consignment with packages bearing the lithium battery handling label must be accompanied with a document such as an air waybill with an indication that:
  — the package contains lithium metal cells or batteries;
  — the package must be handled with care and that a flammability hazard exists if the package is damaged;
  — special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary; and
  — a telephone number for additional information.
— Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Strong outer packagings		

Part 5

SHIPPER'S RESPONSIBILITIES

Chapter 1

GENERAL

Parts of this Chapter are affected by State Variations AU 2, AU 3, BE 4, CA 1, CA 4, CA 14, CA 15, CA 16, CH 3, DE 1, DE 2, FR 3, FR 4,GB 1, GB 6, HK 3, IN 2, IN 3, IR 2, IT 1, IT 2, IT 5, JP 2, JP 8, MY 1, MY 2, MY 3, NL 3, UA 1, US 10; see Table A-1

Note.— It is the shipper's responsibility to ensure that all of the applicable air transport requirements are met. The items indicated below are provided as examples and do not include a complete list of all the applicable requirements for air transport.

1.1 GENERAL REQUIREMENTS

Before a person offers any package or overpack of dangerous goods for transport by air that person must ensure that:

a) the articles or substances are not prohibited for transport by air (see Part 1, Chapter 2);

b) the goods are properly classified, marked and labelled and otherwise in a condition for transport as required by these Instructions;

c) the dangerous goods are packaged in compliance with all the applicable air transport requirements including:

— inner packaging and the maximum quantity per package limits;

— appropriate types of packaging according to the packing instructions;

— other applicable requirements indicated in the packing instructions including:

— single packagings may be forbidden;
— only inner and outer packagings indicated in the packing instructions are permitted;
— inner packaging may need to be packed in intermediate packagings; and
— certain dangerous goods must be transported in packagings meeting a higher performance level.

— appropriate closure procedures for inner and outer packagings (see 4;1.1.4);

— the compatibility requirements such as those in the particular packing requirements of the packing instructions and in Part 4, Chapter 1;

— the absorbent material requirements in 4;1.1.10.1 and in the packing instructions when applicable; and

— the pressure differential requirement in 4;1.1.6.

d) the dangerous goods transport document has been properly executed and the declaration signed;

e) an overpack is used for packages bearing the "Cargo aircraft only" label only if:

1) the packages are assembled in such a way that clear visibility and easy access to them is possible; or

2) the packages are not required to be accessible under 7;2.4.1; or

3) not more than one package is involved;

f) the overpack does not contain packages of dangerous goods which require segregation according to Table 7-1;

>

g) the dangerous goods are not included in any freight container/unit load device except for radioactive material as specified in 7;2.9 (subject to the approval of the operator, this does not apply to a unit load device containing consumer commodities prepared according to Packing Instruction 910 or dry ice used as a refrigerant for other than dangerous goods when prepared according to Packing Instruction 904 or magnetized material when prepared according to Packing Instruction 902);

h) before a package or overpack is reused, all inappropriate dangerous goods labels and markings are removed or completely obliterated; and

≠ i) each package contained within an overpack is properly packed, marked, labelled and is free of any indication that its integrity has been compromised and in all respects is properly prepared as required in these Instructions. The "overpack" marking described in 2.4.10 is an indication of compliance with this requirement. The intended function of each package must not be impaired by the overpack.

Note.— For cooling purposes, an overpack may contain dry ice, provided that the overpack meets the requirements of Packing Instruction 904.

≠ 1.2 GENERAL PROVISIONS FOR CLASS 7

1.2.1 Approval of shipments and notification

1.2.1.1 *General*

In addition to the approval for package designs described in Part 6, Chapter 4, multilateral shipment approval is also required in certain circumstances (1.2.1.2 and 1.2.1.3). In some circumstances it is also necessary to notify competent authorities of a shipment (1.2.1.4).

1.2.1.2 *Shipment approvals*

Multilateral approval must be required for:

a) The shipment of Type B(M) packages not conforming with the requirements of 6;7.6.5;

b) The shipment of Type B(M) packages containing radioactive material with an activity greater than 3000 A_1 or 3000 A_2, as appropriate, or 1000 TBq, whichever is the lower;

c) The shipment of packages containing fissile materials if the sum of the criticality safety indexes of the packages in a single freight container or in an aircraft exceeds 50; and

except that a competent authority may authorize transport into or through its country without shipment approval, by a specific provision in its design approval (see 1.2.2.1).

1.2.1.3 *Shipment approval by special arrangement*

Provisions may be approved by a competent authority under which a consignment, which does not satisfy all of the applicable requirements of these Instructions may be transported under special arrangement (see 1;6.4).

1.2.1.4 *Notifications*

Notification to competent authorities is required as follows:

a) Before the first shipment of any package requiring competent authority approval, the shipper must ensure that copies of each applicable competent authority certificate applying to that package design have been submitted to the competent authority of each country through or into which the consignment is to be transported. The shipper is not required to await an acknowledgement from the competent authority, nor is the competent authority required to make such acknowledgement of receipt of the certificate;

b) For each of the following types of shipments:

i) Type C packages containing radioactive material with an activity greater than 3000 A_1 or 3000 A_2, as appropriate, or 1000 TBq, whichever is the lower;

ii) Type B(U) packages containing radioactive material with an activity greater than 3000 A_1 or 3000 A_2, as appropriate, or 1000 TBq, whichever is the lower;

iii) Type B(M) packages;

iv) Shipment under special arrangement;

the shipper must notify the competent authority of each country through or into which the consignment is to be transported. This notification must be in the hands of each competent authority prior to the commencement of the shipment, and preferably at least 7 days in advance;

c) The shipper is not required to send a separate notification if the required information has been included in the application for shipment approval;

d) The consignment notification must include:

i) sufficient information to enable the identification of the package or packages including all applicable certificate numbers and identification marks;

ii) information on the date of shipment, the expected date of arrival and proposed routeing;

iii) the names of the radioactive material or nuclides;

iv) descriptions of the physical and chemical forms of the radioactive material, or whether it is special form radioactive material or low dispersible radioactive material; and

v) the maximum activity of the radioactive contents during transport expressed in units of becquerels (Bq) with an appropriate SI prefix symbol (see 1;3.2). For fissile material, the mass of fissile material in units of grams (g), or multiples thereof, may be used in place of activity.

1.2.2 Certificates issued by the competent authority

1.2.2.1 Certificates issued by the competent authority are required for the following:

a) Designs for:

i) special form radioactive material;

ii) low dispersible radioactive material;

iii) packages containing 0.1 kg or more of uranium hexafluoride;

iv) all packages containing fissile material unless excepted by 6;7.10.2;

v) Type B(U) packages and Type B(M) packages;

vi) Type C packages;

b) Special arrangements;

c) Certain shipments (1.2.1.2).

The certificates must confirm that the applicable requirements are met, and for design approvals, must attribute to the design an identification mark.

The package design and shipment approval certificates may be combined into a single certificate.

Certificates and applications for these certificates must be in accordance with the requirements in 6;7.22.

1.2.2.2 The shipper must be in possession of a copy of each applicable certificate.

1.2.2.3 For package designs where a competent authority issued certificate is not required, the shipper must, on request, make available for inspection by the relevant competent authority, documentary evidence of the compliance of the package design with all the applicable requirements.

1.2.3 Determination of transport index (TI) and criticality safety index (CSI)

1.2.3.1 Determination of transport index

1.2.3.1.1 The transport index (TI) for a package, overpack or freight container, must be the number derived in accordance with the following procedure:

a) Determine the maximum radiation level in units of millisieverts per hour (mSv/h) at a distance of 1 m from the external surfaces of the package, overpack, or freight container. The value determined must be multiplied by 100 and the resulting number is the transport index. For uranium and thorium ores and their concentrates, the maximum radiation level at any point 1 m from the external surface of the load may be taken as:

0.4 mSv/h for ores and physical concentrates of uranium and thorium;

0.3 mSv/h for chemical concentrates of thorium;

0.02 mSv/h for chemical concentrates of uranium, other than uranium hexafluoride;

b) For freight containers, the value determined in step a) above must be multiplied by the appropriate factor from Table 5-1;

c) The value obtained in steps a) and b) above must be rounded up to the first decimal place (e.g. 1.13 becomes 1.2), except that a value of 0.05 or less may be considered as zero.

1.2.3.1.2 The transport index for each overpack or freight container must be determined as either the sum of the transport indices of all the packages contained, or by direct measurement of radiation level, except in the case of non-rigid overpacks for which the transport index must be determined only as the sum of the transport indices of all the packages.

Table 5-1. Multiplication factors for freight containers

*Size of load**	*Multiplication factor*
size of load ≤ 1 m^2 1 m^2 < size of load ≤ 5 m^2 5 m^2 < size of load ≤ 20 m^2 20 m^2 < size of load	1 2 3 10
* Largest cross-sectional area of the load being measured.	

1.2.3.1.3 The criticality safety index for each overpack or freight container must be determined as the sum of the CSIs of all the packages contained. The same procedure must be followed for determining the total sum of CSIs in a consignment or aboard an aircraft.

1.2.3.1.4 Packages and overpacks must be assigned to either category I-WHITE, II-YELLOW or III-YELLOW in accordance with the conditions specified in Table 5-2 and with the following requirements:

a) for a package or overpack, both the transport index and the surface radiation level conditions must be taken into account in determining which is the appropriate category. Where the transport index satisfies the condition for one category but the surface radiation level satisfies the condition for a different category, the package or overpack must be assigned to the higher category. For this purpose, category I-WHITE must be regarded as the lowest category;

b) the transport index must be determined following the procedures specified in 1.2.3.1.1 and 1.2.3.1.2;

c) if the surface radiation level is greater than 2 mSv/h, the package or overpack must be transported under exclusive use and under the provisions of 7;2.9.5.3; as appropriate;

d) a package transported under a special arrangement must be assigned to category III-YELLOW except when otherwise specified in the competent authority approval certificate of the country of origin of design (see 2;7.2.4.6);

e) an overpack which contains packages transported under special arrangement must be assigned to category III-YELLOW except when otherwise specified in the competent authority approval certificate of the country of origin of design (see 2;7.2.4.6).

Table 5-2. Categories of packages and overpacks

Conditions		
Transport index	*Maximum radiation level at any point on external surface*	*Category*
0*	Not more than 0.005 mSv/h	I-WHITE
More than 0 but not more than 1*	More than 0.005 mSv/h but not more than 0.5 mSv/h	II-YELLOW
More than 1 but not more than 10	More than 0.5 mSv/h but not more than 2 mSv/h	III-YELLOW
More than 10	More than 2 mSv/h but not more than 10 mSv/h	III-YELLOW**
* If the measured transport index is not greater than 0.05, the value quoted may be zero in accordance with 1.2.3.1.1 c). ** Must be transported under exclusive use and special arrangement.		

1.3 INFORMATION TO EMPLOYEES

A shipper must provide such information to employees as will enable them to carry out their responsibilities with regard to the transport of dangerous goods by air.

1.4 TRAINING

Before a consignment of dangerous goods is offered for air transport, all relevant persons involved in its preparation must have received training to enable them to carry out their responsibilities, as detailed in Part 1. Where a shipper does not have trained staff, the “relevant persons” may be interpreted as applying to those employed to act on the shipper’s behalf and to undertake the shipper’s responsibilities in the preparation of the consignment. However, such persons must be trained as required by Part 1, Chapter 4.

1.5 SALVAGE PACKAGINGS

Before a person offers any salvage packaging for transport by air, that person must ensure that:

— it is marked with the proper shipping name and UN number of, and bear all the labels appropriate for, the dangerous goods contained therein;

— it is marked with the word “Salvage”;

— the words “Salvage package” are added after the description of the goods in the dangerous goods transport document required by 4.1; and

— where the package contains dangerous goods restricted to transport on cargo aircraft only, it bears a “Cargo aircraft only” label and the dangerous goods transport document contains the necessary statement according to 4.1.5.8.1 b).

In addition, that person must ensure that all other applicable requirements are met.

1.6 EMPTY PACKAGINGS

1.6.1 Other than for Class 7, a packaging which previously contained dangerous goods must be identified, marked, labelled and placarded as required for those dangerous goods unless steps such as cleaning, purging of vapours or refilling with a non-dangerous substance are taken to nullify any hazard.

1.6.2 Before an empty packaging which had previously contained an infectious substance is returned to the shipper, or sent elsewhere, it must be disinfected or sterilized to nullify any hazard, and any label or marking indicating that it had contained an infectious substance must be removed or obliterated.

1.6.3 Packagings used for the transport of radioactive material must not be used for the storage or transport of other goods unless decontaminated below the level of 0.4 Bq/cm2 for beta and gamma emitters and low toxicity alpha emitters and 0.04 Bq/cm2 for all other alpha emitters.

1.7 MIXED PACKING

When two or more dangerous goods are packed within the same outer packaging, the package must be labelled and marked as required for each substance. Labels need not be applied for a subsidiary risk if the hazard is already represented by a primary risk label.

Chapter 2

PACKAGE MARKINGS

Parts of this Chapter are affected by State Variations CA 4, DQ 4, ES 1, HK 2, MY 6, PK 1, US 1, US 7, VC 5, VU 1; see Table A-1

2.1 THE REQUIREMENT TO MARK

Unless otherwise provided in these Instructions, packages of dangerous goods and overpacks containing dangerous goods offered for transport by air must be marked as required by this Chapter.

2.2 APPLICATION OF MARKINGS

2.2.1 All markings must be so placed on the packagings that they are not covered or obscured by any part of or attachment to the packaging or any other label or marking.

2.2.2 All package markings required by 2.1:

a) must be durable and printed or otherwise marked on, or affixed to, the external surface of the package;

b) must be readily visible and legible;

c) must be able to withstand open weather exposure without a substantial reduction in effectiveness;

d) must be displayed on a background of contrasting colour; and

e) must not be located with other package markings that could substantially reduce their effectiveness.

2.3 PROHIBITED MARKING

Arrows for purposes other than indicating proper package orientation must not be displayed on a package containing liquid dangerous goods.

2.4 MARKING SPECIFICATIONS AND REQUIREMENTS

≠ 2.4.1 Marking with proper shipping name and UN number

2.4.1.1 Unless otherwise provided in these Instructions, the proper shipping name of the dangerous goods (supplemented with the technical name(s) if appropriate, see Part 3, Chapter 1) and, when assigned, the corresponding UN number preceded by the letters “UN” must be displayed on each package. In the case of unpackaged articles, the marking must be displayed on the article, on its cradle or on its handling, storage or launching device. A typical package marking would be:

“Corrosive liquid, acidic, organic, n.o.s. (caprylyl chloride) UN 3265”.

For packages containing limited quantities of dangerous goods, the UN number (preceded by the letters “UN”) may be placed within a diamond. If the diamond marking is applied, the following requirements must be met. The width of the line forming the diamond must be at least 2 mm; the number must be at least 6 mm high. When more than one substance is included in the package and the substances are assigned to different UN numbers, then the diamond must be large enough to include each relevant UN number.

≠ Note.— It is anticipated that displaying the UN number within a diamond for packages containing limited quantities of dangerous goods will become mandatory as of 1 January 2011.

2.4.1.2 For solid substances, unless the word “molten” is already included in the proper shipping name, it must be added to the proper shipping name on the package when a substance is offered for air transport in the molten state (see Part 3, Chapter 1).

Note.— Additional descriptive text in the entries in column 1 of the Dangerous Goods List (Table 3-1) are not part of the proper shipping name but may be used in addition to the proper shipping name.

2.4.2 Shipper and consignee identification

The name and address of the person who offers the dangerous goods for transport by air and of the consignee must be provided on each package.

2.4.3 Special marking requirements for explosives

Each package must be marked with the net quantity of explosive and the gross mass of the package. The proper shipping name required by 2.4.1 may be supplemented by additional descriptive text to indicate commercial or military names.

2.4.4 Packaging specification markings

2.4.4.1 Each outer or single packaging used for dangerous goods, for which specification packaging is required in Part 4, must bear the markings appropriate to the contents as specified in Part 6, Chapter 2.

2.4.4.2 Markings must be stamped, printed or otherwise marked on the package to provide adequate permanency.

2.4.5 Special marking requirements for radioactive material

2.4.5.1

a) each package of gross mass exceeding 50 kg must have its permissible gross mass legibly and durably marked on the outside of the packaging;

b) each package which conforms to:

   i) a Type IP-1 package, a Type IP-2 package or a Type IP-3 package design must be legibly and durably marked on the outside of the packaging with “TYPE IP-1”, “TYPE IP-2” or “TYPE IP-3” as appropriate;

   ii) a Type A package design must be legibly and durably marked on the outside of the packaging with “TYPE A”;

   iii) a Type IP-2 package, a Type IP-3 package or a Type A package design must be legibly and durably marked on the outside of the packaging with the international vehicle registration code (VRI Code) of the country of origin of design and either the name of the manufacturer, or other identification of the packaging specified by the competent authority of the country of origin of design.

c) each package which conforms to a design approved by the competent authority must be legibly and durably marked on the outside of the packaging with:

   i) the identification mark allocated to that design by the competent authority;

   ii) a serial number to uniquely identify each packaging which conforms to that design;

   iii) in the case of a Type B(U) or Type B(M) package design, with “TYPE B(U)” or “TYPE B(M)”; and

   iv) in the case of a Type C package design, with “TYPE C”.

d) each package which conforms to a Type B(U), Type B(M) or Type C package design must have the outside of the outermost receptacle which is resistant to the effects of fire and water plainly marked by embossing, stamping or other means resistant to the effects of fire and water with the trefoil symbol, as shown in Figure 5-1 below:

e) each excepted package must be marked with the UN number, preceded by the letters “UN”.

2.4.5.2 In case of international transport of packages requiring competent authority design or shipment approval, for which different approval types apply in the different countries concerned, marking must be in accordance with the certificate of the country of origin of the design.

2.4.6 Special marking requirements for refrigerated liquefied gas

The upright position of each package must be indicated prominently by arrows or by using the “Package orientation” label (Figure 5-26). The wording “KEEP UPRIGHT” must be placed at 120° intervals around the package or on each side. Packages must also be clearly marked “DO NOT DROP — HANDLE WITH CARE”.

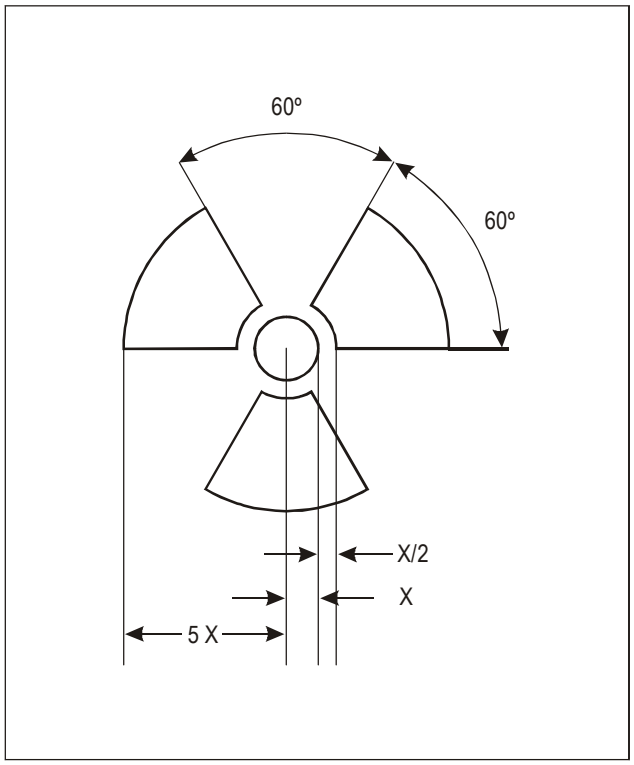


Figure 5-1. Basic trefoil symbol with proportions based on a central circle of radius X. The minimum allowable size of X must be 4 mm.

2.4.7 Special marking requirement for dry ice

The net mass of solid carbon dioxide (dry ice) must be marked on any package containing such substance.

2.4.8 Special marking requirement for biological substances, Category B

Packages containing biological substances, Category B packed in accordance with Packing Instruction 650 must be marked "Biological substance, Category B".

+ ### 2.4.9 Special marking provisions for environmentally hazardous substances

2.4.9.1 Packages containing environmentally hazardous substances meeting the criteria of 2.9.3 of the UN Recommendations (UN Nos. 3077 and 3082) must be durably marked with the environmentally hazardous substance mark with the exception of single packagings and combination packagings containing inner packagings with:

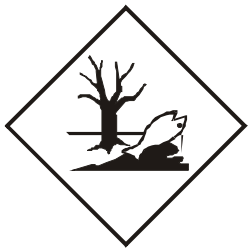
— contents of 5 L or less for liquids; or
— contents of 5 kg or less for solids.

2.4.9.2 The environmentally hazardous substance mark must be located adjacent to the markings required by 2.4.1.1. The requirements of 2.2.2 must be met.

2.4.9.3 The environmentally hazardous substance mark must be as shown in Figure 5-2. For packagings, the dimensions must be 100 mm × 100 mm, except in the case of packages of such dimensions that they can only bear smaller marks.

2.4.10 Marking of overpacks

≠ An overpack must be marked with the word "Overpack", with the proper shipping name, UN number, and special handling instructions appearing on interior packages for each item of dangerous goods contained in the overpack unless markings and labels representative of all dangerous goods in the overpack are visible, except as required in 3.2.6 and 3.5.1.1 h) to i) . Packaging specification markings must not be reproduced on the overpack.



+ **Figure 5-2. Symbol (fish and tree): black on white or suitable contrasting background**

≠ **2.4.11 Additional markings of packages containing dangerous goods in limited quantities**

Packages containing limited quantities of dangerous goods and prepared in accordance with 3;4 must be marked “limited quantity(ies)” or “LTD QTY”.

2.4.12 Markings required by other modes of transport

Markings required by other international or national transport regulations are permitted in addition to markings required by these Instructions, provided that they cannot be confused with or conflict with any markings prescribed by these Instructions, because of their colour, design or shape.

2.4.13 Special marking requirement for chemical oxygen generators

When chemical oxygen generators contained in protective breathing equipment (PBE) are being transported under Special Provision A144, the statement “Aircrew protective breathing equipment (smoke hood) in accordance with Special Provision A144” shall be marked adjacent to the proper shipping name on the package.

2.5 LANGUAGES TO BE USED

In addition to the languages which may be required by the State of Origin, English should be used.

Chapter 3

LABELLING

Parts of this Chapter are affected by State Variations CA 1, CA 4, IT 7, JP 9, JP 21, PK 2, VC 6, VU 5; see Table A-1

Note 1.— These provisions relate essentially to danger labels. However, additional marking or symbols indicating precautions to be taken in handling or storing a package (e.g. a symbol representing an umbrella indicating that a package should be kept dry) may be displayed on a package as appropriate. For such purposes, it is preferable to use the symbols recommended by the International Organization for Standardization (ISO).

Note 2.— In 3.6 of this Chapter there are provisions concerning the placarding of large freight containers for radioactive material.

Note 3.— The provisions concerning the placarding of portable tanks are shown in the Supplement, Part S-4;12.4.

3.1 THE REQUIREMENT TO LABEL

3.1.1 Where articles or substances are specifically listed in the Dangerous Goods List (Table 3-1), a danger class label must be affixed for the hazard shown in column 3 of Table 3-1. A subsidiary risk label must also be affixed for any risk indicated by a class or division number in column 4 of Table 3-1. However, special provisions indicated in column 7 may also require a subsidiary risk label where no subsidiary risk is indicated in column 4 or may exempt from the requirement for a subsidiary risk label where such a risk is indicated in the Dangerous Goods List.

3.1.2 Labels identifying the primary and subsidiary risks of the dangerous goods must bear the class or division number as required in 3.5.1.

3.1.3 All labels must be able to withstand open weather exposure without a substantial reduction in effectiveness.

3.2 APPLICATION OF LABELS

3.2.1 The labels required to be displayed on packages of dangerous goods are identified in the Dangerous Goods List for articles and substances specifically listed by name and for articles and substances not specifically listed by name which are covered by generic or n.o.s. entries.

3.2.2 Packages containing substances of Class 8 need not show a subsidiary risk label for Division 6.1 if the toxicity arises solely from the destructive effect on tissue. Substances of Division 4.2 need not show a subsidiary risk label for Division 4.1 if the substance is also a flammable solid.

3.2.3 Packages containing organic peroxides which meet the criteria for Class 8, Packing Group I or II must be labelled with a corrosive subsidiary risk label.

Note.— Many liquid organic peroxide formulations are flammable; however, no subsidiary risk flammable label is required because the organic peroxide label itself is considered to imply that the product may be flammable.

3.2.4 In addition to the primary hazard label (Figure 5-17), infectious substances packages must bear any other label required by the nature of the contents. This is not required if a quantity of 30 ml or less of dangerous goods included in classes 3, 8 or 9 is packed in each primary receptacle containing infectious substances provided these substances meet the requirements of 3;5.1.2.

3.2.5 Packages containing radioactive material having additional hazardous characteristics must also be labelled to indicate those characteristics.

≠ 3.2.6 Except when enlarged labels are used in accordance with 3.6, each package, overpack and freight container containing radioactive material must bear at least two labels which conform to Figures 5-18, 5-19 and 5-20 as appropriate according to the category (see 5;1.2.3.1.4) of that package, overpack or freight container. Labels must be affixed to two opposite sides on the outside of the package or on the outside of all four sides of the freight container. Each overpack

containing radioactive material must bear at least two labels on opposite sides of the outside of the overpack. In addition, each package, overpack and freight container containing fissile material, other than fissile material excepted under the provisions of 6;7.10.2 must bear labels which conform to the model shown in Figure 5-21; such labels, where applicable, must be affixed adjacent to the labels for radioactive material. Labels must not cover the markings specified in Chapter 2. Any labels which do not relate to the contents must be removed or covered.

3.2.7 Except as provided in 3.5.1.1 d), each label must:

a) be affixed to a background of contrasting colour or must have a dotted or solid line outer boundary;

b) be located on the same surface of the package near the proper shipping name marking, if the package dimensions are adequate;

c) be so placed on the packaging that they are not covered or obscured by any part of or attachment to the packaging or any other label or marking;

d) when primary and subsidiary risk labels are required, be displayed next to each other; and

e) in case of hazard warning labels, be affixed at an angle of 45° (diamond shaped), unless the package dimensions are inadequate.

3.2.8 Labels must not be folded. Cylindrical packages must be of such dimensions that a label will not overlap itself. In the case of cylindrical packages containing radioactive materials, which require two identical labels, these labels must be centred on opposite points of the circumference and must not overlap each other. If the dimensions of the package are such that two identical labels cannot be affixed without overlapping each other, one label is acceptable provided it does not overlap itself.

3.2.9 Labels must be firmly affixed to or printed on the package of dangerous goods. Where a package is of such an irregular shape that a label cannot be affixed to or printed on a surface, it is acceptable to attach the label to the package by an adequately strong tag.

3.2.10 Since packages or consignments of magnetized material (Class 9) must bear the “Magnetized material” label (Figure 5-24) as required by column 5 of Table 3-1, such packages or consignments do not need to bear the “Miscellaneous dangerous goods” label (Figure 5-23).

3.2.11 In addition to the class hazard labels specified in 3.1, handling labels must also be affixed to packages of dangerous goods as follows:

a) the “Cargo aircraft only” label (Figure 5-25) must be affixed:

   1) when the package containing the dangerous goods may only be transported on a cargo aircraft. However, where the packing instruction number and the permitted quantity per package are identical for passenger and cargo aircraft, the “Cargo aircraft only” label should not be used;

   2) to each Type B(M) package of radioactive material and any freight container containing such a Type B(M) package;

   3) on the same surface of the package near the hazard labels;

b) when required by the provisions of 4;1.1.13, either the “Package orientation” label (Figure 5-26), or pre-printed package orientation labels meeting the same specification as either Figure 5-26 or ISO Standard 780-1997, must be affixed to or printed on at least two opposite vertical sides of the package with the arrows pointing in the correct direction. The words “Dangerous goods” may be inserted on the label below the line;

c) for packages containing refrigerated liquefied gases, the “Cryogenic liquid” label (Figure 5-28) must be affixed on all packages;

d) for packages containing self-reactive substances of Division 4.1 or Division 5.2 organic peroxides, the “Keep away from heat” label (Figure 5-29) must be affixed on all packages. This label should be affixed on the same surface of the package near the hazard label(s);

e) for excepted packages of radioactive material the “Radioactive material, excepted package” handling label (Figure 5-30) must be affixed.

3.2.12 Where a text is indicated in Figures 5-1 to 5-31, an equivalent text in another language may be used.

3.2.13 Labels required by other international or national transport regulations are permitted in addition to labels required by these Instructions, provided that they cannot be confused with or conflict with any label prescribed by these Instructions, because of their colour, design or shape.

3.3 LABELLING OF OVERPACKS

3.3.1 An overpack must be labelled as required for packages by Chapter 3, for each item of dangerous goods contained in the overpack unless labels representative of all dangerous goods in the overpack are visible.

3.3.2 An overpack containing single packages with end closures containing liquid dangerous goods must be labelled with either the "Package Orientation" label (Figure 5-26), or pre-printed package orientation labels meeting the same specification as either Figure 5-26 or ISO Standard 780-1997, unless such labels are affixed to the package and are visible from the outside of the overpack. Such labels must be affixed to or printed on at least two opposite vertical sides of the overpack with the arrows pointing in the direction required to indicate the orientation of the overpack required to ensure that end closures are upward, notwithstanding that such single packages may also have side closures.

3.4 PROHIBITED LABELLING

Arrows for purposes other than indicating proper package orientation must not be displayed on a package containing liquid dangerous goods.

3.5 LABEL SPECIFICATIONS

3.5.1 Class hazard label specifications

3.5.1.1 Class hazard labels must conform to the following specifications:

≠ a) They must be in the form of a square with minimum dimensions of 100 mm × 100 mm, set at an angle of 45° (diamond shaped) except that labels of 50 mm × 50 mm may be used on packages containing infectious substances where the packages are of dimensions such that they can only bear smaller labels. They must have a line 5 mm inside the edge and running parallel with it. In the upper half of a label the line must have the same colour as the symbol and in the lower half it must have the same colour as the figure in the bottom corner. Labels are divided into halves. With the exception of Divisions 1.4, 1.5 and 1.6, the upper half of the label must contain the pictorial symbol and the lower half must contain the class or division number (and for goods of Class 1, the compatibility group letter) as appropriate. The label may include text such as the UN number or words describing the hazard class or division (e.g. "flammable") in accordance with f) provided the text does not obscure or detract from the other required label elements.

b) The symbols, texts and numbers must be shown in black on all labels except:

1) the Class 8 label, where the text (if any) and class number must appear in white;

2) labels with entirely green, red or blue backgrounds, where they may be shown in white; and

\+ 3) the Division 5.2 label, where the symbol may be shown in white.

c) Except for Divisions 1.4, 1.5 and 1.6, labels for Class 1 show in the lower half the division number and compatibility group letter for the substance or article. Labels for Divisions 1.4, 1.5 and 1.6 must show in the upper half the division number and in the lower half the compatibility group letter.

≠ d) Cylinders for Class 2 may, on account of their shape, orientation and securing mechanisms for transport, bear labels representative of those specified in this chapter, which have been reduced in size, according to ISO 7225:2005, for display on the non-cylindrical part (shoulder) of such cylinders. Labels may overlap to the extent provided for by ISO 7225:2005 "Gas cylinders — Precautionary labels"; however, in all cases the labels representing the primary hazard and the numbers appearing on any label must remain fully visible and the symbols recognizable.

e) In the case of labels for Class 5, the division number of the substance must be shown in the bottom corner of the label. For all other labels, the class number must be shown in the bottom corner of the label.

f) Unless otherwise provided for in these Instructions, only text indicating the nature of the risk may be inserted in the lower half of the label (in addition to the class or division number of compatibility group).

g) A label may contain form identification information, including the name of its maker, provided that information is printed outside of the solid line border in no larger than 10-point type.

Labelling of radioactive material

h) Each label conforming to Figures 5-18, 5-19 and 5-20 must be completed with the following information:

1) Contents:

A) except for LSA-I material, the name(s) of the radionuclide(s) as taken from Table 2-12, using the symbols prescribed therein. For mixtures of radionuclides, the most restrictive nuclides must be listed to the extent the space on the line permits. The group of LSA or SCO must be shown following the name(s) of the radionuclide(s). The terms “LSA-II”,“LSA-III”, “SCO-I” and “SCO-II” must be used for this purpose;

B) for LSA-I material, the term “LSA-I” is all that is necessary; the name of the radionuclide is not necessary;

2) Activity: The maximum activity of the radioactive contents during transport expressed in units of becquerels (Bq) with the appropriate SI prefix symbol. For fissile material, the mass of fissile material in units of grams (g), or multiples thereof, may be used in place of activity;

3) For overpacks and freight containers the “contents” and “activity” entries on the label must bear the information required in 3.5.1.1 h) 1 A) and B), respectively, totalled together for the entire contents of the overpack or freight container except that on labels for overpacks or freight containers containing mixed loads of packages containing different radionuclides, such entries may read “See Transport Documents”;

≠ 4) Transport index: The number determined in accordance with 1.2.3.1.1 and 1.2.3.1.2. (No transport index entry is required for category I-WHITE.)

i) Each label conforming to the Figure 5-21 must be completed with the criticality safety index (CSI) as stated in the certificate of approval for special arrangement or the certificate of approval for the package design issued by the competent authority.

j) For overpacks and freight containers, the criticality safety index (CSI) on the label must bear the information required in h) above totalled together for the fissile contents of the overpack or freight container.

k) In case of international transport of packages requiring competent authority design or shipment approval, for which different approval types apply in the different countries concerned, labelling must be in accordance with the certificate of the country of origin of design.

3.5.1.2 Illustrations of the class hazard labels, showing the approved symbols and colours, are given in Figures 5-3 to 5-23. The label descriptions used in column 5 of Table 3-1 are indicated in parentheses.

Note 1.— The asterisk appearing in the bottom corner of the label indicates the location of the class or division number when the label is used to show the primary risk. See Figures 5-3 to 5-6 concerning the location of information on explosives labels.

Note 2.— Minor variations in the design of the symbol on labels or other differences such as the width of vertical lines on labels as shown in these Instructions or in regulations of other modes, which do not affect the obvious meaning of the label, are acceptable. For example the hand shown on the Class 8 label may be shown with or without shading, the extreme right and left vertical lines on the Division 4.1 and Class 9 label may extend to the edge of the label or there may be some white space at the edge, etc.

≠ **3.5.2 Handling labels**

≠ 3.5.2.1 Handling label specifications

An illustration of each of the handling labels showing the approved design and colour is given in Figures 5-24 to 5-26 and Figures 5-28 to 5-31. The minimum label dimensions are shown in the figures, however:

a) labels having dimensions not smaller than half of those indicated may be used on packages containing infectious substances when the packages are of dimensions such that they can only bear smaller labels; and

b) orientation labels may meet the specification of either Figure 5-26 or ISO Standard 780-1997.

+ 3.5.2.2 Lithium battery handling label

Packages containing lithium batteries packed according to Packing Instructions 965 to 970 that are not subject to other additional requirements of these Instructions must bear a “Lithium battery” handling label (Figure 5-31). The label must show “Lithium metal batteries” or “Lithium ion batteries”, as applicable. Where the package contains both types of batteries, the label must show “Lithium metal and lithium ion batteries”.

3.6 PLACARDING OF LARGE FREIGHT CONTAINERS CONTAINING RADIOACTIVE MATERIAL

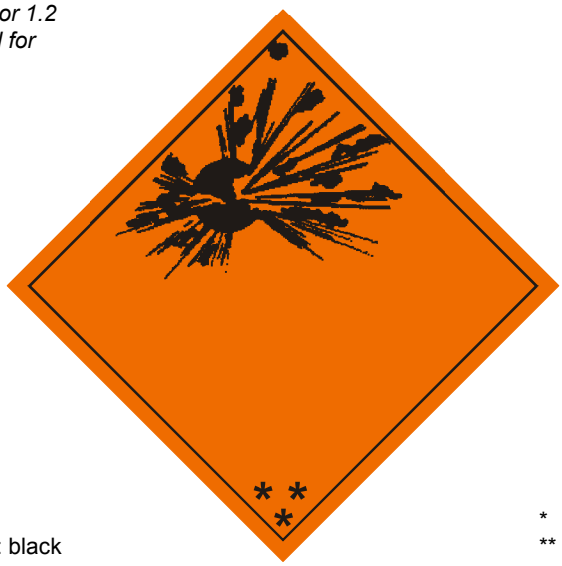
3.6.1 Special provisions for Class 7

3.6.1.1 Large freight containers carrying packages (other than excepted packages) and tanks must bear four placards which conform with Figure 5-27. The placards must be affixed in a vertical orientation to each side wall and each end wall of the large freight container. Any placards which do not relate to the contents must be removed. Instead of using both labels and placards, it is permitted as an alternative to use enlarged labels only, as shown in Figures 5-18, 5-19 and 5-20, and where appropriate Figure 5-21, with dimensions as required for the placard in Figure 5-27.

3.6.1.2 For Class 7, the placard must have minimum overall dimensions of 250 mm by 250 mm with a black line running 5 mm inside the edge and parallel with it, and must be otherwise as shown in Figure 5-27. The number 7 must not be less than 25 mm high. The background colour of the upper half of the placard must be yellow and of the lower half white, the colour of the trefoil and the printing must be black. The use of the word “Radioactive” in the bottom half is optional to allow the use of this placard to display the appropriate United Nations number for the consignment.

(Explosive)

Note.— Packages bearing this label marked Division 1.1 or 1.2 are not normally permitted for transport by air.



Symbol (exploding bomb): black
Background: orange

* Place for class number
** Place for division and compatibility group

Figure 5-3. Explosive, Class 1, Divisions 1.1, 1.2 and 1.3

(Explosive 1.4)

Background: orange
Figures: black
Numerals must be about 30 mm in height and about 5 mm thick (for a label measuring 100 mm × 100 mm).

* Place for class number
*** Place for compatibility group

Figure 5-4. Explosive, Class 1, Division 1.4

(Explosive 1.5)

Note.— Packages bearing this label are not normally permitted for transport by air.

Background: orange
Figures: black
Numerals must be about 30 mm in height and about 5 mm thick (for a label measuring 100 mm × 100 mm).

* Place for class number
*** Place for compatibility group

Figure 5-5. Explosive, Class 1, Division 1.5

(Explosive 1.6)

Note.— Packages bearing this label are not normally permitted for transport by air.

Background: orange
Figures: black
Numerals must be about 30 mm in height and about 5 mm thick (for a label measuring 100 mm × 100 mm).

* Place for class number
*** Place for compatibility group

Figure 5-6. Explosive, Class 1, Division 1.6

(Gas flammable)

Symbol (flame): black or white
Background: red

* Place for class number

Figure 5-7. Flammable gas, Class 2, Division 2.1

(Gas non-flammable)

Symbol (gas cylinder): black or white
Background: green

Figure 5-8. Non-flammable, non-toxic gas, Class 2, Division 2.2

(Gas toxic)

Symbol (skull and crossbones): black
Background: white

Figure 5-9. Toxic gas, Class 2, Division 2.3

(Liquid flammable)

Symbol (flame): black or white
Background: red

* Place for class number

Figure 5-10. Flammable liquid, Class 3

(Solid flammable)

Symbol (flame): black
Background: white with seven vertical red stripes

* Place for class number

Figure 5-11. Flammable solid, Class 4, Division 4.1

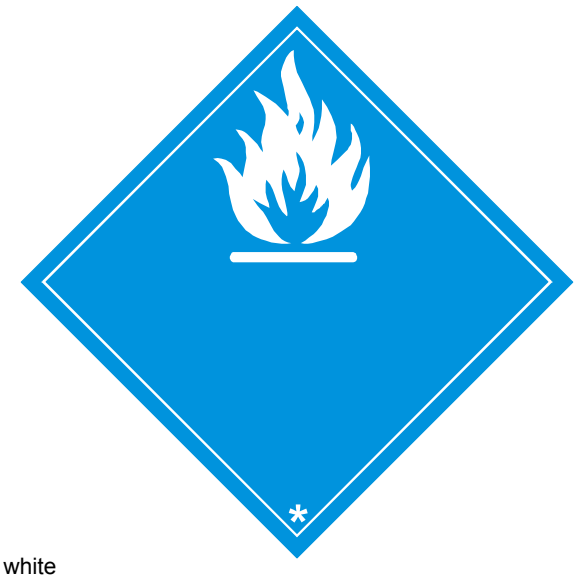
(Spontaneous combustion)

Symbol (flame): black
Background: upper half white,
lower half red

* Place for class number

Figure 5-12. Substance liable to spontaneous combustion, Class 4, Division 4.2

(Danger if wet)



Symbol (flame): black or white
Background: blue

* Place for class number

Figure 5-13. Substance which, in contact with water, emits flammable gas, Class 4, Division 4.3

(Oxidizer)

Symbol (flame over circle): black
Background: yellow
Figure “5.1” in bottom corner

Figure 5-14. Oxidizing substance, Class 5

Note — It is anticipated that Figure 5-13 in the 2005-2006 edition of the Technical Instructions may continue to be used to denote organic peroxides until 31 December 2010.

(Organic peroxide)

Symbol (flame): black or white
Background: upper half red; lower half yellow
Figure “5.2” in bottom corner

Figure 5-15. Organic peroxide, Class 5, Division 5.2

(Toxic)

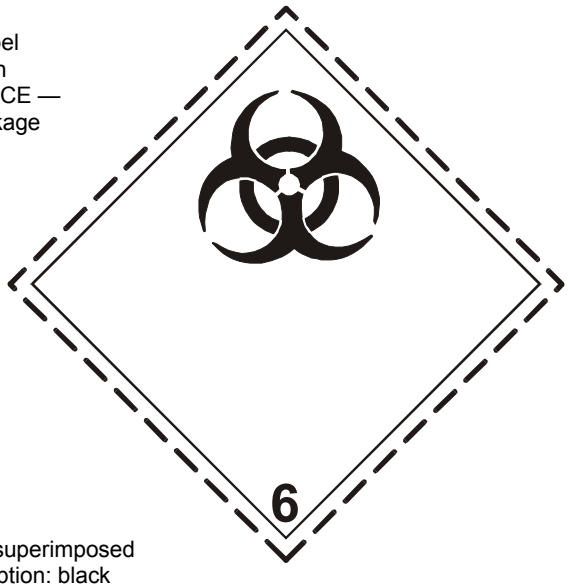
Symbol (skull and crossbones): black
Background: white

* Place for class number

Figure 5-16. Toxic substance, Class 6, Division 6.1

(Infectious)

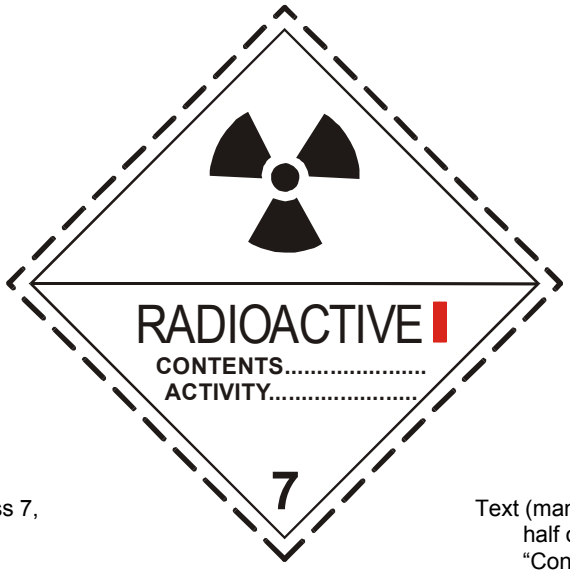
The bottom part of the label should bear the inscription "INFECTIOUS SUBSTANCE — In case of damage or leakage immediately notify public health authority"



Symbol (three crescents superimposed on a circle) and inscription: black
Background: white
Figure "6" in bottom corner

Figure 5-17. Infectious substance, Class 6, Division 6.2

(Radioactive)



Radioactive material, Class 7, Category I — White
Symbol (trefoil): black
Background: white
Figure “7” in bottom corner

Text (mandatory), black in bottom half of label: “Radioactive”; “Contents . . .”; “Activity . . .”
One (1) red vertical stripe must follow the word “Radioactive”.

Figure 5-18. Radioactive material, Class 7, Category I

(Radioactive)

Radioactive material, Class 7, Category II — Yellow
Symbol (trefoil): black
Background: top half yellow with white border, bottom half white
Figure “7” in bottom corner

Text (mandatory), black in bottom half of label: ”Radioactive”; “Contents . . .”; “Activity . . .”; in a black outlined box — “Transport Index”.
Two (2) red vertical stripes must follow the word “Radioactive”.

Figure 5-19. Radioactive material, Class 7, Category II

(Radioactive)

Radioactive material, Class 7, Category III — Yellow
Symbol (trefoil): black
Background: top half yellow with white border, bottom half white
Figure "7" in bottom corner

Text (mandatory), black in bottom half of label: "Radioactive"; "Contents . . ."; "Activity . . ."; in a black outlined box — "Transport Index".
Three (3) red vertical stripes must follow the word "Radioactive".

Figure 5-20. Radioactive material, Class 7, Category III

Requirements and controls for transport

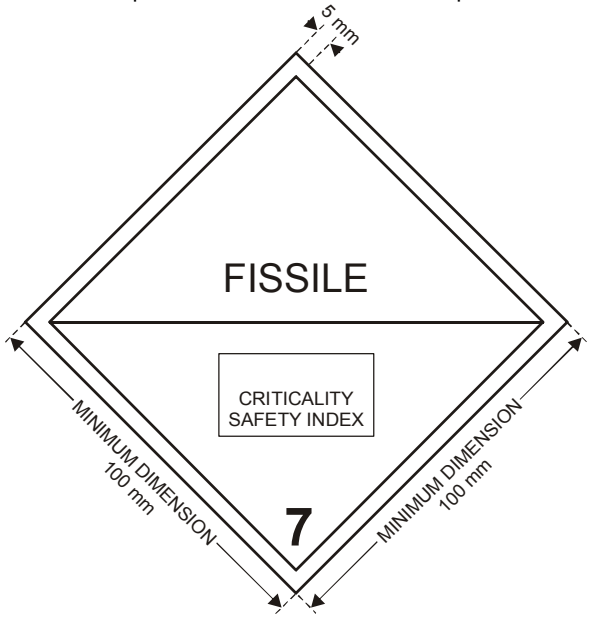
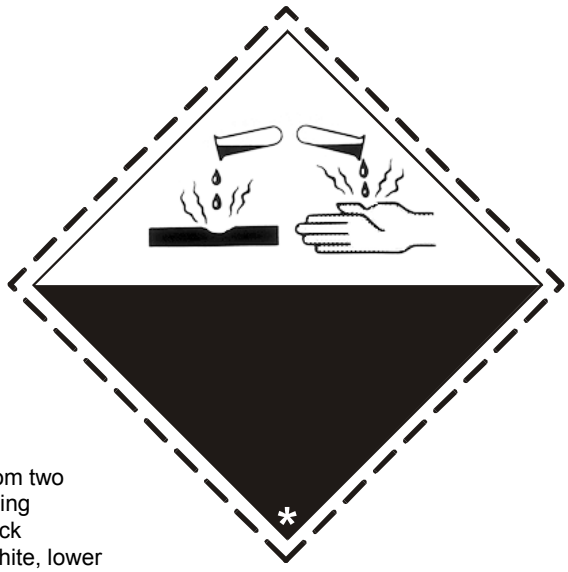


Figure 5-21. Criticality safety index label

(Corrosive)



Symbol (liquids spilling from two glass vessels and attacking a hand and a metal); black
Background: upper half white, lower half black with white border

* Place for class number

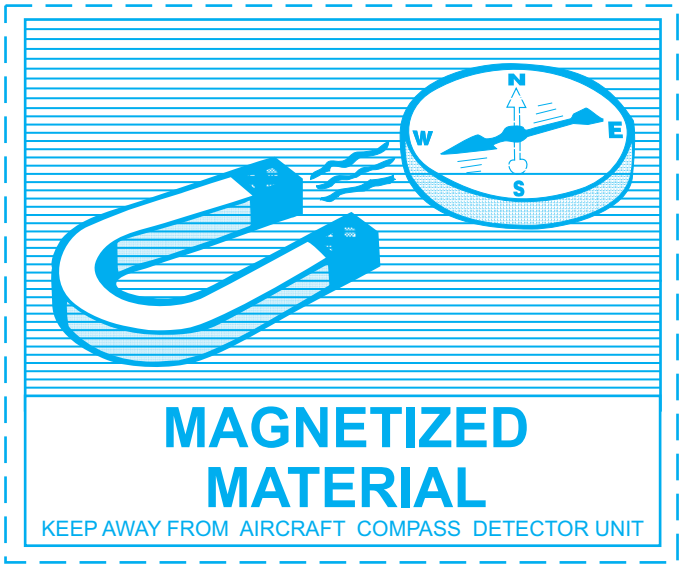
Figure 5-22. Corrosive, Class 8

(Miscellaneous)

Symbol (seven vertical stripes in upper half): black
Background: white

Figure 5-23. Miscellaneous dangerous goods, Class 9

(Magnetic)



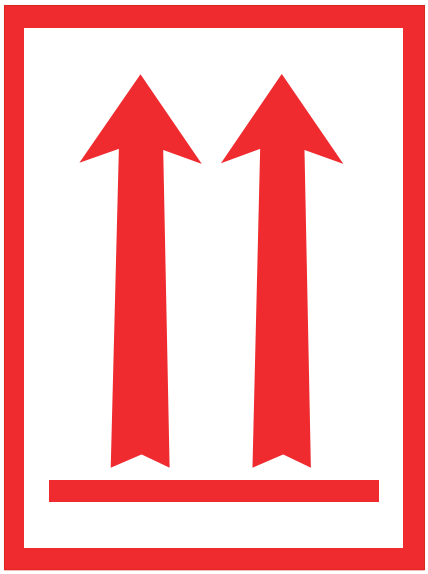
Colour: blue on white
Dimensions: 110 mm × 90 mm

Figure 5-24. Magnetized material

Colour: black on orange
Dimensions: 120 mm × 110 mm

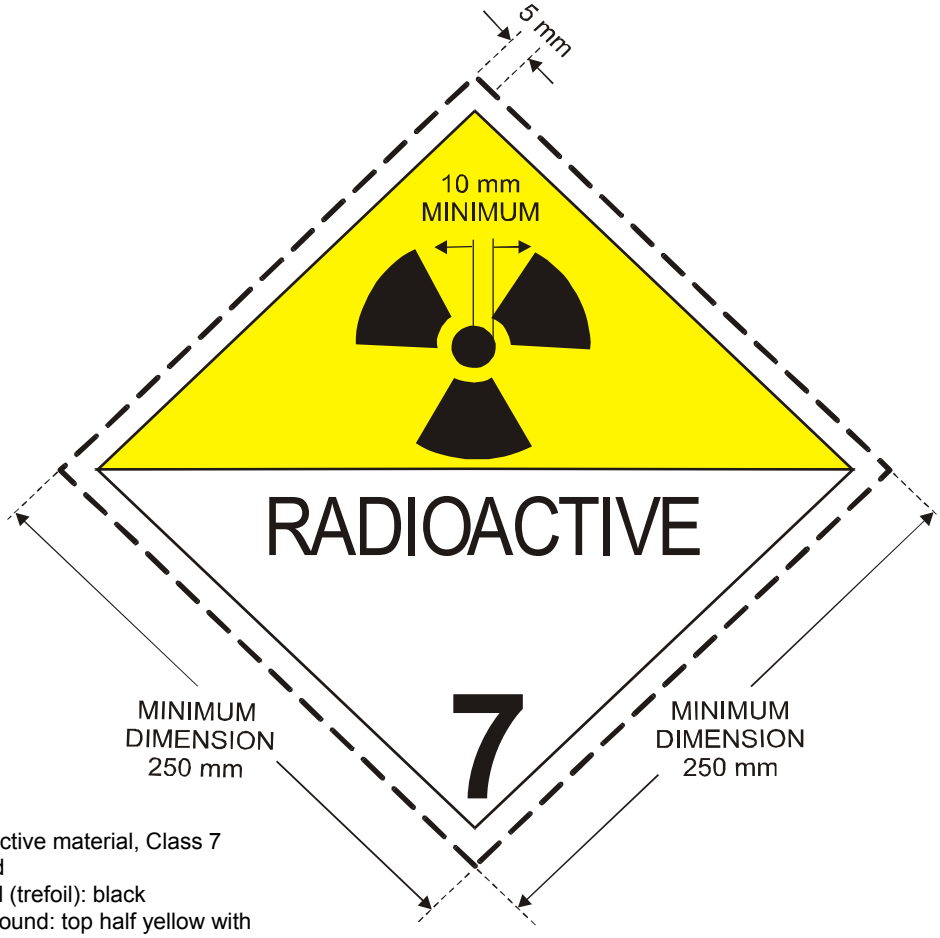
Note.— Figure 5-24 as contained in the 2007-2008 edition of these Technical Instructions may continue to be used until 31 December 2012.

≠ **Figure 5-25. Cargo aircraft only**



Colour: red or black on a contrasting background
Dimensions: 74 mm × 105 mm

Figure 5-26. Package orientation



Radioactive material, Class 7
Placard
Symbol (trefoil): black
Background: top half yellow with white border, bottom half white
Dimensions: the minimum dimensions are shown. When larger dimensions are used, the relative proportions must be maintained. The figure "7" must be in the bottom corner and must be not less than 25 mm high.

Note.— The word "RADIOACTIVE" in the bottom half is optional to allow the alternative use of the appropriate UN number.

Figure 5-27. Radioactive material, Class 7, placard for large freight containers

Symbol: white
Background: green
Dimensions: 75 mm x 105 mm

Note.— The words "Caution — may cause cold burn injuries if spilled or leaked" are optional and may be included.

Figure 5-28. Cryogenic liquid label

Colour: red or black on a white background
Dimensions: 74 mm × 105 mm

Figure 5-29. Keep away from heat

Colour: red or black on a contrasting background
Dimensions: 74 × 105 mm

Note.— The words "The information for this package need not appear on the Notification to Captain (NOTOC)" are optional and may be included.

Figure 5-30. Radioactive material, excepted package

+ **Figure 5-31. Lithium battery handling label**

Chapter 4

DOCUMENTATION

Parts of this Chapter are affected by State Variations AE 1, BN 1, CA 4, CA 14, CA 15, CA 16, CA 20, ES 1, HK 2, JM 2, JM 3, MY 6, PK 3, US 1, US 7, US 12, VC 7, VU 1, ZA 3; see Table A-1

≠ *Note.— These Instructions do not preclude the use of electronic data processing (EDP) and electronic data interchange (EDI) transmission techniques as an alternative to paper documentation, unless otherwise indicated.*

4.1 DANGEROUS GOODS TRANSPORT INFORMATION

≠ 4.1.1 General

4.1.1.1 The person who offers dangerous goods for transport by air must provide to the operator the information applicable to the consignment as set out in this paragraph. The information may be provided on a paper document or, where an agreement exists with the operator, by EDP or EDI techniques.

4.1.1.2 Where a paper document is used, the person who offers dangerous goods for transport by air must provide to the operator two copies of the dangerous goods transport document, completed and signed as provided for in this paragraph.

4.1.1.3 Where the dangerous goods transport information is provided by EDP or EDI techniques the data must be able to be produced as a paper document without delay, with the data in the sequence required by this chapter.

Note.— All references to "dangerous goods transport document" in this chapter also include provision of the required information by use of EDP and EDI transmission techniques.

4.1.2 Form of the transport document

4.1.2.1 A dangerous goods transport document may be in any form, provided it contains all of the information required by these Instructions.

4.1.2.2 If both dangerous and non-dangerous goods are listed in one document, the dangerous goods must be listed first, or otherwise be emphasized.

4.1.2.3 *Continuation page*

A dangerous goods transport document may consist of more than one page, provided pages are consecutively numbered.

4.1.2.4 The information on a dangerous goods transport document must be easy to identify, legible and durable.

4.1.3 Shipper and consignee

The name and address of the shipper and the consignee of the dangerous goods must be included on the dangerous goods transport document.

4.1.4 Information required on the dangerous goods transport document

4.1.4.1 *Dangerous goods description*

The dangerous goods transport document must contain the following information for each dangerous substance, material or article offered for transport:

a) the UN number preceded by the letters "UN";

b) the proper shipping name, as determined according to 3;1.2, including the technical name enclosed in parenthesis, as applicable (see 3;1.2.7);

c) the primary hazard class or, when assigned, the division of the goods, including for Class 1 the compatibility group letter. The words “Class” or “Division” may be included preceding the primary hazard class or division numbers;

d) subsidiary hazard class or division number(s) corresponding to the subsidiary risk label(s) required to be applied, when assigned, must be entered following the primary hazard class or division and must be enclosed in parenthesis. The words “Class” or “Division” may be included preceding the subsidiary hazard class or division numbers;

e) where assigned, the packing group for the substance or article which may be preceded by “PG” (e.g. “PG II”).

4.1.4.2 *Sequence of the dangerous goods description*

The five elements of dangerous goods description specified in 4.1.4.1 must be shown in the order listed above (i.e. a), b), c), d), e)), with no information interspersed, except as provided in these Instructions. Examples of a dangerous goods description are:

“UN 1717 Acetyl chloride 3 (8) II” or
“UN 1717 Acetyl chloride, Class 3 (Class 8), PG II”

Note 1.— In addition to the requirements of these Instructions, other elements of information may be required by the appropriate national authority or for certain modes of transport (e.g. flash point for sea transport). Unless permitted or required by these Instructions, additional information must be placed after the dangerous goods description.

Note 2.— Additional descriptive text in the entries in column 1 of the Dangerous Goods List (Table 3-1) are not part of the proper shipping name but may be used in addition to the proper shipping name.

Note 3.— For explosives of Class 1, the basic dangerous goods description may be supplemented by additional descriptive text to indicate commercial or military names.

4.1.4.3 *Information which supplements the proper shipping name in the dangerous goods description*

The proper shipping name in the dangerous goods description must be supplemented as follows:

a) *Technical names for “n.o.s.” and other generic descriptions*: Proper shipping names that are assigned an asterisk in column 1 of the Dangerous Goods List must be supplemented with their technical or chemical group names as described in 3;1.2.5;

b) *Empty uncleaned packagings*: Empty means of containment which contain the residue of dangerous goods of classes other than Class 7 must be described as such by, for example, placing the words “Empty uncleaned” or “Residue last contained” before or after the proper shipping name;

c) *Wastes*: For waste dangerous goods (other than radioactive wastes) which are being transported for disposal, or for processing for disposal, the proper shipping name must be preceded by the word “Waste”, unless this is already a part of the proper shipping name;

d) *Elevated temperature substances*: For solid substances, unless the word “Molten” is already included in the proper shipping name, it must be added to the proper shipping name on the dangerous goods transport document when a substance is offered for air transport in the molten state (see Part 3, Chapter 1).

4.1.5 Information required in addition to the dangerous goods description

In addition to the dangerous goods description the following information must be included after the dangerous goods description on the dangerous goods transport document.

4.1.5.1 *Quantity of dangerous goods, number and type of packagings*

The number of packages, type of packaging (e.g. steel drum, fibreboard box, etc.) and net quantity of dangerous goods in each package (by volume or mass, as appropriate) must be indicated for each item of dangerous goods bearing a different proper shipping name, UN number or packing group. Abbreviations may be used to specify the unit of measurement for the quantity. For packages containing the same dangerous goods and quantity per package a multiple of the quantity may be used. For example:

UN 1263, Paint, 3, PG II, 5 fibreboard boxes x 5 L

Consignment comprising packages of different quantities of the same dangerous good must be clearly identified. For example:

UN 1263, Paint, 3, PG II, 5 fibreboard boxes x 5 L, 10 fibreboard boxes x 10 L

UN packaging codes may only be used to supplement the description of the kind of package (e.g. one fibreboard box (4G)). Where the letter “G” follows the quantity in column 11 or 13 of Table 3-1 the gross mass of each package must be indicated, rather than the net quantity; and:

a) for empty uncleaned packagings as described by 4.1.4.3 b) only the number and type of packagings need be shown;

b) for chemical kits and first aid kits, the total net mass of dangerous goods. Where the kits contain solids and/or liquids, the net mass of liquids within the kits is to be calculated on a 1 to 1 basis of their volume, i.e. 1 litre equal to 1 kilogram;

c) for dangerous goods in machinery or apparatus, the individual total quantities of dangerous goods in solid, liquid or gaseous state, contained in the article;

d) for dangerous goods transported in salvage packagings, an estimate of the quantity of dangerous goods must be given;

≠ e) for items where “No Limit” is shown in column 11 or 13 the quantity must be the net mass or volume for substances (e.g. UN 2964, UN 3291). For articles (e.g. UN 2794, UN 2800, UN 2990, UN 3166) the quantity must be the gross mass, followed by the letter G.

4.1.5.2 *Limited quantities*

When dangerous goods are transported according to the exceptions for dangerous goods packed in limited quantities, the words “Limited quantity” or “LTD QTY” must be included.

4.1.5.3 *Salvage packagings*

For dangerous goods transported in salvage packagings, the words “Salvage package” must be included.

4.1.5.4 *Chemical oxygen generators*

When chemical oxygen generators contained in protective breathing equipment (PBE) are being transported under Special Provision A144, the statement “Aircrew protective breathing equipment (smoke hood) in accordance with Special Provision A144” must be included on the dangerous goods transport document.

4.1.5.5 *Self-reactive substances and organic peroxides*

Not used.

4.1.5.5.1 When organic peroxides and self-reactive substances are transported under conditions where approval is required (for organic peroxides, see 2;5.3.2.5 for self-reactive substances, see 2;4.2.3.2.5), a statement to this effect must be included in the dangerous goods transport document. A copy of the classification approval and conditions of transport for non-listed organic peroxides and self-reactive substances must be attached to the dangerous goods transport document.

4.1.5.5.2 When a sample of an organic peroxide (see 2;5.3.2.6) or a self-reactive substance (see 2;4.2.3.2.6) is transported, a statement to this effect must be included in the dangerous goods transport document.

4.1.5.6 *Infectious substances and controlled substances*

The dangerous goods transport document must also include the name and telephone number of a responsible person when a national law or international convention prohibits the disclosure of the technical name following an “n.o.s.*” entry or for infectious substances, UN 2814 and 2900.

4.1.5.7 *Radioactive material*

4.1.5.7.1 The following information must be included for each consignment of Class 7 material, as applicable, in the order given:

a) The name or symbol of each radionuclide or, for mixtures of radionuclides, an appropriate general description or a list of the most restrictive nuclides;

b) A description of the physical and chemical form of the material, or a notation that the material is special form radioactive material or low dispersible radioactive material. A generic chemical description is acceptable for chemical form;

c) The maximum activity of the radioactive contents during transport expressed in units of becquerels (Bq) with an appropriate SI prefix symbol (see 1;3.2). For fissile material, the mass of fissile material in units of grams (g), or appropriate multiples thereof, may be used in place of activity;

d) The category of the package, i.e. I-WHITE, II-YELLOW, III-YELLOW;

e) The transport index (categories II-YELLOW and III-YELLOW only);

f) For consignments including fissile material other than consignments excepted under 6;7.10.2, the criticality safety index;

g) The identification mark for each competent authority approval certificate (special form radioactive material, low dispersible radioactive material, special arrangement, package design, or shipment) applicable to the consignment;

h) For consignments of more than one package, the information contained in 4.1.4.1 a) to c) and 4.1.5.7.1 a) to g) must be given for each package. For packages in an overpack or freight container, a detailed statement of the contents of each package within the overpack or freight container and, where appropriate, of each overpack or freight container must be included. If packages are to be removed from the overpack or freight container at a point of intermediate unloading, appropriate transport documents must be made available;

i) Where a consignment is required to be shipped under exclusive use, the statement “EXCLUSIVE USE SHIPMENT”; and

j) For LSA-II, LSA-III, SCO-I and SCO-II, the total activity of the consignment as a multiple of A_2.

4.1.5.7.2 The shipper must provide a statement regarding actions, if any, that are required to be taken by the carrier. The statement must be in the languages deemed necessary by the carrier or the authorities concerned, and must include at least the following points:

a) Supplementary requirements for loading, stowage, carriage, handling and unloading of the package, overpack or freight container including any special stowage provisions for the safe dissipation of heat (see 7;2.9.3.2), or a statement that no such requirements are necessary;

b) Restrictions on the type of aircraft and any necessary routeing instructions;

c) Emergency arrangements appropriate to the consignment.

4.1.5.7.3 In case of international transport of packages requiring competent authorities design or shipment approval, for which different approval types apply in the different countries concerned, the UN number and proper shipping name required in 4.1.4.1 must be in accordance with the certificate of the country of origin of design.

≠ 4.1.5.7.4 The applicable competent authority certificates need not necessarily accompany the consignment. The shipper must make them available.

4.1.5.8 *Additional requirements*

4.1.5.8.1 The dangerous goods transport document must also contain:

a) the packing instruction applied and, when applicable, reference to Special Provision A1, A2 or A109, except for radioactive material;

b) a statement indicating that the shipment is within the limitations prescribed for either passenger and cargo aircraft or cargo-only aircraft, as appropriate;

Note.— To qualify as acceptable for transport aboard passenger aircraft, passenger aircraft packing instruction number(s) must be used, and the package must not bear the “Cargo aircraft only” label. To qualify as acceptable for transport aboard cargo-only aircraft, cargo aircraft packing instruction number(s) must be used, and the package must bear the “Cargo aircraft only” label; or passenger aircraft instruction number(s) must be shown and no “Cargo aircraft only” label applied. However, where the packing instruction number(s) and the permitted quantity per package are identical for passenger and cargo aircraft, the “Cargo aircraft only” label should not be used.

c) special handling information, when appropriate;

d) an indication that an overpack has been used, when appropriate; and

e) the “Q” value rounded up to the first decimal place, if substances are packed in accordance with 3;4.3.3 or 4;1.1.8 e).

4.1.5.8.2 For explosive substances, where Packing Instruction 101 has been adopted by an appropriate national authority, the State’s distinguishing sign for motor vehicles in international traffic of the country for which the authority acts must be marked on the dangerous goods transport document as follows:

Packaging authorized by the competent authority of ...

Note.— In this instance, the term “competent authority” is used for intermodal compatibility; it refers to the appropriate national authority.

4.1.5.8.3 When self-reactive substances of Division 4.1, or organic peroxides of Division 5.2 or other substances having similar properties, are offered for transport, the shipper must indicate on the dangerous goods transport document that the packages containing such substances must be protected from direct sunlight and all sources of heat and be placed in

adequately-ventilated areas.

4.1.6 Certification

4.1.6.1 The dangerous goods transport document must include a certification or declaration that the consignment is acceptable for transport and that the goods are properly packaged, marked and labelled, and in proper condition for transport in accordance with the applicable regulations and including additional air transport requirements of these Instructions (examples of additional air transport requirements are indicated in 5;1.1).

The text for this certification is:

> "I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations."
>
> For air transport the following additional statement is required:
>
> "I declare that all of the applicable air transport requirements have been met."

The certification must be signed and dated by the shipper. Facsimile signatures are acceptable where applicable laws and regulations recognize the legal validity of facsimile signatures.

Note.— The word "placarded" is not essential for shipments by air.

≠ 4.1.6.2 If the dangerous goods documentation is presented to the operator by means of electronic data processing (EDP) or electronic data interchange (EDI) transmission techniques, the signature(s) may be replaced by the name(s) (in capitals) of the person authorized to sign. Where the original consignment details are provided to an operator, by EDP or EDI techniques, and subsequently the consignment is transhipped to an operator that requires a paper dangerous goods transport document, the paper document must indicate "Original Received Electronically" and the name of the signatory must be shown in capital letters.

4.1.6.3 In addition to the languages which may be required by the State of Origin, English should be used for the dangerous goods transport document.

4.2 AIR WAYBILL

When an air waybill is issued for a consignment for which a dangerous goods transport document is required, the air waybill must contain a statement to indicate that the dangerous goods are described on an accompanying dangerous goods transport document. An air waybill issued for a consignment must, when applicable, indicate that the consignment must be loaded on cargo aircraft only.

4.3 ADDITIONAL DOCUMENTATION FOR OTHER THAN RADIOACTIVE MATERIAL

4.3.1 When dangerous goods are shipped as authorized by Special Provision A1, A2 or A109, they must be accompanied by a copy of the document(s) of approval, showing the quantity limitations, the packing requirements and, in the case of A2, the labelling requirements.

4.3.2 When dangerous goods are shipped in portable tanks as authorized by Part S-4, Chapter 12 of the Supplement, they must be accompanied by a copy of the document(s) of approval.

4.3.3 When dangerous goods are shipped in packagings as authorized by 4;2.8, they must be accompanied by a copy of the document(s) of approval.

4.3.4 When organic peroxides and self-reactive substances require an approval prior to transport under the provisions of 2;5.3.2.5 or 2;4.2.3.2.5, a copy of the approval must be attached to the dangerous goods transport document.

4.3.5 When dangerous goods are shipped under exemption (see 1;1.1.2), a copy of the exemption must accompany the consignment. Where more than one State has granted an exemption for a particular consignment, the documents that need to accompany it are the exemptions granted by the States of Origin, transit (if relevant) and destination.

4.4 DOCUMENTATION FOR RADIOACTIVE MATERIAL, EXCEPTED PACKAGE

Excepted packages of radioactive material must be shown on the air waybill or other similar document (such as a consignment note) by the appropriate proper shipping name and UN number as shown in the list below. This information must be included with the description of the goods:

a) “Radioactive material, excepted package — empty packaging” (UN 2908);

b) “Radioactive material, excepted package — articles manufactured from natural uranium” (UN 2909); or “Radioactive material, excepted package — articles manufactured from depleted uranium” (UN 2909); or “Radioactive material, excepted package — articles manufactured from natural thorium” (UN 2909);

c) “Radioactive material, excepted package — limited quantity of material” (UN 2910);

d) “Radioactive material, excepted package — instruments” (UN 2911); or “Radioactive material, excepted package — articles” (UN 2911).

(See 1;6.1.5.1.)

Part 6

PACKAGING NOMENCLATURE, MARKING, REQUIREMENTS AND TESTS

Chapter 1

APPLICABILITY, NOMENCLATURE AND CODES

1.1 APPLICABILITY

1.1.1 The applicability of each Chapter of this Part to the packagings for the various Classes and Divisions of dangerous goods is as set out in Table 6-1.

Table 6-1. Applicability of Chapters

Class or Division	*Chapter*
Classes 1, 2, 3, 4, 5, 8 and 9 and Division 6.1, where the packing instructions for these Classes and Divisions require the use of a packaging marked in accordance with Chapter 2 of this Part	1 to 5
Division 6.2, infectious substances	2, 6
Class 7, radioactive material	7

1.1.2 The requirements for packagings in Chapter 3 are based on packagings currently used. In order to take into account progress in science and technology, there is no objection to the use of packagings having specifications different from those in Chapter 3, provided they are equally effective, acceptable to the appropriate authority and able successfully to withstand the tests described in 4;1.1.18 and Chapter 4. Methods of testing other than those described in these Instructions are acceptable, provided they are equivalent.

1.1.3 Manufacturers and subsequent distributors of packagings must provide information regarding procedures to be followed (including closure instructions for inner packagings and receptacles), a description of the types and dimensions of the closures (including required gaskets) and any other components needed to ensure that packages, as presented for transport, are capable of passing the applicable performance tests of Chapters 4 to 7 and the pressure differential requirements of 4;1.1.6 as applicable.

1.2 CODES FOR DESIGNATING TYPES OF PACKAGINGS

1.2.1 Two systems of codes are used in these Instructions for designating types of packagings. The first is based on the UN Recommendations, Chapter 6, and is applicable to packagings other than inner packagings. The second is applicable to inner packagings.

1.2.2 The code consists of:

— an Arabic numeral indicating the kind of packaging, e.g. drum, jerrican, etc., followed by

— a capital letter(s) in Latin characters indicating the nature of the material, e.g. steel, wood, etc., followed where necessary by

— an Arabic numeral indicating the category of packaging within the kind to which the packaging belongs.

1.2.3 In the case of composite packagings, two capital letters in Latin characters are used in sequence in the second position of the code. The first indicates the material of the inner receptacle and the second that of the outer packaging.

1.2.4 For combination packagings, only the code number for the outer packaging is used.

1.2.5 The following numerals must be used for the kinds of packaging:

1. Drum
2. Reserved
3. Jerrican
4. Box
5. Bag
6. Composite packaging.

1.2.6 The following capital letters must be used for the types of material:

A. Steel (all types and surface treatments)
B. Aluminium
C. Natural wood
D. Plywood
F. Reconstituted wood
G. Fibreboard
H. Plastic material
L. Textile
M. Paper, multiwall
N. Metal (other than steel or aluminium)
P. Glass, porcelain or stoneware (not used in these Instructions).

+ Note.— Plastics materials are taken to include other polymeric materials such as rubber.

1.2.7 The letters “T” or “U” or “V” or “W” may follow the packaging code. The letter “T” signifies a salvage packaging conforming to the requirements of 4.8. The letter “U” signifies a special packaging conforming to the requirements of 6.4. The letter “V” signifies a special packaging conforming to the requirements of 4.1.7. The letter “W” signifies that the packaging, although of the same type indicated by the code, is manufactured to a specification different to that in 3.1 and is considered equivalent under the requirements of 1.1.2.

1.2.8 The following code is used in these Instructions for designating inner packagings:

— the capital letters “IP” in Latin characters indicating “Inner Packaging”;

— an Arabic numeral indicating the kind of inner packaging;

— where appropriate, a capital letter in Latin characters indicating the category within the kind.

1.3 INDEX OF PACKAGINGS

Table 6-2 contains an index of packagings, other than inner packagings, referred to in Chapters 1 to 4. It lists all the packagings, except inner packagings, specified in the United Nations *Recommendations for the Transport of Dangerous Goods*, and notes those not used in these Instructions for air transport. The index lists the number of the paragraph containing the requirements of those packagings used in these Instructions. The performance tests are specified in Chapter 4. Table 6-3 contains an index of inner packagings and lists the paragraph number containing the requirements together with, where applicable, individual performance tests (e.g. for aerosols).

Table 6-2. Index of packagings other than inner packagings

Kind	*Code and, where applicable, category*		*Paragraph*	*Maximum capacity (L)*	*Maximum net mass (kg)*
Steel drums	1A1	non-removable head	3.1.1	450	400
	1A2	removable head	3.1.1	450	400
Aluminium drums	1B1	non-removable head	3.1.2	450	400
	1B2	removable head	3.1.2	450	400
Metal (other than steel or aluminium) drums	1N1	non-removable head	3.1.3	450	400
	1N2	removable head	3.1.3	450	400
Steel jerricans	3A1	non-removable head	3.1.4	60	120
	3A2	removable head	3.1.4	60	120
Aluminium jerricans	3B1	non-removable head	3.1.4	60	120
	3B2	removable head	3.1.4	60	120
Plywood drums	1D		3.1.5	250	400
Reserved					
Fibre drums	1G		3.1.6	450	400
Plastic drums and jerricans	1H1	drums, non-removable head	3.1.7	450	400

Kind	*Code and, where applicable, category*		*Paragraph*	*Maximum capacity (L)*	*Maximum net mass (kg)*
	1H2	drums, removable head	3.1.7	450	400
	3H1	jerricans, non-removable head	3.1.7	60	120
	3H2	jerricans, removable head	3.1.7	60	120
Boxes of natural wood	4C1	ordinary	3.1.8		400
	4C2	with siftproof walls	3.1.8		400
Plywood boxes	4D		3.1.9		400
Reconstituted wood boxes	4F		3.1.10		400
Fibreboard boxes	4G		3.1.11		400
Plastic boxes	4H1	expanded plastic boxes	3.1.12		60
	4H2	solid plastic boxes	3.1.12		400
Steel or aluminium boxes	4A	steel	3.1.13		400
	4B	aluminium	3.1.13		400
Textile bags	5L1	without inner liner or coating	Not used in these Instructions		
	5L2	siftproof	3.1.14		50
	5L3	water-resistant	3.1.14		50
Woven plastic bags	5H1	without inner liner or coating	Specialized use only		
	5H2	siftproof	3.1.15		50
	5H3	water-resistant	3.1.15		50
Plastic film bags	5H4		3.1.16		50
Paper bags	5M1	multiwall	3.1.17		
	5M2	multiwall, water-resistant	3.1.17		50
Composite packaging (plastic material)	6HA1	plastic receptacle with outer steel drum	3.1.18	250	400
	6HA2	plastic receptacle with outer steel crate*/or box	3.1.18	60	75
	6HB1	plastic receptacle with outer aluminium drum	3.1.18	250	400
	6HB2	plastic receptacle with outer aluminium crate*/or box	3.1.18	60	75
	6HC	plastic receptacle with outer wooden box	3.1.18	60	75
	6HD1	plastic receptacle with outer plywood drum	3.1.18	250	400
	6HD2	plastic receptacle with outer plywood box	3.1.18	60	75
	6HG1	plastic receptacle with outer fibre drum	3.1.18	250	400
	6HG2	plastic receptacle with outer fibreboard box	3.1.18	60	75
	6HH1	plastic receptacle with outer plastic drum	3.1.18	250	400
	6HH2	plastic receptacle with outer solid plastic box	3.1.18	60	75
Composite packagings (glass, porcelain or stoneware)	6PA1	receptacle with outer steel drum			
	6PA2	receptacle with outer steel crate*/or box			
	6PB1	receptacle with outer aluminium drum			
	6PB2	receptacle with outer aluminium crate*/or box			
	6PC	receptacle with outer wooden box			
	6PD1	receptacle with outer plywood drum	Not used in these Instructions		
	6PD2	receptacle with outer wickerwork hamper			
	6PG1	receptacle with outer fibre drum			
	6PG2	receptacle with outer fibreboard box			
	6PH1	receptacle with outer expanded plastic packaging			
	6PH2	receptacle with outer solid plastic packaging			

* Crates are outer packagings with incomplete surfaces. For air transport, crates may not be used as outer packagings of composite packagings.

Table 6-3. Index of inner packagings

Code	*Kind*	*Paragraph*
IP.1	Earthenware, glass or wax	3.2.1
IP.2	Plastic	3.2.2
IP.3	Metal cans, tins or tubes (other than aluminium)	3.2.3.1
IP.3A	Metal cans, tins or tubes (aluminium)	3.2.3.2
IP.4	Multiwall paper bags	3.2.4
IP.5	Plastic bags	3.2.5
IP.6	Fibre cans or boxes	3.2.6
IP.7	Metal receptacles (aerosols), non-refillable	3.2.7.1
IP.7A	Metal receptacles (aerosols), non-refillable	3.2.7.1
IP.7B	Metal receptacles (aerosols), non-refillable	3.2.7.2
IP.7C	Plastic receptacle (aerosols), non-refillable	3.2.8
IP.8	Glass ampoules (glass tubes)	3.2.9
IP.9	Metal or plastic flexible tubes	3.2.10
IP.10	Bags, paper with plastic/aluminium	3.2.11

Chapter 2

MARKING OF PACKAGINGS OTHER THAN INNER PACKAGINGS

Introductory Notes

Note 1.— The marking indicates that the packaging which bears it corresponds to a successfully tested design type and that it complies with the provisions of Chapters 3 and 4 which are related to the manufacture, but not to the use, of the packaging. In itself, therefore, the mark does not necessarily confirm that the packaging may be used for any particular substance.

Note 2.— The marking is intended to be of assistance to packaging manufacturers, reconditioners, packaging users, operators and appropriate authorities. In relation to the use of a new packaging, the original marking is a means for its manufacturer(s) to identify the type and to indicate those performance test regulations that have been met.

Note 3.— The marking does not always provide full details of the test levels, etc., and these may need to be taken further into account, e.g. by reference to a test certificate, test reports or register of successfully tested packagings. For example, a packaging having an X or Y marking may be used for substances to which a packing group having a lesser degree of danger has been assigned with the relevant maximum permissible value of the relative density, determined by taking into account the factor 1.5 or 2.25 indicated in the test requirements for packagings in Chapter 4 as appropriate, i.e. a Packing Group I packaging tested for products with a relative density of 1.2 could be used as a Packing Group II packaging for products with a relative density of 1.8 or a Packing Group III packaging for products with a relative density of 2.7, provided of course that all the performance criteria can still be met with the higher relative density.

2.1 MARKING REQUIREMENTS FOR PACKAGINGS OTHER THAN INNER PACKAGINGS

2.1.1 Each packaging intended for use according to these Instructions must bear markings which are durable, legible and placed in a location and of such a size relative to the packaging as to be readily visible. For packages with a gross mass of more than 30 kg the markings, or a duplicate thereof, must appear on the top or on a side of the packaging. Letters, numerals and symbols must be at least 12 mm high, except for packagings of 30 L or 30 kg capacity or less, when they must be at least 6 mm in height and for packagings of 5 L or 5 kg or less when they must be of an appropriate size. The markings must show:

a) the United Nations packaging symbol 

≠ This symbol must not be used for any purpose other than certifying that a packaging complies with the relevant requirements in Chapters 1 to 6. For embossed metal packagings the capital letters “UN” may be applied as the symbol;

b) the code designating the type of packaging according to 1.2;

c) a code in two parts:

1) a letter designating the packing group(s) for which the design type has been successfully tested:

X for Packing Groups I, II and III
Y for Packing Groups II and III
Z for Packing Group III only;

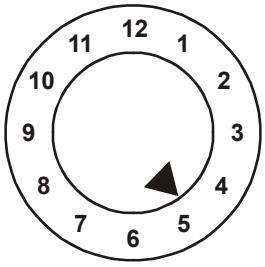
2) A) for single packagings intended to contain liquids: the relative density, rounded off to the first decimal, for which the design type has been tested; this may be omitted when the relative density does not exceed 1.2;

B) for packagings intended to contain solids or inner packagings: the maximum gross mass, in kilograms, at which the design type has been tested;

d) 1) for single packagings intended to contain liquids: the hydraulic test pressure which the packaging was shown to withstand, in kPa rounded down to the nearest 10 kPa;

2) for packagings intended to contain solids or inner packagings: the letter “S”;

e) the last two digits of the year during which the packaging was manufactured. Packagings of types 1H1, 1H2, 3H1 and 3H2 must also be appropriately marked with the month of manufacture; this may be marked on the packaging in a different place from the remainder of the marking. An appropriate method is:



f) the State authorizing the allocation of the mark, indicated by the distinguishing sign for motor vehicles in international traffic;

g) the name of the manufacturer or other identification of the packaging specified by the appropriate national authority.

2.1.2 In addition to the durable markings prescribed in 2.1.1, every new metal drum of a capacity greater than 100 L must bear the marks described in 2.1.1. a) to e) on the bottom, with an indication of the nominal thickness of at least the metal used in the body (in mm, to 0.1 mm), in a permanent form (e.g. embossed). When the nominal thickness of either head of a metal drum is thinner than that of the body, the nominal thicknesses of the top head, body and bottom head must be marked on the bottom in a permanent form (e.g. embossed), for example “1.0-1.2-1.0” or “0.9-1.0-1.0”. Nominal thicknesses of metal must be determined according to the appropriate ISO Standard, for example ISO 3574:1999 for steel. The marks indicated in 2.1.1 f) and g) must not be applied in a permanent form (e.g. embossed) except as provided for in 2.1.5.

2.1.3 Every packaging liable to undergo a reconditioning process other than those referred to in 2.1.2 must bear the marks indicated in 2.1.1 a) to e) in a permanent form. Marks are permanent if they are able to withstand the reconditioning process (e.g. embossed). For packagings other than metal drums of a capacity greater than 100 L, these permanent marks may replace the corresponding durable markings prescribed in 2.1.1.

2.1.4 For re-manufactured metal drums, if there is no change to the packaging type and no replacement or removal of integral structural components, the required markings need not be permanent (e.g. embossed). Every other re-manufactured metal drum must bear the markings indicated in 2.1.1 a) to e) in a permanent form (e.g. embossed) on the top head or side.

2.1.5 Metal drums made from materials (e.g. stainless steel) designed to be reused repeatedly may bear the markings indicated in 2.1.1 f) and g) in a permanent form (e.g. embossed).

2.1.6 Packagings manufactured with recycled plastic material as defined in 1;3 must be marked “REC”. This mark must be placed near the marking prescribed in 2.1.1.

2.1.7 Marking must be applied in the sequence of the sub-paragraphs in 2.1.1; each element of the marking required in these sub-paragraphs and when appropriate sub-paragraphs h) to j) of 2.1.8 must be clearly separated, e.g. by a slash or space, so as to be easily identified; for examples see 2.1.10; 2.2.3; and 2.3. Any additional markings authorized by the appropriate national authority must still enable the parts of the marking to be correctly identified with reference to 2.1.1.

2.1.8 After reconditioning a packaging, the reconditioner must apply to it, in sequence, a durable marking showing:

h) the State in which the reconditioning was carried out, indicated by the distinguishing sign for motor vehicles in international traffic;

i) the name of the reconditioner or other identification of the packaging specified by the appropriate national authority;

j) the year of reconditioning; the letter “R”; and for every packaging successfully passing the leakproofness test in 4.4, the additional letter “L”.

2.1.9 When, after reconditioning, the markings required by 2.1.1 a) to d) no longer appear on the top head or the side of a metal drum, the reconditioner must apply them in a durable form followed by those required by 2.1.8. The markings must not identify a greater performance capability than that for which the original design type had been tested and marked.

2.1.10 Examples of markings for NEW packagings:

for a new fibreboard box

(un) 4G/Y145/S/02 as in 2.1.1 a), b), c)1), c)2)B), d)2) and e)
NL/VL823 as in 2.1.1 f) and g)

for a new steel drum to contain liquids

(un) 1A1/Y1.4/150/98 as in 2.1.1 a), b), c)1), c)2)A), d)1) and e)
NL/VL824 as in 2.1.1 f) and g)

for a new steel drum to contain solids, or inner packagings

(un) 1A2/Y150/S/01 as in 2.1.1 a), b), c)1), c)2)B), d)2) and e)
NL/VL825 as in 2.1.1 f) and g)

for a new plastic box of equivalent specification

(un) 4HW/Y136/S/98 as in 2.1.1 a), b), c)1), c)2)B), d)2) and e)
NL/VL826 as in 2.1.1 f) and g)

for a remanufactured steel drum to contain liquids

(un) 1A2/Y/100/01 as in 2.1.1 a), b), c)1), c)2)A), d)1) and e)
USA/MM5 as in 2.1.1 f) and g)

2.1.11 Examples of markings for RECONDITIONED packagings:

(un) 1A1/Y1.4/150/97 as in 2.1.1 a), b), c)1), c)2)A), d)1) and e)
NL/RB/01 RL as in 2.1.8 h), i) and j)

(un) 1A2/Y150/S/99 as in 2.1.1 a), b), c)1), c)2)B), d)2) and e)
USA/RB/00 R as in 2.1.8 h), i) and j)

2.2 PACKAGING MARKINGS FOR INFECTIOUS SUBSTANCES

2.2.1 Packagings for infectious substances, which meet the requirements of Packing Instruction 602 and Chapter 6 of this Part, must be marked with a packaging marking.

2.2.2 The packaging marking consists of:

a) the United Nations packaging symbol;

b) the code designating the type of packaging according to the provisions of 1.3;

c) the text “CLASS 6.2”;

d) the last two digits of the year of manufacture of the packaging;

e) the State authorizing the allocation of the mark, indicated by the distinguishing sign for motor vehicles in international traffic;

f) the name of the manufacturer or other identification of the packaging specified by the appropriate national authority.

2.2.3 Example of a marking is:

(un) 4G/CLASS 6.2/01 as in 2.2.2 a), b), c) and d)
S/SP-9989-ERIKSSON as in 2.2.2 e) and f)

Each element of the marking applied in accordance with a) to f) must be clearly separated, e.g. by a slash or space, so as to be easily identifiable.

2.3 PACKAGING MARKINGS FOR SALVAGE PACKAGINGS

Example of marking for SALVAGE packagings:

(un) 1A2T/Y300/S/01 as in 2.1.1 a), b), c)2)B), d)2) and e)
USA/abc as in 2.1.1 f) and g)

Note.— In the examples given in 2.1.10, 2.2.3 and 2.3, the markings are shown, for convenience, in two lines; however, the markings can be applied in a single line or in multiple lines provided they are given in the correct sequence. Additionally, the inclusion in the specification marking of the “/” symbol is optional.

Chapter 3

REQUIREMENTS FOR PACKAGINGS

3.1 REQUIREMENTS FOR PACKAGINGS OTHER THAN INNER PACKAGINGS

3.1.1 Steel drums

1A1 non-removable head
1A2 removable head

3.1.1.1 Body and heads must be constructed of steel sheet of a suitable type and of adequate thickness in relation to the capacity of the drum and to its intended use.

Note.— In the case of carbon steel drums, "suitable" steels are identified in ISO 3573:1999 "Hot rolled carbon steel sheet of commercial and drawing qualities" and ISO 3574:1999 "Cold-reduced carbon steel of commercial and drawing qualities". For carbon steel drums below 100 litres, "suitable" steels in addition to the above standards are also identified in ISO 11949:1995 "Cold-reduced electrolytic tinplate", ISO 11950:1995 "Cold-reduced electrolytic chromium/chromium oxide-coated steel" and ISO 11951:1995 "Cold-reduced blackplate in coil form for the production of tinplate or electrolytic chromium/chromium oxide-coated steel".

3.1.1.2 Body seams must be welded on drums intended to contain more than 40 L of liquids. Body seams must be mechanically seamed or welded on drums intended to contain solids, or 40 L or less of liquids.

3.1.1.3 Chimes must be mechanically seamed or welded. Separate reinforcing rings may be applied.

3.1.1.4 The body of a drum of a capacity greater than 60 L must, in general, have at least two expanded rolling hoops or, alternatively, at least two separate rolling hoops. If there are separate rolling hoops they must be fitted tightly on the body and so secured that they cannot shift. Rolling hoops must not be spot welded.

3.1.1.5 Openings for filling, emptying and venting in the bodies or heads of non-removable head (1A1) drums must not exceed 7 cm in diameter. Drums with larger openings are considered to be of the removable head type (1A2). Closures for openings in the bodies and heads of drums must be so designed and applied that they will remain secure and leakproof under normal conditions of transport. Closure flanges may be mechanically seamed or welded in place. Gaskets or other sealing elements must be used with closures, unless the closure is inherently leakproof.

3.1.1.6 Closure devices for removable head drums must be so designed and applied that they will remain secure and drums will remain leakproof under normal conditions of transport. Gaskets or other sealing elements must be used with all removable heads.

3.1.1.7 If materials used for body, heads, closures and fittings are not in themselves compatible with the contents to be transported, suitable internal protective coatings or treatments must be applied. These coatings or treatments must retain their protective properties under normal conditions of transport.

3.1.1.8 Maximum capacity of drum: 450 L.

3.1.1.9 Maximum net mass: 400 kg.

3.1.2 Aluminium drums

1B1 non-removable head
1B2 removable head

3.1.2.1 Body and heads must be constructed of aluminium at least 99 per cent pure or of an aluminium base alloy. Materials must be of a suitable type and of adequate thickness in relation to the capacity of the drum and to its intended use.

3.1.2.2 All seams must be welded. Chime seams, if any, must be reinforced by the application of separate reinforcing rings.

3.1.2.3 The body of a drum of a capacity greater than 60 L must, in general, have at least two expanded rolling hoops or, alternatively, at least two separate rolling hoops. If there are separate rolling hoops they must be fitted tightly on the body and so secured that they cannot shift. Rolling hoops must not be spot welded.

3.1.2.4 Openings for filling, emptying and venting in the bodies or heads on non-removable head (1B1) drums must not exceed 7 cm in diameter. Drums with larger openings are considered to be of the removable head type (1B2). Closures for

openings in the bodies and heads of drums must be so designed and applied that they will remain secure and leakproof under normal conditions of transport. Closure flanges must be welded in place so that the weld provides a leakproof seam. Gaskets or other sealing elements must be used with closures, unless the closure is inherently leakproof.

3.1.2.5 Closure devices for removable head drums must be so designed and applied that they will remain secure and drums will remain leakproof under normal conditions of transport. Gaskets or other sealing elements must be used with all removable heads.

3.1.2.6 Maximum capacity of drum: 450 L.

3.1.2.7 Maximum net mass: 400 kg.

3.1.3 Drums of metal other than aluminium or steel

1N1 non-removable head
1N2 removable head

3.1.3.1 The body and heads must be constructed of a metal or of a metal alloy other than steel or aluminium. Material must be of a suitable type and of adequate thickness in relation to the capacity of the drum and to its intended use.

3.1.3.2 Chime seams, if any, must be reinforced by the application of separate reinforcing rings. All seams, if any, must be joined (welded, soldered, etc.) in accordance with the technical state-of-the-art for the metal or metal alloy used.

3.1.3.3 The body of a drum of a capacity greater than 60 L must, in general, have at least two expanded rolling hoops or, alternatively, at least two separate rolling hoops. If there are separate rolling hoops, they must be fitted tightly on the body and so secured that they cannot shift. Rolling hoops must not be spot welded.

3.1.3.4 Openings for filling, emptying and venting in the bodies or heads or non-removable head (1N1) drums must not exceed 7 cm in diameter. Drums with larger openings are considered to be of the removable head type (1N2). Closures for openings in the bodies and heads of drums must be so designed and applied that they will remain secure and leakproof under normal conditions of transport. Closure flanges must be joined in place (welded, soldered, etc.) in accordance with the technical state of the art for the metal or metal alloy used so that the seam join is leakproof. Gaskets or other sealing elements must be used with closures, unless the closure is inherently leakproof.

3.1.3.5 Closure devices for removable head drums must be so designed and applied that they will remain secure and drums will remain leakproof under normal conditions of transport. Gaskets or other sealing elements must be used with all removable heads.

3.1.3.6 Maximum capacity of drum: 450 L.

3.1.3.7 Maximum net mass: 400 kg.

3.1.4 Steel or aluminium jerricans

3A1 steel, non-removable head
3A2 steel, removable head
3B1 aluminium, non-removable head
3B2 aluminium, removable head

3.1.4.1 Body and heads must be constructed of a steel sheet of aluminium at least 99 per cent pure or of an aluminium base alloy. Material must be of a suitable type and of adequate thickness in relation to the capacity of the jerrican and to its intended use.

3.1.4.2 Chimes of steel jerricans must be mechanically seamed or welded. Body seams of steel jerricans intended to contain more than 40 L of liquid must be welded. Body seams of steel jerricans intended to contain 40 L or less must be mechanically seamed or welded. For aluminium jerricans, all seams must be welded. Chime seams, if any, must be reinforced by the application of a separate reinforcing ring.

3.1.4.3 Openings in jerricans (3A1 and 3B1) must not exceed 7 cm in diameter. Jerricans with larger openings are considered to be of the removable head type (3A2 and 3B2). Closures must be so designed that they will remain secure and leakproof under normal conditions of transport. Gaskets or other sealing elements must be used with closures, unless the closure is inherently leakproof.

3.1.4.4 If materials used for body, heads, closures and fittings are not in themselves compatible with the contents to be transported, suitable internal protective coatings or treatments must be applied. These coatings or treatments must retain their protective properties under normal conditions of transport.

3.1.4.5 Maximum capacity of jerrican: 60 L.

3.1.4.6 Maximum net mass: 120 kg.

3.1.5 Plywood drums
1D

3.1.5.1 The wood used must be well seasoned, commercially dry and free from any defect likely to lessen the effectiveness of the drum for the purpose intended. If a material other than plywood is used for the manufacture of the heads, it must be of a quality equivalent to the plywood.

3.1.5.2 At least two-ply plywood must be used for the body and at least three-ply plywood for the heads; the plies must be firmly glued together by a water-resistant adhesive with their grain crosswise.

3.1.5.3 The body and heads of the drum and their joins must be of a design appropriate to the capacity of the drum and to its intended use.

3.1.5.4 In order to prevent sifting of the contents, lids must be lined with kraft paper or some other equivalent material which must be securely fastened to the lid and extend to the outside along its full circumference.

3.1.5.5 Maximum capacity of drum: 250 L.

3.1.5.6 Maximum net mass: 400 kg.

3.1.6 Fibre drums
1G

3.1.6.1 The body of the drum must consist of multiple plies of heavy paper or fibreboard (without corrugations) firmly glued or laminated together and may include one or more protective layers of bitumen, waxed kraft paper, metal foil, plastic material, etc.

3.1.6.2 Heads must be of natural wood, fibreboard, metal, plywood, plastic or other suitable material and may include one or more protective layers of bitumen, waxed kraft paper, metal foil, plastic material, etc.

3.1.6.3 The body and heads of the drum and their joins must be of a design appropriate to the capacity of the drum and to its intended use.

3.1.6.4 The assembled packaging must be sufficiently water-resistant so as not to delaminate under normal conditions of transport.

3.1.6.5 Maximum capacity of drum: 450 L.

3.1.6.6 Maximum net mass: 400 kg.

3.1.7 Plastic drums and jerricans
1H1 drums, non-removable head
1H2 drums, removable head
3H1 jerricans, non-removable head
3H2 jerricans, removable head

3.1.7.1 The packaging must be manufactured from suitable plastic material and be of adequate strength in relation to its capacity and intended use. Except for recycled plastic material as defined in 1;3, no used material other than production residues or regrind from the same manufacturing process may be used. The packaging must be adequately resistant to aging and to degradation caused either by the substance contained or by ultraviolet radiation. Any permeation of the substance contained must not constitute a danger under normal conditions of transport.

3.1.7.2 If protection against ultraviolet radiation is required, it must be provided by the addition of carbon black or other suitable pigments or inhibitors. These additives must be compatible with the contents and remain effective throughout the life of the packaging. Where use is made of carbon black, pigments or inhibitors other than those used in the manufacture of the tested design type, retesting may be waived if the carbon black content does not exceed 2 per cent by mass or if the pigment content does not exceed 3 per cent by mass; the content of inhibitors of ultraviolet radiation is not limited.

3.1.7.3 Additives serving purposes other than protection against ultraviolet radiation may be included in the composition of the plastic material provided that they do not adversely affect the chemical and physical properties of the material of the packaging. In such circumstances retesting may be waived.

3.1.7.4 The wall thickness at every point of the packaging must be appropriate to its capacity and intended use, taking into account the stresses to which each point is liable to be exposed.

3.1.7.5 Openings for filling, emptying and venting in the bodies or heads of non-removable head drums (1H1) and jerricans (3H1) must not exceed 7 cm in diameter. Drums and jerricans with larger openings are considered to be of the removable head type (1H2 and 3H2). Closures for openings in the bodies or heads of drums and jerricans must be so designed and applied that they will remain secure and leakproof under normal conditions of transport. Gaskets or other sealing elements must be used with closures unless the closure is inherently leakproof.

3.1.7.6 Closure devices for removable head drums and jerricans must be so designed and applied that they will remain secure and leakproof under normal conditions of transport. Gaskets must be used with all removable heads unless the drum or jerrican design is such that, where the removable head is properly secured, the drum or jerrican is inherently leakproof.

3.1.7.7 Maximum capacity of drums and jerricans:

1H1, 1H2: 450 L;
3H1, 3H2: 60 L.

3.1.7.8 Maximum net mass:

1H1, 1H2: 400 kg;
3H1, 3H2: 120 kg.

3.1.8 Boxes of natural wood

4C1 ordinary
4C2 with siftproof walls

3.1.8.1 The wood used must be well seasoned, commercially dry and free from defects that would materially lessen the strength of any part of the box. The strength of the material used and the method of construction must be appropriate to the capacity and intended use of the box. The tops and bottoms may be made of water-resistant reconstituted wood such as hardboard, particle board or other suitable type.

3.1.8.2 Fastenings must be resistant to vibration experienced under normal conditions of transport. End grain nailing must be avoided whenever practicable. Joins which are likely to be highly stressed must be made using clenched or annular ring nails or equivalent fastenings.

3.1.8.3 Box 4C2: each part must consist of one piece or be equivalent thereto. Parts are considered equivalent to one piece when one of the following methods of glued assembly is used: Lindermann joint, tongue and groove joint, ship lap or rabbet joint or butt joint with at least two corrugated metal fasteners at each joint.

3.1.8.4 Maximum net mass: 400 kg.

3.1.9 Plywood boxes

4D

3.1.9.1 Plywood used must be at least 3-ply. It must be made from well seasoned rotary cut, sliced or sawn veneer, commercially dry and free from defects that would materially lessen the strength of the box. The strength of the material used and the method of construction must be appropriate to the capacity and intended use of the box. All adjacent plies must be glued with water-resistant adhesive. Other suitable materials may be used together with plywood in the construction of boxes. Boxes must be firmly nailed or screwed to corner posts or ends or be assembled by equally suitable devices.

3.1.9.2 Maximum net mass: 400 kg.

3.1.10 Reconstituted wood boxes

4F

3.1.10.1 The walls of boxes must be made of water-resistant reconstituted wood such as hardboard, particle board or other suitable type. The strength of the material used and the method of construction must be appropriate to the capacity of the boxes and their intended use.

3.1.10.2 Other parts of the boxes may be made of other suitable material.

3.1.10.3 Boxes must be securely assembled by means of suitable devices.

3.1.10.4 Maximum net mass: 400 kg.

3.1.11 Fibreboard boxes

4G

3.1.11.1 Strong and good quality solid or double-faced corrugated fibreboard (single or multiwall) must be used, appropriate to the capacity of the box and to its intended use. The water resistance of the outer surface must be such that the increase in mass, as determined in a test carried out over a period of 30 minutes by the Cobb method of determining water absorption, is not greater than 155 g/m^2 — see ISO 535:1991. It must have proper bending qualities. Fibreboard must be cut, creased without scoring, and slotted so as to permit assembly without cracking, surface breaks or undue bending. The fluting of corrugated fibreboard must be firmly glued to the facings.

3.1.11.2 The ends of boxes may have a wooden frame or be entirely of wood or other suitable material. Reinforcements of wooden battens or other suitable material may be used.

3.1.11.3 Manufacturing joins in the body of boxes must be taped, lapped and glued or lapped and stitched with metal staples. Lapped joins must have an appropriate overlap.

3.1.11.4 Where closing is effected by gluing or taping, a water-resistant adhesive must be used.

3.1.11.5 Boxes must be designed so as to provide a good fit to the contents.

3.1.11.6 Maximum net mass: 400 kg.

3.1.12 Plastic boxes

4H1 expanded plastic boxes
4H2 solid plastic boxes

3.1.12.1 The box must be manufactured from suitable plastic material and be of adequate strength in relation to its capacity and intended use. The box must be adequately resistant to aging and to degradation caused either by the substance contained or by ultraviolet radiation.

3.1.12.2 An expanded plastic box must comprise two parts made of a moulded expanded plastic material, a bottom section containing cavities for the inner packagings and a top section covering and interlocking with the bottom section. The top and bottom sections must be designed so that the inner packagings fit snugly. The closure cap for any inner packaging must not be in contact with the inside of the top section of this box.

3.1.12.3 For dispatch, an expanded plastic box must be closed with a self-adhesive tape having sufficient tensile strength to prevent the box from opening. The adhesive tape must be weather-resistant and its adhesive compatible with the expanded plastic material of the box. Other closing devices at least equally effective may be used.

3.1.12.4 For solid plastic boxes, protection against ultraviolet radiation, if required, must be provided by the addition of carbon black or other suitable pigments or inhibitors. These additives must be compatible with the contents and remain effective throughout the life of the box. Where use is made of carbon black, pigments or inhibitors other than those used in the manufacture of the tested design type, re-testing may be waived if the carbon black content does not exceed 2 per cent by mass or if the pigment content does not exceed 3 per cent by mass; the content of inhibitors of ultraviolet radiation is not limited.

3.1.12.5 Additives serving purposes other than protection against ultraviolet radiation may be included in the composition of the plastic material provided that they do not adversely affect the chemical or physical properties of the material of the box. Under such circumstances re-testing may be waived.

3.1.12.6 Solid plastic boxes must have closure devices made of a suitable material, of adequate strength and so designed as to prevent the box from unintentional opening.

3.1.12.7 Maximum net mass:

4H1 box: 60 kg;
4H2 box: 400 kg.

3.1.13 Steel or aluminium boxes

4A steel
4B aluminium

3.1.13.1 The strength of the metal and the construction of the box must be appropriate to the capacity of the box and to its intended use.

3.1.13.2 Boxes must be lined with fibreboard or felt packing pieces or must have an inner liner or coating of suitable material as required. If a double seamed metal liner is used, steps must be taken to prevent the ingress of substances, particularly explosives, into the recesses of the seams.

3.1.13.3 Closures may be of any suitable type; they must remain secured under normal conditions of transport.

3.1.13.4 Maximum net mass: 400 kg.

3.1.14 Textile bags

5L2 siftproof
5L3 water-resistant

3.1.14.1 The textiles used must be of good quality. The strength of the fabric and the construction of the bag must be appropriate to the capacity of the bag and to its intended use.

3.1.14.2 Bags, siftproof, 5L2: the bag must be made siftproof, for example by the use of:

— paper bonded to the inner surface of the bag by a water-resistant adhesive such as bitumen; or

— plastic film bonded to the inner surface of the bag; or

— one or more inner liners made of paper or plastic material.

3.1.14.3 Bags, water-resistant, 5L3: to prevent the entry of moisture the bag must be made waterproof, for example by the use of:

— separate inner liners of water-resistant paper (e.g. waxed kraft paper, tarred paper or plastic-coated kraft paper); or

— plastic film bonded to the inner surface of the bag; or

— one or more inner liners made of plastic material.

3.1.14.4 Maximum net mass: 50 kg.

3.1.15 Woven plastic bags

5H1 without inner lining or coating
5H2 siftproof
5H3 water-resistant

3.1.15.1 Bags must be made from stretched tapes or monofilaments of a suitable plastic material. The strength of the material used and the construction of the bag must be appropriate to the capacity of the bag and to its intended use.

3.1.15.2 If the fabric is woven flat, the bags must be made by sewing or some other method ensuring closure of the bottom and one side. If the fabric is tubular, the bag must be closed by sewing, weaving or some other equally strong method of closure.

3.1.15.3 Bags, siftproof, 5H2: The bag must be made siftproof, for example by means of:

— paper or a plastic film bonded to the inner surface of the bag; or

— one or more separate inner liners made of paper or plastic material.

3.1.15.4 Bags, water-resistant, 5H3: To prevent the entry of moisture, the bag must be made waterproof, for example by means of:

— separate inner liners of water-resistant paper (e.g. waxed kraft paper, double-tarred kraft paper or plastic-coated kraft paper); or

— plastic film bonded to the inner or outer surface of the bag; or

— one or more inner plastic liners.

3.1.15.5 Maximum net mass: 50 kg.

3.1.16 Plastic film bags

5H4

3.1.16.1 Bags must be made of a suitable plastic material. The strength of the material used and the construction of the bag must be appropriate to the capacity of the bag and to its intended use. Joins and closures must withstand pressures and impacts liable to occur under normal conditions of transport.

3.1.16.2 Maximum net mass: 50 kg.

3.1.17 Paper bags

5M1 multiwall
5M2 multiwall, water-resistant

3.1.17.1 Bags must be made of a suitable kraft paper or of an equivalent paper with at least three plies, the middle ply of which may be net-cloth and adhesive bonding to the outer paper plies. The strength of the paper and the construction of the bags must be appropriate to the capacity of the bag and to its intended use. Joins and closures must be siftproof.

3.1.17.2 To prevent the entry of moisture, a bag of four plies or more must be made waterproof by the use of either a water-resistant ply as one of the two outermost plies or a water-resistant barrier made of a suitable protective material between

the two outermost plies. A bag of three plies must be made waterproof by the use of a water-resistant ply as the outermost ply. Where there is a danger of the substance contained reacting with moisture or where it is packed damp, a waterproof ply or barrier, such as double-tarred kraft paper, plastic-coated kraft paper, plastic film bonded to the inner surface of the bag, or one or more inner plastic liners, must also be placed next to the substance. Joins and closures must be waterproof.

3.1.17.3 Maximum net mass: 50 kg.

3.1.18 Composite packagings (plastic material)

6HA1 plastic receptacle with outer steel drum
6HA2 plastic receptacle with outer steel crate*/or box
6HB1 plastic receptacle with outer aluminium drum
6HB2 plastic receptacle with outer aluminium crate*/or box
6HC plastic receptacle with outer wooden box
6HD1 plastic receptacle with outer plywood drum
6HD2 plastic receptacle with outer plywood box
6HG1 plastic receptacle with outer fibre drum
6HG2 plastic receptacle with outer fibreboard box
6HH1 plastic receptacle with outer plastic drum
6HH2 plastic receptacle with outer solid plastic box

3.1.18.1 *Inner receptacle*

3.1.18.1.1 The provisions of 3.1.7.1 and 3.1.7.3 to 3.1.7.6 apply to inner plastic receptacles.

3.1.18.1.2 The inner plastic receptacle must fit snugly inside the outer packaging, which must be free of any projection that might abrade the plastic material.

3.1.18.1.3 Maximum capacity of inner receptacles:

6HA1, 6HB1, 6HD1, 6HG1, 6HH1: 250 L;
6HA2, 6HB2, 6HC, 6HD2, 6HG2, 6HH2: 60 L.

3.1.18.1.4 Maximum net mass:

6HA1, 6HB1, 6HD1, 6HG1, 6HH1: 400 kg;
6HA2, 6HB2, 6HC, 6HD2, 6HG2, 6HH2: 75 kg.

3.1.18.2 *Outer packaging*

3.1.18.2.1 Plastic receptacle with outer steel or aluminium drum 6HA1 or 6HB1; the relevant provisions of 3.1.1 or 3.1.2, as appropriate, apply to the construction of the outer packaging.

3.1.18.2.2 Plastic receptacle with outer steel or aluminium box 6HA2 or 6HB2; the relevant provisions of 3.1.13 apply to the construction of the outer packaging.

3.1.18.2.3 Plastic receptacle with outer wooden box 6HC; the relevant provisions of 3.1.8 apply to the construction of the outer packaging.

3.1.18.2.4 Plastic receptacle with outer plywood drum 6HD1; the relevant provisions of 3.1.5 apply to the construction of the outer packaging.

3.1.18.2.5 Plastic receptacle with outer plywood box 6HD2; the relevant provisions of 3.1.9 apply to the construction of the outer packaging.

3.1.18.2.6 Plastic receptacle with outer fibre drum 6HG1; the provisions of 3.1.6.1 to 3.1.6.4 apply to the construction of the outer packaging.

3.1.18.2.7 Plastic receptacle with outer fibreboard box 6HG2; the relevant provisions of 3.1.11 apply to the construction of the outer packaging.

3.1.18.2.8 Plastic receptacle with outer plastic drum 6HH1; the provisions of 3.1.7.1 and 3.1.7.3 to 3.1.7.7 apply to the construction of the outer packaging.

3.1.18.2.9 Plastic receptacle with outer solid plastic box (including corrugated plastic material) 6HH2; the provisions of 3.1.12.1 and 3.1.12.4 to 3.1.12.6 apply to the construction of the outer packaging.

* Crates are outer packagings with incomplete surfaces. For air transport, crates may not be used as outer packagings of composite packagings.

3.2 REQUIREMENTS FOR INNER PACKAGINGS

3.2.1 Earthenware, glass or wax (IP.1)

Packagings must be well constructed. The materials of which these packagings and closures are made must be of good quality and, where in contact with the substance or article, not liable to react with it. Closures must be sufficiently tight to prevent leaking and sifting. Stoppers or corks must be held securely in position with wire, adhesive tape, or other positive means. Packagings having necks with moulded screw-threads must have threaded-type caps having a resilient liner completely resistant to the contents.

3.2.2 Plastic (IP.2)

Packagings must be well constructed. The materials of which these packagings and closures are made must be of good quality polyethylene or other suitable plastic and, where in contact with the substance, resistant to it. Closures must be sufficiently tight to prevent leaking and sifting. Stoppers or corks must be held securely in position with wire, adhesive tape, or other positive means.

3.2.3 Metal cans, tins or tubes (IP.3 and IP.3A)

3.2.3.1 *Metal (other than aluminium) IP.3*

Packagings must be well constructed and, unless otherwise restricted by the requirements of the packing instructions, the bodies must be made of a metal other than aluminium. Closures may be made of aluminium provided it is compatible both with the contents of the packagings and with the metal(s) used in their construction. The materials of which the packagings and closures are made must be of good quality and, where in contact with the substance, not liable to react with it. Closures must be sufficiently tight to prevent leaking and sifting and threaded-type caps must be equipped with a resilient liner completely resistant to the contents of the packagings.

3.2.3.2 *Aluminium IP.3A*

Packagings must be well constructed and the bodies must be made from aluminium. Closures may be made of materials other than aluminium provided they are compatible both with the contents of the packagings and with the aluminium. The aluminium and any other materials of which the closures are made must be of good quality and, where in contact with the substance, not liable to react with it. Closures must be sufficiently tight to prevent leaking and sifting and threaded-type caps must be equipped with a resilient liner completely resistant to the contents of the packagings.

3.2.4 Multiwall paper bags (IP.4)

Shipping sack kraft paper, or equivalent, of at least two sheets of paper must be used.

3.2.5 Plastic bags (IP.5)

The weld-seams and closures of such bags must be siftproof. Plastic bags must have a minimum thickness of 0.1 mm.

3.2.6 Fibre cans or boxes (IP.6)

Packagings must be well constructed and the material of which they are made must be of good quality. Metal tops, bottoms and connections, of suitable thickness, are authorized.

3.2.7 Metal receptacles (aerosols), non-refillable (IP.7, IP.7A, IP.7B)

3.2.7.1 *Receptacles (aerosols) IP.7 and IP.7A*

3.2.7.1.1 *Materials and construction.* Uniform quality steel plate or non-ferrous metal of uniform drawing quality must be used:

— IP.7 receptacles must have a minimum wall thickness of 0.18 mm;
— IP.7A receptacles must have a minimum wall thickness of 0.20 mm.

The receptacles may be seamless or with seams welded, soldered, brazed, double-seamed or swaged. The ends must be of pressure design. Maximum capacity must not exceed 820 mL and the maximum inner diameter must not exceed 76 mm.

3.2.7.1.2 *Performance test.* One out of each lot of 25 000 or less receptacles successively produced per day must be pressure-tested to destruction:

— IP.7 receptacles must not burst below 1 650 kPa gauge pressure;
— IP.7A receptacles must not burst below 1 860 kPa gauge pressure.

3.2.7.2 *Receptacles (aerosols) IP.7B*

3.2.7.2.1 *Materials and construction.* Uniform quality steel plate or non-ferrous metal of uniform drawing quality must be used. The receptacles may be seamless or with seams welded, soldered, brazed, double-seamed or swaged. The ends must be of pressure design. Maximum capacity must not exceed 1 000 mL and the maximum inner diameter must not exceed 76 mm. The aerosol, including its valve, must be virtually hermetically sealed under normal conditions of transport and the valve must be suitably protected to prevent actuation during transport.

3.2.7.2.2 Performance tests required:

— hydraulic pressure test;
— bursting test;
— leakage test.

3.2.7.2.3 *Hydraulic pressure test.* Number of samples: six receptacles.

Method of testing and pressure applied: the pressure must be applied slowly. The test pressure must be 50 per cent higher than the internal pressure at 50°C but at least 1 000 kPa. The test pressure must be applied for 25 seconds.

Criteria for passing the test successfully: the receptacle must not show major distortions, leaks or similar faults, but a slight symmetrical distortion of the base, or one affecting the profile of the top end shall be allowed, provided that the receptacle passes the bursting test.

3.2.7.2.4 *Bursting test.* Number of samples: six receptacles; these may be the same receptacles used in the hydraulic pressure test.

Method of testing and pressures applied: a hydraulic pressure at least 20 per cent higher than the test pressure as mentioned in 3.2.7.2.3 must be applied.

Criteria for passing the test successfully: no receptacle may leak.

3.2.7.2.5 *Leakage test.* Number of samples: every aerosol.

Method of testing: each aerosol must be immersed in a bath of water. The temperature of the water and the duration of the test must be such that the internal pressure reaches that which would be reached at 55°C, or 50°C if the liquid phase does not exceed 95 per cent of the capacity of the aerosol at 50°C. When an aerosol is sensitive to heat, the temperature of the bath may be set at between 20°C and 30°C in which case one receptacle in 2 000 must be tested at the higher temperature.

Equally effective methods of testing may also be used.

Criteria for passing the test successfully: the aerosol must not show visible permanent distortions or any leakage.

3.2.8 Plastic receptacles (aerosols) non-refillable (IP.7C)

3.2.8.1 *Receptacles (aerosols) IP.7C*

≠ 3.2.8.1.1 *Materials and construction*. The receptacle must be of polyethylene terephthalate (PET), polyethylene napthalate (PEN), polyamide (Nylon), or a blend containing some combination of PET, PEN, ethyl vinyl alcohol (EVOH) and Nylon. Thermoplastic processes ensuring uniformity of the completed container shall be applied. No used material other than production residues or re-grind from the same manufacturing process may be used. The packaging shall be adequately resistant to aging and to degradation caused either by the substance contained or by ultraviolet radiation. Maximum capacity must not exceed 500 mL.

3.2.8.1.2 Performance tests required:

— drop test;
— hydraulic pressure test;
— bursting test;
— leakage test.

3.2.8.1.3 *Drop test*. Method of testing: to ensure that creep does not affect the ability of the receptacle type to retain the contents the receptacles shall be dropped as follows: three groups of twenty-five filled receptacles shall be dropped from 1.8 m on to a rigid, non-resilient, flat and horizontal surface. One group must be conditioned at 38°C for 26 weeks, the second group for 100 hours at 50°C and the third group for 18 hours at 55°C, prior to the drop test.

Criteria for passing the test successfully: the receptacle must not break or leak.

3.2.8.1.4 *Hydraulic pressure test.* Number of samples: six receptacles.

Method of testing: receptacles must resist a test pressure equal to at least 1 200 kPa.

Criteria for passing the test successfully: the receptacle must not show major distortions, leaks or similar faults, but a slight symmetrical distortion of the base, or one affecting the profile of the top end, shall be allowed, provided that the receptacle passes the bursting test.

3.2.8.1.5 *Bursting test*. Number of samples: six. These may be the same receptacles used in the hydraulic pressure test.

Method of testing and pressures applied: a hydraulic pressure at least 20 per cent higher than the test pressure as mentioned in 3.2.8.1.4 must be applied.

Criteria for passing the test successfully: the receptacle must not leak.

3.2.8.1.6 *Leakage test*. Every aerosol. A leakage test in accordance with 6;5.4.2.2.2 or 6;5.4.3 approved by the competent authority shall be used.

3.2.9 Glass ampoules (glass tubes) (IP.8)

The ampoules must be heat-sealed, gas- and liquid-tight and they must not react chemically when coming into contact with the contents. If such glass tubes are also permitted by the appropriate national authority for liquefied gases, they must be thick-walled and free of defects.

3.2.10 Metal or plastic flexible tubes (IP.9)

The materials of construction of flexible tubes and their closures must, where in contact with the organic peroxide, not affect the thermal stability.

3.2.11 Bags, paper with plastic/aluminium (IP.10)

The bags must be multiwall paper bags lined with plastic and/or aluminium. The weld-seams and closure must be siftproof.

Chapter 4

PACKAGING PERFORMANCE TESTS

Introductory Notes

Note 1.— The performance tests specified in this Chapter take account of the material used, and constructional design of packagings. They also take into account whether the goods to be transported are liquid or solid.

Note 2.— The performance tests are designed to ensure that there will be no loss of contents under normal transport conditions. The severity of the tests on a packaging is dependent on the intended contents, taking account of the degree of danger (i.e. packing group), relative density and vapour pressure (for liquids).

4.1 PERFORMANCE AND FREQUENCY OF TESTS

4.1.1 The design type of each packaging must be tested as provided for in this Chapter in accordance with procedures established by the appropriate national authority.

≠ 4.1.2 Each packaging design type must successfully pass the tests prescribed in this chapter before being used. A packaging design type is defined by the design, size, material and thickness, manner of construction and packing, but may include various surface treatments. It also includes packagings which differ from the design type only in their lesser design height.

4.1.3 Tests must be repeated on production samples at intervals established by the appropriate national authority. For such tests on paper or fibreboard packagings, preparation at ambient conditions is considered equivalent to the provisions of 4.2.3.

4.1.4 Tests must also be repeated after each modification which alters the design, material or manner of construction of a packaging.

4.1.5 The appropriate national authority may permit the selective testing of packagings that differ only in minor respects from a tested type, e.g. smaller sizes of inner packagings or inner packagings of lower net mass; and packagings such as drums, bags and boxes which are produced with small reductions in external dimension(s).

4.1.6 Reserved.

Note.— For the conditions for assembling different inner packagings in an outer packaging and permissible variations in inner packagings, see 4;1.1.9.1.

4.1.7 Articles or inner packagings of any type for solids or liquids may be assembled and transported, without testing, in an outer packaging under the following conditions:

a) The outer packaging must have been successfully tested in accordance with 4.3 with fragile (e.g. glass) inner packagings containing liquids using the Packing Group I drop height.

b) The total combined gross mass of inner packagings must not exceed one-half the gross mass of inner packagings used for the drop test in a) above.

c) The thickness of cushioning material between inner packagings and between inner packagings and the outside of the packaging must not be reduced below the corresponding thicknesses in the originally tested packaging; and if a single inner packaging was used in the original test, the thicknesses of cushioning between inner packagings must not be less than the thickness of cushioning between the outside of the packaging and the inner packaging in the original test. If either fewer or smaller inner packagings are used (as compared to the inner packagings used in the drop test), sufficient additional cushioning material must be used to take up void spaces.

d) The outer packaging must have passed successfully the stacking test in 4.6 while empty. The total mass of identical packages must be based on the combined mass of inner packagings used for the drop test in a) above.

e) Inner packagings containing liquids must be completely surrounded with a sufficient quantity of absorbent material to absorb the entire liquid contents of the inner packagings.

f) If the outer packaging is intended to contain inner packagings for liquids and is not leakproof, or is intended to contain inner packagings for solids and is not siftproof, a means of containing any liquid or solid contents in the event of

leakage must be provided in the form of a leakproof liner, plastic bag or other equally efficient means of containment. For packagings containing liquids, the absorbent material required by e) above must be placed inside the means of containing the liquid contents.

g) Inner packagings containing liquids must comply with 4;1.1.6 and 4;1.1.6.1.

h) Packagings must be marked in accordance with Part 6;2 as having been tested to Packing Group I performance for combination packagings. The marked gross mass in kilograms must be the sum of the mass of the outer packaging plus one half of the mass of the inner packaging(s) as used for the drop test referred to in a) above. Such a packaging mark must also contain a letter "V" as described in 1.2.7.

4.1.8 The appropriate national authority may at any time require proof, by tests in accordance with this Chapter, that serially produced packagings meet the requirements of the design type tests.

4.1.9 If an inner treatment or coating is required for safety reasons, it must retain its protective properties even after the tests.

4.1.10 Provided the validity of the test results is not affected, and with the approval of the appropriate national authority, several tests may be made on one sample.

4.2 PREPARATION OF PACKAGINGS FOR TESTING

4.2.1 Tests must be carried out on packagings prepared as for transport including, with respect to combination packagings, the inner packagings used. Inner or single receptacles or packagings must be filled to not less than 98 per cent of their maximum capacity for liquids or 95 per cent for solids. Bags must only be filled to the maximum mass at which they may be used. For other than bags, combination packagings where the inner packaging is designed to carry liquids and solids, separate testing is required for both liquid and solid contents. The substances or articles to be transported in the packaging may be replaced by other substances or articles except where this would invalidate the results of the tests. For solids, when another substance is used it must have the same physical characteristics (mass, grain size, etc.) as the substance to be carried. It is permissible to use additives, such as bags of lead shot, to achieve the requisite total package mass, so long as they are placed so that the test results are not invalidated.

4.2.2 In the drop tests for liquids, when another substance is used, it must be of similar relative density and viscosity to those of the substance being transported. Water may also be used for the liquid drop test under the conditions set forth in 4.3.5.

4.2.3 Paper or fibreboard packagings must be conditioned for at least 24 hours in an atmosphere having a controlled temperature and relative humidity (r.h.). There are three options, one of which must be chosen. The preferred atmosphere is 23°C ± 2°C and 50 per cent ± 2 per cent r.h. The two other options are 20°C ± 2°C and 65 per cent ± 2 per cent r.h., or 27°C ± 2°C and 65 per cent ± 2 per cent r.h.

Note.— Average values must fall within these limits. Short-term fluctuations and measurement limitations may cause individual measurements to vary by up to ±5 per cent relative humidity without significant impairment of test reproducibility.

4.2.4 Additional steps must be taken to ascertain that the plastic material used in the manufacture of plastic drums, plastic jerricans and composite packagings (plastic material) intended to contain liquid complies with the provisions in 3.1.7.1, 3.1.7.3 and 4;1.1.3. This may be done, for example, by submitting sample receptacles or packagings to a preliminary test extending over a long period, for example six months, during which the samples would remain filled with the substances they are intended to contain, and after which the samples must be submitted to the applicable tests listed in 4.3, 4.4, 4.5 and 4.6. For substances which may cause stress-cracking or weakening in plastic drums or jerricans, the sample, filled with the substance or another substance that is known to have at least as severe a stress-cracking influence on the plastic materials in question, must be subjected to a superimposed load equivalent to the total mass of identical packages which might be stacked on it during transport. The minimum stacking height, including the test sample, must be 3 m.

4.3 DROP TEST

4.3.1 Number of test samples (per design type and manufacturer) and drop orientation

For other than flat drops, the centre of gravity must be vertically over the point of impact. Where more than one orientation is possible for a given drop, the orientation most likely to result in failure of the packaging must be used.

4.3.2 Special preparation of test samples for the drop test

The temperature of the test sample and its contents must be reduced to –18°C or lower for the following packagings:

a) plastic drums (see 3.1.7);

b) plastic jerricans (see 3.1.7);

c) plastic boxes other than expanded polystyrene boxes (see 3.1.12);

d) composite packagings (plastic material) (see 3.1.18); and

e) combination packagings with plastic inner packagings, other than plastic bags intended to contain solids or articles.

Where test samples are prepared in this way, the conditioning specified in 4.2.3 may be waived. Test liquids must be kept in the liquid state by the addition of antifreeze, if necessary.

Packaging	*Number of test samples*	*Drop orientation*
Steel drums Aluminium drums Steel jerricans Aluminium jerricans Plywood drums Fibre drums Plastic drums and jerricans Composite packagings which are in the shape of a drum	Six (three for each drop)	First drop (using three samples): the packaging must strike the target diagonally on the chime or, if the packaging has no chime, on a circumferential seam or an edge. Second drop (using the other three samples): the packaging must strike the target on the weakest part not tested by the first drop, for example a closure or, for some cylindrical drums, the welded longitudinal seam of the drum body.
Boxes of natural wood Plywood boxes Reconstituted wood boxes Fibreboard boxes Plastic boxes Steel or aluminium boxes Composite packagings which are in the shape of a box	Five (one for each drop)	First drop: flat on the bottom Second drop: flat on the top Third drop: flat on the long side Fourth drop: flat on the short side Fifth drop: on a corner
Bags — single-ply without a side seam, or multi-ply	Three (two drops per bag)	First drop: flat on a wide face Second drop: on an end of the bag
Bags — single-ply with a side seam	Three (three drops per bag)	First drop: flat on a wide face Second drop: flat on a narrow face Third drop: on an end of the bag

4.3.3 Removable head packagings for liquids must not be dropped until at least 24 hours after filling and closing to allow for any possible gasket relaxation.

4.3.4 Target

≠ The target must be a non-resilient horizontal surface and must be:

a) integral and massive enough to be immovable;

b) flat with a surface kept free from local defects capable of influencing the test results;

c) rigid enough to be non-deformable under test conditions and not liable to become damaged by the tests; and

d) sufficiently large to ensure that the test package falls entirely upon the surface.

4.3.5 Drop height

For solids and liquids, if the test is performed with the solid or liquid to be transported or with another substance having essentially the same physical characteristics:

Packing Group I	Packing Group II	Packing Group III
1.8 m	1.2 m	0.8 m

For liquids in single packagings and for inner packagings of combination packagings, if the test is performed with water:

a) where the substances to be transported have a relative density not exceeding 1.2:

Packing Group I	Packing Group II	Packing Group III
1.8 m	1.2 m	0.8 m

b) where the substances to be transported have a relative density exceeding 1.2, the drop height must be calculated on the basis of the relative density (d) of the substance to be carried, rounded up to the first decimal, as follows:

Packing Group I	Packing Group II	Packing Group III
d × 1.5 m	d × 1.0 m	d × 0.67 m

Note.— The term water includes water/antifreeze solutions with a minimum specific gravity of 0.95 for testing at –18°C.

4.3.6 Criteria for passing the test

4.3.6.1 Each packaging containing liquid must be leakproof when equilibrium has been reached between the internal and external pressures, except for inner packagings of combination packagings when it is not necessary that the pressures be equalized.

4.3.6.2 Where a packaging for solids undergoes a drop test and its upper face strikes the target, the test sample passes the test if the entire contents are retained by an inner packaging or inner receptacle (e.g. a plastic bag) even if the closure, while retaining its containment function, is no longer siftproof.

4.3.6.3 The packaging or outer packaging of a composite or combination packaging must not exhibit any damage liable to affect safety during transport. There must be no leakage of the filling substance from the inner receptacle or inner packaging(s).

4.3.6.4 Neither the outermost ply of a bag nor an outer packaging may exhibit any damage liable to affect safety during transport.

4.3.6.5 A slight discharge from the closure(s) upon impact is not considered to be a failure of the packaging provided that no further leakage occurs.

4.3.6.6 No rupture is permitted in packagings for goods of Class 1 which would permit the spillage of loose explosive substances or articles from the outer packaging.

4.4 LEAKPROOFNESS TEST

Note.— The leakproofness test must be performed on all design types of packagings intended to contain liquids; however, this test is not required for the inner packagings of combination packagings.

4.4.1 Number of test samples: three test samples per design type and manufacturer.

4.4.2 Test method and pressure to be applied: the packagings including their closures must be restrained under water for 5 minutes while an internal air pressure is applied; the method of restraint must not affect the results of the test. The air pressure (gauge) to be applied must be:

Packing Group I	Packing Group II	Packing Group III
Not less than 30 kPa (0.3 bar)	Not less than 20 kPa (0.2 bar)	Not less than 20 kPa (0.2 bar)

Other methods at least equally effective may be used.

4.4.3 Criterion for passing the test: there must be no leakage.

4.5 INTERNAL PRESSURE (HYDRAULIC) TEST

4.5.1 Packagings to be tested: the internal pressure (hydraulic) test must be carried out on all design types of metal, plastic and composite packagings intended to contain liquids. This test is not required for the inner packagings of combination packagings. For the internal pressure requirements for inner packagings see 4;1.1.6.1.

4.5.2 Number of test samples: three test samples per design type and manufacturer.

4.5.3 Test method and pressure to be applied: metal packagings including their closures must be subjected to the test pressure for 5 minutes. Plastic packagings and composite packagings (plastic material) including their closures must be subjected to the test pressure for 30 minutes. This pressure is the one to be included in the marking required by 2.1.1 d). The manner in which the packagings are supported must not invalidate the test. The test pressure must be applied continuously and evenly: it must be kept constant throughout the test period. The hydraulic pressure (gauge) applied, as determined by any one of the following methods, must be:

a) not less than the total gauge pressure measured in the packaging (i.e. the vapour pressure of the filling liquid and the partial pressure of the air or other inert gases minus 100 kPa) at 55°C, multiplied by a safety factor of 1.5. This total gauge pressure must be determined on the basis of a maximum degree of filling in accordance with Part 4;1.1.5 and a filling temperature of 15°C. The test pressure must be not less than 95 kPa (not less than 75 kPa for liquids in Packing Group III of Class 3 or Division 6.1); or

b) not less than 1.75 times the vapour pressure at 50°C of the liquid to be transported, minus 100 kPa but with a minimum test pressure of 100 kPa; or

c) not less than 1.5 times the vapour pressure at 55°C of the liquid to be transported, minus 100 kPa but with a minimum test pressure of 100 kPa.

These are expressed as:

a) P_T = (P_{M55} × 1.5) kPa with minima of 95 or 75 kPa;

b) P_T = (Vp_{50} × 1.75) – 100 kPa with a minimum of 100 kPa;

c) P_T = (Vp_{55} × 1.5) – 100 kPa with a minimum of 100 kPa;

where:

P_T = Test pressure in kPa (gauge)

P_{M55} = Pressure measured in the filled packaging at a temperature of 55°C

Vp_{50} = Vapour pressure at 50°C

Vp_{55} = Vapour pressure at 55°C.

4.5.4 In addition, packagings intended to contain liquids of Packing Group I must be tested to a minimum test pressure of 250 kPa (gauge) for a test period of 5 or 30 minutes depending upon the material of construction of the packaging.

4.5.5 Criteria for passing the test: no packaging may leak.

4.6 STACKING TEST

4.6.1 All design types of packagings other than bags must be subjected to a stacking test.

4.6.2 Number of test samples: three test samples per design type and manufacturer.

4.6.3 Test method: the test sample must be subjected to a force applied to the top surface of the test sample equivalent to the total weight of identical packages which might be stacked on it during transport: where the contents of the test samples are liquids with a relative density different from that of the liquid to be transported, the force must be calculated in relation to the latter. The minimum height of the stack including the test sample must be 3 m. The duration of the test must be 24 hours except that plastic drums, jerricans and composite packagings (6HH1 and 6HH2) intended for liquids must be subjected to the stacking test for a period of 28 days at a temperature of not less than 40°C.

4.6.4 Criteria for passing the test: no test sample may leak. In composite packagings or combination packagings, there must be no leakage of the filling substance from the inner receptacle or inner packaging. No test sample must show any deterioration which could adversely affect transport safety or any distortion liable to reduce its strength or cause instability in stacks of packages. Plastic packagings must be cooled to ambient temperature before the assessment.

4.7 TEST REPORT

4.7.1 A test report containing at least the following particulars must be drawn up and must be available to the users of the packaging:

a) name and address of the test facility;

b) name and address of the applicant (where appropriate);

c) a unique test report identification;

d) date of the test report;

e) manufacturer of the packaging;

f) description of the packaging type (e.g. dimensions, materials, closures, thickness, etc.), including method of manufacture (e.g. blow moulding); drawings and/or photographs may be included;

g) maximum capacity;

h) characteristics of the test contents (e.g. the viscosity and relative density for liquids and the particle size for solids);

i) test descriptions and results;

j) a signature and name and status of the signatory.

4.7.2 The test report must contain statements that:

a) the packaging prepared as for transport was tested in accordance with the appropriate provisions of these Instructions or the equivalent provisions of Chapter 6 of the United Nations *Recommendations on the Transport of Dangerous Goods*; and

b) the use of other packaging methods or components may render it invalid.

4.7.3 A copy of the test report must be made available to the appropriate national authority.

4.8 TEST REQUIREMENTS FOR SALVAGE PACKAGING

Salvage packagings (see 1;3.1) must be tested and marked in accordance with the requirements applicable to Packing Group II packagings intended for the transport of solids or inner packagings, except as follows:

a) the test substance used in performing the tests must be water, and the packagings must be filled to not less than 98 per cent of their maximum capacity. It is permissible to use additives, such as bags of lead shot, to achieve the requisite total package mass so long as they are placed so that the test results are not affected. In performing the drop test, the drop height must meet the requirements of 4.3;

b) packagings must have been successfully leakproofness tested at 30 kPa with the test results reflected in the test report required by 4.7.1;

c) packagings for which retention of liquids is a basic function must, in addition, have been successfully tested in accordance with the internal pressure test specified in 4.5; and

d) the marking required by 2.1.1 b) must be followed by the letter “T”.

Chapter 5

≠ # REQUIREMENTS FOR THE CONSTRUCTION AND TESTING OF CYLINDERS AND CLOSED CRYOGENIC RECEPTACLES, AEROSOL DISPENSERS AND SMALL RECEPTACLES CONTAINING GAS (GAS CARTRIDGES) AND FUEL CELL CARTRIDGES CONTAINING LIQUEFIED FLAMMABLE GAS

5.1 GENERAL REQUIREMENTS

≠ *Note 1.— For aerosol dispensers, small receptacles containing gas (gas cartridges) and fuel cell cartridges containing liquefied flammable gas see 5.4.*

Note 2.— For open cryogenic receptacles the requirements of Packing Instruction 202 must be met.

5.1.1 Design and construction

5.1.1.1 Cylinders and closed cryogenic receptacles and their closures must be designed, manufactured, tested and equipped in such a way as to withstand all conditions, including fatigue, to which they will be subjected during normal conditions of transport.

5.1.1.2 In recognition of scientific and technological advances, and recognizing that cylinders and closed cryogenic receptacles other than those that are marked with a UN certification marking may be used on a national or regional basis, cylinders and closed cryogenic receptacles conforming to requirements other than those specified in these Instructions may be used if approved by the appropriate national authorities in the countries of transport and use.

5.1.1.3 In no case must the minimum wall thickness be less than that specified in the design and construction technical standards.

5.1.1.4 For welded cylinders and closed cryogenic receptacles, only metals of weldable quality must be used.

5.1.1.5 The test pressure of cylinders must be in accordance with Packing Instruction 200. The test pressure for closed cryogenic receptacles must be in accordance with Packing Instruction 202.

5.1.1.6 Not used.

5.1.1.7 Contact between dissimilar metals which could result in damage by galvanic action must be avoided.

5.1.1.8 The following additional requirements apply to the construction of closed cryogenic receptacles for refrigerated liquefied gases.

5.1.1.8.1 The mechanical properties of the metal used must be established for each closed cryogenic receptacle, including the impact strength and the bending coefficient.

5.1.1.8.2 The closed cryogenic receptacles must be thermally insulated. The thermal insulation must be protected against impact by means of a jacket. If the space between the closed cryogenic receptacle and the jacket is evacuated of air (vacuum-insulation), the jacket must be designed to withstand without permanent deformation an external pressure of at least 100 kPa (1 bar) calculated in accordance with a recognized technical code or a calculated critical collapsing pressure of not less than 200 kPa (2 bar) gauge pressure. If the jacket is so closed as to be gas-tight (e.g. in the case of vacuum-insulation), a device must be provided to prevent any dangerous pressure from developing in the insulating layer in the event of inadequate gas-tightness of the closed cryogenic receptacle or its fittings. The device must prevent moisture from penetrating into the insulation.

5.1.1.8.3 Closed cryogenic receptacles intended for the transport of refrigerated liquefied gases having a boiling point below –182°C at atmospheric pressure must not include materials that may react with oxygen or oxygen-enriched atmospheres in a dangerous manner when located in parts of the thermal insulation where there is a risk of contact with oxygen or oxygen-enriched liquid.

5.1.1.8.4 Closed cryogenic receptacles must be designed and constructed with suitable lifting and securing arrangements.

+ 5.1.1.9 Additional requirements for the construction of pressure receptacles for acetylene

Cylinders for UN 1001**— Acetylene, dissolved** and UN 3374 **— Acetylene, solvent free** must be filled with a porous mass, uniformly distributed, of a type that conforms to the requirements and testing specified by the appropriate national authority and which:

a) is compatible with the cylinder and does not form harmful or dangerous compounds either with the acetylene or with the solvent in the case of UN 1001; and

b) is capable of preventing the spread of decomposition of the acetylene in the porous mass.

In the case of UN 1001, the solvent must be compatible with the cylinders.

5.1.2 Materials

5.1.2.1 Construction materials of cylinders and closed cryogenic receptacles and their closures which are in direct contact with dangerous goods must not be affected or weakened by the dangerous goods intended and must not cause a dangerous effect (e.g. catalysing a reaction or reacting with the dangerous goods).

5.1.2.2 Cylinders and closed cryogenic receptacles and their closures must be made of the materials specified in the design and construction technical standards and the applicable packing instruction for the substances intended for transport in the cylinder and closed cryogenic receptacle. The materials must be resistant to brittle fracture and to stress corrosion cracking as indicated in the design and construction technical standards.

5.1.3 Service equipment

≠ 5.1.3.1 Valves, piping and other fittings subjected to pressure, excluding pressure relief devices, must be designed and constructed so that the burst pressure is at least 1.5 times the test pressure of the cylinders and closed cryogenic receptacles.

5.1.3.2 Service equipment must be configured or designed to prevent damage that could result in the release of the cylinder and closed cryogenic receptacle contents during normal conditions of handling and transport. The filling and discharge valves and any protective caps must be capable of being secured against unintended opening. Valves must be protected as specified in 4;4.1.1.8.

5.1.3.3 Cylinders and closed cryogenic receptacles that are not capable of being handled manually or rolled must be fitted with devices (skids, rings, straps) ensuring that they can be safely handled by mechanical means and arranged so as not to impair the strength of, nor cause undue stresses in, the cylinder and closed cryogenic receptacle.

5.1.3.4 Individual cylinders and closed cryogenic receptacles must be equipped with pressure relief devices as specified in Packing Instruction 200(1) or 202, or 5.1.3.6.4 and 5.1.3.6.5. Pressure-relief devices must be designed to prevent the entry of foreign matter, the leakage of gas and the development of any dangerous excess pressure.

5.1.3.5 Cylinders and closed cryogenic receptacles whose filling is measured by volume must be provided with a level indicator.

5.1.3.6 *Additional requirements for closed cryogenic receptacles*

5.1.3.6.1 Not used.

5.1.3.6.2 For sections of piping which can be closed at both ends and where liquid product can be trapped, a method of automatic pressure-relief must be provided to prevent excess pressure build-up within the piping.

5.1.3.6.3 Each connection to a closed cryogenic receptacle must be clearly marked to indicate its function (e.g. vapour or liquid phase).

5.1.3.6.4 *Pressure-relief devices*

5.1.3.6.4.1 Every closed cryogenic receptacle, having a nominal capacity in excess of 550 L, must be provided with at least two pressure-relief devices. The pressure-relief device must be of the type that will resist dynamic forces including surge.

5.1.3.6.4.2 Closed cryogenic receptacles, having a nominal capacity of 550 L or less, must be provided with at least one pressure-relief device and may, in addition have a frangible disc in parallel with the spring-loaded device in order to meet the requirements of 5.1.3.6.5. The pressure-relief device must be of the type that will resist dynamic forces including surge.

5.1.3.6.4.3 Connections to pressure-relief devices must be of sufficient size to enable the required discharge to pass unrestricted to the pressure-relief device.

5.1.3.6.4.4 All pressure-relief device inlets must, under maximum filling conditions, be situated in the vapour space of the closed cryogenic receptacle and the devices must be so arranged as to ensure that the escaping vapour is discharged unrestrictedly.

5.1.3.6.5 *Capacity and setting of pressure-relief devices*

Note.— In relation to pressure-relief devices, MAWP means the maximum effective gauge pressure permissible at the top of a loaded closed cryogenic receptacle in its operating position including the highest effective pressure during filling and discharge.

5.1.3.6.5.1 The pressure-relief device must open automatically at a pressure not less than the MAWP and be fully open at a pressure equal to 110 per cent of the MAWP. It must, after discharge, close at a pressure not lower than 10 per cent below the pressure at which discharge starts and must remain closed at all lower pressures.

5.1.3.6.5.2 Not used.

5.1.3.6.5.3 In the case of the loss of vacuum in a vacuum-insulated closed cryogenic receptacle, the combined capacity of all pressure-relief devices installed must be sufficient so that the pressure (including accumulation) inside the closed cryogenic receptacle does not exceed 120 per cent of the MAWP.

5.1.3.6.5.4 The required capacity of the pressure-relief devices must be calculated in accordance with an established technical code recognized by the appropriate national authority. (See, for example, the Compressed Gas Association (CGA) Publications S-1.2-2003 and S-1.1-2003.)

+ **5.1.4 Approval of cylinders and closed cryogenic receptacles**

5.1.4.1 The conformity of cylinders and closed cryogenic receptacles must be assessed at the time of manufacture as required by the appropriate national authority. Cylinders and closed cryogenic receptacles must be inspected, tested and approved by an inspection body. The technical documentation must include full specifications on design and construction, and full documentation on the manufacturing and testing.

5.1.4.2 Quality assurance systems must conform to the requirements of the appropriate national authority.

5.1.5 Initial inspection and testing

5.1.5.1 New cylinders must be subjected to inspection and testing during and after manufacture in accordance with the applicable design standards including the following:

On an adequate sample of cylinders:

a) testing of the mechanical characteristics of the material of construction;

b) verification of the minimum wall thickness;

c) verification of the homogeneity of the material for each manufacturing batch;

d) inspection of the external and internal conditions of the cylinders;

e) inspection of the neck threads;

f) verification of the conformance with the design standard;

For all cylinders:

g) a hydraulic pressure test. Cylinders must withstand the test pressure without expansion greater than that allowed in the design specifications;

Note.— With the agreement of the appropriate national authority, the hydraulic pressure test may be replaced by a test using a gas, where such an operation does not entail any danger.

h) inspection and assessment of manufacturing defects and either repairing them or rendering the cylinders unserviceable. In the case of welded cylinders, particular attention must be paid to the quality of the welds;

i) an inspection of the markings on the cylinders;

j) in addition, cylinders intended for the transport of UN 1001 **— Acetylene, dissolved**, and UN 3374 **— Acetylene, solvent free**, must be inspected to ensure proper installation and condition of the porous mass and, if applicable, the quantity of solvent.

5.1.5.2 On an adequate sample of closed cryogenic receptacles, the inspections and tests specified in 5.1.5.1 a), b), d) and f) must be performed. In addition, welds must be inspected by radiographic, ultrasonic or another suitable non-destructive test method on a sample of closed cryogenic receptacles according to the applicable design and construction standard. This weld inspection does not apply to the jacket. Additionally, all closed cryogenic receptacles must undergo the inspections and tests specified in 5.1.5.1 g), h) and i), as well as a leakproofness test and a test of the satisfactory operation of the service equipment after assembly.

5.1.6 Periodic inspection and testing

5.1.6.1 Refillable cylinders must be subjected to periodic inspections and tests by a body authorized by the appropriate national authority, in accordance with the following:

a) check of the external conditions of the cylinder and verification of the equipment and the external markings;

b) check of the internal conditions of the cylinder (e.g. internal inspection, verification of minimum wall thickness);

c) check of the threads if there is evidence of corrosion or if the fittings are removed;

d) a hydraulic pressure test and, if necessary, verification of the characteristics of the material by suitable tests;

Note 1.— With the agreement of the appropriate national authority, the hydraulic pressure test may be replaced by a test using a gas, where such an operation does not entail any danger.

Note 2.— With the agreement of the appropriate national authority, the hydraulic pressure test of cylinders may be replaced by an equivalent method based on acoustic emission testing, ultrasonic examination or a combination of acoustic emission testing and ultrasound examination.

+ e) check of service equipment, other accessories and pressure-relief devices, if to be reintroduced into service.

≠ 5.1.6.2 Cylinders intended for the transport of UN 1001 — **Acetylene, dissolved**, and UN 3374 — **Acetylene, solvent free**, must be examined only as specified in 5.1.6.1 a), c) and e). In addition, the condition of the porous material (e.g. cracks, top clearance, loosening, settlement) must be examined.

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5.1.7 Requirements for manufacturers

5.1.7.1 The manufacturer must be technically able and must possess all resources required for the satisfactory manufacture of cylinders and closed cryogenic receptacles; this relates in particular to qualified personnel:

a) to supervise the entire manufacturing process;

b) to carry out joining of materials; and

c) to carry out the relevant tests.

5.1.7.2 The proficiency test of a manufacturer must in all instances be carried out by an inspection body approved by the appropriate national authority of the country of approval.

5.1.8 Requirements for inspection bodies

Inspection bodies must be independent from manufacturing enterprises and competent to perform the tests, inspections and approvals required.

5.2 REQUIREMENTS FOR UN CYLINDERS AND CLOSED CRYOGENIC RECEPTACLES

In addition to the general requirements of 5.1, UN cylinders and closed cryogenic receptacles must comply with the requirements of this section, including the standards, as applicable.

Note.— With the agreement of the appropriate national authority, more recently published versions of the standards, if available, may be used.

5.2.1 Design, construction and initial inspection and testing

5.2.1.1 The following standards apply for the design, construction and initial inspection and test of UN cylinders, except that inspection requirements related to the conformity assessment system and approval must be in accordance with 5.2.5:

ISO 9809-1:1999 Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing — Part 1: Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa.

Note.— The note concerning the F factor in section 7.3 of this standard must not be applied for UN cylinders.

ISO 9809-2:2000 Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing — Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1 100 MPa.

ISO 9809-3:2000 Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing — Part 3: Normalized steel cylinders.

ISO 7866:1999 Gas cylinders — Refillable seamless aluminium alloy gas cylinders — Design, construction and testing.

Note.— The note concerning the F factor in section 7.2 of this standard must not be applied for UN cylinders. Aluminium alloy 6351A — T6 or equivalent must not be authorized.

ISO 11118:1999 Gas cylinders — Non-refillable metallic gas cylinders — Specification and test methods.

ISO 11119-1:2002 Gas cylinders of composite construction — Specification and test methods — Part 1: Hoop wrapped composite gas cylinders.

ISO 11119-2:2002 Gas cylinders of composite construction — Specification and test methods — Part 2: Fully wrapped fibre reinforced composite gas cylinders with load-sharing metal liners.

ISO 11119-3:2002 Gas cylinders of composite construction — Specification and test methods — Part 3: Fully wrapped fibre reinforced composite gas cylinders with non-load-sharing metallic or non-metallic liners.

Note.— After the first 15 years of service, composite cylinders manufactured according to these standards, may be approved for extended service by the appropriate national authority which was responsible for the original approval of the cylinders and which will base its decision on the test information supplied by the manufacturer or owner or user.

5.2.1.2 Not used.

5.2.1.3 The following standards apply for the design, construction and initial inspection and test of UN acetylene cylinders except that inspection requirements related to the conformity assessment system and approval must be in accordance with 5.2.5.

Note.— The maximum of 1 000 L volume as mentioned in the ISO standard ISO 21029-1:2004 Cryogenic vessels, does not apply for refrigerated liquefied gases in closed cryogenic receptacles installed in apparatus (e.g. MRI or cooling machines).

For the cylinder shell:

ISO 9809-1:1999 Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing — Part 1: Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa.

Note.— The note concerning the F factor in section 7.3 of this standard must not be applied for UN cylinders.

ISO 9809-3:2000 Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing — Part 3: Normalized steel cylinders.

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For the porous mass in the cylinder:

ISO 3807-1:2000 Cylinders for acetylene — Basic requirements — Part 1: Cylinders without fusible plugs.

ISO 3807-2:2000 Cylinders for acetylene — Basic requirements — Part 2: Cylinders with fusible plugs.

5.2.1.4 The following standard applies for the design, construction and initial inspection and test of UN closed cryogenic receptacles, except that inspection requirements related to the conformity assessment system and approval must be in accordance with 5.2.5:

ISO 21029-1:2004 Cryogenic vessels — Transportable vacuum insulated vessels of not more than 1 000 L volume — Part 1: Design, fabrication, inspection and tests.

5.2.2 Materials

In addition to the material requirements specified in the cylinder and closed cryogenic receptacle design and construction standards, and any restrictions specified in the applicable Packing Instruction for the gas(es) to be transported (e.g. Packing Instruction 200 or Packing Instruction 202), the following standards apply to material compatibility:

ISO 11114-1:1997 Transportable gas cylinders — Compatibility of cylinder and valve materials with gas contents — Part 1: Metallic materials.

ISO 11114-2:2000 Transportable gas cylinders — Compatibility of cylinder and valve materials with gas contents — Part 2: Non-metallic materials.

+ *Note.— The limitations imposed in ISO 11114-1 on high strength steel alloys at ultimate tensile strength levels up to 1 100 MPa do not apply to* ***Silane*** *(UN 2203).*

5.2.3 Service equipment

The following standards apply to closures and their protection:

ISO 11117:1998 Gas cylinders — Valve protection caps and valve guards for industrial and medical gas cylinders — Design, construction and tests.

ISO 10297:1999 Gas cylinders — Refillable gas cylinder valves — Specification and type testing.

5.2.4 Periodic inspection and test

The following standards apply to the periodic inspection and testing of UN cylinders:

≠ ISO 6406:2005 Seamless steel gas cylinders — Periodic inspection and testing.

≠ ISO 10461:2005/A1:2006 Seamless aluminium-alloy gas cylinders — Periodic inspection and testing.

≠ ISO 10462:2005 Transportable cylinders for dissolved acetylene — Periodic inspection and maintenance.

SO 11623:2002 Transportable gas cylinders — Periodic inspection and testing of composite gas cylinders.

5.2.5 Conformity assessment system and approval for manufacture of cylinders and closed cryogenic receptacles

5.2.5.1 *Definitions*

For the purposes of this section:

Conformity assessment system: a system for appropriate national authority approval of a manufacturer, by cylinder and closed cryogenic receptacle design type approval, approval of manufacturer's quality system and approval of inspection bodies.

Design type: a cylinder and closed cryogenic receptacle design as specified by a particular cylinder and closed cryogenic receptacle standard.

Verify: confirm by examination or provision of objective evidence that specified requirements have been fulfilled.

5.2.5.2 *General requirements*

5.2.5.2.1 *Appropriate national authority*

5.2.5.2.1.1 The appropriate national authority that approves the cylinder and closed cryogenic receptacle must approve the conformity assessment system for the purpose of ensuring that cylinders and closed cryogenic receptacles conform to the requirements of these Instructions. In instances where the appropriate national authority that approves a cylinder and closed cryogenic receptacle is not the appropriate national authority in the country of manufacture, the marks of the approval country and the country of manufacture must be indicated in the cylinder and closed cryogenic receptacle marking (see 5.2.7 and 5.2.8).The appropriate national authority of the country of approval must supply to its counterpart in a country of use, upon request, evidence demonstrating compliance to this conformity assessment system.

5.2.5.2.2 The appropriate national authority may delegate its conformity assessment system functions in whole or in part.

5.2.5.2.3 The appropriate national authority must ensure that a current list of approved inspection bodies and their identity marks and approved manufacturers and their identity marks is available.

5.2.5.2.4 *Inspection body*

5.2.5.2.4.1 The inspection body must be approved by the appropriate national authority for the inspection of cylinders and closed cryogenic receptacles and must:

a) have a staff with an organizational structure, capable, trained, competent and skilled, to satisfactorily perform its technical functions;

b) have access to suitable and adequate facilities and equipment;

c) operate in an impartial manner and be free from any influence which could prevent it from doing so;

d) ensure commercial confidentiality of the commercial and proprietary activities of the manufacturer and other bodies;

e) maintain clear demarcation between actual inspection body functions and unrelated functions;

f) operate a documented quality system;

g) ensure that the tests and inspections specified in the relevant cylinder and closed cryogenic receptacle standard and these instructions are performed; and

h) maintain an effective and appropriate report and record system in accordance with 5.2.5.6.

5.2.5.2.5 The inspection body must perform design type approval, and cylinder and closed cryogenic receptacle production testing, inspection and certification to verify conformity with the relevant cylinder and closed cryogenic receptacle standard (see 5.2.5.4 and 5.2.5.5).

5.2.5.2.6 *Manufacturer*

The manufacturer must:

a) operate a documented quality system in accordance with 5.2.5.3;

b) apply for design type approvals in accordance with 5.2.5.4;

c) select an inspection body from the list of approved inspection bodies maintained by the appropriate national authority in the country of approval; and

d) maintain records in accordance with 5.2.5.6.

5.2.5.2.7 *Testing laboratory*

The testing laboratory must have:

a) staff with an organizational structure, sufficient in number, competence and skill; and

b) suitable and adequate facilities and equipment to perform, to the satisfaction of the inspection body, the tests required by the manufacturing standard.

5.2.5.3 *Manufacturer's quality system*

5.2.5.3.1 The quality system must contain all the elements, requirements and provisions adopted by the manufacturer. It must be documented in a systematic and orderly manner in the form of written policies, procedures and instructions.

The contents must in particular include adequate descriptions of:

a) the organizational structure and responsibilities of personnel with regard to design and product quality;

b) the design control and design verification techniques, processes and procedures that will be used when designing the cylinders and closed cryogenic receptacles;

c) the relevant cylinder and closed cryogenic receptacle manufacturing, quality control, quality assurance, and process operation instructions that will be used;

d) quality records, such as inspection reports, test data and calibration data;

e) management reviews to ensure the effective operation of the quality system arising from the audits in accordance with 5.2.5.3.2;

f) the process describing how customer requirements are met;

g) the process for control of documents and their revision;

h) the means for control of non-conforming cylinders and closed cryogenic receptacles, purchased components, in-process and final materials; and

i) training programmes and qualification procedures for relevant personnel.

5.2.5.3.2 *Audit of the quality system*

5.2.5.3.2.1 The quality system must be initially assessed to determine whether it meets the requirements in 5.2.5.3.1 to the satisfaction of the appropriate national authority.

5.2.5.3.2.2 The manufacturer must be notified of the results of the audit. The notification must contain the conclusions of the audit and any corrective actions required.

5.2.5.3.2.3 Periodic audits must be carried out, to the satisfaction of the appropriate national authority, to ensure that the manufacturer maintains and applies the quality system. Reports of the periodic audits must be provided to the manufacturer.

5.2.5.3.3 *Maintenance of the quality system*

5.2.5.3.3.1 The manufacturer must maintain the quality system as approved in order that it remains adequate and efficient.

5.2.5.3.3.2 The manufacturer must notify the appropriate national authority that approved the quality system, of any intended changes. The proposed changes must be evaluated in order to determine whether the amended quality system will still satisfy the requirements in 5.2.5.3.1.

5.2.5.4 *Approval process*

5.2.5.4.1 *Initial design type approval*

The initial design type approval must consist of the approval of the manufacturer's quality system and the approval of the cylinder and closed cryogenic receptacle design to be produced. An application for an initial design type approval must meet the requirements of 5.2.5.4.2 to 5.2.5.4.6 and 5.2.5.4.9.

5.2.5.4.2 A manufacturer desiring to produce cylinders and closed cryogenic receptacles in accordance with a cylinder and closed cryogenic receptacle standard and these Instructions must apply for, obtain and retain a Design Type Approval Certificate issued by the appropriate national authority in the country of approval for at least one cylinder and closed cryogenic receptacle design type in accordance with the procedure given in 5.2.5.4.9. This certificate must, on request, be submitted to the appropriate national authority of the country of use.

5.2.5.4.3 An application must be made for each manufacturing facility and must include:

a) the name and registered address of the manufacturer and, in addition, if the application is submitted by an authorized representative, its name and address;

b) the address of the manufacturing facility (if different from the above);

c) the name and title of the person(s) responsible for the quality system;

d) the designation of the cylinder and closed cryogenic receptacle and the relevant cylinder and closed cryogenic receptacle standard;

e) details of any refusal of approval of a similar application by any other appropriate national authority;

f) the identity of the inspection body for design type approval;

g) documentation on the manufacturing facility as specified under 5.2.5.3.1;

h) the technical documentation required for design type approval, which must enable verification of the conformity of the cylinders and closed cryogenic receptacles with the requirements of the relevant cylinder and closed cryogenic receptacle design standard. The technical documentation must cover the design and method of manufacture and must contain, as far as is relevant for assessment, at least the following:

   i) cylinder and closed cryogenic receptacle design standard, design and manufacturing drawings, showing components and sub-assemblies, if any;

   ii) descriptions and explanations necessary for the understanding of the drawings and intended use of the cylinders and closed cryogenic receptacles;

   iii) a list of the standards necessary to fully define the manufacturing process;

   iv) design calculations and material specifications; and

   v) design type approval test reports, describing the results of examinations and tests carried out in accordance with 5.2.5.4.9.

5.2.5.4.4 An initial audit in accordance with 5.2.5.3.2 must be performed to the satisfaction of the appropriate national authority.

5.2.5.4.5 If the manufacturer is denied approval, the appropriate national authority must provide written detailed reasons for such denial.

5.2.5.4.6 Following approval, changes to the information submitted under 5.2.5.4.3 relating to the initial approval must be provided to the appropriate national authority.

5.2.5.4.7 *Subsequent design type approvals*

An application for a subsequent design type approval must encompass the requirements of 5.2.5.4.8 and 5.2.5.4.9, provided a manufacturer is in possession of an initial design type approval. In such a case, the manufacturer's quality system according to 5.2.5.3 must have been approved during the initial design type approval and must be applicable for the new design.

5.2.5.4.8 The application must include:

a) the name and address of the manufacturer and, in addition, if the application is submitted by an authorized representative, its name and address;

b) details of any refusal of approval of a similar application by any other appropriate national authority;

c) evidence that initial design type approval has been granted; and

d) the technical documentation, as described in 5.2.5.4.3 h).

5.2.5.4.9 *Procedure for design type approval*

5.2.5.4.9.1 The inspection body must:

a) examine the technical documentation to verify that:

   i) the design is in accordance with the relevant provisions of the standard; and

   ii) the prototype lot has been manufactured in conformity with the technical documentation and is representative of the design;

b) verify that the production inspections have been carried out as required in accordance with 5.2.5.5;

c) select cylinders and closed cryogenic receptacles from a prototype production lot and supervise the tests of these cylinders and closed cryogenic receptacles as required for design type approval;

d) perform or have performed the examinations and tests specified in the cylinder and closed cryogenic receptacle standard to determine that:

   i) the standard has been applied and fulfilled; and

   ii) the procedures adopted by the manufacturer meet the requirements of the standard; and

e) ensure that the various type approval examinations and tests are correctly and competently carried out.

5.2.5.4.9.2 After prototype testing has been carried out with satisfactory results and all applicable requirements of 5.2.5.4 have been satisfied, a Design Type Approval Certificate must be issued which must include the name and address of the manufacturer, results and conclusions of the examination, and the necessary data for identification of the design type.

5.2.5.4.9.3 If the manufacturer is denied a design type approval, the appropriate national authority must provide written detailed reasons for such denial.

5.2.5.4.10 *Modifications to approved design types*

The manufacturer must either:

a) inform the issuing appropriate national authority of modifications to the approved design type, where such modifications do not constitute a new design, as specified in the cylinder and closed cryogenic receptacle standard; or

b) request a subsequent design type approval where such modifications constitute a new design according to the relevant cylinder and closed cryogenic receptacle standard. This additional approval must be given in the form of an amendment to the original Design Type Approval Certificate.

5.2.5.4.11 Upon request, the appropriate national authority must communicate to any other appropriate national authority, information concerning design type approval, modifications of approvals, and withdrawn approvals.

5.2.5.5 *Production inspection and certification*

5.2.5.5.1 An inspection body, or its delegate, must carry out the inspection and certification of each cylinder. The inspection body selected by the manufacturer for inspection and testing during production may be different from the inspection body used for the design type approval testing.

5.2.5.5.2 Where it can be demonstrated to the satisfaction of the inspection body that the manufacturer has trained and competent inspectors, independent of the manufacturing operations, inspection may be performed by those inspectors. In such a case, the manufacturer must maintain training records of the inspectors.

5.2.5.5.3 The inspection body must verify that the inspections by the manufacturer and tests performed on those cylinders and closed cryogenic receptacles, fully conform to the standards and requirements of these Instructions. Should non-conformance in conjunction with this inspection and testing be determined, the permission to have inspection performed by the manufacturer's inspectors may be withdrawn.

5.2.5.5.4 The manufacturer must, after approval by the inspection body, make a declaration of conformity with the certified design type. The application of the cylinder and closed cryogenic receptacle certification marking must be considered a declaration that the cylinder and closed cryogenic receptacle comply with the applicable cylinder and closed cryogenic receptacle standards, the requirements of this conformity assessment system and these Instructions. The inspection body must affix or delegate the manufacturer to affix the cylinder and closed cryogenic receptacle certification marking and the registered mark of the inspection body to each approved cylinder or closed cryogenic receptacle.

5.2.5.5.5 A certificate of compliance, signed by the inspection body and the manufacturer, must be issued before the cylinders and closed cryogenic receptacles are filled.

5.2.5.6 *Records*

Design type approval and certificate of compliance records must be retained by the manufacturer and the inspection body for not less than 20 years.

5.2.6 Approval system for periodic inspection and test of cylinders and closed cryogenic receptacles

5.2.6.1 *Definitions*

For the purposes of this section:

Approval system: means a system for the appropriate national authority approval of a body performing the periodic inspection and test of cylinders and closed cryogenic receptacles (hereinafter referred to as "periodic inspection and test body"), including approval of that body's quality system.

5.2.6.2 *General requirements*

5.2.6.2.1 *Appropriate national authority*

5.2.6.2.1.1 The appropriate national authority must establish an approval system for the purpose of ensuring that the periodic inspection and test of cylinders and closed cryogenic receptacles conform to the requirements of these Instructions. In instances where the appropriate national authority that approves the body performing periodic inspection and test of a cylinder and closed cryogenic receptacle is not the appropriate national authority of the country approving the manufacture of the cylinder, the marks of the approval country of periodic inspection and test must be indicated in the cylinder and closed cryogenic receptacle marking (see 5.2.7).

5.2.6.2.1.2 The appropriate national authority of the country of approval for the periodic inspection and test must supply, upon request, evidence demonstrating compliance with this approval system, including the records of the periodic inspection and test, to its counterpart in a country of use.

5.2.6.2.1.3 The appropriate national authority of the country of approval may terminate the approval certificate referred to in 5.2.6.4.1 upon evidence demonstrating non-compliance with the approval system.

5.2.6.2.2 The appropriate national authority may delegate its functions in this approval system, in whole or in part.

5.2.6.2.3 The appropriate national authority must ensure that a current list of approved periodic inspection and test bodies and their identity marks is available.

5.2.6.2.4 *Periodic inspection and test body*

The periodic inspection and test body must be approved by the appropriate national authority and must:

a) have a staff with an organizational structure, capable, trained, competent and skilled to satisfactorily perform its technical functions;

b) have access to suitable and adequate facilities and equipment;

c) operate in an impartial manner and be free from any influence that could prevent it from doing so;

d) ensure commercial confidentiality;

e) maintain clear demarcation between actual periodic inspection and test body functions and unrelated functions;

f) operate a documented quality system in accordance with 5.2.6.3;

g) apply for approval in accordance with 5.2.6.4;

h) ensure that the periodic inspections and tests are performed in accordance with 5.2.6.5; and

i) maintain an effective and appropriate report and record system in accordance with 5.2.6.6.

5.2.6.3 *Quality system and audit of the periodic inspection and test body*

5.2.6.3.1 *Quality system*

5.2.6.3.1.1 The quality system must contain all the elements, requirements and provisions adopted by the periodic inspection and test body. It must be documented in a systematic and orderly manner in the form of written policies, procedures and instructions.

5.2.6.3.1.2 The quality system must include:

a) a description of the organizational structure and responsibilities;

b) the relevant inspection and test, quality control, quality assurance and process operation instructions that will be used;

c) quality records, such as inspection reports, test data, calibration data and certificates;

d) management reviews to ensure the effective operation of the quality system arising from the audits performed in accordance with 5.2.6.3.2;

e) a process for control of documents and their revision;

f) a means for control of non-conforming cylinders and closed cryogenic receptacles; and training programmes and qualification procedures for relevant personnel.

5.2.6.3.2 *Audit*

5.2.6.3.2.1 The periodic inspection and test body and its quality system must be audited in order to determine whether it meets the requirements of these Instructions to the satisfaction of the appropriate national authority.

5.2.6.3.2.2 An audit must be conducted as part of the initial approval process (see 5.2.6.4.3). An audit may be required as part of the process to modify an approval (see 5.2.6.4.6).

5.2.6.3.2.3 Periodic audits must be conducted, to the satisfaction of the appropriate national authority, to ensure that the periodic inspection and test body continues to meet the requirements of these Instructions.

5.2.6.3.2.4 The periodic inspection and test body must be notified of the results of any audit. The notification must contain the conclusions of the audit and any corrective actions required.

5.2.6.3.3 *Maintenance of the quality system*

5.2.6.3.3.1 The periodic inspection and test body must maintain the quality system as approved in order that it remains adequate and efficient.

5.2.6.3.3.2 The periodic inspection and test body must notify the appropriate national authority that approved the quality system, of any intended changes, in accordance with the process for modification of an approval in 5.2.6.4.6.

5.2.6.4 *Approval process for periodic inspection and test bodies*

5.2.6.4.1 *Initial approval*

5.2.6.4.1.1 A body desiring to perform periodic inspection and test of cylinders and closed cryogenic receptacles in accordance with a cylinder and closed cryogenic receptacle standard and these Instructions must apply for, obtain and retain an Approval Certificate issued by the appropriate national authority.

5.2.6.4.1.2 This written approval must, on request, be submitted to the appropriate national authority of a country of use.

5.2.6.4.2 An application must be made for each periodic inspection and test body and must include:

a) the name and address of the periodic inspection and test body and, if the application is submitted by an authorized representative, its name and address;

b) the address of each facility performing the periodic inspection and test;

c) the name and title of the person(s) responsible for the quality system;

d) the designation of the cylinders and closed cryogenic receptacles, the periodic inspection and test methods and the relevant cylinder and closed cryogenic receptacle standards encompassed by the quality system;

e) documentation on each facility, the equipment and the quality system as specified under 5.2.6.3.1;

f) the qualifications and training records of the periodic inspection and test personnel; and

g) details of any refusal of approval of a similar application by any other appropriate national authority.

5.2.6.4.3 The appropriate national authority must:

a) examine the documentation to verify that the procedures are in accordance with the requirements of the relevant cylinder and closed cryogenic receptacle standards and these Instructions; and

b) conduct an audit in accordance with 5.2.6.3.2 to verify that the inspections and tests are carried out as required by the relevant cylinder and closed cryogenic receptacle standards and these Instructions, to the satisfaction of the appropriate national authority.

5.2.6.4.4 After the audit has been carried out with satisfactory results and all applicable requirements of 5.2.6.4 have been satisfied, an Approval Certificate must be issued. It must include the name of the periodic inspection and test body, the registered mark, the address of each facility and the necessary data for identification of its approved activities (e.g. designation of cylinders and closed cryogenic receptacles, periodic inspection and test method and cylinder and closed cryogenic receptacle standards).

5.2.6.4.5 If the periodic inspection and test body is denied approval, the appropriate national authority must provide written detailed reasons for such denial.

5.2.6.4.6 *Modifications to periodic inspection and test body approvals*

5.2.6.4.6.1 Following approval, the periodic inspection and test body must notify the issuing appropriate national authority of any modifications to the information submitted under 5.2.6.4.2 relating to the initial approval.

5.2.6.4.6.2 The modifications must be evaluated in order to determine whether the requirements of the relevant cylinder and closed cryogenic receptacle standards and these Instructions will be satisfied.

5.2.6.4.6.3 An audit in accordance with 5.2.6.3.2 may be required.

5.2.6.4.6.4 The appropriate national authority must accept or reject these modifications in writing, and an amended Approval Certificate must be issued as necessary.

5.2.6.4.7 Upon request, the appropriate national authority must communicate to any other appropriate national authority, information concerning initial approvals, modifications of approvals and withdrawn approvals.

5.2.6.5 *Periodic inspection and test and certification*

5.2.6.5.1 The application of the periodic inspection and test marking to a cylinder and closed cryogenic receptacle must be considered a declaration that the cylinder and closed cryogenic receptacle complies with the applicable cylinder and closed cryogenic receptacle standards and the requirements of these Instructions. The periodic inspection and test body must affix the periodic inspection and test marking, including its registered mark, to each approved cylinder and closed cryogenic receptacle (see 5.2.7.8).

5.2.6.5.2 A record certifying that a cylinder and closed cryogenic receptacle have passed the periodic inspection and test must be issued by the periodic inspection and test body before the cylinder and closed cryogenic receptacle are filled.

5.2.6.6 *Records*

5.2.6.6.1 The periodic inspection and test body must retain records of the periodic inspection and test of cylinders and closed cryogenic receptacles (both passed and failed), including the location of the test facility, for not less than 15 years.

5.2.6.6.2 The owner of the cylinder and closed cryogenic receptacle must retain an identical record until the next periodic inspection and test unless the cylinder and closed cryogenic receptacle are permanently removed from service.

5.2.7 Marking of UN refillable cylinders and closed cryogenic receptacles

5.2.7.1 Refillable UN cylinders and closed cryogenic receptacles must be marked clearly and legibly with certification, operational and manufacturing marks. These marks must be permanently affixed (e.g. stamped, engraved or etched) on the cylinder. The marks must be on the shoulder, top end or neck of the cylinder and closed cryogenic receptacle or on a permanently affixed component of the cylinder and closed cryogenic receptacle (e.g. welded collar or corrosion-resistant plate welded to the outer jacket of a closed cryogenic receptacle). Except for the UN packaging symbol, the minimum size of the marks must be 5 mm for cylinders and closed cryogenic receptacles with a diameter greater than or equal to 140 mm and 2.5 mm for cylinders and closed cryogenic receptacles with a diameter less than 140 mm. The minimum size of the UN packaging symbol must be 10 mm for cylinders and closed cryogenic receptacles with a diameter greater than or equal to 140 mm and 5 mm for cylinders and closed cryogenic receptacles with a diameter less than 140 mm.

5.2.7.2 The following certification marks must be applied:

a) The UN packaging symbol (un)

≠ This symbol must not be used for any purpose other than certifying that a packaging complies with the relevant requirements in Chapters 1 to 6;

b) The technical standard (e.g. ISO 9809-1) used for the design, construction and testing;

c) The character(s) identifying the country of approval, as indicated by the distinguishing signs of motor vehicles in international traffic;

d) The identity mark or stamp of the inspection body that is registered with the appropriate national authority of the country authorizing the marking;

e) The date of the initial inspection, the year (four digits) followed by the month (two digits) separated by a slash (i.e. "/").

5.2.7.3 The following operational marks must be applied:

f) The test pressure in bar, preceded by the letters "PH" and followed by the letters "BAR";

g) The mass of the empty cylinder and closed cryogenic receptacle including all permanently attached integral parts (e.g. neck ring, foot ring, etc.) in kilograms, followed by the letters "KG". This mass must not include the mass of valve, valve cap or valve guard, any coating, or porous mass for acetylene. The mass must be expressed to three significant figures rounded up to the last digit. For cylinders and closed cryogenic receptacles of less than 1 kg, the mass must be expressed to two significant figures rounded up to the last digit. In the case of cylinders for UN 1001 **Acetylene, dissolved** and UN 3374 **Acetylene, solvent free**, at least one decimal must be shown after the decimal point and two digits for cylinders of less than 1 kg;

h) The minimum guaranteed wall thickness of the cylinder in millimetres followed by the letters "MM". This mark is not required for cylinders with a water capacity less than or equal to 1 litre or for composite cylinders or for closed cryogenic receptacles;

i) In the case of cylinders for compressed gases, UN 1001 **Acetylene, dissolved**, and UN 3374 **Acetylene, solvent free**, the working pressure in bar, preceded by the letters "PW". In the case of closed cryogenic receptacles, the maximum allowable working pressure preceded by the letters "MAWP";

j) In the case of cylinders for liquefied gases and closed cryogenic receptacles, the water capacity in litres expressed to three significant figures rounded down to the last digit, followed by the letter "L". If the value of the minimum or nominal water capacity is an integer, the digits after the decimal point may be neglected;

k) In the case of cylinders for UN 1001 **Acetylene, dissolved**, the total of the mass of the empty receptacle, the fittings and accessories not removed during filling, any coating, the porous mass, the solvent and the saturation gas expressed to three significant figures rounded down to the last digit followed by the letters "KG". At least one decimal must be shown after the decimal point. For cylinders of less than 1 kg, the mass must be expressed to two significant figures rounded down to the last digit;

l) In the case of cylinders for UN 3374 **Acetylene, solvent free**, the total of the mass of the empty receptacle, the fittings and accessories not removed during filling, any coating, and the porous mass expressed to three significant figures rounded down to the last digit followed by the letters "KG". At least one decimal must be shown after the decimal point. For cylinders of less than 1 kg, the mass must be expressed to two significant figures rounded down to the last digit.

5.2.7.4 The following manufacturing marks must be applied:

m) Identification of the cylinder thread (e.g. 25E). (This mark is not required for closed cryogenic receptacles);

n) The manufacturer's mark registered by the appropriate national authority. When the country of manufacture is not the same as the country of approval, then the manufacturer's mark must be preceded by the character(s) identifying the country of manufacture, as indicated by the distinguishing signs of motor vehicles in international traffic. The country mark and the manufacturer's mark must be separated by a space or slash;

o) The serial number assigned by the manufacturer;

p) In the case of steel cylinders and closed cryogenic receptacles and composite cylinders and closed cryogenic receptacles with steel liner intended for the transport of gases with a risk of hydrogen embrittlement, the letter "H" showing compatibility of the steel (see ISO 11114-1:1997).

5.2.7.5 The above marks must be placed in three groups:

a) Manufacturing marks must be the top grouping and must appear consecutively in the sequence given in 5.2.7.4;

b) The operational marks in 5.2.7.3 must be the middle grouping and the test pressure f) which must be immediately preceded by the working pressure (i) when the latter is required;

c) Certification marks must be the bottom grouping and must appear in the sequence given in 5.2.7.2.

The following is an example of the markings applied to a cylinder:

m) 25E	n) D MF	o) 765432	p) H	
i) PW200PH	f) 300BAR	g) 62.1KG	j) 50L	h) 5.8MM
(un) a)	b) ISO 9809-1	c) F	d) IB	e) 2000/12

5.2.7.6 Other marks are allowed in areas other than the side wall, provided they are made in low stress areas and are not of a size and depth that will create harmful stress concentrations. In the case of closed cryogenic receptacles, such marks may be on a separate plate attached to the outer jacket. Such marks must not conflict with required marks.

5.2.7.7 Cylinders of composite construction with limited life must be marked with the letters "FINAL" followed by the expiry date, the year (four digits) and the month (two digits).

5.2.7.8 In addition to the preceding marks, each refillable cylinder and closed cryogenic receptacle that meets the periodic inspection and test requirements of 5.2.4 must be marked indicating:

a) the character(s) identifying the country authorizing the body performing the periodic inspection and test. This marking is not required if this body is approved by the appropriate national authority of the country approving manufacture;

b) the registered mark of the body authorized by the appropriate national authority for performing the periodic inspection and test;

c) the date of the periodic inspection and test, the year (two digits) followed by the month (two digits) separated by a slash (i.e. "/"). Four digits may be used to indicate the year.

The above marks must appear consecutively in the sequence given.

5.2.7.9 For acetylene cylinders, with the agreement of the national authority, the date of the most recent periodic inspection and the stamp of the body performing the periodic inspection and test may be engraved on a ring held on the cylinder by the valve. The ring must be configured so that it can be removed only by disconnecting the valve from the cylinder.

5.2.8 Marking of non-refillable UN cylinders and closed cryogenic receptacles

5.2.8.1 Non-refillable UN cylinders and closed cryogenic receptacles must be marked clearly and legibly with certification and gas or cylinder and closed cryogenic receptacle specific marks. These marks must be permanently affixed (e.g. stencilled, stamped, engraved or etched) on the cylinder. Except when stencilled, the marks must be on the shoulder, top end or neck of the cylinder and closed cryogenic receptacle or on a permanently affixed component of the cylinder and closed cryogenic receptacle (e.g. welded collar). Except for the "UN" mark and the "DO NOT REFILL" mark, the minimum size of the marks must be 5 mm for cylinders and closed cryogenic receptacles with a diameter greater than or equal to 140 mm and 2.5 mm and closed cryogenic receptacles for cylinders with a diameter less than 140 mm. The minimum size of the "UN" mark must be

10 mm for cylinders and closed cryogenic receptacles with a diameter greater than or equal to 140 mm and 5 mm for cylinders and closed cryogenic receptacles with a diameter less than 140 mm. The minimum size of the "DO NOT REFILL" mark must be 5 mm.

5.2.8.2 The marks listed in 5.2.7.2 to 5.2.7.4 must be applied with the exception of g), h) and m). The serial number o) may be replaced by the batch number. In addition, the words "DO NOT REFILL" in letters of at least 5 mm in height are required.

5.2.8.3 The requirements of 5.2.7.5 must apply.

Note.— Non-refillable cylinders and closed cryogenic receptacles may, on account of their size, substitute this marking by a label.

5.2.8.4 Other marks are allowed provided they are made in low stress areas other than the side wall and are not of a size and depth that will create harmful stress concentrations. Such marks must not conflict with required marks.

5.3 REQUIREMENTS FOR NON-UN CYLINDERS AND NON-UN CLOSED CRYOGENIC RECEPTACLES

5.3.1 Cylinders and closed cryogenic receptacles not designed, constructed, inspected, tested and approved according to the requirements of 5.2 must be designed, constructed, inspected, tested and approved in accordance with the provisions of a technical code recognized by the appropriate national authority and the general requirements of 5.1.

5.3.2 Cylinders and closed cryogenic receptacles designed, constructed, inspected, tested and approved under the provisions of this section must not be marked with the UN packaging symbol.

5.3.3 For metallic cylinders, the construction must be such that the minimum burst ratio (burst pressure divided by test pressure) is:

1.50 for refillable cylinders,
2.00 for non-refillable cylinders.

5.3.4 Marking must be in accordance with the requirements of the appropriate national authority of the country of use.

≠ ## 5.4 REQUIREMENTS FOR AEROSOL DISPENSERS, SMALL RECEPTACLES CONTAINING GAS (GAS CARTRIDGES) AND FUEL CELL CARTRIDGES CONTAINING LIQUEFIED FLAMMABLE GAS

≠ ### 5.4.1 Small receptacles containing gas (gas cartridges) and fuel cell cartridges containing liquefied flammable gas

≠ 5.4.1.1 Each receptacle or fuel cell cartridge must be subjected to a test performed in a hot water bath; the temperature of the bath and the duration of the test must be such that the internal pressure reaches that which would be reached at 55°C (50°C if the liquid phase does not exceed 95 per cent of the capacity of the receptacle or the fuel cell cartridge at 50°C). If the contents are sensitive to heat or if the receptacles or the fuel cell cartridges are made of plastics material which softens at this test temperature, the temperature of the bath must be set at between 20°C and 30°C but, in addition, one receptacle or fuel cell cartridge in 2 000 must be tested at the higher temperature.

≠ 5.4.1.2 No leakage or permanent deformation of a receptacle or fuel cell cartridge may occur, except that a plastic receptacle or fuel cell cartridge may be deformed through softening provided it does not leak.

5.4.2 Aerosol dispensers

5.4.2.1 Each filled aerosol dispenser must be subjected to a test performed in a hot water bath or an approved water bath alternative.

5.4.2.2 *Hot water bath test*

5.4.2.2.1 The temperature of the water bath and the duration of the test must be such that the internal pressure reaches that which would be reached at 55°C (50°C if the liquid phase does not exceed 95 percent of the capacity of the aerosol dispenser at 50°C). If the contents are sensitive to heat or if the aerosol dispensers are made of plastics material which softens at this test temperature, the temperature of the bath must be set at between 20°C and 30°C but, in addition, one aerosol dispenser in 2 000 must be tested at the higher temperature.

5.4.2.2.2 No leakage or permanent deformation of an aerosol dispenser may occur, except that a plastic aerosol dispenser may be deformed through softening provided that it does not leak.

5.4.2.3 *Alternative methods*

5.4.2.3.1 With the approval of the appropriate national authority, alternative methods which provide an equivalent level of safety may be used provided that the requirements of 5.4.2.2.1, 5.4.2.2.2 and 5.4.2.2.3 are met.

5.4.2.3.2 *Quality system*

5.4.2.3.2.1 Aerosol dispenser fillers and component manufacturers must have a quality system. The quality system must implement procedures to ensure that all aerosol dispensers that leak or that are deformed are rejected and not offered for transport.

5.4.2.3.2.2 The quality system must include:

a) a description of the organizational structure and responsibilities;

b) the relevant inspection and test, quality control, quality assurance, and process operation instructions that will be used;

c) quality records, such as inspection reports, test data, calibration data and certificates;

d) management reviews to ensure the effective operation of the quality system;

e) a process for control of documents and their revision;

f) a means for control of non-conforming aerosol dispensers;

g) training programmes and qualification procedures for relevant personnel; and

h) procedures to ensure that there is no damage to the final product.

5.4.2.3.2.3 An initial audit and periodic audits must be conducted to the satisfaction of the appropriate national authority. These audits must ensure the approved system is and remains adequate and efficient. Any proposed changes to the approved system must be notified to the appropriate national authority in advance.

5.4.2.3.3 *Pressure and leak testing of aerosol dispensers before filling*

Every empty aerosol dispenser must be subjected to a pressure equal to or in excess of the maximum expected in the filled aerosol dispensers at 55°C (50°C if the liquid phase does not exceed 95 percent of the capacity of the receptacle at 50°C). This must be at least two-thirds of the design pressure of the aerosol dispenser. If any aerosol dispenser shows evidence of leakage at a rate equal to or greater than 3.3×10^{-2} mbar.l.s^{-1} at the test pressure, distortion or other defect, it must be rejected.

5.4.2.3.4 *Testing of the aerosol dispensers after filling*

5.4.2.3.4.1 Prior to filling, the filler must ensure that the crimping equipment is set appropriately and the specified propellant is used.

5.4.2.3.4.2 Each filled aerosol dispenser must be weighed and leak tested. The leak detection equipment must be sufficiently sensitive to detect at least a leak rate of 2.0×10^{-3} mbar.l.s^{-1} at 20°C.

≠ 5.4.2.3.4.3 Any filled aerosol dispenser which shows evidence of leakage, deformation or excessive mass must be rejected.

5.4.3 With the approval of the appropriate national authority, aerosols and receptacles, small, containing pharmaceutical products and non flammable gases which are required to be sterile, but may be adversely affected by water bath testing, are not subject to 5.4.1 and 5.4.2 if:

a) they are manufactured under the authority of a national health administration and, if required by the appropriate national authority, follow the principles of Good Manufacturing Practice (GMP) established by the World Health Organization (WHO)*; and

* WHO Publication: Quality assurance of pharmaceuticals. A compendium of guidelines and related materials. Volume 2: Good manufacturing practices and inspection.

b) an equivalent level of safety is achieved by the manufacturer's use of alternative methods for leak detection and pressure resistance, such as helium detection and water bathing a statistical sample of at least 1 in 2 000 from each production batch.

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Chapter 6

PACKAGINGS FOR INFECTIOUS SUBSTANCES OF CATEGORY A

6.1 GENERAL

The requirements of this chapter apply to packagings intended for the transport of infectious substances of Category A.

6.2 REQUIREMENTS FOR PACKAGINGS

6.2.1 The requirements for packagings in this section are based on packagings, as specified in Chapter 2, currently used. In order to take into account progress in science and technology, there is no objection to the use of packagings having specifications different from those in this chapter provided that they are equally effective, acceptable to the competent authority and able successfully to withstand the tests described in 6.5. Methods of testing other than those described in these Instructions are acceptable provided they are equivalent.

6.2.2 Packagings must be manufactured and tested under a quality assurance programme which satisfies the competent authority in order to ensure that each packaging meets the requirements of this chapter.

6.2.3 Manufacturers and subsequent distributors of packagings must provide information regarding procedures to be followed (including closure instructions for inner packagings and receptacles), a description of the types and dimensions of the closures (including required gaskets) and any other components needed to ensure that packages, as presented for transport, are capable of passing the applicable performance tests of this chapter.

6.3 CODE FOR DESIGNATING TYPES OF PACKAGINGS

6.3.1 The codes for designating types of packagings are set out in 6;1.2.

6.3.2 The letters “U” or “W” may follow the packaging code. The letter “U” signifies a special packaging conforming to the requirements of 6.5.1.6. The letter “W” signifies that the packaging, although of the same type indicated by the code, is manufactured to a specification different from that in Chapter 3 and is considered equivalent under the requirements of 6.2.1.

6.4 MARKING

Note 1.— The marking indicates that the packaging which bears it corresponds to a successfully tested design type and that it complies with the provisions of this chapter which are related to the manufacture, but not to the use, of the packaging.

Note 2.— The marking is intended to be of assistance to packaging manufacturers, reconditioners, packaging users, operators and appropriate authorities.

Note 3.— The marking does not always provide full details of the test levels, etc., and these may need to be taken further into account, e.g. by reference to a test certificate, test reports or register of successfully tested packagings.

6.4.1 Each packaging intended for use according to these Instructions must bear markings which are durable, legible and placed in a location and of such a size relative to the packaging as to be readily visible. For packages with a gross mass of more than 30 kg the markings, or a duplicate thereof, must appear on the top or on a side of the packaging. Letters, numerals and symbols must be at least 12 mm high, except for packagings of 30 L or 30 kg capacity or less, when they must be at least 6 mm in height and for packagings of 5 L or 5 kg or less, when they must be of an appropriate size.

6.4.2 A packaging that meets the requirements of this section and of 6.5 shall be marked with:

a) the United Nations packaging symbol; (un)

   This symbol must not be used for any purpose other than certifying that a packaging complies with the relevant requirements in Chapters 1 to 6;

b) the code designating the type of packaging according to the requirements of 6;1.2;

c) the text “CLASS 6.2”;

d) the last two digits of the year of manufacture of the packaging;

e) the State authorizing the allocation of the mark, indicated by the distinguishing sign for motor vehicles in international traffic;

f) the name of the manufacturer or other identification of the packaging specified by the competent authority; and

g) for packagings meeting the requirements of 6.5.1.6, the letter “U”, inserted immediately following the marking required in b) above.

6.4.3 Markings must be applied in the sequence of the sub-paragraphs in 6.4.2; each element of the marking required in these sub-paragraphs must be clearly separated, e.g. by a slash or space, so as to be easily identified. For an example see 6.4.4. Any additional markings authorized by a competent authority must still enable the parts of the marking to be correctly identified with reference to 6.4.1.

6.4.4 Example of a marking:

(un) 4G/CLASS 6.2/06 as in 6.4.2 a), b), c) and d)
S/SP-9989-ERIKSSON as in 6.4.2 e) and f)

6.5 TEST REQUIREMENTS FOR PACKAGINGS

6.5.1 Performance and frequency of tests

6.5.1.1 The design type of each packaging must be tested as provided for in this chapter in accordance with procedures established by the competent authority.

6.5.1.2 Each packaging design type must successfully pass the tests prescribed in this chapter before being used. A packaging design type is defined by the design, size, material and thickness, manner of construction and packing, but may include various surface treatments. It also includes packagings which differ from the design type only in their lesser design height.

6.5.1.3 Tests must be repeated on production samples at intervals established by the competent authority.

6.5.1.4 Tests must also be repeated after each modification which alters the design, material or manner of construction of a packaging.

6.5.1.5 The competent authority may permit the selective testing of packagings that differ only in minor respects from a tested type, e.g. smaller sizes or lower net mass of primary receptacles; and packagings such as drums and boxes which are produced with small reductions in external dimension(s).

6.5.1.6 Primary receptacles of any type may be assembled within a secondary packaging and transported without testing in the rigid outer packaging under the following conditions:

a) The rigid outer packaging combination must have been successfully tested in accordance with 6.5.2.2 with fragile (e.g. glass) primary receptacles.

b) The total combined gross mass of primary receptacles must not exceed one-half the gross mass of primary receptacles used for the drop test in a) above.

c) The thickness of cushioning between primary receptacles and between primary receptacles and the outside of the secondary packaging must not be reduced below the corresponding thicknesses in the originally tested packaging; and if a single primary receptacle was used in the original test, the thickness of cushioning between primary receptacles must not be less than the thickness of cushioning between the outside of the secondary packaging and the primary receptacle in the original test. When either fewer or smaller primary receptacles are used (as compared to the primary receptacles used in the drop test), sufficient additional cushioning material must be used to take up the void spaces.

d) The rigid outer packaging must have successfully passed the stacking test in 4.6 while empty. The total mass of identical packages must be based on the combined mass of packagings used in the drop test in a) above.

e) For primary receptacles containing liquids, an adequate quantity of absorbent material to absorb the entire liquid content of the primary receptacles must be present.

f) If the rigid outer packaging is intended to contain primary receptacles for liquids and is not leakproof, or is intended to contain primary receptacles for solids and is not siftproof, a means of containing any liquid or solid contents in the event of leakage must be provided in the form of a leakproof liner, plastic bag or other equally effective means of containment.

g) In addition to the markings prescribed in 6.4.2 a) to f), packagings must be marked in accordance with 6.4.2 g).

6.5.1.7 The competent authority may at any time require proof, by tests in accordance with this chapter, that serially produced packagings meet the requirements of the design type tests.

6.5.1.8 Provided the validity of the test results is not affected, and with the approval of the competent authority, several tests may be made on one sample.

6.5.2 Preparation of packagings for testing

6.5.2.1 Samples of each packaging must be prepared as for transport except that the liquid or solid infectious substance must be replaced by water or, where conditioning at –18°C is specified, by a water/antifreeze mixture. Each primary receptacle must be filled to not less than 98 per cent of its capacity.

Note.— The term water includes water/antifreeze solution with a minimum specific gravity of 0.95 for testing at –18°C.

6.5.2.2 *Tests and number of samples required*

Table 6-4. Tests required for packaging types

Type of packaging[a]			*Tests required*					
	Primary receptacle		*Water spray 6.5.3.6.1*	*Cold conditioning 6.5.3.6.2*	*Drop 6.5.3*	*Additional drop 6.5.3.6.3*	*Puncture 6.5.4*	*Stacking 6;4.6*
Rigid outer packaging	*Plastics*	*Other*	*No. of samples*	*No. of samples*	*No. of samples*	*No. of samples*	*No. of samples*	*No. of samples*
Fibreboard box	X		5	5	10		2	
		X	5	0	5		2	
Fibreboard drum	X		3	3	6		2	
		X	3	0	3		2	Required on three samples when testing a "U"-marked packaging, as defined in 6.5.1.6 for specific provisions.
Plastics box	X		0	5	5	Required on one sample when the packaging is intended to contain dry ice.	2	
		X	0	5	5		2	
Plastics drum/ jerrican	X		0	3	3		2	
		X	0	3	3		2	
Boxes of other material	X		0	5	5		2	
		X	0	0	5		2	
Drums/ jerricans of other material	X		0	3	3		2	
		X	0	0	3		2	

a. *Type of packaging* categorizes packagings for test purposes according to the kind of packaging and its material characteristics.

Note 1.— In instances where a primary receptacle is made of two or more materials, the material most liable to damage determines the appropriate test.

Note 2.— The material of the secondary packagings are not taken into consideration when selecting the test or conditioning for the test.

6.5.2.2.1 *Explanation for use of Table 6-4*

6.5.2.2.1.1 If the packaging to be tested consists of a fibreboard outer box with a plastics primary receptacle, five samples must undergo the water spray test (see 6.5.3.6.1) prior to dropping and another five must be conditioned to –18°C (see 6.5.3.6.2) prior to dropping. If the packaging is to contain dry ice, then one further single sample must be dropped five times after conditioning in accordance with 6.5.3.6.3.

6.5.2.2.1.2 Packagings prepared as for transport must be subjected to the tests in 6.5.3 and 6.5.4. For outer packagings, the headings in Table 6-4 relate to fibreboard or similar materials whose performance may be rapidly affected by moisture, plastics which may embrittle at low temperature, and other materials such as metal whose performance is not affected by moisture or temperature.

6.5.3 Drop test

6.5.3.1 Samples must be subjected to free-fall drops from a height of 9 metres onto a non-resilient, horizontal, flat, massive and rigid surface in conformity with 6;4.3.4.

6.5.3.2 Where the samples are in the shape of a box, five must be dropped, one in each of the following orientations:

a) flat on the base;

b) flat on the top;

c) flat on the longest side;

d) flat on the shortest side;

e) on a corner.

6.5.3.3 Where the samples are in the shape of a drum, three must be dropped, one in each of the following orientations:

a) diagonally on the top chime, with the centre of gravity directly above the point of impact;

b) diagonally on the base chime;

c) flat on the side.

6.5.3.4 While the sample must be released in the required orientation, it is accepted that for aerodynamic reasons the impact may not take place in that orientation.

6.5.3.5 Following the appropriate drop sequence, there must be no leakage from the primary receptacle(s), which must remain protected by cushioning/absorbent material in the secondary packaging.

6.5.3.6 *Special preparation of test sample for the drop test*

6.5.3.6.1 *Fibreboard — water spray test*

Fibreboard outer packagings: The sample must be subjected to a water spray that simulates exposure to rainfall of approximately 5 cm per hour for at least one hour. It must then be subjected to the test described in 6.5.3.1.

6.5.3.6.2 *Plastics material — cold conditioning*

Plastics primary receptacles or outer packagings: The temperature of the test sample and its contents must be reduced to -18°C or lower for a period of at least 24 hours and within 15 minutes of removal from that atmosphere the test sample must be subjected to the test described in 6.5.3.1. Where the sample contains dry ice, the conditioning period may be reduced to four hours.

6.5.3.6.3 *Packagings intended to contain dry ice — additional drop test*

Where the packaging is intended to contain dry ice, a test additional to that specified in 6.5.3.1 and, when appropriate, in 6.5.3.6.1 or 6.5.3.6.2 must be carried out. One sample must be stored so that all the dry ice dissipates and then that sample must be dropped in one of the orientations described in 6.5.3.2 which must be that most likely to result in failure of the packaging.

6.5.4 Puncture test

6.5.4.1 *Packagings with a gross mass of 7 kg or less*

Samples must be placed on a level, hard surface. A cylindrical steel rod with a mass of at least 7 kg, a diameter of 38 mm and the impact end edges of a radius not exceeding 6 mm must be dropped in a vertical free fall from a height of one metre measured from the impact end to the impact surface of the sample. One sample must be placed on its base. A second sample must be placed in an orientation perpendicular to that used for the first sample. In each instance, the steel rod must be aimed to impact the primary receptacle. Following each impact, penetration of the secondary packaging is acceptable, provided that there is no leakage from the primary receptacle(s).

6.5.4.2 *Packagings with a gross mass exceeding 7 kg*

Samples are dropped onto the end of a cylindrical steel rod. The rod must be set vertically on a level, hard surface. It must have a diameter of 38 mm with the upper end edges of a radius not exceeding 6 mm. The rod must protrude from the surface a distance at least equal to the distance between the centre of the primary receptacle(s) and the outer surface of the outer packaging, with a minimum protrusion of 200 mm. One sample is dropped with its top face lowermost in a vertical free fall from a height of 1 m, measured from the top of the steel rod. A second sample is dropped from the same height in an orientation perpendicular to that

used for the first sample. In each instance, the packaging must be so orientated that the steel rod would be capable of penetrating the primary receptacle(s). Following each impact, penetration of the secondary packaging is acceptable provided that there is no leakage from the primary receptacle(s).

6.5.5 Test report

6.5.5.1 A written test report containing at least the following particulars must be prepared and must be available to the users of the packaging:

a) name and address of the test facility;

b) name and address of the applicant (where appropriate);

c) a unique test report identification;

d) date of the test and of the report;

e) manufacturer of the packaging;

f) description of the packaging design type (e.g. dimensions, materials, closures, thickness, etc.), including method of manufacture (e.g. blow moulding) and which may include drawing(s) and/or photograph(s);

g) maximum capacity;

h) test contents;

i) test descriptions and results;

j) a signature and the name and status of the signatory.

6.5.5.2 The test report must contain statements that the packaging prepared for transport was tested in accordance with the appropriate requirements of this chapter and that the use of other packaging methods or components may render it invalid. A copy of the test report must be available to the appropriate national authority.

Chapter 7

REQUIREMENTS FOR THE CONSTRUCTION, TESTING AND APPROVAL OF PACKAGES AND MATERIAL OF CLASS 7

Parts of this Chapter are affected by State Variations CA 1, CA 3, CA 4, DE 2, DK 1, JP 8, JP 26, US 10; see Table A-1

7.1 GENERAL REQUIREMENTS

7.1.1 The package must be so designed in relation to its mass, volume and shape that it can be easily and safely transported. In addition, the package shall be so designed that it can be properly secured in the aircraft during transport.

7.1.2 The design must be such that any lifting attachments on the package will not fail when used in the intended manner and that, if failure of the attachments should occur, the ability of the package to meet other requirements of these Instructions would not be impaired. The design must take account of appropriate safety factors to cover snatch lifting.

7.1.3 Attachments and any other features on the outer surface of the package which could be used to lift it must be designed either to support its mass in accordance with the requirements of 7.1.2 or must be removable or otherwise rendered incapable of being used during transport.

7.1.4 As far as practicable, the packaging must be designed and finished so that the external surfaces are free from protruding features and can be easily decontaminated.

7.1.5 As far as practicable, the outer layer of the package must be designed so as to prevent the collection and the retention of water.

7.1.6 Any features added to the package at the time of transport which are not part of the package must not reduce its safety.

7.1.7 The package must be capable of withstanding the effects of any acceleration, vibration or vibration resonance, which may arise under routine conditions of transport without any deterioration in the effectiveness of the closing devices on the various receptacles or in the integrity of the package as a whole. In particular, nuts, bolts and other securing devices must be designed so as to prevent them from becoming loose or being released unintentionally, even after repeated use.

7.1.8 The materials of the packaging and any components or structures must be physically and chemically compatible with each other and with the radioactive contents. Account must be taken of their behaviour under irradiation.

7.1.9 All valves through which the radioactive contents could otherwise escape must be protected against unauthorized operation.

7.1.10 The design of the package must take into account ambient temperatures and pressures that are likely to be encountered in routine conditions of transport.

7.1.11 For radioactive material having other dangerous properties, the package design must take into account those properties (see Part 2, Introductory Chapter, 3.1, 3.2 and 4;9.1.5).

7.2 ADDITIONAL REQUIREMENTS FOR PACKAGES TRANSPORTED BY AIR

7.2.1 The temperature of the accessible surfaces must not exceed 50°C at an ambient temperature of 38°C with no account taken of insolation.

7.2.2 Packages must be designed so that, if they were exposed to ambient temperatures ranging from –40°C to +55°C, the integrity of the containment would not be impaired.

7.2.3 Packages containing radioactive material must be capable of withstanding, without leakage, an internal pressure that produces a pressure differential of not less than maximum normal operating pressure plus 95 kPa.

7.3 REQUIREMENTS FOR EXCEPTED PACKAGES

An excepted package must be designed to meet the requirements specified in 7.1 and 7.2.

7.4 REQUIREMENTS FOR INDUSTRIAL PACKAGES

7.4.1 Industrial packages Types 1, 2 and 3 (Types IP-1, IP-2 and IP-3) must meet the requirements specified in 7.1, 7.2 and 7.6.2.

7.4.2 A Type IP-2 package must, if it were subjected to the tests specified in 7.14.4 and 7.14.5, prevent:

a) loss or dispersal of the radioactive contents; and

b) more than a 20 per cent increase in the maximum radiation level at any external surface of the package.

7.4.3 A Type IP-3 package must meet all the requirements specified in 7.6.2 to 7.6.15.

7.4.4 Alternative requirements for industrial packages Types 2 and 3 (Types IP-2 and IP-3)

7.4.4.1 Packages may be used as a Type IP-2 package, provided that:

a) they satisfy the requirements of 7.4.1;

≠ b) they are designed to satisfy the requirements prescribed for Packing Group I or II in Part 6, Chapters 1 to 4, of these Instructions; and

c) when subjected to the tests required for Packing Group I or II in Part 6, Chapter 4, they would prevent:

i) loss or dispersal of the radioactive contents; and

ii) more than a 20 per cent increase in the maximum radiation level at any external surface of the package.

≠ 7.4.4.2 Freight containers of a permanent enclosed character may also be used as Industrial package Types 2 or 3 (Types IP-2 or IP-3), provided that:

a) the radioactive contents are restricted to solid materials;

b) they satisfy the requirements of 7.4.1; and

c) they are designed to conform to ISO 1496-1:1990: “Series 1 freight containers — Specification and testing — Part 1: General cargo containers” excluding dimensions and ratings. They must be designed so that, if subjected to the tests prescribed in that document and to the accelerations occurring during routine conditions of transport, they would prevent:

i) loss or dispersal of the radioactive contents; and

ii) more than a 20 per cent increase in the maximum radiation level at any external surface of the freight containers.

7.5 REQUIREMENTS FOR PACKAGES CONTAINING URANIUM HEXAFLUORIDE

7.5.1 Packages designed to contain uranium hexafluoride must meet the requirements prescribed elsewhere in these Instructions which pertain to the radioactive and fissile properties of the material. Except as allowed in 7.5.4, uranium hexafluoride in quantities of 0.1 kg or more must also be packaged and transported in accordance with the provisions of ISO 7195:1993: “Packaging of uranium hexafluoride (UF_6) for transport”, and the requirements of 7.5.2 and 7.5.3. The package must also meet the requirements prescribed elsewhere in these Instructions, which pertain to the radioactive and fissile properties of the material.

7.5.2 Each package designed to contain 0.1 kg or more of uranium hexafluoride must be designed so that it would meet the following requirements:

a) withstand, without leakage and without unacceptable stress, as specified in ISO 7195:1993, the structural test as specified in 7.20;

b) withstand, without loss or dispersal of the uranium hexafluoride, the free drop test specified in 7.14.4; and

c) withstand, without rupture of the containment system, the thermal test specified in 7.16.3.

7.5.3 Packages designed to contain 0.1 kg or more of uranium hexafluoride must not be provided with pressure relief devices.

7.5.4 Subject to the approval of the competent authority, packages designed to contain 0.1 kg or more of uranium hexafluoride may be transported if:

a) the packages are designed to international or national standards other than ISO 7195:1993 provided an equivalent level of safety is maintained;

b) the packages are designed to withstand, without leakage and without unacceptable stress, a test pressure of less than 2.76 MPa, as specified in 7.20;

c) for packages designed to contain 9 000 kg or more of uranium hexafluoride, the packages do not meet the requirement of 7.5.2 c).

In all other respects, the requirements specified in 7.5.1 to 7.5.3 must be satisfied.

7.6 REQUIREMENTS FOR TYPE A PACKAGES

7.6.1 Type A packages must be designed to meet the requirements of 7.1, 7.2 and 7.6.2 to 7.6.17.

7.6.2 The smallest overall external dimension of the package must not be less than 10 cm.

7.6.3 The outside of the package must incorporate a feature such as a seal, which is not readily breakable and which, while intact, will be evidence that it has not been opened.

7.6.4 Any tie-down attachments on the package must be designed so that, under normal and accident conditions of transport, the forces in those attachments must not impair the ability of the package to meet the requirements of these Instructions.

7.6.5 The design of the package must take into account temperatures ranging from –40°C to +70°C for the components of the packaging. Attention must be given to freezing temperatures for liquids and to the potential degradation of packaging materials within the given temperature range.

7.6.6 The design and manufacturing techniques must be in accordance with national or international standards, or other requirements, acceptable to the competent authority.

7.6.7 The design must include a containment system securely closed by a positive fastening device which cannot be opened unintentionally or by a pressure which may arise within the package.

7.6.8 Special form radioactive material may be considered as a component of the containment system.

7.6.9 If the containment system forms a separate unit of the package, it must be capable of being securely closed by a positive fastening device which is independent of any other part of the packaging.

7.6.10 The design of any component of the containment system must take into account, where applicable, the radiolytic decomposition of liquids and other vulnerable materials and the generation of gas by chemical reaction and radiolysis.

7.6.11 The containment system must retain its radioactive contents under a reduction of ambient pressure to 60 kPa.

7.6.12 All valves, other than pressure relief valves, must be provided with an enclosure to retain any leakage from the valve.

7.6.13 A radiation shield, which encloses a component of the package specified as a part of the containment system, must be designed so as to prevent the unintentional release of that component from the shield. Where the radiation shield and such component within it form a separate unit, the radiation shield must be capable of being securely closed by a positive fastening device, which is independent of any other packaging structure.

7.6.14 A package must be designed so that if it were subjected to the tests specified in 7.14, it would prevent:

a) loss or dispersal of the radioactive contents; and

b) more than a 20 per cent increase in the maximum radiation level at any external surface of the package.

7.6.15 The design of a package intended for liquid radioactive material must make provision for ullage to accommodate variations in the temperature of the contents, dynamic effects and filling dynamics.

7.6.16 Type A packages to contain liquids

A Type A package designed to contain liquid radioactive material must, in addition:

a) be adequate to meet the conditions specified in 7.6.14 a) if the package is subjected to the tests specified in 7.15; and

b) either:

i) be provided with sufficient absorbent material to absorb twice the volume of the liquid contents. Such absorbent material must be suitably positioned so as to contact the liquid in the event of leakage; or

ii) be provided with a containment system composed of primary inner and secondary outer containment components, designed to ensure retention of the liquid contents within the secondary outer containment components, even if the primary inner components leak.

7.6.17 Type A packages to contain gas

A package designed for gases must prevent loss or dispersal of the radioactive contents if the package were subjected to the tests specified in 7.15. A Type A package designed for tritium gas or for noble gases must be excepted from this requirement.

7.7 REQUIREMENTS FOR TYPE B(U) PACKAGES

7.7.1 Type B(U) packages must be designed to meet the requirements specified in 7.1, 7.2 and 7.6.2 to 7.6.15, except 7.6.14 a), and, in addition, to the requirements specified in 7.7.2 to 7.7.15.

7.7.2 A package must be designed so that, under the ambient conditions specified in 7.7.5 and 7.7.6, heat generated within the package by the radioactive contents shall not, under normal conditions of transport, as demonstrated by the tests in 7.14, adversely affect the package in such a way that it would fail to meet the applicable requirements for containment and shielding if left unattended for a period of one week. Particular attention shall be paid to the effects of heat, which may:

a) alter the arrangement, the geometrical form or the physical state of the radioactive contents or, if the radioactive material is enclosed in a can or receptacle (for example, clad fuel elements), cause the can, receptacle or radioactive material to deform or melt; or

b) lessen the efficiency of the packaging through differential thermal expansion or cracking or melting of the radiation shielding material; or

c) in combination with moisture, accelerate corrosion.

7.7.3 A package must be so designed that, under the ambient condition specified in 7.7.5 and in the absence of isolation, the temperature of the accessible surfaces of a package must not exceed 50°C, unless the package is transported under exclusive use.

7.7.4 In order to meet the requirements of 7.2.1, account may be taken of barriers or screens intended to give protection to persons without the need for the barriers or screens being subject to any test.

7.7.5 The ambient temperature must be assumed to be 38°C.

7.7.6 The solar insolation conditions must be assumed to be as specified in Table 6-5.

7.7.7 A package which includes thermal protection for the purpose of satisfying the requirements of the thermal test specified in 7.16.3 must be so designed that such protection will remain effective if the package is subjected to the tests specified in 7.14 and 7.16.2 a) and b) or 7.16.2 b) and c), as appropriate. Any such protection on the exterior of the package must not be rendered ineffective by ripping, cutting, skidding, abrasion or rough handling.

7.7.8 A package must be so designed that, if it were subjected to:

a) the tests specified in 7.14, it would restrict the loss of radioactive contents to not more than 10^{-6} A_2 per hour; and

b) the tests specified in 7.16.1, 7.16.2 b), 7.16.3 and 7.16.4 and the tests in:

i) 7.16.2 c), when the package has a mass not greater than 500 kg, an overall density not greater than 1 000 kg/m^3 based on the external dimensions, and radioactive contents greater than 1 000 A_2 not as special form radioactive material; or

ii) 7.16.2 a), for all other packages,

it would meet the following requirements:

— retain sufficient shielding to ensure that the radiation level at 1 m from the surface of the package would not exceed 10 mSv/h with the maximum radioactive contents which the package is designed to contain; and

— restrict the accumulated loss of radioactive contents in a period of one week to not more than 10 A_2 for krypton-85 and not more than A_2 for all other radionuclides.

Where mixtures of different radionuclides are present, the provisions of 2;7.2.2.4 to 2;7.2.2.6 must apply except that for krypton-85, an effective A2(i) value equal to 10 A2 may be used. For case a) above, the assessment must take into account the external contamination limits of 4;9.1.2.

Table 6-5. Insolation data

Case	*Form and location of surface*	*Insolation for 12 hours per day (W/m^2)*
1	Flat surfaces transported horizontally — downward facing	0
2	Flat surfaces transported horizontally — upward facing	800
3	Surfaces transported vertically	200*
4	Other downward facing (not horizontal) surfaces	200*
5	All other surfaces	400*

* Alternatively, a sine function may be used, with an absorption coefficient adopted and the effects of possible reflection from neighbouring objects neglected.

7.7.9 A package for radioactive contents with activity greater than 10^5 A_2 must be designed so that if it were subjected to the enhanced water immersion test specified in 7.17, there would be no rupture of the containment system.

7.7.10 Compliance with the permitted activity release limits must depend neither upon filters nor upon a mechanical cooling system.

7.7.11 A package must not include a pressure relief system from the containment system, which would allow the release of radioactive material to the environment under the conditions of the tests specified in 7.14 and 7.16.

7.7.12 A package must be designed so that if it were at the maximum normal operating pressure and it were subjected to the tests specified in 7.14 and 7.16, the level of strains in the containment system would not attain values which would adversely affect the package in such a way that it would fail to meet the applicable requirements.

7.7.13 A package must not have a maximum normal operating pressure in excess of a gauge pressure of 700 kPa.

7.7.14 A package containing low dispersible radioactive material must be so designed so that any features added to the low dispersible radioactive material that are not part of it, or any internal components of the packaging must not adversely affect the performance of the low dispersible radioactive material.

7.7.15 A package must be designed for an ambient temperature range from –40°C to +38°C.

7.8 REQUIREMENTS FOR TYPE B(M) PACKAGES

Type B(M) packages must meet the requirements for Type B(U) packages specified in 7.7.1, except that for packages to be transported solely within a specified country or solely between specified countries, conditions other than those given in 7.6.5, 7.7.5, 7.7.6 and 7.7.9 to 7.7.15 may be assumed with the approval of the competent authorities of these countries. Notwithstanding, the requirements for Type B(U) packages specified in 7.7.9 to 7.7.15 must be met as far as practicable.

7.9 REQUIREMENTS FOR TYPE C PACKAGES

7.9.1 Type C packages must be designed to meet the requirements specified in 7.1, 7.2 and 7.6.2 to 7.6.15, except as specified in 7.6.14 a), and the requirements specified in 7.7.2 to 7.7.6, 7.7.10 to 7.7.15 and 7.9.2 to 7.9.4.

7.9.2 A package must be capable of meeting the assessment criteria prescribed for tests in 7.7.8 b) and 7.7.12 after burial in an environment defined by a thermal conductivity of 0.33 W/(m.K) and a temperature of 38°C in the steady state. Initial conditions for the assessment must assume that any thermal insulation of the package remains intact, the package is at the maximum normal operating pressure and the ambient temperature is 38°C.

7.9.3 A package must be designed so that, if it were at the maximum normal operating pressure and subjected to:

a) the tests specified in 7.14, it would restrict the loss of radioactive contents to not more than 10^{-6} A_2 per hour; and

b) the test sequences in 7.19.1, it would meet the following requirements:

   i) retain sufficient shielding to ensure that the radiation level at 1 m from the surface of the package would not exceed 10 mSv/h with the maximum radioactive contents which the package is designed to contain; and

ii) restrict the accumulated loss of radioactive contents in a period of one week to not more than 10 A_2 for krypton-85 and not more than A_2 for all other radionuclides.

Where mixtures of different radionuclides are present, the provisions of 2;7.2.2.4 to 2;7.2.2.6 must apply, except that for krypton-85 an effective A_2(i) value equal to 10 A_2 may be used. For case a) above, the assessment must take into account the external contamination limits of 4;9.1.2.

7.9.4 A package must be so designed that there will be no rupture of the containment system following performance of the enhanced water immersion test specified in 7.17.

7.10 REQUIREMENTS FOR PACKAGES CONTAINING FISSILE MATERIAL

7.10.1 Fissile material must be transported so as to:

a) maintain subcriticality during normal and accident conditions of transport; in particular, the following contingencies must be considered:

i) water leaking into or out of packages;

ii) the loss of efficiency of built-in neutron absorbers or moderators;

iii) rearrangement of the contents either within the package or as a result of loss from the package;

iv) reduction of spaces within or between packages;

v) packages becoming immersed in water or buried in snow; and

vi) temperature changes; and

b) meet the requirements:

i) of 7.6.2 for packages containing fissile material;

ii) prescribed elsewhere in these Instructions and which pertain to the radioactive properties of the material; and

iii) specified in 7.10.3 to 7.10.12, unless excepted by 7.10.2.

≠ 7.10.2 Fissile material meeting one of the provisions in a) to d) of 2;7.2.3.5 is excepted from the requirement to be transported in packages that comply with 7.10.3 to 7.10.12, as well as the other requirements of these Instructions that apply to fissile material. Only one type of exception is allowed per consignment.

7.10.3 Where the chemical or physical form, isotopic composition, mass or concentration, moderation ratio or density, or geometric configuration is not known, the assessments of 7.10.7 to 7.10.12 must be performed assuming that each parameter that is not known has the value which gives the maximum neutron multiplication consistent with the known conditions and parameters in these assessments.

7.10.4 For irradiated nuclear fuel the assessments of 7.10.7 to 7.10.12 must be based on an isotopic composition demonstrated to provide:

a) the maximum neutron multiplication during the irradiation history; or

b) a conservative estimate of the neutron multiplication for the package assessments. After irradiation but prior to shipment, a measurement must be performed to confirm the conservatism of the isotopic composition.

7.10.5 The package, after being subjected to the tests specified in 7.14, must prevent the entry of a 10-cm cube.

7.10.6 The package must be designed for an ambient temperature range of –40°C to +38°C unless the competent authority specifies otherwise in the certificate of approval for the package design.

7.10.7 For a package in isolation, it must be assumed that water can leak into or out of all void spaces of the package, including those within the containment system. However, if the design incorporates special features to prevent such leakage of water into or out of certain void spaces, even as a result of error, absence of leakage may be assumed in respect of those void spaces. Special features must include the following:

a) multiple high standard water barriers, each of which would remain watertight if the package were subject to the tests prescribed in 7.10.12 b), a high degree of quality control in the manufacture, maintenance and repair of packagings and tests to demonstrate the closure of each package before each shipment; or

b) for packages containing uranium hexafluoride only, with maximum enrichment of 5 mass per cent uranium-235:

i) packages where, following the tests prescribed in 7.10.12 b), there is no physical contact between the valve and any other component of the packaging other than at its original point of attachment and where, in addition, following the test prescribed in 7.16.3, the valves remain leaktight; and

ii) a high degree of quality control in the manufacture, maintenance and repair of packagings coupled with tests to demonstrate closure of each package before each shipment.

7.10.8 It must be assumed that the confinement system must be closely reflected by at least 20 cm of water or such greater reflection as may additionally be provided by the surrounding material of the packaging. However, when it can be demonstrated that the confinement system remains within the packaging following the tests prescribed in 7.10.12 b), close reflection of the package by at least 20 cm of water may be assumed in 7.10.9 c).

7.10.9 The package must be subcritical under the conditions of 7.10.7 and 7.10.8, with the package conditions that result in the maximum neutron multiplication consistent with:

a) routine conditions of transport (incident free);

b) the tests specified in 7.10.11 b);

c) the tests specified in 7.10.12 b).

7.10.10:

a) The package must be subcritical under conditions consistent with the Type C package tests specified in 7.19.1 assuming reflection by at least 20 cm of water but no water-in leakage.

b) In the assessment of 7.10.9, allowance must not be made for special features of 7.10.7 unless, following the Type C package tests specified in 7.19.1 and, subsequently, the water-in leakage test of 7.18.3, leakage of water into or out of the void spaces is prevented.

7.10.11 A number “N” must be derived, such that five times “N” must be subcritical for the arrangement and package conditions that provide the maximum neutron multiplication consistent with the following:

a) There must not be anything between the packages, and the package arrangement must be reflected on all sides by at least 20 cm of water; and

b) The state of the packages must be their assessed or demonstrated condition if they had been subjected to the tests specified in 7.14.

7.10.12 A number “N” must be derived, such that two times “N” must be subcritical for the arrangement and package conditions that provide the maximum neutron multiplication consistent with the following:

a) hydrogenous moderation between packages, and the package arrangement reflected on all sides by at least 20 cm of water; and

b) the tests specified in 7.14 followed by whichever of the following is the more limiting:

i) the tests specified in 7.16.2 b) and, either 7.16.2 c) for packages having a mass not greater than 500 kg and an overall density not greater than 1 000 kg/m^3 based on the external dimensions, or 7.16.2 a) for all other packages; followed by the test specified in 7.16.3 and completed by the tests specified in 7.18.1 to 7.18.3; or

ii) the test specified in 7.16.4; and

c) where any part of the fissile material escapes from the containment system following the tests specified in 7.10.12 b), it must be assumed that fissile material escapes from each package in the array and all of the fissile material must be arranged in the configuration and moderation that results in the maximum neutron multiplication with close reflection by at least 20 cm of water.

7.10.13 The criticality safety index (CSI) for packages containing fissile material must be obtained by dividing the number 50 by the smaller of the two values of N derived in 7.10.11 and 7.11.12 (i.e. CSI = 50/N). The value of the CSI may be zero, provided that an unlimited number of packages is subcritical (i.e. N is effectively equal to infinity in both cases).

≠ **7.11 TEST PROCEDURES AND DEMONSTRATION OF COMPLIANCE**

7.11.1 Demonstration of compliance with the performance standards required in 2;7.2.3.1.3, 2;7.2.3.1.4, 2;7.2.3.3.1, 2;7.2.3.3.2, 2;7.2.3.4.1, 2;7.2.3.4.2 and 6;7.1 to 6;7.10 must be accomplished by any of the methods listed below or by a combination thereof:

a) Performance of tests with specimens representing LSA-III material, or special form radioactive material, or low dispersible radioactive material or with prototypes or samples of the packaging, where the contents of the specimen or the packaging

for the tests must simulate, as closely as practicable, the expected range of radioactive contents and the specimen or packaging to be tested must be prepared as presented for transport;

b) Reference to previous satisfactory demonstrations of a sufficiently similar nature;

c) Performance of tests with models of appropriate scale incorporating those features which are significant with respect to the item under investigation when engineering experience has shown results of such tests to be suitable for design purposes. When a scale model is used, the need for adjusting certain test parameters, such as penetrator diameter or compressive load, must be taken into account;

d) Calculation, or reasoned argument, when the calculation procedures and parameters are generally agreed to be reliable or conservative.

7.11.2 After the specimen, prototype or sample has been subjected to the tests, appropriate methods of assessment must be used to assure that the requirements for the test procedures have been fulfilled in compliance with the performance and acceptance standards prescribed in 2;7.2.3.1.3, 2;7.2.3.1.4, 2;7.2.3.3.1, 2;7.2.3.3.2, 2;7.2.3.4.1, 2;7.2.3.4.2 and 6;7.1 to 6;7.10.

7.11.3 All specimens must be inspected before testing in order to identify and record faults or damage including the following:

a) divergence from the design;

b) defects in manufacture;

c) corrosion or other deterioration; and

d) distortion of features.

The containment system of the package must be clearly specified. The external features of the specimen must be clearly identified so that reference may be made simply and clearly to any part of such a specimen.

7.12 TESTING THE INTEGRITY OF THE CONTAINMENT SYSTEM AND SHIELDING AND EVALUATING CRITICALITY SAFETY

After each of the applicable tests specified in 7.14 to 7.20:

a) faults and damages must be identified and recorded;

b) it must be determined whether the integrity of the containment system and shielding has been retained to the extent required in 7.1 to 7.10 for the package under test; and

c) it must be determined, for packages containing fissile material, whether the assumptions and conditions used in the assessments required by 7.10.1 to 7.10.12 for one or more packages are valid.

7.13 TARGET FOR DROP TESTS

The target for the drop tests specified in 2;7.2.3.3.5 a), 7.14.4, 7.15 a), 7.16.2 and 7.19.2 must be a flat, horizontal surface of such a character that any increase in its resistance to displacement or deformation upon impact by the specimen would not significantly increase the damage to the specimen.

7.14 TESTS FOR DEMONSTRATING ABILITY TO WITHSTAND NORMAL CONDITIONS OF TRANSPORT

7.14.1 The tests are: the water spray test, the free drop test, the stacking test and the penetration test. Specimens of the package must be subjected to the free drop test, the stacking test and the penetration test, preceded in each case by the water spray test. One specimen may be used for all the tests, provided that the requirements of 7.14.2 are fulfilled.

7.14.2 The time interval between the conclusion of the water spray test and the succeeding test must be such that the water has soaked in to the maximum extent, without appreciable drying of the exterior of the specimen. In the absence of any evidence to the contrary, this interval must be taken to be two hours if the water spray is applied from four directions simultaneously. No time interval must elapse, however, if the water spray is applied from each of the four directions consecutively.

7.14.3 Water spray test: the specimen must be subjected to a water spray test that simulates exposure to rainfall of approximately 5 cm per hour for at least one hour.

7.14.4 Free drop test: the specimen must drop onto the target so as to suffer maximum damage in respect of the safety features to be tested.

a) The height of the drop measured from the lowest point of the specimen to the upper surface of the target must be not less than the distance specified in Table 6-6 for the applicable mass. The target must be as defined in 7.13;

b) For rectangular fibreboard or wood packages not exceeding a mass of 50 kg, a separate specimen must be subjected to a free drop onto each corner from a height of 0.3 m;

c) For cylindrical fibreboard packages not exceeding a mass of 100 kg, a separate specimen must be subjected to a free drop onto each of the quarters of each rim from a height of 0.3 m.

7.14.5 Stacking test: unless the shape of the packaging effectively prevents stacking, the specimen must be subjected, for a period of 24 hours, to a compressive load equal to the greater of the following:

a) the equivalent of 5 times the mass of the actual package; and

b) the equivalent of 13 kPa multiplied by the vertically projected area of the package.

The load must be applied uniformly to two opposite sides of the specimen, one of which must be the base on which the package would typically rest.

7.14.6 Penetration test: the specimen must be placed on a rigid, flat, horizontal surface which will not move significantly while the test is being carried out.

Table 6-6. Free drop distance for testing packages to normal conditions of transport

Package mass (kg)	*Free drop distance (m)*
Package mass < 5 000	1.2
5 000 ≤ Package mass < 10 000	0.9
10 000 ≤ Package mass < 15 000	0.6
15 000 ≤ Package mass	0.3

a) A bar of 3.2 cm in diameter with a hemispherical end and a mass of 6 kg must be dropped and directed to fall, with its longitudinal axis vertical, onto the centre of the weakest part of the specimen so that, if it penetrates sufficiently far, it will hit the containment system. The bar must not be significantly deformed by the test performance;

b) The height of the drop of the bar measured from its lower end to the intended point of impact on the upper surface of the specimen must be 1 m.

7.15 ADDITIONAL TESTS FOR TYPE A PACKAGES DESIGNED FOR LIQUIDS AND GASES

A specimen or separate specimens must be subjected to each of the following tests, unless it can be demonstrated that one test is more severe for the specimen in question than the other, in which case one specimen must be subjected to the more severe test.

a) Free drop test: the specimen must drop onto the target so as to suffer the maximum damage in respect of containment. The height of the drop measured from the lowest part of the specimen to the upper surface of the target must be 9 m. The target must be as defined in 7.13;

b) Penetration test: the specimen must be subjected to the test specified in 7.14.6 except that the height of the drop must be increased to 1.7 m from the 1 m specified in 7.14.6 b).

7.16 TESTS FOR DEMONSTRATING THE ABILITY TO WITHSTAND ACCIDENT CONDITIONS IN TRANSPORT

7.16.1 The specimen must be subjected to the cumulative effects of the tests specified in 7.16.2 and 7.16.3, in that order. Following these tests, either this specimen or a separate specimen must be subjected to the effect(s) of the water immersion test(s) as specified in 7.16.4 and, if applicable, 7.17.

7.16.2 Mechanical test: the mechanical test consists of three different drop tests. Each specimen must be subjected to the applicable drops as specified in 7.7.8 or 7.10.12. The order in which the specimen is subjected to the drops must be such that, on completion of the mechanical test, the specimen must have suffered such damage as will lead to the maximum damage in the thermal test which follows:

a) For drop I, the specimen must drop onto the target so as to suffer the maximum damage, and the height of the drop measured from the lowest point of the specimen to the upper surface of the target must be 9 m. The target must be as defined in 7.13;

b) For drop II, the specimen must drop, so as to suffer the maximum damage, onto a bar rigidly mounted perpendicularly on the target. The height of the drop measured from the intended point of impact of the specimen to the upper surface of the bar must be 1 m. The bar must be of solid mild steel of circular section, (15.0 ± 0.5 cm) in diameter and 20 cm long unless a longer bar would cause greater damage, in which case a bar of sufficient length to cause maximum damage must be used. The upper end of the bar shall be flat and horizontal with its edge rounded off to a radius of not more than 6 mm. The target on which the bar is mounted shall be as described in 7.13;

c) For drop III, the specimen must be subjected to a dynamic crush test by positioning the specimen on the target so as to suffer maximum damage by the drop of a 500 kg mass from 9 m onto the specimen. The mass must consist of a solid mild steel plate 1 m by 1 m and must fall in a horizontal attitude. The height of the drop must be measured from the underside of the plate to the highest point of the specimen. The target on which the specimen rests must be as defined in 7.13.

7.16.3 Thermal test: the specimen must be in thermal equilibrium under conditions of an ambient temperature of 38°C, subject to the solar insolation conditions specified in Table 6-5 and subject to the design maximum rate of internal heat generation within the package from the radioactive contents. Alternatively, any of these parameters are allowed to have different values prior to and during the test, provided due account is taken of them in the subsequent assessment of package response. The thermal test must then consist of:

a) exposure of a specimen for a period of 30 minutes to a thermal environment which provides a heat flux at least equivalent to that of a hydrocarbon fuel/air fire in sufficiently quiescent ambient conditions to give a minimum average flame emissivity coefficient of 0.9 and an average temperature of at least 800°C, fully engulfing the specimen, with a surface absorptivity coefficient of 0.8 or that value which the package may be demonstrated to possess if exposed to the fire specified, followed by;

b) exposure of the specimen to an ambient temperature of 38°C, subject to the solar insolation conditions specified in Table 6-5 and subject to the design maximum rate of internal heat generation within the package by the radioactive contents for a sufficient period to ensure that temperatures in the specimen are everywhere decreasing and/or are approaching initial steady-state conditions. Alternatively, any of these parameters are allowed to have different values following cessation of heating, provided due account is taken of them in the subsequent assessment of package response.

During and following the test, the specimen must not be artificially cooled and any combustion of materials of the specimen must be permitted to proceed naturally.

7.16.4 Water immersion test: the specimen must be immersed under a head of water of at least 15 m for a period of not less than eight hours in the attitude which will lead to maximum damage. For demonstration purposes, an external gauge pressure of at least 150 kPa must be considered to meet these conditions.

7.17 ENHANCED WATER IMMERSION TEST FOR TYPE B(U) AND TYPE B(M) PACKAGES CONTAINING MORE THAN 10^5 A_2, AND TYPE C PACKAGES

Enhanced water immersion test: the specimen must be immersed under a head of water of at least 200 m for a period of not less than one hour. For demonstration purposes, an external gauge pressure of at least 2 MPa must be considered to meet these conditions.

7.18 WATER LEAKAGE TEST FOR PACKAGES CONTAINING FISSILE MATERIAL

7.18.1 Packages for which water-in leakage or out-leakage to the extent which results in the greatest reactivity has been assumed, for purposes of assessment under 7.10.7 to 7.10.12, must be excepted from the test.

7.18.2 Before the specimen is subjected to the water leakage test specified below, it must be subjected to the tests in 7.16.2 b) and either 7.16.2 a) or c) as required by 7.10.12 and the test specified in 7.16.3.

7.18.3 The specimen must be immersed under a head of water of at least 0.9 m for a period of not less than eight hours and in the attitude for which maximum leakage is expected.

7.19 TESTS FOR TYPE C PACKAGES

7.19.1 Specimens must be subjected to the effects of each of the following test sequences in the orders specified:

a) the tests specified in 7.16.2 a), 7.16.2 c), 7.19.2 and 7.19.3; and

b) the test specified in 7.19.4.

Separate specimens are allowed to be used for each of the sequences in a) and b).

7.19.2 Puncture/tearing test: the specimen must be subjected to the damaging effects of a solid probe made of mild steel. The orientation of the probe to the surface of the specimen must be positioned so as to cause maximum damage at the conclusion of the test sequence specified in 7.19.1 a).

a) The specimen, representing a package having a mass less than 250 kg, must be placed on a target and subjected to a probe having a mass of 250 kg and falling from a height of 3 m above the intended impact point. For this test, the probe must be a 20 cm in diameter cylindrical bar with the striking end forming a frustum of a right circular cone with the following dimensions: 30 cm in height and 2.5 cm in diameter at the top with its edge rounded off to a radius of not more than 6 mm. The target on which the specimen is placed must be as specified in 7.13;

b) For packages having a mass of 250 kg or more, the base of the probe must be placed on a target and the specimen dropped onto the probe. The height of the drop, measured from the point of impact with the specimen to the upper surface of the probe must be 3 m. For this test, the probe must have the same properties and dimensions as specified in a) above, except that the length and mass of the probe must be such as to incur maximum damage to the specimen. The target on which the base of the probe is placed must be as specified in 7.13.

7.19.3 Enhanced thermal test: the conditions for this test must be as specified in 7.16.3, except that the exposure to the thermal environment must be for a period of 60 minutes.

7.19.4 Impact test: the specimen must be subject to an impact on a target at a velocity of not less than 90 m/s, at such an orientation as to suffer maximum damage. The target must be as defined in 7.13, except that the target surface may be at any orientation as long as the surface is normal to the specimen path.

7.20 TESTS FOR PACKAGINGS DESIGNED TO CONTAIN URANIUM HEXAFLUORIDE

Specimens that comprise or simulate packagings designed to contain 0.1 kg or more of uranium hexafluoride must be tested hydraulically at an internal pressure of at least 1.38 MPa but, when the test pressure is less than 2.76 MPa, the design must require multilateral approval. For re-testing packagings, any other equivalent non-destructive testing may be applied subject to multilateral approval.

7.21 APPROVALS OF PACKAGE DESIGNS AND MATERIALS

7.21.1 The approval of designs for packages containing 0.1 kg or more of uranium hexafluoride requires that:

a) each design that meets the requirements of 7.5.4 requires multilateral approval;

b) each design that meets the requirements of 7.5.1 to 7.5.3 must require unilateral approval by the competent authority of the State of Origin of the design, unless multilateral approval is otherwise required by these Instructions.

7.21.2 Each Type B(U) and Type C package design requires unilateral approval, except that:

a) a package design for fissile material, which is also subject to 5;1.2.2.1 and 7.21.4 must require multilateral approval; and

b) a Type B(U) package design for low dispersible radioactive material must require multilateral approval.

7.21.3 Each Type B(M) package design, including those for fissile material which are also subject to 5;1.2.2.1 and 7.21.4 and those for low dispersible radioactive material, must require multilateral approval.

7.21.4 Each package design for fissile material that is not excepted, according to 7.10.2, from the requirements which apply specifically to packages containing fissile material must require multilateral approval.

7.21.5 The design for special form radioactive material must require unilateral approval. The design for low dispersible radioactive material must require multilateral approval (see also 6.4.23.8 of the UN Recommendations).

7.22 REGISTRATION OF SERIAL NUMBERS AND VALIDATION

7.22.1 The competent authority must be informed of the serial number of each packaging manufactured to a design approved by them. The competent authority must maintain a register of such numbers.

7.22.2 Multilateral approval may be by validation of the original certificate issued by the competent authority of the State of Origin of the design or shipment.

7.23 TRANSITIONAL MEASURES FOR CLASS 7

7.23.1 Packages not requiring competent authority approval of design under the 1985 and 1985 (As Amended 1990) editions of IAEA Safety Series No. 6

7.23.1.1 Excepted packages, Industrial packages Type IP-1, Type IP-2 and Type IP-3 and Type A packages that did not require approval of design by the competent authority and which meet the requirements of the 1985 or 1985 (As Amended 1990) editions of the IAEA *Regulations for the Safe Transport of Radioactive Material* (IAEA Safety Series No. 6) may continue to be used subject to the mandatory programme of quality assurance in accordance with the requirements of 1;6.3 and the activity limits and material restrictions of 2;7.2.4.

7.23.1.2 Any packaging modified, unless to improve safety, or manufactured after 31 December 2003, must meet the requirements of these Instructions in full. Packages prepared for transport not later than 31 December 2003 under the 1985 or 1985 (As Amended 1990) editions of IAEA Safety Series No. 6 may continue in transport. Packages prepared for transport after this date must meet the requirements of these Instructions in full.

7.23.2 Packages approved under the 1973, 1973 (As Amended), 1985 and 1985 (As Amended 1990) editions of IAEA Safety Series No. 6

7.23.2.1 Packagings manufactured to a package design approved by the competent authority under the provisions of the 1973 or 1973 (As Amended) editions of IAEA Safety Series No. 6 may continue to be used subject to: multilateral approval of package design; the mandatory programme of quality assurance in accordance with the applicable requirements of 1;6.3; the activity limits and material restrictions of 2;7.2.4; and, for a package containing fissile material and transported by air, the requirements of 7.10.10. No new manufacture of such packaging must be permitted to commence. Changes in the design of the packaging or in the nature or quantity of the authorized radioactive contents which, as determined by the competent authority, would significantly affect safety, must meet the requirements of these Instructions in full. A serial number according to the provision of 5;2.4.5.1 c) must be assigned to and marked on the outside of each packaging.

7.23.2.2 Packagings manufactured to a package design approved by the competent authority under the provisions of the 1985 or 1985 (As Amended 1990) editions of IAEA Safety Series No. 6 may continue to be used subject to the multilateral approval of package design; the mandatory programme of quality assurance in accordance with the requirements of 1;6.3; the activity limits and material restrictions of 2;7.2.4; and, for a package containing fissile material and transported by air, the requirements of 7.10.10. Changes in the design of the packaging or in the nature or quantity of the authorized radioactive contents which, as determined by the competent authority, would significantly affect safety must meet the requirements of these Instructions in full. All packagings for which manufacture begins after 31 December 2006 must meet the requirements of these Instructions in full.

7.23.4 Special form radioactive material approved under the 1973, 1973 (As Amended), 1985 and 1985 (As Amended 1990) editions of IAEA Safety Series No. 6

Special form radioactive material manufactured to a design which had received unilateral approval by the competent authority under the 1973, 1973 (As Amended), 1985 or 1985 (As Amended 1990) editions of IAEA Safety Series No. 6 may continue to be used when in compliance with the mandatory programme of quality assurance in accordance with the applicable requirements of 1;6.3. All special form radioactive material manufactured after 31 December 2003 must meet the requirements of these Instructions in full.

Part 7

OPERATOR'S RESPONSIBILITIES

INTRODUCTORY NOTE

This Part details the responsibilities of operators with regard to the acceptance, handling and loading of dangerous goods. However, nothing contained herein should be interpreted as requiring an operator to transport a particular article or substance or as preventing an operator from imposing special requirements on the transport of a particular article or substance. Also, nothing in this Part is intended to preclude a ground handling agent from carrying out some or all of the functions of an operator. However, such ground handling agents are subject to the operator's responsibilities of Part 7.

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Chapter 1

ACCEPTANCE PROCEDURES

Parts of this Chapter are affected by State Variations AE 7, AE 9, CA 1, CA 4, CA 6, CA 14, CA 15, CA 16, CH 3, CN 1, FR 4, HK 1, IN 1, IN 2, IR 1, IT 1, IT 5, MO 1, NL 3, PL 1, SG 1, UA 1, US 1, US 8, US 10, US 13; see Table A-1

1.1 CARGO ACCEPTANCE PROCEDURES

1.1.1 Operators' acceptance staff must be adequately trained to assist them in identifying and detecting dangerous goods presented as general cargo.

1.1.2 Cargo acceptance staff should seek confirmation from shippers about the contents of any item of cargo where there are suspicions that it may contain dangerous goods, with the aim of preventing undeclared dangerous goods from being loaded on an aircraft as general cargo. Many innocuous-looking items may contain dangerous goods, and a list of general descriptions which, experience has shown, are often applied to such items is shown in Chapter 6.

1.2 ACCEPTANCE OF DANGEROUS GOODS BY OPERATORS

1.2.1 An operator must not accept for transport aboard an aircraft a package or overpack containing dangerous goods or a freight container containing radioactive material or a unit load device or other type of pallet containing the dangerous goods as described in 1.4.1 b) and c) unless:

a) it is accompanied by two copies of the dangerous goods transport document; or

b) the information applicable to the consignment is provided in electronic form; or

c) where permitted, by alternative documentation.

1.2.2 Where a document is provided, one copy must accompany the consignment to final destination and one copy must be retained by the operator at a location on the ground where it will be possible to obtain access to it within a reasonable period; the document must be retained at this point until the goods have arrived at final destination, after which time it may be stored elsewhere.

1.2.3 When the information applicable to the consignment is provided in electronic form, the information must be available to the operator at all times during transport to final destination. The data must be able to be produced as a paper document without delay. When a paper document is produced, the data must be presented as required by 5;4.

1.3 THE ACCEPTANCE CHECK

1.3.1 An operator must not accept for transport aboard an aircraft a package or overpack containing dangerous goods or a freight container containing radioactive material or a unit load device or other type of pallet containing dangerous goods as described in 1.4 unless the operator has, by use of a checklist, verified the following:

a) the documentation or, when provided, the electronic data, complies with the detailed requirements specified in 5;4;

b) the quantity of dangerous goods stated on the dangerous goods transport document is within the limits per package on a passenger or cargo aircraft as appropriate;

c) the marking of the package, overpack or freight container accords with the details stated on the accompanying dangerous goods transport document and are clearly visible;

d) where required, the letter in the packaging specification marking designating the packing group for which the design type has been successfully tested is appropriate for the dangerous goods contained within. This does not apply to overpacks where the specification marking is not visible;

e) proper shipping names, UN numbers, labels, and special handling instructions appearing on the interior package(s) are clearly visible or reproduced on the outside of an overpack;

f) the labelling of the package, overpack or freight container is as required by 5;3;

g) the outer packaging of a package is of the type stated on the accompanying dangerous goods transport document and is permitted by the applicable packing instruction;

h) the package or overpack does not contain different dangerous goods which require segregation from each other according to Table 7-1;

i) the package, overpack, freight container or unit load device is not leaking and there is no indication that its integrity has been compromised;

j) an overpack does not contain packages bearing the “Cargo aircraft only” label unless:

1) the packages are assembled in such a way that clear visibility and easy access to them is possible; or

2) the packages are not required to be accessible under 7;2.4.1; or

3) not more than one package is involved;

Note 1.— Minor discrepancies, such as the omission of dots and commas in the proper shipping name appearing on the transport document or on package markings, or minor variations in hazard labels which do not affect the obvious meaning of the label, are not considered as errors if they do not compromise safety and should not be considered as reason for rejecting a consignment.

Note 2.— Where packages are contained in an overpack or freight container, as permitted by 1.4, the checklist should establish the correct marking and labelling of such an overpack or other type of pallet or freight container and not the individual packages contained in them. Where packages are contained in a unit load device, as permitted by 1.4.1, the checklist should not require the checking of packages individually for the correct marking and labelling.

Note 3.— An acceptance check is not required for dangerous goods in excepted quantities and radioactive material in excepted packages.

Table 7-1. Segregation between packages

Hazard label	*Class or division*							
	1	*2*	*3*	*4.2*	*4.3*	*5.1*	*5.2*	*8*
1	Note 1	Note 2	Note 2	Note 2	Note 2	Note 2	Note 2	Note 2
2	Note 2	—	—	—	—	—	—	—
3	Note 2	—	—	—	—	x	—	—
4.2	Note 2	—	—	—	—	x	—	—
4.3	Note 2	—	—	—	—	—	—	x
5.1	Note 2	—	x	x	—	—	—	—
5.2	Note 2	—	—	—	—	—	—	—
8	Note 2	—	—	—	x	—	—	—

An “x” at the intersection of a row and column indicates that packages containing these classes of dangerous goods may not be stowed next to or in contact with each other, or in a position which would allow interaction in the event of leakage of the contents. Thus, a package containing Class 3 dangerous goods may not be stowed next to or in contact with a package containing Division 5.1 dangerous goods.

Note 1.— See 2.2.2.2 through 2.2.2.5.

Note 2.— This class or division must not be stowed together with explosives other than those in Division 1.4, Compatibility Group S.

Note 3. — Packages containing dangerous goods with multiple hazards in the class or divisions which require segregation in accordance with Table 7-1 need not be segregated from other packages bearing the same UN number.

1.4 ACCEPTANCE OF FREIGHT CONTAINERS AND UNIT LOAD DEVICES

1.4.1 An operator must not accept from a shipper a freight container or a unit load device containing dangerous goods other than:

a) a freight container for radioactive material (see 6;7.1);

b) a unit load device or other type of pallet containing consumer commodities prepared according to Packing Instruction 910;

c) a unit load device or other type of pallet containing dry ice used as a refrigerant for other than dangerous goods prepared according to Packing Instruction 904; or

d) a unit load device or other type of pallet containing magnetized material.

1.4.2 When an operator accepts a unit load device or other type of pallet containing consumer commodities, dry ice or magnetized material as permitted by 1.4.1, the operator must attach an identification tag as required by 2.7.1 to the unit load device.

1.5 SPECIAL RESPONSIBILITIES IN ACCEPTING INFECTIOUS SUBSTANCES

1.5.1 Routing

Whatever the mode used, transport must be made by the quickest possible routing. If trans-shipment is necessary, precautions must be taken to ensure special care, expeditious handling and monitoring of the substances in transit.

1.6 UNDELIVERABLE CONSIGNMENTS OF RADIOACTIVE MATERIAL

Where a consignment is undeliverable, the consignment must be placed in a safe location and the appropriate competent authority must be informed as soon as possible and a request made for instructions on further action.

Chapter 2

STORAGE AND LOADING

Parts of this Chapter are affected by State Variations AE 6, CA 1, CA 4, IR 2, JP 10, JP 11, JP 12, JP 22, US 15; see Table A-1

2.1 LOADING RESTRICTIONS ON THE FLIGHT DECK AND FOR PASSENGER AIRCRAFT

2.1.1 Dangerous goods must not be carried in an aircraft cabin occupied by passengers or on the flight deck of an aircraft, except as permitted by 1;2.2.1 and 8;1 and for radioactive material, excepted packages under 2;7.2.4.1.1. Dangerous goods may be carried in a main deck cargo compartment of a passenger aircraft provided that compartment meets all the certification requirements for a Class B or a Class C aircraft cargo compartment. Dangerous goods bearing the "Cargo aircraft only" label must not be carried on a passenger aircraft.

2.1.2 Under the conditions specified in S-7;2.2 of the Supplement, the State of Origin may approve the transport of dangerous goods in main deck cargo compartments of passenger aircraft that do not meet the requirements in 2.1.1.

2.2 INCOMPATIBLE DANGEROUS GOODS

2.2.1 Segregation

Packages containing dangerous goods which might react dangerously one with another must not be stowed on an aircraft next to each other or in a position that would allow interaction between them in the event of leakage. As a minimum, the segregation scheme shown in Table 7-1 must be followed in order to maintain acceptable segregation between packages containing dangerous goods having different hazards. The scheme applies irrespective of whether the hazard is the primary or subsidiary risk.

2.2.2 Separation of explosive substances and articles

2.2.2.1 Only explosives in Division 1.4, Compatibility Group S, are permitted to be transported on passenger aircraft. Only the following explosives may be transported on a cargo aircraft:

Division 1.3: Compatibility Groups C, G

Division 1.4: Compatibility Groups B, C, D, E, G, S.

2.2.2.2 The extent to which explosives may be stowed together in an aircraft is determined by their "compatibility". Explosives are considered to be compatible if they can be stowed together without significantly increasing either the probability of an accident or, for a given quantity, the magnitude of the effects of such an accident.

2.2.2.3 Explosives in Compatibility Group S may be stowed with explosives in all compatibility groups.

2.2.2.4 Except as provided for in 2.2.2.5, explosives of different compatibility groups may be stowed together whether or not they belong to the same division.

2.2.2.5 Explosives in Division 1.4B and explosives in Division 1.3 must not be stowed together. Division 1.4B and Division 1.3 explosives must be loaded into separate unit load devices and, when stowed aboard the aircraft, the unit load devices must be separated by other cargo with a minimum separation distance of 2 m. When not loaded in a unit load device, Division 1.4B and Division 1.3 explosives must be loaded into different, non-adjacent loading positions and separated by other cargo with a minimum separation distance of 2 m.

2.3 HANDLING AND LOADING OF PACKAGES CONTAINING LIQUID DANGEROUS GOODS

During the course of air transport, a package of dangerous goods bearing the package orientation label prescribed in 5;3 must be loaded and stowed aboard an aircraft and handled at all times in accordance with such a label. Single packagings with end closures containing liquid dangerous goods must be loaded and stowed aboard an aircraft with those closures upwards, notwithstanding that such single packages may also have side closures.

2.4 LOADING AND SECURING OF DANGEROUS GOODS

≠ 2.4.1 Loading on cargo aircraft

2.4.1.1 Packages or overpacks of dangerous goods bearing the “Cargo aircraft only” label must be loaded on a cargo aircraft in accordance with one of the following provisions:

a) in a Class C aircraft cargo compartment; or

b) in a unit load device equipped with a fire detection/suppression system equivalent to that required by the certification requirements of a Class C aircraft cargo compartment as determined by the appropriate national authority; or

c) in such a manner that in the event of an emergency involving such packages or overpacks, a crew member or other authorized person can access those packages or overpacks, and can handle and, where size and mass permit, separate such packages or overpacks from other cargo.

2.4.1.2 The requirements of 2.4.1.1 do not apply to:

a) substances of Class 3, Packing Group III, without a subsidiary risk;

b) toxic and infectious substances (Class 6);

c) radioactive material (Class 7);

d) miscellaneous dangerous goods (Class 9).

Note — When transporting goods in a non-pressurized cargo hold, there will be a large pressure differential at high altitudes. Packages that are filled at a normal atmospheric pressure may not be capable of withstanding this pressure differential. Confirmation of the suitability of the packaging from the shipper may be required.

≠ 2.4.2 Securing of dangerous goods

The operator must secure dangerous goods in the aircraft in a manner that will prevent any movement. For packages or overpacks containing radioactive material, the securing must be adequate to ensure that the separation requirements of 2.9.3 are met at all times.

≠ 2.4.3 General loading requirements

When dangerous goods subject to the provisions herein are loaded in an aircraft, the operator must protect the packages of dangerous goods from being damaged, including by the movement of baggage, mail, stores or other cargo. Particular attention must be paid to the handling of packages during their preparation for transport, the type of aircraft on which they are to be carried and the method required to load that aircraft, so that accidental damage is not caused through dragging or mishandling of the packages.

2.5 DAMAGED PACKAGES OF DANGEROUS GOODS

Where any package of dangerous goods loaded on an aircraft appears to be damaged or leaking, the operator must remove such package from the aircraft, or arrange for its removal by an appropriate authority or organization, and thereafter arrange for its safe disposal. In the case of a package which appears to be leaking, the operator must ensure the remainder of the consignment is in a proper condition for transport by air and that no other package, baggage or cargo has been contaminated. See 3.1 and 3.2 of this Part concerning action to be taken in the event of damage to packages containing infectious substances in Class 6 and radioactive materials in Class 7.

2.6 REPLACEMENT OF LABELS

When an operator discovers that labels for packages of dangerous goods have become lost, detached or illegible the operator must replace them with appropriate labels in accordance with the information provided on the dangerous goods transport document.

2.7 IDENTIFICATION OF UNIT LOAD DEVICES CONTAINING DANGEROUS GOODS

2.7.1 Each unit load device containing dangerous goods which require a class hazard label must clearly display on its exterior an indication that dangerous goods are contained within the unit load device, unless those hazard class labels are themselves visible.

2.7.2 This indication must be provided by attaching to the unit load device an identification tag having a border of prominent red hatchings on both sides and the minimum dimensions of 148 mm × 210 mm. The primary and subsidiary hazard class(es) or division(s) numbers of such dangerous goods must be clearly marked on this tag.

2.7.3 If the unit load device contains packages bearing the "Cargo aircraft only" label, either that label must be visible or the tag must indicate that the unit load device can be loaded only on a cargo aircraft.

2.7.4 The tag must be removed from the unit load device immediately after the dangerous goods have been unloaded.

2.8 STOWAGE OF TOXIC AND INFECTIOUS SUBSTANCES

Substances of Class 6 (toxic and category A infectious substances) and substances requiring a subsidiary risk "Toxic" label must not be carried in the same compartment of an aircraft with animals, substances marked as or known to be foodstuffs, feeds or other edible substances intended for consumption by humans or by animals, unless either the toxic or category A infectious substances and the foodstuffs or animals are loaded in separate unit load devices and when stowed aboard the aircraft the unit load devices are not adjacent to each other, or the toxic or category A infectious substances are loaded in one closed unit load device and the foodstuffs or animals are loaded in another closed unit load device.

2.9 SPECIAL PROVISIONS APPLICABLE TO THE CARRIAGE OF RADIOACTIVE MATERIAL

2.9.1 Limitation of exposure of persons to radiation

2.9.1.1 The radiation exposure of transport and storage personnel must be so controlled that none of them are likely to receive a radiation dose in excess of that permitted for members of the public. In special cases, arrangements may be made with the competent authority for radiological control to have such personnel classified as radiation workers and to comply with the necessary provisions.

2.9.1.2 All relevant transport and storage personnel must receive such instructions as are necessary concerning the hazards involved and the precautions to be observed.

2.9.1.3 The practice should be followed of keeping exposure to radiation as low as reasonably achievable. The separation distances shown in Tables 7-2 and 7-3 are minimum values, and greater distances should be used where feasible. As far as possible, packages of radioactive materials stowed in underfloor cargo compartments of passenger aircraft should be placed on the compartment floor.

\+ *Note.— The separation distances from packages of radioactive material to passengers specified in Table 7-2 are based on a 0.02 mSv/h reference dose rate at a seat height of 0.4 m.*

2.9.2 Activity limits

The total activity in all aircraft, for carriage of LSA material or SCO in Type IP-1, Type IP-2, Type IP-3 or unpackaged, must not exceed the limits shown in Table 7-4.

2.9.3 Stowage during transport and storage in transit

2.9.3.1 Consignments must be securely stowed.

2.9.3.2 Provided that its average surface heat flux does not exceed 15 W/m^2 and that the immediately surrounding cargo is not in sacks or bags, a package or overpack may be carried or stored among packaged general cargo without any special stowage provisions except as may be specifically required by the competent authority in an applicable approval certificate.

2.9.3.3 Loading of freight containers and accumulation of packages, overpacks and freight containers must be controlled as follows:

a) Except under the condition of exclusive use, the total number of packages, overpacks and freight containers aboard a single aircraft must be so limited that the total sum of the transport indexes aboard the aircraft does not exceed the values shown in Table 7-5. For consignments of LSA-I material, there is no limit on the sum of the transport indexes;

≠ b) Where a consignment is transported under exclusive use, there is no limit on the sum of the transport indexes aboard a single aircraft, but the requirement on minimum segregation distances established in 2.9.6 applies;

c) The radiation level under routine conditions of transport must not exceed 2 mSv/h at any point on, and 0.1 mSv/h at 2 m from, the external surface of the aircraft;

d) The total sum of the criticality safety indexes in a freight container and aboard an aircraft must not exceed the values shown in Table 7-6.

2.9.3.4 Any package or overpack having either a transport index greater than 10, or any consignment having a criticality safety index greater than 50, must be transported only under exclusive use.

2.9.4 Segregation of packages containing fissile material during transport and storage in transit

2.9.4.1 Any group of packages, overpacks and freight containers containing fissile material stored in transit in any one storage area must be so limited that the total sum of the criticality safety indexes in the group does not exceed 50. Each group must be stored so as to maintain a spacing of at least 6 m from other such groups.

Table 7-2. Minimum distance from surface of packages, overpacks and freight containers of radioactive material to the nearest inside surface of passenger cabin or flight deck partitions or floors, irrespective of carriage duration

Total sum of transport indexes	*Minimum distance (metres)*
0.1 – 1.0	0.30
1.1 – 2.0	0.50
2.1 – 3.0	0.70
3.1 – 4.0	0.85
4.1 – 5.0	1.00
5.1 – 6.0	1.15
6.1 – 7.0	1.30
7.1 – 8.0	1.45
8.1 – 9.0	1.55
9.1 – 10.0	1.65
10.1 – 11.0	1.75
11.1 – 12.0	1.85
12.1 – 13.0	1.95
13.1 – 14.0	2.05
14.1 – 15.0	2.15
15.1 – 16.0	2.25
16.1 – 17.0	2.35
17.1 – 18.0	2.45
18.1 – 20.0	2.60
20.1 – 25.0	2.90
25.1 – 30.0	3.20
30.1 – 35.0	3.50
35.1 – 40.0	3.75
40.1 – 45.0	4.00
45.1 – 50.0	4.25

If more than one package, overpack or freight container is placed in the aircraft, the minimum separation distance for each individual package, overpack or freight container must be determined in accordance with the above table, on the basis of the sum of the transport index numbers of the individual packages, overpacks or freight containers. Alternatively, if the packages, overpacks or freight containers are separated into groups, the minimum distance from the nearest inside surface of the passenger cabin or flight deck partitions or floors to each group is the distance applicable to the sum of the transport indexes within the individual groups, provided that each group is separated from each other group by at least three times the distance applicable to the one that has the larger sum of transport indexes.

Note.— For total sum of transport indexes over 50 to be carried by cargo aircraft only, see Table 7-3.

Table 7-3. Minimum distance from surface of packages, overpacks and freight containers of radioactive material, carried by cargo aircraft only, to the nearest inside surface of the flight deck partitions or floor, or other areas occupied by personnel, irrespective of carriage duration

Total sum of transport indexes	*Minimum distance (metres)*	*Total sum of transport indexes*	*Minimum distance (metres)*
50.1 – 60.0	4.65	180.1 – 190.0	8.55
60.1 – 70.0	5.05	190.1 – 200.0	8.75
70.1 – 80.0	5.45	200.1 – 210.0	9.00
80.1 – 90.0	5.80	210.1 – 220.0	9.20
90.1 – 100.0	6.10	220.1 – 230.0	9.40
100.1 – 110.0	6.45	230.1 – 240.0	9.65
110.1 – 120.0	6.70	240.1 – 250.0	9.85
120.1 – 130.0	7.00	250.1 – 260.0	10.05
130.1 – 140.0	7.30	260.1 – 270.0	10.25
140.1 – 150.0	7.55	270.1 – 280.0	10.40
150.1 – 160.0	7.80	280.1 – 290.0	10.60
160.1 – 170.0	8.05	290.1 – 300.0	10.80
170.1 – 180.0	8.30		

If more than one package, overpack or freight container is placed in the aircraft, the minimum separation distance for each individual package, overpack or freight container must be determined in accordance with the above table, on the basis of the sum of the transport index numbers of the individual packages, overpacks or freight containers. Alternatively, if the packages, overpacks or freight containers are separated into groups, the minimum distance from the nearest inside surface of the flight deck partition or floor to each group is the distance applicable to the sum of transport indexes within the individual groups, provided that each group is separated from each other group by at least three times the distance applicable to the one that has the larger sum of transport indexes.

Note.— For smaller sums of transport indexes, see Table 7-2. Distances for total sum of transport indexes over 200 apply to exclusive use only.

Table 7-4. Aircraft activity limits for LSA material and SCO in industrial packages

Nature of material	*Activity limit for aircraft*
LSA-I	No limit
LSA-II and LSA-III non-combustible solids	No limit
LSA-II and LSA-III combustible solids, and all liquids and gases	100 A_2
SCO	100 A_2

Table 7-5. Transport index limits for freight containers and aircraft not under exclusive use

Type of freight container or aircraft	*Limit on total sum of transport indexes in a freight container or aboard an aircraft*
Freight container — small	50
Freight container — large	50
Aircraft	
Passenger	50
Cargo	200

Table 7-6. Critical safety indexes limits for freight containers and aircraft containing fissile material

	Limit on total sum of criticality safety indexes in a freight container or aboard an aircraft	
Type of freight container or aircraft	*Not under exclusive use*	*Under exclusive use*
Freight container — small	50	n.a.
Freight container — large	50	100
Aircraft		
Passenger	50	n.a.
Cargo	50	100

2.9.4.2 Where the total sum of the criticality safety indexes on board an aircraft or in a freight container exceeds 50, as permitted in Table 7-6, storage must be such as to maintain a spacing of at least 6 m from other groups of packages, overpacks or freight containers containing fissile material or other conveyances carrying radioactive material.

2.9.5 Transport by air

2.9.5.1 Type B(M) packages and consignments under exclusive use must not be transported on passenger aircraft.

2.9.5.2 Vented Type B(M) packages, packages which require external cooling by an ancillary cooling system, packages subject to operational controls during transport, and packages containing liquid pyrophoric materials must not be transported by air.

2.9.5.3 Packages or overpacks having a surface radiation level greater than 2 mSv/h must not be transported by air except by special arrangement.

2.9.5.4 Except in the case of shipment under special arrangement, mixing of packages of different kinds of radioactive material, including fissile material, and mixing of different kinds of packages with different transport indexes is permitted without specific competent authority approval. In the case of shipments under special arrangement, mixing is not permitted except as specifically authorized under the special arrangement.

2.9.6 Separation

2.9.6.1 *Separation from persons*

Categories II — Yellow and III — Yellow packages, overpacks or freight containers must be separated from persons. The minimum separation distances to be applied are shown in Tables 7-2 and 7-3 and these distances are from the surface of the packages, overpacks or freight containers to the nearest inside surface of the passenger cabin or flight deck partitions or floors, irrespective of the duration of the carriage of the radioactive material. Table 7-3 applies only when radioactive material is being carried by a cargo aircraft, and in those circumstances the minimum distances must be applied as above and also to any other areas occupied by persons.

2.9.6.2 *Separation from undeveloped photographic film*

Categories II — Yellow and III — Yellow packages, overpacks or freight containers must be separated from undeveloped photographic films or plates. The minimum separation distances to be applied are shown in Table 7-7 and these distances are from the surface of the packages, overpacks or freight containers to the surface of the packages of undeveloped photographic films or plates.

2.9.6.3 *Separation from live animals*

Categories II — Yellow and III — Yellow packages, overpacks or freight containers must be separated from live animals by a distance of at least 0.5 metres for journeys not exceeding 24 hours, and by a distance of at least 1.0 metres for journeys longer than 24 hours.

2.10 LOADING OF MAGNETIZED MATERIAL

Magnetized material must not be loaded in such a position that it will have a significant effect on the direct-reading magnetic compasses or on the master compass detector units. The significant effect will be produced if the magnetic field strength of the magnetized materials reaches 0.418 A/m at the location of aircraft compasses or compass detector units. The minimum stowage distance of the magnetized material to the aircraft compasses or compass detector units will depend on the intensity of the magnetized material's field strength and varies from 1.5 m for material which just meets the threshold level of the

magnetized material definition in 2;9, to 4.6 m for materials which possesses the maximum field strength permitted by Packing Instruction 902 in 4;11. If the minimum stowage distance of a specific item, in its packed form, from the compass or detector units is not known and cannot be estimated, or if material which is to be transported affects the aircraft's compasses, a special minimum stowage distance check must be made on the freight to be transported. Multiple packages may produce a cumulative effect. See Packing Instruction 902 for determination of shielding requirements.

+ *Note.— Masses of ferro-magnetic metals such as automobiles, automobile parts, metal fencing, piping and metal construction material, even if not meeting the definition of magnetized materials may be subject to the operator's special stowage requirements since they may affect aircraft instruments, particularly the compasses. Additionally, packages or items of material which individually do not meet the definition of magnetized materials but cumulatively may do so, may also be subject to the operator's special stowage requirements.*

Table 7-7. Minimum distance in metres from surface of each package, overpack or freight container of radioactive material to undeveloped photographic films or plates, for carriage lasting up to 48 hours

Total sum of transport indexes	*Duration of carriage*					
	2 hours or less	*2-4 hours*	*4-8 hours*	*8-12 hours*	*12-24 hours*	*24-48 hours*
1	0.4	0.6	0.9	1.1	1.5	2.2
2	0.6	0.8	1.2	1.5	2.2	3.1
3	0.7	1.0	1.5	1.8	2.6	3.8
4	0.8	1.2	1.7	2.2	3.1	4.4
5	0.8	1.3	1.9	2.4	3.4	4.8
10	1.4	2.0	2.8	3.5	4.9	6.9
20	2.0	2.8	4.0	4.9	6.9	10.0
30	2.4	3.5	4.9	6.0	8.6	12.0
40	2.9	4.0	5.7	6.9	10.0	14.0
50	3.2	4.5	6.3	7.9	11.0	16.0

Note.— The above is calculated so that the radiation dose received by the films does not exceed 0.1 mSv (10 mrem).

2.11 LOADING OF DRY ICE

2.11.1 Dry ice (carbon dioxide, solid), when shipped by itself or when used as a refrigerant for other commodities, may be carried provided the operator has made suitable arrangements dependent on the aircraft type, the aircraft ventilation rates, the method of packing and stowing, whether animals will be carried on the same flight, and other factors. The operator must ensure that ground staff are informed that the dry ice is being loaded or is on board the aircraft.

2.11.2 Where dry ice is contained in a unit load device or other type of pallet prepared by a single shipper in accordance with Packing Instruction 904 and the operator, after acceptance, adds additional dry ice, then the operator must ensure that the information provided to the pilot-in-command reflects that revised quantity of dry ice.

Note.— For arrangements between the shipper and operator see Packing Instruction 904.

2.12 LOADING OF EXPANDABLE POLYMERIC BEADS

A total of not more than 100 kg net mass of expandable polymeric beads (or granules), or plastic moulding materials, referenced to Packing Instruction 908, may be carried in any inaccessible hold on any aircraft.

2.13 HANDLING OF SELF-REACTIVE SUBSTANCES AND ORGANIC PEROXIDES

During the course of transport, packages or unit load devices containing self-reactive substances of Division 4.1 or organic peroxides of Division 5.2 must be shaded from direct sunlight, stored away from all sources of heat in a well-ventilated area.

Chapter 3

INSPECTION AND DECONTAMINATION

Parts of this Chapter are affected by State Variations AE 4, AE 7, CA 4, IT 4; see Table A-1

3.1 INSPECTION FOR DAMAGE OR LEAKAGE

3.1.1 It is the operator's responsibility to ensure that a package or overpack containing dangerous goods is not loaded onto an aircraft or into a unit load device unless it has been inspected immediately prior to loading and found free from evidence of leakage or damage.

3.1.2 A unit load device must not be loaded aboard an aircraft unless the device has been inspected and found free from any evidence of leakage from or damage to any dangerous goods contained therein.

3.1.3 Packages or overpacks containing dangerous goods must be inspected for signs of damage or leakage upon unloading from the aircraft or unit load device. If evidence of damage or leakage is found, the position where the dangerous goods or unit load device was stowed on the aircraft must be inspected for damage or contamination and any hazardous contamination removed. The special responsibilities of operators regarding infectious substances are detailed in 3.1.4.

3.1.4 If any person responsible for the carriage of packages containing infectious substances becomes aware of damage to or leakage from such a package, that person must:

a) avoid handling the package or keep handling to a minimum;

b) inspect adjacent packages for contamination and put aside any that may have been contaminated;

c) inform the appropriate public health authority or veterinary authority and provide information on any other countries of transit where persons may have been exposed to danger;

d) notify the shipper and/or the consignee.

3.2 DAMAGED OR LEAKING PACKAGES OF RADIOACTIVE MATERIAL, CONTAMINATED PACKAGINGS

3.2.1 If it is evident that a package is damaged or leaking, or if it is suspected that the package may have leaked or been damaged, access to the package must be restricted and a qualified person must, as soon as possible, assess the extent of contamination and the resultant radiation level of the package. The scope of the assessment must include the package, the aircraft, the adjacent loading and unloading areas and, if necessary, all other material which has been carried in the aircraft. When necessary, additional steps for the protection of persons' property and the environment, in accordance with provisions established by the relevant competent authority, must be taken to overcome and minimize the consequences of such leakage or damage.

3.2.2 Packages damaged or leaking radioactive contents in excess of allowable limits for normal conditions of transport may be removed to an acceptable interim location under supervision, but must not be forwarded until repaired or reconditioned and decontaminated.

3.2.3 An aircraft and equipment used regularly for the transport of radioactive material must be periodically checked to determine the level of contamination. The frequency of such checks must be related to the likelihood of contamination and the extent to which radioactive material is transported.

3.2.4 Except as provided in 3.2.5, any aircraft or equipment or part thereof which has become contaminated above the limits specified in 4;9.1.2 in the course of the transport of radioactive material, or which shows a radiation level in excess of 5 mSv/h at the surface, must be decontaminated as soon as possible by a qualified person and must not be re-used unless the non-fixed contamination does not exceed the limits specified in 4;9.1.2, and the radiation level resulting from the fixed contamination on surfaces after decontamination is less than 5 μSv/h at the surface.

3.2.5 An overpack, freight container, or aircraft dedicated to the transport of radioactive material under exclusive use must be excepted from the requirements of 4;9.1.4 and 3.2.4 solely with regard to its internal surfaces and only for as long as it remains under that specific exclusive use.

3.3 DEALING WITH SUSPECTED CONTAMINATED BAGGAGE OR CARGO

If an operator becomes aware that baggage or cargo not identified as containing dangerous goods has been contaminated and it is suspected that dangerous goods may be the cause of the contamination, the operator must take reasonable steps to identify the nature and source of the contamination before proceeding with the loading of the contaminated baggage or cargo. If the contaminating substance is found or suspected to be a substance classified as dangerous goods by these Instructions, the operator must isolate the baggage or cargo and take appropriate steps to nullify any identified hazard before the baggage or cargo is transported further by air.

Chapter 4

PROVISION OF INFORMATION

Parts of this Chapter are affected by State Variations AE 8, AU 4, CA 4, CA 19, CH 2, FR 9, FR 10, GB 4, MY 4, MY 5, US 12, US 13, US 15, VU 3, VU 4; see Table A-1

INTRODUCTORY NOTE

Operators' responsibilities for the provision of information to passengers are shown in Part 8.

4.1 INFORMATION TO THE PILOT-IN-COMMAND

4.1.1 The operator of an aircraft in which dangerous goods are to be carried must provide the pilot-in-command, as early as practicable before departure of the aircraft, with accurate and legible written or printed information concerning dangerous goods that are to be carried as cargo.

Note.— This includes information about dangerous goods loaded at a previous departure point and which are to be carried on the subsequent flight.

≠ Except as otherwise provided, this information must include the following:

a) the air waybill number (when issued);

≠ b) the proper shipping name (supplemented with the technical name(s) if appropriate; see 3;1) and UN Number or ID number as listed in these Instructions. When chemical oxygen generators contained in protective breathing equipment (PBE) are being transported under Special Provision A144, the proper shipping name of "oxygen generator, chemical" must be supplemented with the statement "Aircrew protective breathing equipment (smoke hood) in accordance with Special Provision A144".

c) the class or division, and subsidiary risk(s) corresponding to the subsidiary risk label(s) applied, by numerals, and in the case of Class 1, the compatibility group;

d) the packing group shown on the dangerous goods transport document;

e) the number of packages and their exact loading location. For radioactive material see g) below;

≠ f) the net quantity, or gross mass if applicable, of each package, except that this does not apply to radioactive material or other dangerous goods where the net quantity or gross mass is not required on the dangerous goods transport document (see 5;4.1.4). For a consignment consisting of multiple packages containing dangerous goods bearing the same proper shipping name and UN number or ID number, only the total quantity and an indication of the quantity of the largest and smallest package at each loading location need to be provided. For unit load devices or other types of pallets containing consumer commodities accepted from a single shipper, the number of packages and the average gross mass need to be provided;

g) for radioactive material the number of packages, overpacks or freight containers, their category, their transport index (if applicable) and their exact loading location;

h) whether the package must be carried on cargo aircraft only;

i) the aerodrome at which the package(s) is to be unloaded;

j) where applicable, an indication that the dangerous goods are being carried under a State exemption; and

k) the telephone number where a copy of the information provided to the pilot-in-command can be obtained during the flight if the operator allows the pilot-in-command to provide a telephone number instead of the details about the dangerous goods on board the aircraft, as specified in 4.3.

\+ 4.1.2 For UN 1845 — **Carbon dioxide, solid** (dry ice), only the UN number, proper shipping name, class, total quantity in each hold on the aircraft and the aerodrome at which the package(s) is to be unloaded need to be provided.

4.1.3 The information provided to the pilot-in-command must also include a signed confirmation, or some other indication, from the person responsible for loading the aircraft that there was no evidence of any damage to or leakage from the packages loaded on the aircraft.

4.1.4 The information provided to the pilot-in-command must be readily available to the pilot-in-command during flight.

4.1.5 This information provided to the pilot-in-command should be presented on a dedicated form and should not be by means of air waybills, dangerous goods transport documents, invoices, etc.

4.1.6 The pilot-in-command must indicate on a copy of the information provided to the pilot-in-command, or in some other way, that the information has been received.

4.1.7 A legible copy of the information provided to the pilot-in-command must be retained on the ground. This copy must have an indication on it, or with it, that the pilot-in-command has received the information. This copy, or the information contained in it, must be readily accessible to the aerodromes of last departure and next scheduled arrival point, until after the flight to which the information refers.

4.1.8 In addition to the languages which may be required by the State of the Operator, English should be used for the information provided to the pilot-in-command.

4.1.9 In the event that the volume of information provided to the pilot-in-command is such that in-flight radiotelephony transmission would be impracticable in an emergency situation, a summary of the information should also be provided by the operator, containing at least the quantities and class or division of the dangerous goods in each cargo compartment.

4.2 INFORMATION TO BE PROVIDED TO EMPLOYEES

An operator must provide such information in the operations manual and/or other appropriate manuals as will enable flight crews and other employees to carry out their responsibilities with regard to the transport of dangerous goods. This information must include instructions as to the action to be taken in the event of emergencies involving dangerous goods, and details of the location and numbering system of cargo compartments together with:

a) the maximum quantity of dry ice permitted in each compartment; and

b) if radioactive material is to be carried, instructions on the loading of such dangerous goods based on the requirements of 7;2.9.

Where applicable, this information must also be provided to ground handling agents.

4.3 INFORMATION TO BE PROVIDED BY THE PILOT-IN-COMMAND IN CASE OF IN-FLIGHT EMERGENCY

If an in-flight emergency occurs, the pilot-in-command must, as soon as the situation permits, inform the appropriate air traffic services unit, for the information of aerodrome authorities, of any dangerous goods carried as cargo on board an aircraft. Wherever possible this information should include the proper shipping name and/or UN number, the class/division and, for Class 1, the compatibility group, any identified subsidiary risk(s), the quantity and the location on board the aircraft, or a telephone number where a copy of the information provided to the pilot-in-command can be obtained. When it is not considered possible to include all the information, those parts thought most relevant in the circumstances or a summary of the quantities and class or division of dangerous goods in each cargo compartment should be given.

4.4 REPORTING OF DANGEROUS GOODS ACCIDENTS AND INCIDENTS

An operator must report dangerous goods accidents and incidents to the appropriate authorities of the State of the Operator and the State in which the accident or incident occurred in accordance with the reporting requirements of those appropriate authorities.

+ *Note.— This includes incidents involving dangerous goods that are not subject to all or part of the Technical Instructions through the application of an exception or of a special provision (e.g. an incident involving the short circuiting of a dry cell battery that is required to meet short circuit prevention conditions in a special provision of 3;3).*

4.5 REPORTING OF UNDECLARED OR MISDECLARED DANGEROUS GOODS

An operator must report any occasion when undeclared or misdeclared dangerous goods are discovered in cargo. Such a report must be made to the appropriate authorities of the State of the Operator and the State in which this occurred. An

operator must also report any occasion when dangerous goods not permitted under 8;1.1.1 are discovered in passengers' baggage. Such a report must be made to the appropriate authority of the State in which this occurred.

4.6 INFORMATION BY THE OPERATOR IN CASE OF AN AIRCRAFT ACCIDENT OR INCIDENT

4.6.1 In the event of:

a) an aircraft accident; or

b) a serious incident where dangerous goods carried as cargo may be involved,

the operator of the aircraft carrying dangerous goods as cargo must, without delay, provide to emergency services responding to the accident or serious incident, information about the dangerous goods on board, as shown on the copy of the information provided to the pilot-in-command. As soon as possible, the operator must also provide this information to the appropriate authorities of the State of the Operator and the State in which the accident or serious incident occurred.

4.6.2 In the event of an aircraft incident, if requested to do so, the operator of an aircraft carrying dangerous goods as cargo must, without delay, provide to emergency services responding to the incident and to the appropriate authority of the State in which the incident occurred, information about the dangerous goods on board, as shown on the copy of the information provided to the pilot-in-command.

Note.— The terms "accident", "serious incident" and "incident" are as defined in Annex 13.

4.6.3 Operators must address the provisions of 4.6.1 and 4.6.2 in appropriate manuals and accident contingency plans.

4.7 CARGO ACCEPTANCE AREAS — PROVISION OF INFORMATION

An operator or the operator's handling agent must ensure that notices giving information about the transport of dangerous goods, sufficient in number and prominently displayed, are provided at acceptance points for cargo.

4.8 EMERGENCY RESPONSE INFORMATION

The operator must ensure that for consignments for which a dangerous goods transport document is required by these Instructions, appropriate information is immediately available at all times for use in emergency response to accidents and incidents involving dangerous goods in air transport. The information must be available to the pilot-in-command and can be provided by:

a) the ICAO document *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481); or

b) any other document which provides similar information concerning the dangerous goods on board.

4.9 TRAINING

≠ An operator must ensure training is provided in accordance with the detailed requirements of 1;4 to all relevant employees, including those of agencies employed to act on the operator's behalf, to enable them to carry out their responsibilities with regard to the transport of dangerous goods, passengers and their baggage, cargo, mail and stores.

4.10 RETENTION OF DOCUMENTS

The operator must ensure that at least one copy of the documents appropriate to the transport by air of a consignment of dangerous goods is retained for a minimum period of three months, or such other period as specified by the States concerned, after the flight on which the dangerous goods were transported. As a minimum, the documents which must be retained are the dangerous goods transport documents, the acceptance checklist (when this is in a form which requires physical completion) and the written information to the pilot-in-command.

Note.— Where the documents are kept electronically or in a computer system, they should be capable of being reproduced in a printed manner.

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Chapter 5

PROVISIONS CONCERNING PASSENGERS AND CREW

5.1 INFORMATION TO PASSENGERS

5.1.1 An operator must ensure that information on the types of dangerous goods which a passenger is forbidden to transport aboard an aircraft is provided with the passenger ticket or made available in another manner to passengers prior to the check-in process.

≠ 5.1.2 An operator or the operator's handling agent and the airport operator must ensure that notices warning passengers of the types of dangerous goods which they are forbidden to transport aboard an aircraft are prominently displayed, in sufficient number, at each of the places at an airport where tickets are issued, passengers are checked in and aircraft boarding areas are maintained, and at any other location where passengers are checked in. These notices must include visual examples of dangerous goods forbidden from transport aboard an aircraft.

\+ *Note.— Existing notices that do not include visual examples of dangerous goods may continue in place until 31 December 2009 after which time the requirements specified above will apply.*

5.2 PASSENGER CHECK-IN PROCEDURES

5.2.1 Operators' check-in staff must be adequately trained to assist them in identifying and detecting dangerous goods carried by passengers other than as permitted in 8;1.1.2.

5.2.2 With the aim of preventing dangerous goods, which passengers are not permitted to have, from being taken aboard an aircraft in passengers' baggage or on their person, check-in staff should seek confirmation from a passenger that they are not carrying dangerous goods that are not permitted, and seek further confirmation about the contents of any item where there are suspicions that it may contain dangerous goods that are not permitted. Many innocuous-looking items may contain dangerous goods, and a list of general descriptions which, experience has shown, often apply to such items is shown in 7;6.

Chapter 6

PROVISIONS TO AID RECOGNITION OF UNDECLARED DANGEROUS GOODS

6.1 With the aim of preventing undeclared dangerous goods from being loaded on an aircraft and of preventing passengers from taking on board those dangerous goods which they are not permitted to have in their baggage (see 8;1.1.2), information about:

a) general descriptions that are often used for items in cargo or in passengers' baggage which may contain dangerous goods;

b) other indications that dangerous goods may be present (e.g. labels, markings); and

c) those dangerous goods which may be carried by passengers in accordance with 8;1.1.2,

must be provided to cargo acceptance staff and passenger check-in staff as appropriate and must be readily available to such staff. The following is a list of general descriptions and the types of dangerous goods that may be included in any item bearing that description.

aircraft on ground (AOG) spares — may contain explosives (flares or other pyrotechnics), chemical oxygen generators, unserviceable tire assemblies, cylinders of compressed gas (oxygen, carbon dioxide or fire extinguishers), fuel in equipment, wet or lithium batteries, matches

automobile parts (car, motor, motorcycle) — may include engines, carburettors or fuel tanks that contain or have contained fuel, wet batteries, compressed gases in tire inflation devices and fire extinguishers, air bags, etc.

breathing apparatus — may indicate cylinders of compressed air or oxygen, chemical oxygen generators or refrigerated liquefied oxygen

camping equipment — may contain flammable gases (butane, propane, etc.), flammable liquids (kerosene, gasoline, etc.) or flammable solids (hexamine, matches, etc.)

cars, car parts — see automobile parts, etc.

chemicals — may contain items meeting any of the criteria for dangerous goods, particularly flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances

consolidated consignments (groupages) — may contain any of the defined classes of dangerous goods

cryogenic (liquid) — indicates refrigerated liquefied gases such as argon, helium, neon, nitrogen, etc.

cylinders — may contain compressed or liquefied gas

dental apparatus — may contain flammable resins or solvents, compressed or liquefied gas, mercury and radioactive material

diagnostic specimens — may contain infectious substances

diving equipment — may contain cylinders of compressed gas (e.g. air or oxygen). May also contain high intensity diving lamps that can generate extreme heat when operated in air. In order to be carried safely, the bulb or battery should be disconnected

drilling and mining equipment — may contain explosive(s) and/or other dangerous goods

dry shipper (vapour shipper) — may contain free liquid nitrogen. Dry shippers are not subject to these Instructions only when they do not permit the release of any free liquid nitrogen irrespective of the orientation of the packaging

electrical equipment — may contain magnetized material, mercury in switch gear, electron tubes or wet batteries

electrically powered apparatus (wheelchairs, lawnmowers, golf carts, etc.) — may contain wet batteries

expeditionary equipment — may contain explosives (flares), flammable liquids (gasoline), flammable gas (gas for camping equipment) or other dangerous goods

film crew and media equipment — may contain explosive pyrotechnic devices, generators incorporating internal combustion engines, wet batteries, fuel, heat-producing items, etc.

frozen embryos — may be packed in refrigerated liquefied gas or dry ice

frozen fruit, vegetables, etc. — may be packed in dry ice (solid carbon dioxide)

fuel control units — may contain flammable liquids

hot-air balloon — may contain cylinders with flammable gas, fire extinguishers, engines internal combustion, batteries, etc.

household goods — may contain items meeting any of the criteria for dangerous goods. Examples include flammable liquids such as solvent-based paint, adhesives, polishes, aerosols (for passengers, those not permitted under 8;1.1.2), bleach, corrosive oven or drain cleaners, ammunition, matches, etc.

instruments — may conceal barometers, manometers, mercury switches, rectifier tubes, thermometers, etc., containing mercury

laboratory/testing equipment — may contain items meeting any of the criteria for dangerous goods, particularly flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances

machinery parts — may contain flammable adhesives, paints, sealants and solvents, wet and lithium batteries, mercury, cylinders of compressed or liquefied gas, etc.

magnets and other items of similar material — may individually or cumulatively meet the definition of magnetized material (see 2;9.2.1)

medical supplies — may contain items meeting any of the criteria for dangerous goods, particularly flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances

metal construction material — may contain ferromagnetic material which may be subject to special stowage requirements due to the possibility of affecting aircraft instruments (see 2;9.2.1)

metal fencing — may contain ferromagnetic material which may be subject to special stowage requirements due to the possibility of affecting aircraft instruments (see 2;9.2.1)

metal piping — may contain ferromagnetic material which may be subject to special stowage requirements due to the possibility of affecting aircraft instruments (see 2;9.2.1)

passengers' baggage — may contain items meeting any of the criteria for dangerous goods. Examples include fireworks, flammable household liquids, corrosive oven or drain cleaners, flammable gas or liquid lighter refills or camping stove cylinders, matches, ammunition, bleach, aerosols (not permitted under 8;1.1.2), etc.

pharmaceuticals — may contain items meeting any of the criteria for dangerous goods, particularly radioactive material, flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances

photographic supplies — may contain items meeting any of the criteria for dangerous goods, particularly heat-producing devices, flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances

racing car or motorcycle team equipment — may contain engines, carburettors or fuel tanks that contain fuel or residual fuel, wet batteries, flammable aerosols, nitromethane or other gasoline additives, cylinders of compressed gases, etc.

refrigerators — may contain liquefied gases or an ammonia solution

repair kits — may contain organic peroxides and flammable adhesives, solvent-based paints, resins, etc.

samples for testing — may contain items meeting any of the criteria for dangerous goods, particularly infectious substances, flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances

semen — may be packed with dry ice or refrigerated liquefied gas (see also dry shipper)

ships' spares — may contain explosives (flares), cylinders of compressed gas (life rafts), paint, lithium batteries (emergency locator transmitters), etc.

swimming pool chemicals — may contain oxidizing or corrosive substances

switches in electrical equipment or instruments — may contain mercury

tool boxes — may contain explosives (power rivets), compressed gases or aerosols, flammable gases (Butane cylinders or torches), flammable adhesives or paints, corrosive liquids, etc.

torches — micro torches and utility lighters may contain flammable gas and be equipped with an electronic starter. Larger torches may consist of a torch head (often with a self-igniting switch) attached to a container or cylinder of flammable gas.

unaccompanied passengers' baggage/personal effects — may contain items meeting any of the criteria for dangerous goods. Examples include fireworks, flammable household liquids, corrosive oven or drain cleaners, flammable gas or liquid lighter refills or camping stove cylinders, matches, bleach, aerosols, etc.

vaccines — may be packed in dry ice (solid carbon dioxide).

Part 8

PROVISIONS CONCERNING PASSENGERS AND CREW

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Chapter 1

PROVISIONS FOR DANGEROUS GOODS CARRIED BY PASSENGERS OR CREW

Parts of this Chapter are affected by State Variations CH 1, US 15; see Table A-1

1.1 DANGEROUS GOODS CARRIED BY PASSENGERS OR CREW

1.1.1 Except as otherwise provided in 1.1.2, dangerous goods, including excepted packages of radioactive material, must not be carried by passengers or crew members, either as or in carry-on baggage or checked baggage or on their person. Security type equipment such as attaché cases, cash boxes, cash bags, etc., incorporating dangerous goods, for example lithium batteries or pyrotechnic material, are totally forbidden; see entry in Table 3-1. Personal medical oxygen devices that utilize liquid oxygen are prohibited either as or in carry-on baggage or checked baggage or on the person.

1.1.2 Notwithstanding any additional restrictions which may be implemented by States in the interests of aviation security, except for the incident reporting provisions of 7;4.4, the provisions of these Instructions do not apply to the following when carried by passengers or crew members or in baggage that has been separated from its owner during transit (e.g. lost baggage or improperly routed baggage):

Medical necessities

a) with the approval of the operator(s), small gaseous oxygen or air cylinders required for medical use. Each cylinder must not exceed 5 kg gross mass. Cylinders, valves and regulators, where fitted, must be protected from damage which could cause inadvertent release of the contents;

Note.— Devices containing liquid oxygen are forbidden as or in carry-on baggage, checked baggage or on the person.

b) cylinders of a gas of Division 2.2 worn for the operation of mechanical limbs, also spare cylinders of a similar size if required to ensure an adequate supply for the duration of the journey;

c) non-radioactive medicinal articles (including aerosols). The total net quantity of each single article must not exceed 0.5 kg or 0.5 L. Release valves on aerosols must be protected by a cap or other suitable means to prevent inadvertent release of the contents.

The total net quantity of all articles mentioned in 1.1.2 c), h) and k) must not exceed 2 kg or 2 L (e.g. four aerosol cans of 500 mL each) for each person.

d) radioisotopic cardiac pacemakers or other devices, including those powered by lithium batteries, implanted into a person, or radio-pharmaceuticals contained within the body of a person as the result of medical treatment;

e) with the approval of the operator(s), wheelchairs or other battery-powered mobility aids with non-spillable batteries (see Packing Instruction 806 and Special Provision A67), as checked baggage provided the battery terminals are protected from short circuits and the battery is securely attached to the wheelchair or mobility aid;

f) with the approval of the operator(s), wheelchairs or other battery-powered mobility aids with spillable batteries as checked baggage, provided that the wheelchair or mobility aid can be loaded, stowed, secured and unloaded always in an upright position and that the battery is disconnected, the battery terminals are protected from short circuits and the battery is securely attached to the wheelchair or mobility aid. If the wheelchair or mobility aid cannot be loaded, stowed, secured and unloaded always in an upright position, the battery must be removed and the wheelchair or mobility aid may then be carried as checked baggage without restriction. The removed battery must be carried in strong, rigid packagings as follows:

1) these packagings must be leaktight, impervious to battery fluid and be protected against upset by securing them to pallets or by securing them in cargo compartments using appropriate means of securement (other than by bracing with freight or baggage) such as by use of restraining straps, brackets or holders;

2) batteries must be protected against short circuits, secured upright in these packagings and surrounded by compatible absorbent material sufficient to absorb their total liquid contents; and

3) these packagings must be marked “Battery, wet, with wheelchair” or “Battery, wet, with mobility aid” and be labelled with a “Corrosive” label (Figure 5-22) and with a package orientation label (Figure 5-26).

The pilot-in-command must be informed of the location of a wheelchair or mobility aid with an installed battery or the location of a packed battery.

It is recommended that passengers make advance arrangements with each operator; also unless batteries are non-spillable they should be fitted, where feasible, with spill-resistant vent caps;

g) one small medical or clinical thermometer which contains mercury, for personal use, when in its protective case;

Articles used in dressing or grooming

h) toiletry articles (including aerosols). The total net quantity of each single article must not exceed 0.5 kg or 0.5 L. Release valves on aerosols must be protected by a cap or other suitable means to prevent inadvertent release of the contents. The term “toiletry articles (including aerosols)” is intended to include such items as hair sprays, perfumes and colognes.

The total net quantity of all articles mentioned in 1.1.2 c), h) and k) must not exceed 2 kg or 2 L (e.g. four aerosol cans of 500 mL each) for each person.

i) hair curlers containing hydrocarbon gas, no more than one per person, provided that the safety cover is securely fitted over the heating element. Gas refills for such curlers must not be carried;

Consumer articles

j) when in retail packagings, alcoholic beverages containing more than 24 per cent but not more than 70 per cent alcohol by volume, in receptacles not exceeding 5 L, with a total net quantity per person of 5 L for such beverages.

Note.— Alcoholic beverages containing not more than 24 per cent alcohol by volume are not subject to any restrictions.

k) Aerosols in Division 2.2, with no subsidiary risk, for sporting or home use is permitted in checked baggage only. The total net quantity of each single article must not exceed 0.5 kg or 0.5 L. Release valves on aerosols must be protected by a cap or other suitable means to prevent inadvertent release of the contents.

The total net quantity of all articles mentioned in 1.1.2 c), h) and k) must not exceed 2 kg or 2 L (e.g. four aerosol cans of 500 mL each) for each person.

l) with the approval of the operator(s), as checked baggage only, securely packaged cartridges (UN 0012 or UN 0014 only), in Division 1.4S, in quantities not exceeding 5 kg gross mass per person for that person’s own use, excluding ammunition with explosive or incendiary projectiles. Allowances for more than one person must not be combined into one or more packages;

m) one small packet of safety matches or a cigarette lighter that does not contain unabsorbed liquid fuel (other than liquefied gas), intended for use by an individual when carried on the person. Matches and lighters are not permitted in checked or carry-on baggage. Lighter fuel and lighter refills are not permitted on one’s person, in carry-on or checked baggage;

Note.— “Strike anywhere” matches are forbidden for air transport.

n) with the approval of the operator(s), battery-powered equipment capable of generating extreme heat, which could cause a fire if activated (e.g. underwater high intensity lamps) providing that the heat producing component or the battery is packed separately so as to prevent activation during transport. Any battery which has been removed must be protected against short circuit;

o) with the approval of the operator(s), one avalanche rescue backpack per person equipped with a pyrotechnic trigger mechanism containing not more than 200 mg net of Division 1.4S and a cylinder of compressed gas of Division 2.2 not exceeding 250 mL. The backpack must be packed in such a manner that it cannot be accidentally activated. The airbags within the backpack must be fitted with pressure relief valves;

p) with the approval of the operator(s), no more than two small cylinders of carbon dioxide or another suitable gas in Division 2.2, per person, fitted into a self-inflating life-jacket for inflation purposes, plus no more than two spare cartridges;

q) consumer electronic devices (watches, calculating machines, cameras, cellular phones, laptop computers, camcorders, etc.) containing lithium or lithium ion cells or batteries when carried by passengers or crew for personal use, which should be carried as carry-on baggage. Spare batteries must be individually protected so as to prevent short circuits (by placement in original retail packaging or by otherwise insulating terminals, e.g. by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch) and carried in carry-on baggage only. In addition, each installed or spare battery must not exceed the following:

— for lithium metal or lithium alloy batteries, a lithium content of not more than 2 grams; or

— for lithium ion batteries, a watt-hour rating of not more than 100 Wh.

With the approval of the operator, lithium ion batteries exceeding a watt-hour rating of 100 Wh but not exceeding 160 Wh may be carried as spare batteries in carry-on baggage or in equipment in either checked or carry-on baggage. No more than two individually protected spare batteries per person may be carried.

r) fuel cell systems used to power portable electronic devices (for example cameras, cellular phones, laptop computers and camcorders) and spare fuel cartridges, under the following conditions:

1) fuel cell cartridges may only contain flammable liquids, corrosive substances, liquefied flammable gas, water reactive substances or hydrogen in metal hydride;

2) fuel cell cartridges must not be refillable by the user. Refuelling of fuel cell systems is not permitted except that the installation of a spare cartridge is allowed. Fuel cell cartridges which are used to refill fuel cell systems but which are not designed or intended to remain installed (fuel cell refills) are not permitted to be carried;

3) the maximum quantity of fuel in any fuel cell cartridge must not exceed:

a) for liquids 200 mL;

b) for solids 200 grams;

c) for liquefied gases, 120 mL for non-metallic fuel cell cartridges or 200 mL for metal fuel cell cartridges;

For hydrogen in metal hydride, the fuel cell cartridges must have a water capacity of 120 mL or less;

4) each fuel cell system and each fuel cell cartridge must conform to IEC PAS 62282-6-1 Ed. 1, and must be marked with a manufacturer's certification that it conforms to the specification. In addition, each fuel cell cartridge must be marked with the maximum quantity and type of fuel in the cartridge;

5) fuel cell cartridges containing hydrogen in metal hydride must comply with the requirements in Special Provision A162.

6) no more than two spare fuel cell cartridges may be carried by a passenger;

7) fuel cell systems containing fuel and fuel cell cartridges including spare cartridges are permitted in carry-on baggage only;

8) interaction between fuel cells and integrated batteries in a device must conform to IEC PAS 62282-6-1 Ed. 1. Fuel cell systems whose sole function is to charge a battery in the device are not permitted;

9) fuel cell systems must be of a type that will not charge batteries when the portable electronic device is not in use and must be durably marked by the manufacturer: "APPROVED FOR CARRIAGE IN AIRCRAFT CABIN ONLY" to so indicate; and

10) in addition to the languages which may be required by the State of Origin for the markings specified above, English should be used.

s) with the approval of the operator, dry ice in quantities not exceeding 2.5 kg per person, when used to pack perishables that are not subject to these Instructions, provided the package permits the release of carbon dioxide gas. When carried in checked baggage, each package must be marked:

— "DRY ICE" or "CARBON DIOXIDE, SOLID"; and

— with the net weight of dry ice or an indication that the net weight is 2.5 kg or less;

t) with the approval of the operator(s), as carry-on baggage only, a mercurial barometer or mercurial thermometer carried by a representative of a government weather bureau or similar official agency. The barometer or thermometer must be packed in a strong outer packaging, having a sealed inner liner or a bag of strong leakproof and puncture-resistant material impervious to mercury, which will prevent the escape of mercury from the package irrespective of its position. The pilot- in-command must be informed of the barometer or thermometer;

u) with the approval of the operator(s), as carry-on or checked baggage, instruments containing radioactive material not exceeding the activity limits specified in Table 2-15 (i.e. chemical agent monitor (CAM) and/or rapid alarm and identification device monitor (RAID-M)), securely packed and without lithium batteries, when carried by staff members of the Organization for the Prohibition of Chemical Weapons (OPCW) on official travel.

1.1.3 Any organization or enterprise other than an operator (such as a travel agent), involved in the air transport of passengers, should provide passengers with information about the types of dangerous goods which they are forbidden to transport aboard an aircraft. This information should consist of, as a minimum, notices at those locations where there is an interface with the passengers.

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Attachment 1

LISTS OF PROPER SHIPPING NAMES

Chapter 1
LIST OF UN NUMBERS WITH ASSOCIATED PROPER SHIPPING NAMES

0004 **Ammonium picrate** dry or wetted with less than 10% water, by mass

0005 **Cartridges for weapons** with bursting charge

0006 **Cartridges for weapons** with bursting charge

0007 **Cartridges for weapons** with bursting charge

0009 **Ammunition, incendiary** with or without burster, expelling charge or propelling charge

0010 **Ammunition, incendiary** with or without burster, expelling charge or propelling charge

0012 **Cartridges for weapons, inert projectile**

or **Cartridges, small arms**

0014 **Cartridges for weapons, blank**

or **Cartridges, small arms, blank**

0015 **Ammunition, smoke** with or without burster, expelling charge or propelling charge

0016 **Ammunition, smoke** with or without burster, expelling charge or propelling charge

0018 **Ammunition, tear-producing** with burster, expelling charge or propelling charge

0019 **Ammunition, tear-producing** with burster, expelling charge or propelling charge

0020 **Ammunition, toxic** with burster, expelling charge orpropelling charge

0021 **Ammunition, toxic** with burster, expelling charge orpropelling charge

0027 **Black powder**, granular or as a meal

or **Gunpowder**, granular or as a meal

0028 **Black powder, compressed**

or **Black powder in pellets**

or **Gunpowder, compressed**

or **Gunpowder in pellets**

0029 **Detonators, non-electric** for blasting

0030 **Detonators, electric** for blasting

0033 **Bombs** with bursting charge

0034 **Bombs** with bursting charge

0035 **Bombs** with bursting charge

0037 **Bombs, photo-flash**

0038 **Bombs, photo-flash**

0039 **Bombs, photo-flash**

0042 **Boosters** without detonator

0043 **Bursters**, explosive

0044 **Primers, cap type**

0048 **Charges, demolition**

0049 **Cartridges, flash**

0050 **Cartridges, flash**

0054 **Cartridges, signal**

0055 **Cases, cartridge, empty, with primer**

0056 **Charges, depth**

0059 **Charges, shaped** without detonator

0060 **Charges, supplementary, explosive**

0065 **Cord, detonating**, flexible

0066 **Cord, igniter**

0070 **Cutters, cable, explosive**

0072 **Cyclonite, wetted** with not less than 15% water, by mass

or **Cyclotrimethylenetrinitramine, wetted** with not less than 15% water, by mass

or **Hexogen, wetted** with not less than 15% water, by mass

or **RDX, wetted** with not less than 15% water, by mass

0073 **Detonators for ammunition**

0074 **Diazodinitrophenol, wetted** with not less than 40% water, or mixture of alcohol and water, by mass

0075 **Diethyleneglycol dinitrate, desensitized** with not less than 25% non-volatile, water-insoluble phlegmatizer, by mass

0076 **Dinitrophenol**, dry or wetted with less than 15% water, by mass

0077 **Dinitrophenolates**, alkali metals, dry or wetted with less than 15% water, by mass

0078 **Dinitroresorcinol**, dry or wetted with less than 15% water, by mass

0079 **Dipicrylamine**

or **Hexanitrodiphenylamine**

or **Hexyl**

0081 **Explosive, blasting, type A**

0082 **Explosive, blasting, type B**

0083 **Explosive, blasting, type C**

0084 **Explosive, blasting, type D**

0092 **Flares, surface**

0093 **Flares, aerial**

0094 **Flash powder**

0099 **Fracturing devices, explosive**, without detonator for oil wells

0101 **Fuse, non-detonating**

0102 **Cord, detonating**, metal clad

or **Fuse, detonating**, metal clad

0103 **Fuse, igniter**, tubular, metal clad

0104 **Cord, detonating, mild effect**, metal clad

or **Fuse, detonating, mild effect**, metal clad

0105 **Fuse, safety**

0106 **Fuzes, detonating**

0107 **Fuzes, detonating**

0110 **Grenades, practice**, hand or rifle

0113 **Guanyl nitrosaminoguanylidene hydrazine, wetted** with not less than 30% water, by mass

0114 **Guanyl nitrosaminoguanyltetrazene, wetted** with not less than 30% water, or mixture of alcohol and water, by mass

or **Tetrazene, wetted** with not less than 30% water, or mixture of alcohol and water, by mass

0118 **Hexolite**, dry or wetted with less than 15% water, by mass

or **Hexotol**, dry or wetted with less than 15% water, by mass

0121 **Igniters**

0124 **Jet perforating guns, charged**, oil well, without detonator

0129 **Lead azide, wetted** with not less than 20% water, or mixture of alcohol and water, by mass

0130 **Lead styphnate, wetted** with not less than 20% water, or mixture of alcohol and water, by mass

or **Lead trinitroresorcinate, wetted** with not less than 20% water, or mixture of alcohol and water, by mass

0131 **Lighters, fuse**

0132 **Deflagrating metal salts of aromatic nitro-derivatives, n.o.s.**

0133 **Mannitol hexanitrate, wetted** with not less than 40% water, or mixture of alcohol and water, by mass

or **Nitromannite, wetted** with not less than 40% water, or mixture of alcohol and water, by mass

0135 **Mercury fulminate, wetted** with not less than 20% water, or mixture of alcohol and water, by mass

0136 **Mines** with bursting charge

0137 **Mines** with bursting charge

0138 **Mines** with bursting charge

0143 **Nitroglycerin, desensitized** with not less than 40% non-volatile water-insoluble phlegmatizer, by mass

0144 **Nitroglycerin solution in alcohol** with more than 1% but not more than 10% nitroglycerin

0146 **Nitrostarch**, dry or wetted with less than 20% water, by mass

0147 **Nitro urea**

0150 **Pentaerythrite tetranitrate, desensitized** with not less than 15% phlegmatizer by mass

or **Pentaerythrite tetranitrate, wetted** with not less than 25% water, by mass

or **Pentaerythritol tetranitrate, desensitized** with not less than 15% phlegmatizer, by mass

or **Pentaerythritol tetranitrate, wetted** with not less than 25% water, by mass

or **PETN, desensitized** with not less than 15% phlegmatizer, by mass

or **PETN, wetted** with not less than 25% water, by mass

0151 **Pentolite**, dry or wetted with less than 15% water, by mass

0153 **Picramide**

or **Trinitroaniline**

0154 **Picric acid**, dry or wetted with less than 30% water, by mass

or **Trinitrophenol**, dry or wetted with less than 30% water, by mass

0155 **Picryl chloride**

or **Trinitrochlorobenzene**

0159 **Powder cake, wetted** with not less than 25% water, by mass

or **Powder paste, wetted** with not less than 25% water, by mass

0160 **Powder, smokeless**

0161 **Powder, smokeless**

0167 **Projectiles** with bursting charge

0168 **Projectiles** with bursting charge

0169 **Projectiles** with bursting charge

0171 **Ammunition, illuminating** with or without burster, expelling charge or propelling charge

0173 **Release devices, explosive**

0174 **Rivets, explosive**

0180 **Rockets** with bursting charge

0181 **Rockets** with bursting charge

0182 **Rockets** with bursting charge

0183 **Rockets** with inert head

0186 **Rocket motors**

0190 **Samples, explosive**, other than initiating explosives

0191 **Signal devices, hand**

0192 **Signals, railway track, explosive**

0193 **Signals, railway track, explosive**

0194 **Signals, distress**, ship

0195 **Signals, distress**, ship

0196 **Signals, smoke**

0197 **Signals, smoke**

0204 **Sounding devices, explosive**

0207 **Tetranitroaniline**

0208 **Tetryl**

or **Trinitrophenylmethylnitramine**

0209 **TNT**, dry or wetted with less than 30% water, by mass

or **Trinitrotoluene**, dry or wetted with less than 30% water, by mass

0212 **Tracers for ammunition**

0213 **Trinitroanisole**

0214 **Trinitrobenzene**, dry or wetted with less than 30% water, by mass

0215 **Trinitrobenzoic acid**, dry or wetted with less than 30% water, by mass

0216 **Trinitro-m-cresol**

0217 **Trinitronaphthalene**

0218 **Trinitrophenetole**

0219 **Styphnic acid**, dry or wetted with less than 20% water, or mixture of alcohol and water, by mass

or **Trinitroresorcinol**, dry or wetted with less than 20% water, or mixture of alcohol and water, by mass

0220 **Urea nitrate**, dry or wetted with less than 20% water, by mass

0221 **Warheads, torpedo** with bursting charge

0222 **Ammonium nitrate** with more than 0.2% combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance

0224 **Barium azide**, dry or wetted with less than 50% water, by mass

0225 **Boosters with detonator**

0226 **Cyclotetramethylenetetranitramine, wetted** with not less than 15% water, by mass

or **HMX, wetted** with not less than 15% water, by mass

or **Octogen, wetted** with not less than 15% water, by mass

0234 **Sodium dinitro-o-cresolate**, dry or wetted with less than 15% water, by mass

0235 **Sodium picramate**, dry or wetted with less than 20% water, by mass

0236 **Zirconium picramate**, dry or wetted with less than 20% water, by mass

0237 **Charges, shaped, flexible, linear**

0238 **Rockets, line-throwing**

0240 **Rockets, line-throwing**

0241 **Explosive, blasting, type E**

0242 **Charges, propelling, for cannon**

0243 **Ammunition, incendiary, white phosphorus** with burster, expelling charge or propelling charge

0244 **Ammunition, incendiary, white phosphorus** with burster, expelling charge or propelling charge

0245 **Ammunition, smoke, white phosphorus** with burster, expelling charge or propelling charge

0246 **Ammunition, smoke, white phosphorus** with burster, expelling charge or propelling charge

0247 **Ammunition, incendiary**, liquid or gel, with burster, expelling charge or propelling charge

0248 **Contrivances, water-activated** with burster, expelling charge or propelling charge

0249 **Contrivances, water-activated** with burster, expelling charge or propelling charge

0250 **Rocket motors with hypergolic liquids** with or without expelling charge

0254 **Ammunition, illuminating** with or without burster, expelling charge or propelling charge

0255 **Detonators, electric** for blasting

0257 **Fuzes, detonating**

0266 **Octol**, dry or wetted with less than 15% water, by mass

or **Octolite**, dry or wetted with less than 15% water, by mass

0267 **Detonators, non-electric** for blasting

0268 **Boosters with detonator**

0271 **Charges, propelling**

0272 **Charges, propelling**

0275 **Cartridges, power device**

0276 **Cartridges, power device**

0277 **Cartridges, oil well**

0278 **Cartridges, oil well**

0279 **Charges, propelling, for cannon**

0280 **Rocket motors**

0281 **Rocket motors**

0282 **Nitroguanidine**, dry or wetted with less than 20% water,

or **Picrite**, dry or wetted with less than 20% water, by mass

0283 **Boosters** without detonator

0284 **Grenades**, hand or rifle, with bursting charge

0285 **Grenades**, hand or rifle, with bursting charge

0286 **Warheads, rocket** with bursting charge

0287 **Warheads, rocket** with bursting charge

0288 **Charges, shaped, flexible, linear**

0289 **Cord, detonating**, flexible

0290 **Cord, detonating**, metal clad

or **Fuse, detonating**, metal clad

0291 **Bombs** with bursting charge

0292 **Grenades**, hand or rifle, with bursting charge

0293 **Grenades**, hand or rifle, with bursting charge

0294 **Mines** with bursting charge

0295 **Rockets** with bursting charge

0296 **Sounding devices, explosive**

0297 **Ammunition, illuminating** with or without burster, expelling charge or propelling charge

0299 **Bombs, photo-flash**

0300 **Ammunition, incendiary** with or without burster, expelling charge or propelling charge

0301 **Ammunition, tear-producing** with burster, expelling charge or propelling charge

0303 **Ammunition, smoke** with or without burster, expelling charge or propelling charge

0305 **Flash powder**

0306 **Tracers for ammunition**

0312 **Cartridges, signal**

0313 **Signals, smoke**

0314 **Igniters**

0315 **Igniters**

0316 **Fuzes, igniting**

0317 **Fuzes, igniting**

0318 **Grenades, practice**, hand or rifle

0319 **Primers, tubular**

0320 **Primers, tubular**

0321 **Cartridges for weapons** with bursting charge

0322 **Rocket motors with hypergolic liquids** with or without expelling charge

0323 **Cartridges, power device**

0324 **Projectiles** with bursting charge

0325 **Igniters**

0326 **Cartridges for weapons, blank**

0327 **Cartridges for weapons, blank**

or **Cartridges, small arms, blank**

0328 **Cartridges for weapons, inert projectile**

0329 **Torpedoes** with bursting charge

0330 **Torpedoes** with bursting charge

0331 **Agent, blasting type B**

or **Explosive, blasting, type B**

0332 **Agent, blasting type E**

or **Explosive, blasting, type E**

0333 **Fireworks**

0334 **Fireworks**

0335 **Fireworks**

0336 **Fireworks**

0337 **Fireworks**

0338 **Cartridges for weapons, blank**

or **Cartridges, small arms, blank**

0339 **Cartridges for weapons, inert projectile**

or **Cartridges, small arms**

0340 **Nitrocellulose**, dry or wetted with less than 25% water (or alcohol), by mass

0341 **Nitrocellulose**, unmodified or plasticized with less than 18% plasticizing substance, by mass

0342 **Nitrocellulose, wetted** with not less than 25% alcohol, by mass

0343 **Nitrocellulose, plasticized** with not less than 18% plasticizing substance, by mass

0344 **Projectiles** with bursting charge

0345 **Projectiles**, inert with tracer

0346 **Projectiles** with burster or expelling charge

0347 **Projectiles** with burster or expelling charge

0348 **Cartridges for weapons** with bursting charge

0349 **Articles, explosive, n.o.s.**

0350 **Articles, explosive, n.o.s.**

0351 **Articles, explosive, n.o.s.**

0352 **Articles, explosive, n.o.s.**

0353 **Articles, explosive, n.o.s.**

0354 **Articles, explosive, n.o.s.**

0355 **Articles, explosive, n.o.s.**

0356 **Articles, explosive, n.o.s.**

0357 **Substances, explosive, n.o.s.**

0358 **Substances, explosive, n.o.s.**

0359 **Substances, explosive, n.o.s.**

0360 **Detonator assemblies, non-electric** for blasting

0361 **Detonator assemblies, non-electric** for blasting

0362 **Ammunition, practice**

0363 **Ammunition, proof**

0364 **Detonators for ammunition**

0365 **Detonators for ammunition**

0366 **Detonators for ammunition**

0367 **Fuzes, detonating**

0368 **Fuzes, igniting**

0369 **Warheads, rocket** with bursting charge

0370 **Warheads, rocket** with burster or expelling charge

0371 **Warheads, rocket** with burster or expelling charge

0372 **Grenades, practice**, hand or rifle

0373 **Signal devices, hand**

0374 **Sounding devices, explosive**

0375 **Sounding devices, explosive**

0376 **Primers, tubular**

0377 **Primers, cap type**

0378 **Primers, cap type**

0379 **Cases, cartridge, empty, with primer**

0380 **Articles, pyrophoric**

0381 **Cartridges, power device**

0382 **Components, explosive train, n.o.s.**

0383 **Components, explosive train, n.o.s.**

0384 **Components, explosive train, n.o.s.**

0385 **5-Nitrobenzotriazol**

0386 **Trinitrobenzenesulphonic acid**

0387 **Trinitrofluorenone**

0388 **TNT and hexanitrostilbene mixture**

or **TNT and trinitrobenzene mixture**

or **Trinitrotoluene and hexanitrostilbene mixture**

or **Trinitrotoluene and trinitrobenzene mixture**

0389 **TNT mixture containing trinitrobenzene and hexanitrostilbene**

or **Trinitrotoluene mixture containing trinitrobenzene and hexanitrostilbene**

0390 **Tritonal**

0391 **Cyclonite and cyclotetramethylenetetranitramine mixture, desensitized** with not less than 10% phlegmatizer, by mass

or **Cyclonite and cyclotetramethylenetetranitramine mixture, wetted** with not less than 15% water, by mass

or **Cyclotrimethylenetrinitramine and cyclotetramethylenetetranitramine mixture, desensitized** with not less than 10% phlegmatizer, by mass

or **Cyclotrimethylenetrinitramine and cyclotetramethylenetetranitramine mixture, wetted** with not less than 15% water, by mass

or **Hexogen and cyclotetramethylenetetranitramine mixture, desensitized** with not less than 10% phlegmatizer, by mass

or **Hexogen and cyclotetramethylenetetranitramine mixture, wetted** with not less than 15% water, by mass

or **RDX and cyclotetramethylenetetranitramine mixture, desensitized** with not less than 10% phlegmatizer, by mass

or **RDX and cyclotetramethylenetetranitramine mixture, wetted** with not less than 15% water, by mass

0392 **Hexanitrostilbene**

0393 **Hexotonal**

0394 **Styphnic acid, wetted** with not less than 20% water, or mixture of alcohol and water, by mass

or **Trinitroresorcinol, wetted** with not less than 20% water, or mixture of alcohol and water, by mass

0395 **Rocket motors, liquid fuelled**

0396 **Rocket motors, liquid fuelled**

0397 **Rockets, liquid fuelled** with bursting charge

0398 **Rockets, liquid fuelled** with bursting charge

0399 **Bombs with flammable liquid** with bursting charge

0400 **Bombs with flammable liquid** with bursting charge

0401 **Dipicryl sulphide**, dry or wetted with less than 10% water, by mass

0402 **Ammonium perchlorate**

0403 **Flares, aerial**

0404 **Flares, aerial**

0405 **Cartridges, signal**

0406 **Dinitrosobenzene**

0407 **Tetrazol-1-acetic acid**

0408 **Fuzes, detonating** with protective features

0409 **Fuzes, detonating** with protective features

0410 **Fuzes, detonating** with protective features

0411 **Pentaerythrite tetranitrate** with not less than 7% wax, by mass

or **Pentaerythritol tetranitrate** with not less than 7% wax, by mass

or **PETN** with not less than 7% wax, by mass

0412 **Cartridges for weapons** with bursting charge

0413 **Cartridges for weapons, blank**

0414 **Charges, propelling, for cannon**

0415 **Charges, propelling**

0417 **Cartridges for weapons, inert projectile**

or **Cartridges, small arms**

0418 **Flares, surface**

0419 **Flares, surface**

0420 **Flares, aerial**

0421 **Flares, aerial**

0424 **Projectiles**, inert with tracer

0425 **Projectiles**, inert with tracer

0426 **Projectiles** with burster or expelling charge

0427 **Projectiles** with burster or expelling charge

0428 **Articles, pyrotechnic** for technical purposes

0429 **Articles, pyrotechnic** for technical purposes

0430 **Articles, pyrotechnic** for technical purposes

0431 **Articles, pyrotechnic** for technical purposes

0432 **Articles, pyrotechnic** for technical purposes

0433 **Powder cake, wetted** with not less than 17% alcohol, by mass

or **Powder paste, wetted** with not less than 17% alcohol, by mass

0434 **Projectiles** with burster or expelling charge

0435 **Projectiles** with burster or expelling charge

0436 **Rockets** with expelling charge

0437 **Rockets** with expelling charge

0438 **Rockets** with expelling charge

0439 **Charges, shaped** without detonator

0440 **Charges, shaped** without detonator

0441 **Charges, shaped** without detonator

0442 **Charges, explosive, commercial** without detonator

0443 **Charges, explosive, commercial** without detonator

0444 **Charges, explosive, commercial** without detonator

0445 **Charges, explosive, commercial** without detonator

0446 **Cases, combustible, empty, without primer**

0447 **Cases, combustible, empty, without primer**

0448 **5-Mercaptotetrazol-1-acetic acid**

0449 **Torpedoes, liquid fuelled** with or without bursting charge

0450 **Torpedoes, liquid fuelled** with inert head

0451 **Torpedoes** with bursting charge

0452 **Grenades, practice**, hand or rifle

0453 **Rockets, line-throwing**

0454 **Igniters**

0455 **Detonators, non-electric** for blasting

0456 **Detonators, electric** for blasting

0457 **Charges, bursting, plastics bonded**

0458 **Charges, bursting, plastics bonded**

0459 **Charges, bursting, plastics bonded**

0460 **Charges, bursting, plastics bonded**

0461 **Components, explosive train, n.o.s.**

0462 **Articles, explosive, n.o.s.**

0463 **Articles, explosive, n.o.s.**

0464 **Articles, explosive, n.o.s.**

0465 **Articles, explosive, n.o.s.**

0466 **Articles, explosive, n.o.s.**

0467 **Articles, explosive, n.o.s.**

0468 **Articles, explosive, n.o.s.**

0469 **Articles, explosive, n.o.s.**

0470 **Articles, explosive, n.o.s.**

0471 **Articles, explosive, n.o.s.**

0472 **Articles, explosive, n.o.s.**

0473 **Substances, explosive, n.o.s.**

0474 **Substances, explosive, n.o.s.**

0475 **Substances, explosive, n.o.s.**

0476 **Substances, explosive, n.o.s.**

0477 **Substances, explosive, n.o.s.**

0478 **Substances, explosive, n.o.s.**

0479 **Substances, explosive, n.o.s.**

0480 **Substances, explosive, n.o.s.**

0481 **Substances, explosive, n.o.s.**

0482 **Substances, EVI, n.o.s.**

or **Substances, explosive, very insensitive, n.o.s.**

0483 **Cyclonite, desensitized**

or **Cyclotrimethylenetrinitramine, desensitized**

or **Hexogen, desensitized**

or **RDX, desensitized**

0484 **Cyclotetramethylene-tetranitramine, desensitized**

or **HMX, desensitized**

or **Octogen, desensitized**

0485 **Substances, explosive, n.o.s.**

0486 **Articles, EEI**

or **Articles, explosive, extremely insensitive**

0487 **Signals, smoke**

0488 **Ammunition, practice**

0489 **DINGU**

or **Dinitroglycoluril**

0490 **Nitrotriazolone**

or **NTO**

0491 **Charges, propelling**

0492 **Signals, railway track, explosive**

0493 **Signals, railway track, explosive**

0494 **Jet perforating guns, charged**, oil well, without detonator

0495 **Propellant, liquid**

0496 **Octonal**

0497 **Propellant, liquid**

0498 **Propellant, solid**

0499 **Propellant, solid**

0500 **Detonator assemblies, non-electric** for blasting

0501 **Propellant, solid**

0502 **Rockets** with inert head

0503 **Air bag inflators**

or **Air bag modules**

or **Seat-belt pretensioners**

0504 **1H-Tetrazole**

0505 **Signals, distress**, ship

0506 **Signals, distress**, ship

0507 **Signals, smoke**

0508 **1-Hydroxybenzotriazole, anhydrous**, dry or wetted with less than 20% water, by mass

1001 **Acetylene, dissolved**

1002 **Air, compressed**

1003 **Air, refrigerated liquid**

1005 **Ammonia, anhydrous**

1006 **Argon, compressed**

1008 **Boron trifluoride**

1009 **Bromotrifluoromethane**

or **Refrigerant gas R 13B1**

1010 **Butadienes and hydrocarbon mixture, stabilized**, containing more than 40% butadienes

or **Butadienes, stabilized**

1011 **Butane**

1012 **Butylene**

1013 **Carbon dioxide**

1016 **Carbon monoxide, compressed**

1017 **Chlorine**

1018 **Chlorodifluoromethane**

or **Refrigerant gas R 22**

1020 **Chloropentafluoroethane**

or **Refrigerant gas R 115**

1021 **1-Chloro-1,2,2,2-tetrafluoroethane**

or **Refrigerant gas R 124**

1022 **Chlorotrifluoromethane**

or **Refrigerant gas R 13**

1023 **Coal gas, compressed**

1026 **Cyanogen**

1027 **Cyclopropane**

1028 **Dichlorodifluoromethane**

or **Refrigerant gas R 12**

1029 **Dichlorofluoromethane**

or **Refrigerant gas R 21**

1030 **1,1-Difluoroethane**

or **Refrigerant gas R 152a**

1032 **Dimethylamine, anhydrous**

1033 **Dimethyl ether**

1035 **Ethane**

1036 **Ethylamine**

1037 **Ethyl chloride**

1038 **Ethylene, refrigerated liquid**

1039 **Ethyl methyl ether**

1040 **Ethylene oxide**

or **Ethylene oxide with nitrogen** up to a total pressure of 1 MPa at 50°C

1041 **Ethylene oxide and carbon dioxide mixture**, with more than 9% but not more than 87% ethylene oxide

1043 **Fertilizer ammoniating solution** with free ammonia

1044 **Fire extinguishers** with compressed or liquefied gas

1045 **Fluorine, compressed**

1046 **Helium, compressed**

1048 **Hydrogen bromide, anhydrous**

1049 **Hydrogen, compressed**

1050 **Hydrogen chloride, anhydrous**

1051 **Hydrogen cyanide, stabilized** containing less than 3% water

1052 **Hydrogen fluoride, anhydrous**

1053 **Hydrogen sulphide**

1055 **Isobutylene**

1056 **Krypton, compressed**

1057 **Lighter refills** containing flammable gas

or **Lighters** containing flammable gas

1058 **Liquefied gases**, non-flammable, charged with nitrogen, carbon dioxide or air

1060 **Methylacetylene and propadiene mixture, stabilized**

1061 **Methylamine, anhydrous**

1062 **Methyl bromide** with not more than 2% chloropicrin

1063 **Methyl chloride**

or **Refrigerant gas R 40**

1064 **Methyl mercaptan**

1065 **Neon, compressed**

1066 **Nitrogen, compressed**

1067 **Dinitrogen tetroxide**

or **Nitrogen dioxide**

1069 **Nitrosyl chloride**

1070 **Nitrous oxide**

1071 **Oil gas, compressed**

1072 **Oxygen, compressed**

1073 **Oxygen, refrigerated liquid**

1075 **Petroleum gases, liquefied**

1076 **Phosgene**

1077 **Propylene**

1078 **Refrigerant gas, n.o.s.**

1079 **Sulphur dioxide**

1080 **Sulphur hexafluoride**

1081 **Tetrafluoroethylene, stabilized**

1082 **Trifluorochloroethylene, stabilized**

1083 **Trimethylamine, anhydrous**

1085 **Vinyl bromide, stabilized**

1086 **Vinyl chloride, stabilized**

1087 **Vinyl methyl ether, stabilized**

1088 **Acetal**

1089 **Acetaldehyde**

1090 **Acetone**

1091 **Acetone oils**

1092 **Acrolein, stabilized**

1093 **Acrylonitrile, stabilized**

1098 **Allyl alcohol**

1099 **Allyl bromide**

1100 **Allyl chloride**

1104 **Amyl acetates**

1105 **Pentanols**

1106 **Amylamine**

1107 **Amyl chloride**

1108 **n-Amylene**

or **1-Pentene**

1109 **Amyl formates**

1110 **n-Amyl methyl ketone**

1111 **Amyl mercaptan**

1112 **Amyl nitrate**

1113 **Amyl nitrite**

1114 **Benzene**

1120 **Butanols**

1123 **Butyl acetates**

1125 **n-Butylamine**

1126 **1-Bromobutane**

1127 **Chlorobutanes**

1128 **n-Butyl formate**

1129 **Butyraldehyde**

1130 **Camphor oil**

1131 **Carbon disulphide**

1133 **Adhesives** containing flammable liquid

1134 **Chlorobenzene**

1135 **Ethylene chlorohydrin**

1136 **Coal tar distillates, flammable**

1139 **Coating solution**, (includes surface treatments or coatings used for industrial or other purposes such as vehicle undercoating, drum or barrel lining)

1143 **Crotonaldehyde**

or **Crotonaldehyde, stabilized**

1144 **Crotonylene**

1145 **Cyclohexane**

1146 **Cyclopentane**

1147 **Decahydronaphthalene**

1148 **Diacetone alcohol**

1149 **Dibutyl ethers**

1150 **1,2-Dichloroethylene**

1152 **Dichloropentanes**

1153 **Ethylene glycol diethyl ether**

1154 **Diethylamine**

1155 **Diethyl ether**

or **Ethyl ether**

1156 **Diethyl ketone**

1157 **Diisobutyl ketone**

1158 **Diisopropylamine**

1159 **Diisopropyl ether**

1160 **Dimethylamine, aqueous solution**

1161 **Dimethyl carbonate**

1162 **Dimethyldichlorosilane**

1163 **Dimethylhydrazine, unsymmetrical**

1164 **Dimethyl sulphide**

1165 **Dioxane**

1166 **Dioxolane**

1167 **Divinyl ether, stabilized**

1169 **Extracts, aromatic, liquid**

1170 **Ethanol**

or **Ethanol solution**

or **Ethyl alcohol**

or **Ethyl alcohol solution**

1171 **Ethylene glycol monoethyl ether**

1172 **Ethylene glycol monoethyl ether acetate**

1173 **Ethyl acetate**
1175 **Ethylbenzene**
1176 **Ethyl borate**
1177 **2-Ethylbutyl acetate**
1178 **2-Ethylbutyraldehyde**
1179 **Ethyl butyl ether**
1180 **Ethyl butyrate**
1181 **Ethyl chloroacetate**
1182 **Ethyl chloroformate**
1183 **Ethyldichlorosilane**
1184 **Ethylene dichloride**
1185 **Ethyleneimine, stabilized**
1188 **Ethylene glycol monomethyl ether**
1189 **Ethylene glycol monomethyl ether acetate**
1190 **Ethyl formate**
1191 **Octyl aldehydes**
1192 **Ethyl lactate**
1193 **Ethyl methyl ketone**
or **Methyl ethyl ketone**
1194 **Ethyl nitrite solution**
1195 **Ethyl propionate**
1196 **Ethyltrichlorosilane**
1197 **Extracts, flavouring, liquid**
1198 **Formaldehyde solution, flammable**
1199 **Furaldehydes**
1201 **Fusel oil**
1202 **Diesel fuel**
or **Gas oil**
or **Heating oil, light**
1203 **Gasoline**
or **Motor spirit**
or **Petrol**
1204 **Nitroglycerin solution in alcohol** with not more than 1% nitroglycerin
1206 **Heptanes**
1207 **Hexaldehyde**
1208 **Hexanes**
1210 **Printing ink**, flammable
or **Printing ink related material**, (including printing ink thinning or reducing compound), flammable
1212 **Isobutanol**
or **Isobutyl alcohol**
1213 **Isobutyl acetate**
1214 **Isobutylamine**
1216 **Isooctene**
1218 **Isoprene, stabilized**
1219 **Isopropanol**
or **Isopropyl alcohol**
1220 **Isopropyl acetate**
1221 **Isopropylamine**
1222 **Isopropyl nitrate**
1223 **Kerosene**
1224 **Ketones, liquid, n.o.s.**
1228 **Mercaptan mixture, liquid, flammable, toxic, n.o.s.**
or **Mercaptans, liquid, flammable, toxic, n.o.s.**
1229 **Mesityl oxide**
1230 **Methanol**
1231 **Methyl acetate**
1233 **Methylamyl acetate**
1234 **Methylal**
1235 **Methylamine, aqueous solution**
1237 **Methyl butyrate**
1238 **Methyl chloroformate**
1239 **Methyl chloromethyl ether**
1242 **Methyldichlorosilane**
1243 **Methyl formate**
1244 **Methylhydrazine**
1245 **Methyl isobutyl ketone**
1246 **Methyl isopropenyl ketone, stabilized**
1247 **Methyl methacrylate monomer, stabilized**
1248 **Methyl propionate**
1249 **Methyl propyl ketone**
1250 **Methyltrichlorosilane**
1251 **Methyl vinyl ketone, stabilized**
1259 **Nickel carbonyl**
1261 **Nitromethane**
1262 **Octanes**
1263 **Paint** (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base)
or **Paint related material** (including paint thinning or reducing compound)
1264 **Paraldehyde**
1265 **Pentanes**, liquid
1266 **Perfumery products** with flammable solvents
1267 **Petroleum crude oil**

1268 **Petroleum distillates, n.o.s.**

or **Petroleum products, n.o.s.**

1272 **Pine oil**

1274 **n-Propanol**

or **Propyl alcohol, normal**

1275 **Propionaldehyde**

1276 **n-Propyl acetate**

1277 **Propylamine**

1278 **1-Chloropropane**

1279 **1,2-Dichloropropane**

1280 **Propylene oxide**

1281 **Propyl formates**

1282 **Pyridine**

1286 **Rosin oil**

1287 **Rubber solution**

1288 **Shale oil**

1289 **Sodium methylate solution** in alcohol

1292 **Tetraethyl silicate**

1293 **Tinctures, medicinal**

1294 **Toluene**

1295 **Trichlorosilane**

1296 **Triethylamine**

1297 **Trimethylamine, aqueous solution**, not more than 50% trimethylamine, by mass

1298 **Trimethylchlorosilane**

1299 **Turpentine**

1300 **Turpentine substitute**

1301 **Vinyl acetate, stabilized**

1302 **Vinyl ethyl ether, stabilized**

1303 **Vinylidene chloride, stabilized**

1304 **Vinyl isobutyl ether, stabilized**

1305 **Vinyltrichlorosilane**

1306 **Wood preservatives, liquid**

1307 **Xylenes**

1308 **Zirconium suspended in a flammable liquid**

1309 **Aluminium powder, coated**

1310 **Ammonium picrate, wetted** with not less than 10% water, by mass

1312 **Borneol**

1313 **Calcium resinate**

1314 **Calcium resinate, fused**

1318 **Cobalt resinate, precipitated**

1320 **Dinitrophenol, wetted** with not less than 15% water, by mass

1321 **Dinitrophenolates, wetted** with not less than 15% water, by mass

1322 **Dinitroresorcinol, wetted** with not less than 15% water, by mass

1323 **Ferrocerium**

1324 **Films, nitrocellulose base**, gelatin coated, except scrap

1325 **Flammable solid, organic, n.o.s.**

1326 **Hafnium powder, wetted** with not less than 25% water (a visible excess of water must be present)
(a) mechanically produced, particle size less than 53 microns;
(b) chemically produced, particle size less than 840 microns

1328 **Hexamethylenetetramine**

1330 **Manganese resinate**

1331 **Matches, 'strike anywhere'**

1332 **Metaldehyde**

1333 **Cerium**, slabs, ingots or rods

1334 **Naphthalene, crude**

or **Naphthalene, refined**

1336 **Nitroguanidine, wetted** with not less than 20% water, by mass

or **Picrite, wetted** with not less than 20% water by mass

1337 **Nitrostarch, wetted** with not less than 20% water, by mass

1338 **Phosphorus, amorphous**

1339 **Phosphorus heptasulphide**, free from yellow and white phosphorus

1340 **Phosphorus pentasulphide**, free from yellow and white phosphorus

1341 **Phosphorus sesquisulphide**, free from yellow and white phosphorus

1343 **Phosphorus trisulphide**, free from yellow and white phosphorus

1344 **Picric acid, wetted** with not less than 30% water, by mass

or **Trinitrophenol, wetted** with not less than 30% water, by mass

1345 **Rubber scrap**, powdered or granulated, not exceeding 840 microns and rubber content exceeding 45%

or **Rubber shoddy**, powdered or granulated, not exceeding 840 microns and rubber content exceeding 45%

1346 **Silicon powder, amorphous**

1347 **Silver picrate, wetted** with not less than 30% water, by mass

1348 **Sodium dinitro-o-cresolate, wetted** with not less than 15% water, by mass

1349 **Sodium picramate, wetted** with not less than 20% water, by mass

1350 **Sulphur**

1352 **Titanium powder, wetted** with not less than 25% water (a visible excess of water must be present)
(a) mechanically produced, particle size less than 53 microns;
(b) chemically produced, particle size less than 840 microns

1353 **Fabrics impregnated with weakly nitrated nitrocellulose, n.o.s.**

or **Fibres impregnated with weakly nitrated nitrocellulose, n.o.s.**

1354 **Trinitrobenzene, wetted** with not less than 30% water, by mass

1355 **Trinitrobenzoic acid, wetted** with not less than 30% water, by mass

1356 **TNT, wetted** with not less than 30% water, by mass

or **Trinitrotoluene, wetted** with not less than 30% water, by mass

1357 **Urea nitrate, wetted** with not less than 20% water, by mass

1358 **Zirconium powder, wetted** with not less than 25% water (a visible excess of water must be present)
(a) mechanically produced, particle size less than 53 microns;
(b) chemically produced, particle size less than 840 microns

1360 **Calcium phosphide**

1361 **Carbon**, animal or vegetable origin

1362 **Carbon, activated**

1363 **Copra**

1364 **Cotton waste, oily**

1365 **Cotton, wet**

1369 **p-Nitrosodimethylaniline**

1373 **Fabrics, animal, n.o.s.**, with oil

or **Fabrics, synthetic, n.o.s**, with oil

or **Fabrics, vegetable, n.o.s.**, with oil

or **Fibres, animal, n.o.s.**, with oil

or **Fibres, synthetic, n.o.s.**, with oil

or **Fibres, vegetable, n.o.s.**, with oil

1376 **Iron oxide, spent** (obtained from coal gas purification)

or **Iron sponge, spent** (obtained from coal gas purification)

1378 **Metal catalyst, wetted** with a visible excess of liquid

1379 **Paper, unsaturated oil treated**, incompletely dried (including carbon paper)

1380 **Pentaborane**

1381 **Phosphorus, white, dry**

or **Phosphorus, white, in solution**

or **Phosphorus, white, under water**

or **Phosphorus, yellow, dry**

or **Phosphorus, yellow, in solution**

or **Phosphorus, yellow, under water**

1382 **Potassium sulphide** with less than 30% water of crystallization

or **Potassium sulphide, anhydrous**

1383 **Pyrophoric alloy, n.o.s.**

or **Pyrophoric metal, n.o.s.**

1384 **Sodium dithionite**

or **Sodium hydrosulphite**

1385 **Sodium sulphide** with less than 30% water of crystallization

or **Sodium sulphide, anhydrous**

1386 **Seed cake** with more than 1.5% oil and not more than 11% moisture

1389 **Alkali metal amalgam, liquid**

1390 **Alkali metal amides**

1391 **Alkali metal dispersion**

or **Alkaline earth metal dispersion**

1392 **Alkaline earth metal amalgam, liquid**

1393 **Alkaline earth metal alloy, n.o.s.**

1394 **Aluminium carbide**

1395 **Aluminium ferrosilicon powder**

1396 **Aluminium powder, uncoated**

1397 **Aluminium phosphide**

1398 **Aluminium silicon powder, uncoated**

1400 **Barium**

1401 **Calcium**

1402 **Calcium carbide**

1403 **Calcium cyanamide** with more than 0.1% of calcium carbide

1404 **Calcium hydride**

1405 **Calcium silicide**

1407 **Caesium**

1408 **Ferrosilicon** with 30% or more but less than 90% silicon

1409 **Metal hydrides, water-reactive, n.o.s.**

1410 **Lithium aluminium hydride**

1411 **Lithium aluminium hydride, ethereal**

1413 **Lithium borohydride**

1414 **Lithium hydride**

1415 **Lithium**

1417 **Lithium silicon**

1418 **Magnesium alloys powder**

or **Magnesium powder**

1419 **Magnesium aluminium phosphide**
1420 **Potassium metal alloys, liquid**
1421 **Alkali metal alloy, liquid, n.o.s.**
1422 **Potassium sodium alloys, liquid**
1423 **Rubidium**
1426 **Sodium borohydride**
1427 **Sodium hydride**
1428 **Sodium**
1431 **Sodium methylate**
1432 **Sodium phosphide**
1433 **Stannic phosphides**
1435 **Zinc ashes**
1436 **Zinc dust**
or **Zinc powder**
1437 **Zirconium hydride**
1438 **Aluminium nitrate**
1439 **Ammonium dichromate**
1442 **Ammonium perchlorate**
1444 **Ammonium persulphate**
1445 **Barium chlorate, solid**
1446 **Barium nitrate**
1447 **Barium perchlorate, solid**
1448 **Barium permanganate**
1449 **Barium peroxide**
1450 **Bromates, inorganic, n.o.s.**
1451 **Caesium nitrate**
1452 **Calcium chlorate**
1453 **Calcium chlorite**
1454 **Calcium nitrate**
1455 **Calcium perchlorate**
1456 **Calcium permanganate**
1457 **Calcium peroxide**
1458 **Chlorate and borate mixture**
1459 **Chlorate and magnesium chloride mixture, solid**
1461 **Chlorates, inorganic, n.o.s.**
1462 **Chlorites, inorganic, n.o.s.**
1463 **Chromium trioxide, anhydrous**
1465 **Didymium nitrate**
1466 **Ferric nitrate**
1467 **Guanidine nitrate**
1469 **Lead nitrate**
1470 **Lead perchlorate, solid**
1471 **Lithium hypochlorite, dry**
or **Lithium hypochlorite mixture**
1472 **Lithium peroxide**
1473 **Magnesium bromate**
1474 **Magnesium nitrate**
1475 **Magnesium perchlorate**
1476 **Magnesium peroxide**
1477 **Nitrates, inorganic, n.o.s.**
1479 **Oxidizing solid, n.o.s.**
1481 **Perchlorates, inorganic, n.o.s.**
1482 **Permanganates, inorganic, n.o.s.**
1483 **Peroxides, inorganic, n.o.s.**
1484 **Potassium bromate**
1485 **Potassium chlorate**
1486 **Potassium nitrate**
1487 **Potassium nitrate and sodium nitrite mixture**
1488 **Potassium nitrite**
1489 **Potassium perchlorate**
1490 **Potassium permanganate**
1491 **Potassium peroxide**
1492 **Potassium persulphate**
1493 **Silver nitrate**
1494 **Sodium bromate**
1495 **Sodium chlorate**
1496 **Sodium chlorite**
1498 **Sodium nitrate**
1499 **Sodium nitrate and potassium nitrate mixture**
1500 **Sodium nitrite**
1502 **Sodium perchlorate**
1503 **Sodium permanganate**
1504 **Sodium peroxide**
1505 **Sodium persulphate**
1506 **Strontium chlorate**
1507 **Strontium nitrate**
1508 **Strontium perchlorate**
1509 **Strontium peroxide**
1510 **Tetranitromethane**
1511 **Urea hydrogen peroxide**
1512 **Zinc ammonium nitrite**
1513 **Zinc chlorate**
1514 **Zinc nitrate**
1515 **Zinc permanganate**
1516 **Zinc peroxide**

1517 **Zirconium picramate, wetted** with not less than 20% water, by mass

1541 **Acetone cyanohydrin, stabilized**

1544 **Alkaloid salts, solid, n.o.s.**

or **Alkaloids, solid, n.o.s.**

1545 **Allyl isothiocyanate, stabilized**

1546 **Ammonium arsenate**

1547 **Aniline**

1548 **Aniline hydrochloride**

1549 **Antimony compound, inorganic, solid, n.o.s.**

1550 **Antimony lactate**

1551 **Antimony potassium tartrate**

1553 **Arsenic acid, liquid**

1554 **Arsenic acid, solid**

1555 **Arsenic bromide**

1556 **Arsenic compound, liquid, n.o.s.**, inorganic, including: Arsenates, n.o.s.; Arsenites, n.o.s.; and Arsenic sulphides

1557 **Arsenic compound, solid, n.o.s.**, inorganic, including: Arsenates, n.o.s.; Arsenites, n.o.s.; and Arsenic sulphides

1558 **Arsenic**

1559 **Arsenic pentoxide**

1560 **Arsenic trichloride**

1561 **Arsenic trioxide**

1562 **Arsenical dust**

1564 **Barium compound, n.o.s.**

1565 **Barium cyanide**

1566 **Beryllium compound, n.o.s.**

1567 **Beryllium powder**

1569 **Bromoacetone**

1570 **Brucine**

1571 **Barium azide, wetted** with not less than 50% water, by mass

1572 **Cacodylic acid**

1573 **Calcium arsenate**

1574 **Calcium arsenate and calcium arsenite mixture, solid**

1575 **Calcium cyanide**

1577 **Chlorodinitrobenzenes, liquid**

1578 **Chloronitrobenzenes, solid**

1579 **4-Chloro-o-toluidine hydrochloride, solid**

1580 **Chloropicrin**

1581 **Chloropicrin and methyl bromide mixture** with more than 2% chloropicrin

1582 **Chloropicrin and methyl chloride mixture**

1583 **Chloropicrin mixture, n.o.s.**

1585 **Copper acetoarsenite**

1586 **Copper arsenite**

1587 **Copper cyanide**

1588 **Cyanides, inorganic, solid, n.o.s.**

1589 **Cyanogen chloride, stabilized**

1590 **Dichloroanilines, liquid**

1591 **o-Dichlorobenzene**

1593 **Dichloromethane**

1594 **Diethyl sulphate**

1595 **Dimethyl sulphate**

1596 **Dinitroanilines**

1597 **Dinitrobenzenes, liquid**

1598 **Dinitro-o-cresol**

1599 **Dinitrophenol solution**

1600 **Dinitrotoluenes, molten**

1601 **Disinfectant, solid, toxic, n.o.s.**

1602 **Dye intermediate, liquid, toxic, n.o.s.**

or **Dye, liquid, toxic, n.o.s.**

1603 **Ethyl bromoacetate**

1604 **Ethylenediamine**

1605 **Ethylene dibromide**

1606 **Ferric arsenate**

1607 **Ferric arsenite**

1608 **Ferrous arsenate**

1611 **Hexaethyl tetraphosphate**

1612 **Hexaethyl tetraphosphate and compressed gas mixture**

1613 **Hydrocyanic acid, aqueous solution** with not more than 20% hydrogen cyanide

or **Hydrogen cyanide, aqueous solution** with not more than 20% hydrogen cyanide

1614 **Hydrogen cyanide, stabilized** containing less than 3% water and absorbed in a porous inert material

1616 **Lead acetate**

1617 **Lead arsenates**

1618 **Lead arsenites**

1620 **Lead cyanide**

1621 **London Purple**

1622 **Magnesium arsenate**

1623 **Mercuric arsenate**

1624 **Mercuric chloride**

1625 **Mercuric nitrate**

1626 **Mercuric potassium cyanide**

1627 **Mercurous nitrate**

1629 **Mercury acetate**

1630 **Mercury ammonium chloride**
1631 **Mercury benzoate**
1634 **Mercury bromides**
1636 **Mercury cyanide**
1637 **Mercury gluconate**
1638 **Mercury iodide**
1639 **Mercury nucleate**
1640 **Mercury oleate**
1641 **Mercury oxide**
1642 **Mercury oxycyanide, desensitized**
1643 **Mercury potassium iodide**
1644 **Mercury salicylate**
1645 **Mercury sulphate**
1646 **Mercury thiocyanate**
1647 **Methyl bromide and ethylene dibromide mixture, liquid**
1648 **Acetonitrile**
1649 **Motor fuel anti-knock mixture**
1650 **beta-Naphthylamine, solid**
1651 **Naphthylthiourea**
1652 **Naphthylurea**
1653 **Nickel cyanide**
1654 **Nicotine**
1655 **Nicotine compound, solid, n.o.s.**
or **Nicotine preparation, solid, n.o.s.**
1656 **Nicotine hydrochloride, liquid**
or **Nicotine hydrochloride solution**
1657 **Nicotine salicylate**
1658 **Nicotine sulphate solution**
1659 **Nicotine tartrate**
1660 **Nitric oxide, compressed**
1661 **Nitroanilines** (o-,m-,p-)
1662 **Nitrobenzene**
1663 **Nitrophenols** (o-,m-,p-)
1664 **Nitrotoluenes, liquid**
1665 **Nitroxylenes, liquid**
1669 **Pentachloroethane**
1670 **Perchloromethyl mercaptan**
1671 **Phenol, solid**
1672 **Phenylcarbylamine chloride**
1673 **Phenylenediamines** (o-,m-,p-)
1674 **Phenylmercuric acetate**
1677 **Potassium arsenate**
1678 **Potassium arsenite**
1679 **Potassium cuprocyanide**
1680 **Potassium cyanide, solid**
1683 **Silver arsenite**
1684 **Silver cyanide**
1685 **Sodium arsenate**
1686 **Sodium arsenite, aqueous solution**
1687 **Sodium azide**
1688 **Sodium cacodylate**
1689 **Sodium cyanide, solid**
1690 **Sodium fluoride, solid**
1691 **Strontium arsenite**
1692 **Strychnine**
or **Strychnine salts**
1693 **Tear gas substance, liquid, n.o.s.**
1694 **Bromobenzyl cyanides, liquid**
1695 **Chloroacetone, stabilized**
1697 **Chloroacetophenone, solid**
1698 **Diphenylamine chloroarsine**
1699 **Diphenylchloroarsine, liquid**
1700 **Tear gas candles**
1701 **Xylyl bromide, liquid**
1702 **1,1,2,2-Tetrachloroethane**
1704 **Tetraethyl dithiopyrophosphate**
1707 **Thallium compound, n.o.s.**
1708 **Toluidines, liquid**
1709 **2,4-Toluylenediamine, solid**
1710 **Trichloroethylene**
1711 **Xylidines, liquid**
or **Xylidines, solid**
1712 **Zinc arsenate**
or **Zinc arsenate and zinc arsenite mixture**
or **Zinc arsenite**
1713 **Zinc cyanide**
1714 **Zinc phosphide**
1715 **Acetic anhydride**
1716 **Acetyl bromide**
1717 **Acetyl chloride**
1718 **Butyl acid phosphate**
1719 **Caustic alkali liquid, n.o.s.**
1722 **Allyl chloroformate**
1723 **Allyl iodide**
1724 **Allyltrichlorosilane, stabilized**
1725 **Aluminium bromide, anhydrous**

1726 **Aluminium chloride, anhydrous**

1727 **Ammonium hydrogendifluoride, solid**

1728 **Amyltrichlorosilane**

1729 **Anisoyl chloride**

1730 **Antimony pentachloride, liquid**

1731 **Antimony pentachloride solution**

1732 **Antimony pentafluoride**

1733 **Antimony trichloride**

1736 **Benzoyl chloride**

1737 **Benzyl bromide**

1738 **Benzyl chloride**

1739 **Benzyl chloroformate**

1740 **Hydrogendifluorides, solid, n.o.s.**

1741 **Boron trichloride**

1742 **Boron trifluoride acetic acid complex, liquid**

1743 **Boron trifluoride propionic acid complex, liquid**

1744 **Bromine**

or **Bromine solution**

1745 **Bromine pentafluoride**

1746 **Bromine trifluoride**

1747 **Butyltrichlorosilane**

1748 **Calcium hypochlorite, dry**

or **Calcium hypochlorite mixture, dry** with more than 39% available chlorine (8.8% available oxygen)

1749 **Chlorine trifluoride**

1750 **Chloroacetic acid solution**

1751 **Chloroacetic acid, solid**

1752 **Chloroacetyl chloride**

1753 **Chlorophenyltrichlorosilane**

1754 **Chlorosulphonic acid** (with or without sulphur trioxide)

1755 **Chromic acid solution**

1756 **Chromic fluoride, solid**

1757 **Chromic fluoride solution**

1758 **Chromium oxychloride**

1759 **Corrosive solid, n.o.s.**

1760 **Corrosive liquid, n.o.s.**

1761 **Cupriethylenediamine solution**

1762 **Cyclohexenyltrichlorosilane**

1763 **Cyclohexyltrichlorosilane**

1764 **Dichloroacetic acid**

1765 **Dichloroacetyl chloride**

1766 **Dichlorophenyltrichlorosilane**

1767 **Diethyldichlorosilane**

1768 **Difluorophosphoric acid, anhydrous**

1769 **Diphenyldichlorosilane**

1770 **Diphenylmethyl bromide**

1771 **Dodecyltrichlorosilane**

1773 **Ferric chloride, anhydrous**

1774 **Fire extinguisher charges**, corrosive liquid

1775 **Fluoroboric acid**

1776 **Fluorophosphoric acid, anhydrous**

1777 **Fluorosulphonic acid**

1778 **Fluorosilicic acid**

1779 **Formic acid** with more than 85% acid by mass

1780 **Fumaryl chloride**

1781 **Hexadecyltrichlorosilane**

1782 **Hexafluorophosphoric acid**

1783 **Hexamethylenediamine solution**

1784 **Hexyltrichlorosilane**

1786 **Hydrofluoric acid and sulphuric acid mixture**

1787 **Hydriodic acid**

1788 **Hydrobromic acid**, more than 49% strength

or **Hydrobromic acid**, not more than 49% strength

1789 **Hydrochloric acid**

1790 **Hydrofluoric acid**, more than 60% strength

or **Hydrofluoric acid**, not more than 60% strength

1791 **Hypochlorite solution**

1792 **Iodine monochloride**

1793 **Isopropyl acid phosphate**

1794 **Lead sulphate** with more than 3% free acid

1796 **Nitrating acid mixture** with more than 50% nitric acid

or **Nitrating acid mixture** with not more than 50% nitric acid

1798 **Nitrohydrochloric acid**

1799 **Nonyltrichlorosilane**

1800 **Octadecyltrichlorosilane**

1801 **Octyltrichlorosilane**

1802 **Perchloric acid** with not more than 50% acid, by mass

1803 **Phenolsulphonic acid, liquid**

1804 **Phenyltrichlorosilane**

1805 **Phosphoric acid, solution**

1806 **Phosphorus pentachloride**

1807 **Phosphorus pentoxide**

1808 **Phosphorus tribromide**

1809 **Phosphorus trichloride**

1810 **Phosphorus oxychloride**

1811 **Potassium hydrogendifluoride, solid**

1812 **Potassium fluoride, solid**

1813 **Potassium hydroxide, solid**

1814 **Potassium hydroxide solution**

1815 **Propionyl chloride**

1816 **Propyltrichlorosilane**

1817 **Pyrosulphuryl chloride**

1818 **Silicon tetrachloride**

1819 **Sodium aluminate solution**

1823 **Sodium hydroxide, solid**

1824 **Sodium hydroxide solution**

1825 **Sodium monoxide**

1826 **Nitrating acid mixture, spent** with more than 50% nitric acid

or **Nitrating acid mixture, spent** with not more than 50% nitric acid

1827 **Stannic chloride, anhydrous**

1828 **Sulphur chlorides**

1829 **Sulphur trioxide, stabilized**

1830 **Sulphuric acid** with more than 51% acid

1831 **Sulphuric acid, fuming**

1832 **Sulphuric acid, spent**

1833 **Sulphurous acid**

1834 **Sulphuryl chloride**

1835 **Tetramethylammonium hydroxide solution**

1836 **Thionyl chloride**

1837 **Thiophosphoryl chloride**

1838 **Titanium tetrachloride**

1839 **Trichloroacetic acid**

1840 **Zinc chloride solution**

1841 **Acetaldehyde ammonia**

1843 **Ammonium dinitro-o-cresolate, solid**

1845 **Carbon dioxide, solid**

or **Dry ice**

1846 **Carbon tetrachloride**

1847 **Potassium sulphide, hydrated** with not less than 30% water of crystallization

1848 **Propionic acid** with not less than 10% and less than 90% acid by mass

1849 **Sodium sulphide, hydrated** with not less than 30% water

1851 **Medicine, liquid, toxic, n.o.s.**

1854 **Barium alloys, pyrophoric**

1855 **Calcium alloys, pyrophoric**

or **Calcium, pyrophoric**

1858 **Hexafluoropropylene**

or **Refrigerant gas R 1216**

1859 **Silicon tetrafluoride**

1860 **Vinyl fluoride, stabilized**

1862 **Ethyl crotonate**

1863 **Fuel, aviation, turbine engine**

1865 **n-Propyl nitrate**

1866 **Resin solution**, flammable

1868 **Decaborane**

1869 **Magnesium** in pellets, turnings or ribbons

or **Magnesium alloys** with more than 50% magnesium in pellets, turnings or ribbons

1870 **Potassium borohydride**

1871 **Titanium hydride**

1872 **Lead dioxide**

1873 **Perchloric acid** with more than 50% but not more than 72% acid, by mass

1884 **Barium oxide**

1885 **Benzidine**

1886 **Benzylidene chloride**

1887 **Bromochloromethane**

1888 **Chloroform**

1889 **Cyanogen bromide**

1891 **Ethyl bromide**

1892 **Ethyldichloroarsine**

1894 **Phenylmercuric hydroxide**

1895 **Phenylmercuric nitrate**

1897 **Tetrachloroethylene**

1898 **Acetyl iodide**

1902 **Diisooctyl acid phosphate**

1903 **Disinfectant, liquid, corrosive, n.o.s.**

1905 **Selenic acid**

1906 **Sludge acid**

1907 **Soda lime** with more than 4% sodium hydroxide

1908 **Chlorite solution**

1910 **Calcium oxide**

1911 **Diborane**

1912 **Methyl chloride and methylene chloride mixture**

1913 **Neon, refrigerated liquid**

1914 **Butyl propionates**

1915 **Cyclohexanone**

1916 **2,2'-Dichlorodiethyl ether**

1917 **Ethyl acrylate, stabilized**

1918 **Isopropylbenzene**

1919 **Methyl acrylate, stabilized**

1920 **Nonanes**

1921 **Propyleneimine, stabilized**

1922 **Pyrrolidine**

1923 **Calcium dithionite**

or **Calcium hydrosulphite**

1928 **Methyl magnesium bromide in ethyl ether**

1929 **Potassium dithionite**

or **Potassium hydrosulphite**

1931 **Zinc dithionite**

or **Zinc hydrosulphite**

1932 **Zirconium scrap**

1935 **Cyanide solution, n.o.s.**

1938 **Bromoacetic acid solution**

1939 **Phosphorus oxybromide**

1940 **Thioglycolic acid**

1941 **Dibromodifluoromethane**

1942 **Ammonium nitrate** with not more than 0.2% combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance

1944 **Matches, safety** (book, card or strike on box)

1945 **Matches, wax 'vesta'**

1950 **Aerosols**, flammable

or **Aerosols**, flammable, containing substances in Division 6.1, Packing Group II

or **Aerosols**, flammable, containing substances in Division 6.1, Packing Group III and substances in Class 8, Packing Group III

or **Aerosols**, flammable, containing toxic gas

or **Aerosols**, flammable, corrosive, containing substances in Class 8, Packing Group II

or **Aerosols**, flammable, corrosive, containing substances in Class 8, Packing Group III

or **Aerosols**, flammable (engine starting fluid)

or **Aerosols**, flammable, toxic, containing substances in Division 6.1, Packing Group III

or **Aerosols**, non-flammable

or **Aerosols**, non-flammable, containing substances in Class 8, Packing Group II

or **Aerosols**, non-flammable, containing substances in Division 6.1, Packing Group III and substances in Class 8, Packing Group III

or **Aerosols**, non-flammable, containing substances in Division 6.1, Packing Group II (other than tear gas devices)

or **Aerosols**, non-flammable, containing toxic gas

or **Aerosols**, non-flammable, corrosive, containing substances in Class 8, Packing Group III

or **Aerosols**, non-flammable, (tear gas devices)

or **Aerosols**, non-flammable, toxic, containing substances in Division 6.1, Packing Group III

or **Aerosols**, oxidizing

1951 **Argon, refrigerated liquid**

1952 **Ethylene oxide and carbon dioxide mixture**, with not more than 9% ethylene oxide

1953 **Compressed gas, toxic, flammable, n.o.s.**

1954 **Compressed gas, flammable, n.o.s.**

1955 **Compressed gas, toxic, n.o.s.**

1956 **Compressed gas, n.o.s.**

1957 **Deuterium, compressed**

1958 **1,2-Dichloro-1,1,2,2-tetrafluoroethane**

or **Refrigerant gas R 114**

1959 **1,1-Difluoroethylene**

or **Refrigerant gas R 1132a**

1961 **Ethane, refrigerated liquid**

1962 **Ethylene**

1963 **Helium, refrigerated liquid**

1964 **Hydrocarbon gas mixture, compressed, n.o.s.**

1965 **Hydrocarbon gas mixture, liquefied, n.o.s.**

1966 **Hydrogen, refrigerated liquid**

1967 **Insecticide gas, toxic, n.o.s.**

1968 **Insecticide gas, n.o.s.**

1969 **Isobutane**

1970 **Krypton, refrigerated liquid**

1971 **Methane, compressed**

or **Natural gas, compressed** with high methane content

1972 **Methane, refrigerated liquid** LNG

or **Natural gas, refrigerated liquid** with high methane content

1973 **Chlorodifluoromethane and chloropentafluoroethane mixture** with fixed boiling point, with approximately 49% chlorodifluoromethane

or **Refrigerant gas R 502**

1974 **Chlorodifluorobromomethane**

or **Refrigerant gas R 12B1**

1975 **Nitric oxide and dinitrogen tetroxide mixture**

or **Nitric oxide and nitrogen dioxide mixture**

1976 **Octafluorocyclobutane**

or **Refrigerant gas R C318**

1977 **Nitrogen, refrigerated liquid**

1978 **Propane**

1982 **Refrigerant gas R 14**

or **Tetrafluoromethane**

1983 **1-Chloro-2,2,2-trifluoroethane**

or **Refrigerant gas R 133a**

1984 **Refrigerant gas R 23**

or **Trifluoromethane**

1986 **Alcohols, flammable, toxic, n.o.s.**

1987 **Alcohols, n.o.s.**

1988 **Aldehydes, flammable, toxic, n.o.s.**

1989 **Aldehydes, n.o.s.**

1990 **Benzaldehyde**

1991 **Chloroprene, stabilized**

1992 **Flammable liquid, toxic, n.o.s.**

1993 **Flammable liquid, n.o.s.**

1994 **Iron pentacarbonyl**

1999 **Tars, liquid**, including road asphalt and oils, bitumen and cut backs

2000 **Celluloid**, in blocks, rods, rolls, sheets, tubes, etc. (except scrap)

2001 **Cobalt naphthenates, powder**

2002 **Celluloid, scrap**

2004 **Magnesium diamide**

2006 **Plastics, nitrocellulose-based, self-heating, n.o.s.**

2008 **Zirconium powder, dry**

2009 **Zirconium, dry**, finished sheets, strip or coiled wire (thinner than 18 microns)

2010 **Magnesium hydride**

2011 **Magnesium phosphide**

2012 **Potassium phosphide**

2013 **Strontium phosphide**

2014 **Hydrogen peroxide, aqueous solution** with more than 40% but not more than 60% hydrogen peroxide (stabilized as necessary)

or **Hydrogen peroxide, aqueous solution** with not less than 20% but not more than 40% hydrogen peroxide (stabilized as necessary)

2015 **Hydrogen peroxide, aqueous solution, stabilized** with more than 60% hydrogen peroxide

or **Hydrogen peroxide, stabilized**

2016 **Ammunition, toxic, non-explosive** without burster or expelling charge, non-fuzed

2017 **Ammunition, tear-producing, non-explosive** without burster or expelling charge, non-fuzed

2018 **Chloroanilines, solid**

2019 **Chloroanilines, liquid**

2020 **Chlorophenols, solid**

2021 **Chlorophenols, liquid**

2022 **Cresylic acid**

2023 **Epichlorohydrin**

2024 **Mercury compound, liquid, n.o.s.**

2025 **Mercury compound, solid, n.o.s.**

2026 **Phenylmercuric compound, n.o.s.**

2027 **Sodium arsenite, solid**

2028 **Bombs, smoke, non-explosive** with corrosive liquid, without initiating device

2029 **Hydrazine, anhydrous**

2030 **Hydrazine, aqueous solution** with more than 37% hydrazine by mass

2031 **Nitric acid**, other than red fuming, with at least 65% but not more than 70% nitric acid

or **Nitric acid**, other than red fuming, with more than 20% and less than 65% nitric acid

or **Nitric acid**, other than red fuming, with more than 70% nitric acid

or **Nitric acid**, other than red fuming, with not more than 20% nitric acid

2032 **Nitric acid, red fuming**

2033 **Potassium monoxide**

2034 **Hydrogen and methane mixture, compressed**

2035 **Refrigerant gas R 143a**

or **1,1,1-Trifluoroethane**

2036 **Xenon**

2037 **Gas cartridges**, (flammable) without a release device, non-refillable

or **Gas cartridges** (non-flammable) without a release device, non-refillable

or **Gas cartridges** (oxidizing) without a release device, non-refillable

or **Gas cartridges** (toxic & corrosive) without a release device, non-refillable

or **Gas cartridges** (toxic, flammable & corrosive) without a release device, non-refillable

or **Gas cartridges** (toxic & flammable) without a release device, non-refillable

or **Gas cartridges** (toxic, oxidizing & corrosive) without a release device, non-refillable

or **Gas cartridges** (toxic & oxidizing) without a release device, non-refillable

or **Gas cartridges** (toxic) without a release device, non-refillable

or **Receptacles, small, containing gas** (flammable) without a release device, non-refillable

or **Receptacles, small, containing gas** (non-flammable) without a release device, non-refillable

or **Receptacles, small, containing gas** (oxidizing) without a release device, non-refillable

or **Receptacles, small, containing gas** (toxic & corrosive) without a release device, non-refillable

or **Receptacles, small, containing gas** (toxic, flammable & corrosive) without a release device, non-refillable

or **Receptacles, small, containing gas** (toxic & flammable) without a release device, non-refillable

or **Receptacles, small, containing gas** (toxic, oxidizing & corrosive) without a release device, non-refillable

or **Receptacles, small, containing gas** (toxic & oxidizing) without a release device, non-refillable

or **Receptacles, small, containing gas** (toxic) without a release device, non-refillable

2038 **Dinitrotoluenes, liquid**

2044 **2,2-Dimethylpropane**

2045 **Isobutyl aldehyde**

or **Isobutyraldehyde**

2046 **Cymenes**

2047 **Dichloropropenes**

2048 **Dicyclopentadiene**

2049 **Diethylbenzene**

2050 **Diisobutylene, isomeric compounds**

2051 **2-Dimethylaminoethanol**

2052 **Dipentene**

2053 **Methyl isobutyl carbinol**

2054 **Morpholine**

2055 **Styrene monomer, stabilized**

2056 **Tetrahydrofuran**

2057 **Tripropylene**

2058 **Valeraldehyde**

2059 **Nitrocellulose solution, flammable** with not more than 12.6% nitrogen, by dry mass, and not more than 55% nitrocellulose

2067 **Ammonium nitrate based fertilizer**

2071 **Ammonium nitrate fertilizers**

2073 **Ammonia solution**, relative density less than 0.880 at 15ºC in water, with more than 35% but not more than 50% ammonia

2074 **Acrylamide, solid**

2075 **Chloral, anhydrous, stabilized**

2076 **Cresols, liquid**

2077 **alpha-Naphthylamine**

2078 **Toluene diisocyanate**

2079 **Diethylenetriamine**

2186 **Hydrogen chloride, refrigerated liquid**

2187 **Carbon dioxide, refrigerated liquid**

2188 **Arsine**

2189 **Dichlorosilane**

2190 **Oxygen difluoride, compressed**

2191 **Sulphuryl fluoride**

2192 **Germane**

2193 **Hexafluoroethane**

or **Refrigerant gas R 116**

2194 **Selenium hexafluoride**

2195 **Tellurium hexafluoride**

2196 **Tungsten hexafluoride**

2197 **Hydrogen iodide, anhydrous**

2198 **Phosphorus pentafluoride**

2199 **Phosphine**

2200 **Propadiene, stabilized**

2201 **Nitrous oxide, refrigerated liquid**

2202 **Hydrogen selenide, anhydrous**

2203 **Silane**

2204 **Carbonyl sulphide**

2205 **Adiponitrile**

2206 **Isocyanate solution, toxic, n.o.s.**

or **Isocyanates, toxic, n.o.s.**

2208 **Calcium hypochlorite mixture, dry** with more than 10% but not more than 39% available chlorine

2209 **Formaldehyde solution** with not less than 25% formaldehyde

2210 **Maneb**

or **Maneb preparation** with not less than 60% maneb

2211 **Polymeric beads, expandable**, evolving flammable vapour

2212 **Blue asbestos** (crocidolite)

or **Brown asbestos** (amosite, mysorite)

2213 **Paraformaldehyde**

2214 **Phthalic anhydride** with more than 0.05% of maleic anhydride

2215 **Maleic anhydride**

or **Maleic anhydride, molten**

2217 **Seed cake** with not more than 1.5% oil and not more than 11% moisture

2218 **Acrylic acid, stabilized**

2219 **Allyl glycidyl ether**

2222 **Anisole**

2224 **Benzonitrile**

2225 **Benzenesulphonyl chloride**

2226 **Benzotrichloride**

2227 **n-Butyl methacrylate, stabilized**

2232 **2-Chloroethanal**

2233 **Chloroanisidines**

2234 **Chlorobenzotrifluorides**

2235 **Chlorobenzyl chlorides, liquid**

2236 **3-Chloro-4-methylphenyl isocyanate, liquid**

2237 **Chloronitroanilines**

2238 **Chlorotoluenes**

2239 **Chlorotoluidines, solid**

2240 **Chromosulphuric acid**

2241 **Cycloheptane**

2242 **Cycloheptene**

2243 **Cyclohexyl acetate**

2244 **Cyclopentanol**

2245 **Cyclopentanone**

2246 **Cyclopentene**

2247 **n-Decane**

2248 **Di-n-butylamine**

2249 **Dichlorodimethyl ether, symmetrical**

2250 **Dichlorophenyl isocyanates**

2251 **Bicyclo [2.2.1] hepta-2-5-diene, stabilized**
or **2,5-Norbornadiene, stabilized**

2252 **1,2-Dimethoxyethane**

2253 **N,N-Dimethylaniline**

2254 **Matches, fusee**

2256 **Cyclohexene**

2257 **Potassium**

2258 **1,2-Propylenediamine**

2259 **Triethylenetetramine**

2260 **Tripropylamine**

2261 **Xylenols, solid**

2262 **Dimethylcarbamoyl chloride**

2263 **Dimethylcyclohexanes**

2264 **N,N-Dimethylcyclohexylamine**

2265 **N,N-Dimethylformamide**

2266 **Dimethyl-N-propylamine**

2267 **Dimethyl thiophosphoryl chloride**

2269 **3,3'-Iminodipropylamine**

2270 **Ethylamine, aqueous solution** with not less than 50% but not more than 70% ethylamine

2271 **Ethyl amyl ketone**

2272 **N-Ethylaniline**

2273 **2-Ethylaniline**

2274 **N-Ethyl-N-benzylaniline**

2275 **2-Ethylbutanol**

2276 **2-Ethylhexylamine**

2277 **Ethyl methacrylate, stabilized**

2278 **n-Heptene**

2279 **Hexachlorobutadiene**

2280 **Hexamethylenediamine, solid**

2281 **Hexamethylene diisocyanate**

2282 **Hexanols**

2283 **Isobutyl methacrylate, stabilized**

2284 **Isobutyronitrile**

2285 **Isocyanatobenzotrifluorides**

2286 **Pentamethylheptane**

2287 **Isoheptene**

2288 **Isohexene**

2289 **Isophoronediamine**

2290 **Isophorone diisocyanate**

2291 **Lead compound, soluble, n.o.s.**

2293 **4-Methoxy-4-methylpentan-2-one**

2294 **N-Methylaniline**

2295 **Methyl chloroacetate**

2296 **Methylcyclohexane**

2297 **Methylcyclohexanone**

2298 **Methylcyclopentane**

2299 **Methyl dichloroacetate**

2300 **2-Methyl-5-ethylpyridine**

2301 **2-Methylfuran**

2302 **5-Methylhexan-2-one**

2303 **Isopropenylbenzene**

2304 **Naphthalene, molten**

2305 **Nitrobenzenesulphonic acid**

2306 **Nitrobenzotrifluorides, liquid**

2307 **3-Nitro-4-chlorobenzotrifluoride**

2308 **Nitrosylsulphuric acid, liquid**

2309 **Octadiene**

2310 **Pentane-2,4-dione**

2311 **Phenetidines**

2312 **Phenol, molten**

2313 **Picolines**
2315 **Polychlorinated biphenyls, liquid**
2316 **Sodium cuprocyanide, solid**
2317 **Sodium cuprocyanide solution**
2318 **Sodium hydrosulphide** with less than 25% water of crystallization
2319 **Terpene hydrocarbons, n.o.s.**
2320 **Tetraethylenepentamine**
2321 **Trichlorobenzenes, liquid**
2322 **Trichlorobutene**
2323 **Triethyl phosphite**
2324 **Triisobutylene**
2325 **1,3,5-Trimethylbenzene**
2326 **Trimethylcyclohexylamine**
2327 **Trimethylhexamethylenediamines**
2328 **Trimethylhexamethylene diisocyanate**
2329 **Trimethyl phosphite**
2330 **Undecane**
2331 **Zinc chloride, anhydrous**
2332 **Acetaldehyde oxime**
2333 **Allyl acetate**
2334 **Allylamine**
2335 **Allyl ethyl ether**
2336 **Allyl formate**
2337 **Phenyl mercaptan**
2338 **Benzotrifluoride**
2339 **2-Bromobutane**
2340 **2-Bromoethyl ethyl ether**
2341 **1-Bromo-3-methylbutane**
2342 **Bromomethylpropanes**
2343 **2-Bromopentane**
2344 **Bromopropanes**
2345 **3-Bromopropyne**
2346 **Butanedione**
2347 **Butyl mercaptan**
2348 **Butyl acrylates, stabilized**
2350 **Butyl methyl ether**
2351 **Butyl nitrites**
2352 **Butyl vinyl ether, stabilized**
2353 **Butyryl chloride**
2354 **Chloromethyl ethyl ether**
2356 **2-Chloropropane**
2357 **Cyclohexylamine**
2358 **Cyclooctatetraene**
2359 **Diallylamine**
2360 **Diallyl ether**
2361 **Diisobutylamine**
2362 **1,1-Dichloroethane**
2363 **Ethyl mercaptan**
2364 **n-Propylbenzene**
2366 **Diethyl carbonate**
2367 **alpha-Methylvaleraldehyde**
2368 **alpha-Pinene**
2370 **1-Hexene**
2371 **Isopentenes**
2372 **1,2-Di-(dimethylamino) ethane**
2373 **Diethoxymethane**
2374 **3,3-Diethoxypropene**
2375 **Diethyl sulphide**
2376 **2,3-Dihydropyran**
2377 **1,1-Dimethoxyethane**
2378 **2-Dimethylaminoacetonitrile**
2379 **1,3-Dimethylbutylamine**
2380 **Dimethyldiethoxysilane**
2381 **Dimethyl disulphide**
2382 **Dimethylhydrazine, symmetrical**
2383 **Dipropylamine**
2384 **Di-n-propyl ether**
2385 **Ethyl isobutyrate**
2386 **1-Ethylpiperidine**
2387 **Fluorobenzene**
2388 **Fluorotoluenes**
2389 **Furan**
2390 **2-Iodobutane**
2391 **Iodomethylpropanes**
2392 **Iodopropanes**
2393 **Isobutyl formate**
2394 **Isobutyl propionate**
2395 **Isobutyryl chloride**
2396 **Methacrylaldehyde, stabilized**
2397 **3-Methylbutan-2-one**
2398 **Methyl tert-butyl ether**
2399 **1-Methylpiperidine**
2400 **Methyl isovalerate**
2401 **Piperidine**
2402 **Propanethiols**

2403 **Isopropenyl acetate**
2404 **Propionitrile**
2405 **Isopropyl butyrate**
2406 **Isopropyl isobutyrate**
2407 **Isopropyl chloroformate**
2409 **Isopropyl propionate**
2410 **1,2,3,6-Tetrahydropyridine**
2411 **Butyronitrile**
2412 **Tetrahydrothiophene**
2413 **Tetrapropyl orthotitanate**
2414 **Thiophene**
2416 **Trimethyl borate**
2417 **Carbonyl fluoride**
2418 **Sulphur tetrafluoride**
2419 **Bromotrifluoroethylene**
2420 **Hexafluoroacetone**
2421 **Nitrogen trioxide**
2422 **Octafluorobut-2-ene**
or **Refrigerant gas R 1318**
2424 **Octafluoropropane**
or **Refrigerant gas R 218**
2426 **Ammonium nitrate, liquid** (hot concentrated solution)
2427 **Potassium chlorate, aqueous solution**
2428 **Sodium chlorate, aqueous solution**
2429 **Calcium chlorate, aqueous solution**
2430 **Alkylphenols, solid, n.o.s.** (including C_2-C_{12} homologues)
2431 **Anisidines**
2432 **N,N-Diethylaniline**
2433 **Chloronitrotoluenes, liquid**
2434 **Dibenzyldichlorosilane**
2435 **Ethylphenyldichlorosilane**
2436 **Thioacetic acid**
2437 **Methylphenyldichlorosilane**
2438 **Trimethylacetyl chloride**
2439 **Sodium hydrogendifluoride**
2440 **Stannic chloride pentahydrate**
2441 **Titanium trichloride mixture, pyrophoric**
or **Titanium trichloride, pyrophoric**
2442 **Trichloroacetyl chloride**
2443 **Vanadium oxytrichloride**
2444 **Vanadium tetrachloride**
2446 **Nitrocresols, solid**
2447 **Phosphorus, white, molten**
2448 **Sulphur, molten**
2451 **Nitrogen trifluoride**
2452 **Ethylacetylene, stabilized**
2453 **Ethyl fluoride**
or **Refrigerant gas R 161**
2454 **Methyl fluoride**
or **Refrigerant gas R 41**
2456 **2-Chloropropene**
2457 **2,3-Dimethylbutane**
2458 **Hexadiene**
2459 **2-Methyl-1-butene**
2460 **2-Methyl-2-butene**
2461 **Methylpentadiene**
2463 **Aluminium hydride**
2464 **Beryllium nitrate**
2465 **Dichloroisocyanuric acid, dry**
or **Dichloroisocyanuric acid salts**
2466 **Potassium superoxide**
2468 **Trichloroisocyanuric acid, dry**
2469 **Zinc bromate**
2470 **Phenylacetonitrile, liquid**
2471 **Osmium tetroxide**
2473 **Sodium arsanilate**
2474 **Thiophosgene**
2475 **Vanadium trichloride**
2477 **Methyl isothiocyanate**
2478 **Isocyanates, flammable, toxic, n.o.s.**
or **Isocyanate solution, flammable, toxic, n.o.s.**
2480 **Methyl isocyanate**
2481 **Ethyl isocyanate**
2482 **n-Propyl isocyanate**
2483 **Isopropyl isocyanate**
2484 **tert-Butyl isocyanate**
2485 **n-Butyl isocyanate**
2486 **Isobutyl isocyanate**
2487 **Phenyl isocyanate**
2488 **Cyclohexyl isocyanate**
2490 **Dichloroisopropyl ether**
2491 **Ethanolamine**
or **Ethanolamine solution**
2493 **Hexamethyleneimine**
2495 **Iodine pentafluoride**
2496 **Propionic anhydride**

2498 **1,2,3,6-Tetrahydrobenzaldehyde**

2501 **Tris-(1-aziridinyl) phosphine oxide solution**

2502 **Valeryl chloride**

2503 **Zirconium tetrachloride**

2504 **Tetrabromoethane**

2505 **Ammonium fluoride**

2506 **Ammonium hydrogen sulphate**

2507 **Chloroplatinic acid, solid**

2508 **Molybdenum pentachloride**

2509 **Potassium hydrogen sulphate**

2511 **2-Chloropropionic acid**

2512 **Aminophenols** (o-,m-,p-)

2513 **Bromoacetyl bromide**

2514 **Bromobenzene**

2515 **Bromoform**

2516 **Carbon tetrabromide**

2517 **1-Chloro-1,1-difluoroethane**

or **Refrigerant gas R 142b**

2518 **1,5,9-Cyclododecatriene**

2520 **Cyclooctadienes**

2521 **Diketene, stabilized**

2522 **2-Dimethylaminoethyl methacrylate**

2524 **Ethyl orthoformate**

2525 **Ethyl oxalate**

2526 **Furfurylamine**

2527 **Isobutyl acrylate, stabilized**

2528 **Isobutyl isobutyrate**

2529 **Isobutyric acid**

2531 **Methacrylic acid, stabilized**

2533 **Methyl trichloroacetate**

2534 **Methylchlorosilane**

2535 **4-Methylmorpholine**

or **N-Methylmorpholine**

2536 **Methyltetrahydrofuran**

2538 **Nitronaphthalene**

2541 **Terpinolene**

2542 **Tributylamine**

2545 **Hafnium powder, dry**

2546 **Titanium powder, dry**

2547 **Sodium superoxide**

2548 **Chlorine pentafluoride**

2552 **Hexafluoroacetone hydrate, liquid**

2554 **Methylallyl chloride**

2555 **Nitrocellulose with water**, not less than 25% water by mass

2556 **Nitrocellulose with alcohol**, not less than 25% alcohol, by mass, and not more than 12.6% nitrogen, by dry mass

2557 **Nitrocellulose**, with not more than 12.6% nitrogen, by dry mass, **mixture without plasticizer, without pigment**

or **Nitrocellulose**, with not more than 12.6% nitrogen, by dry mass, **mixture without plasticizer, with pigment**

or **Nitrocellulose**, with not more than 12.6% nitrogen, by dry mass, **mixture with plasticizer, without pigment**

or **Nitrocellulose**, with not more than 12.6% nitrogen, by dry mass, **mixture with plasticizer, with pigment**

2558 **Epibromohydrin**

2560 **2-Methylpentan-2-ol**

2561 **3-Methyl-1-butene**

2564 **Trichloroacetic acid solution**

2565 **Dicyclohexylamine**

2567 **Sodium pentachlorophenate**

2570 **Cadmium compound**

2571 **Alkylsulphuric acids**

2572 **Phenylhydrazine**

2573 **Thallium chlorate**

2574 **Tricresyl phosphate** with more than 3% ortho isomer

2576 **Phosphorus oxybromide, molten**

2577 **Phenylacetyl chloride**

2578 **Phosphorus trioxide**

2579 **Piperazine**

2580 **Aluminium bromide solution**

2581 **Aluminium chloride solution**

2582 **Ferric chloride solution**

2583 **Alkylsulphonic acids, solid** with more than 5% free sulphuric acid

or **Arylsulphonic acids, solid** with more than 5% free sulphuric acid

2584 **Alkylsulphonic acids, liquid** with more than 5% free sulphuric acid

or **Arylsulphonic acids, liquid** with more than 5% free sulphuric acid

2585 **Alkylsulphonic acids, solid** with not more than 5% free sulphuric acid

or **Arylsulphonic acids, solid** with not more than 5% free sulphuric acid

2586 **Alkylsulphonic acids, liquid** with not more than 5% free sulphuric acid

or **Arylsulphonic acids, liquid** with not more than 5% free sulphuric acid

2587 **Benzoquinone**

2588 **Pesticide, solid, toxic, n.o.s.**

2589 **Vinyl chloroacetate**

2590 **White asbestos** (chrysotile, actinolite, anthophyllite, tremolite)

2591 **Xenon, refrigerated liquid**

2599 **Chlorotrifluoromethane and trifluoromethane azeotropic mixture** with approximately 60% chlorotrifluoromethane

or **Refrigerant gas R 503**

2601 **Cyclobutane**

2602 **Dichlorodifluoromethane and difluoroethane azeotropic mixture** with approximately 74% dichlorodifluoromethane

or **Refrigerant gas R 500**

2603 **Cycloheptatriene**

2604 **Boron trifluoride diethyl etherate**

2605 **Methoxymethyl isocyanate**

2606 **Methyl orthosilicate**

2607 **Acrolein dimer, stabilized**

2608 **Nitropropanes**

2609 **Triallyl borate**

2610 **Triallylamine**

2611 **Propylene chlorohydrin**

2612 **Methyl propyl ether**

2614 **Methallyl alcohol**

2615 **Ethyl propyl ether**

2616 **Triisopropyl borate**

2617 **Methylcyclohexanols**, flammable

2618 **Vinyltoluenes, stabilized**

2619 **Benzyldimethylamine**

2620 **Amyl butyrates**

2621 **Acetyl methyl carbinol**

2622 **Glycidaldehyde**

2623 **Firelighters, solid** with flammable liquid

2624 **Magnesium silicide**

2626 **Chloric acid, aqueous solution** with not more than 10% chloric acid

2627 **Nitrites, inorganic, n.o.s.**

2628 **Potassium fluoroacetate**

2629 **Sodium fluoroacetate**

2630 **Selenates**

or **Selenites**

2642 **Fluoroacetic acid**

2643 **Methyl bromoacetate**

2644 **Methyl iodide**

2645 **Phenacyl bromide**

2646 **Hexachlorocyclopentadiene**

2647 **Malononitrile**

2648 **1,2-Dibromobutan-3-one**

2649 **1,3-Dichloroacetone**

2650 **1,1-Dichloro-1-nitroethane**

2651 **4,4'-Diaminodiphenylmethane**

2653 **Benzyl iodide**

2655 **Potassium fluorosilicate**

2656 **Quinoline**

2657 **Selenium disulphide**

2659 **Sodium chloroacetate**

2660 **Nitrotoluidines (mono)**

2661 **Hexachloroacetone**

2664 **Dibromomethane**

2667 **Butyltoluenes**

2668 **Chloroacetonitrile**

2669 **Chlorocresols solution**

2670 **Cyanuric chloride**

2671 **Aminopyridines** (o-,m-,p-)

2672 **Ammonia solution**, relative density between 0.880 and 0.957 at 15ºC in water, with more than 10% but not more than 35% ammonia

2673 **2-Amino-4-chlorophenol**

2674 **Sodium fluorosilicate**

2676 **Stibine**

2677 **Rubidium hydroxide solution**

2678 **Rubidium hydroxide**

2679 **Lithium hydroxide solution**

2680 **Lithium hydroxide**

2681 **Caesium hydroxide solution**

2682 **Caesium hydroxide**

2683 **Ammonium sulphide solution**

2684 **3-Diethylaminopropylamine**

2685 **N,N-Diethylethylenediamine**

2686 **2-Diethylaminoethanol**

2687 **Dicyclohexylammonium nitrite**

2688 **1-Bromo-3-chloropropane**

2689 **Glycerol alpha-monochlorohydrin**

2690 **N,n-Butylimidazole**

2691 **Phosphorus pentabromide**

2692 **Boron tribromide**

2693 **Bisulphites, aqueous solution, n.o.s.**

2698 **Tetrahydrophthalic anhydrides** with more than 0.05% of maleic anhydride

2699 **Trifluoroacetic acid**

2705 **1-Pentol**

2707 **Dimethyldioxanes**

2709 **Butylbenzenes**

2710 **Dipropyl ketone**

2713 **Acridine**

2714 **Zinc resinate**

2715 **Aluminium resinate**

2716 **1,4-Butynediol**

2717 **Camphor**, synthetic

2719 **Barium bromate**

2720 **Chromium nitrate**

2721 **Copper chlorate**

2722 **Lithium nitrate**

2723 **Magnesium chlorate**

2724 **Manganese nitrate**

2725 **Nickel nitrate**

2726 **Nickel nitrite**

2727 **Thallium nitrate**

2728 **Zirconium nitrate**

2729 **Hexachlorobenzene**

2730 **Nitroanisoles, liquid**

2732 **Nitrobromobenzene, liquid**

2733 **Amines, flammable, corrosive, n.o.s.**

or **Polyamines, flammable, corrosive, n.o.s.**

2734 **Amines, liquid, corrosive, flammable, n.o.s.**

or **Polyamines, liquid, corrosive, flammable, n.o.s.**

2735 **Amines, liquid, corrosive, n.o.s.**

or **Polyamines, liquid, corrosive, n.o.s.**

2738 **N-Butylaniline**

2739 **Butyric anhydride**

2740 **n-Propyl chloroformate**

2741 **Barium hypochlorite** with more than 22% available chlorine

2742 **Chloroformates, toxic, corrosive, flammable, n.o.s.**

2743 **n-Butyl chloroformate**

2744 **Cyclobutyl chloroformate**

2745 **Chloromethyl chloroformate**

2746 **Phenyl chloroformate**

2747 **tert-Butylcyclohexyl chloroformate**

2748 **2-Ethylhexyl chloroformate**

2749 **Tetramethylsilane**

2750 **1,3-Dichloropropanol-2**

2751 **Diethylthiophosphoryl chloride**

2752 **1,2-Epoxy-3-ethoxypropane**

2753 **N-Ethylbenzyltoluidines, liquid**

2754 **N-Ethyltoluidines**

2757 **Carbamate pesticide, solid, toxic**

2758 **Carbamate pesticide, liquid, flammable, toxic**, flash point less than 23ºC

2759 **Arsenical pesticide, solid, toxic**

2760 **Arsenical pesticide, liquid, flammable, toxic**, flash point less than 23ºC

2761 **Organochlorine pesticide, solid, toxic**

2762 **Organochlorine pesticide, liquid, flammable, toxic**, flash point less than 23°C

2763 **Triazine pesticide, solid, toxic**

2764 **Triazine pesticide, liquid, flammable, toxic**, flash point less than 23°C

2771 **Thiocarbamate pesticide, solid, toxic**

2772 **Thiocarbamate pesticide, liquid, flammable, toxic**, flash point less than 23°C

2775 **Copper based pesticide, solid, toxic**

2776 **Copper based pesticide, liquid, flammable, toxic**, flash point less than 23ºC

2777 **Mercury based pesticide, solid, toxic**

2778 **Mercury based pesticide, liquid, flammable, toxic**, flash point less than 23°C

2779 **Substituted nitrophenol pesticide, solid, toxic**

2780 **Substituted nitrophenol pesticide, liquid, flammable, toxic**, flash point less than 23°C

2781 **Bipyridilium pesticide, solid, toxic**

2782 **Bipyridilium pesticide, toxic, liquid, flammable**, flash point less than 23ºC

2783 **Organophosphorus pesticide, solid, toxic**

2784 **Organophosphorus pesticide, liquid, flammable, toxic**, flash point less than 23°C

2785 **4-Thiapentanal**

2786 **Organotin pesticide, solid, toxic**

2787 **Organotin pesticide, liquid, flammable, toxic**, flash point less than 23°C

2788 **Organotin compound, liquid, n.o.s.**

2789 **Acetic acid, glacial**

or **Acetic acid solution**, more than 80% acid, by mass

2790 **Acetic acid solution**, more than 10% but less than 50%

or **Acetic acid solution**, not less than 50% but not more than 80% acid, by mass

2793 **Ferrous metal borings** in a form liable to self-heating
or **Ferrous metal cuttings** in a form liable to self-heating
or **Ferrous metal shavings** in a form liable to self-heating
or **Ferrous metal turnings** in a form liable to self-heating

2794 **Batteries, wet, filled with acid**, electric storage

2795 **Batteries, wet, filled with alkali**, electric storage

2796 **Battery fluid, acid**
or **Sulphuric acid** with not more than 51% acid

2797 **Battery fluid, alkali**

2798 **Phenylphosphorus dichloride**

2799 **Phenylphosphorus thiodichloride**

2800 **Batteries, wet, non-spillable**, electric storage

2801 **Dye intermediate, liquid, corrosive, n.o.s.**
or **Dye, liquid, corrosive, n.o.s.**

2802 **Copper chloride**

2803 **Gallium**

2805 **Lithium hydride, fused solid**

2806 **Lithium nitride**

2807 **Magnetized material**

2809 **Mercury**
or **Mercury** contained in manufactured articles

2810 **Toxic liquid, organic, n.o.s.**

2811 **Toxic solid, organic, n.o.s.**

2812 **Sodium aluminate, solid**

2813 **Water-reactive solid, n.o.s.**

2814 **Infectious substance, affecting humans**

2815 **N-Aminoethylpiperazine**

2817 **Ammonium hydrogendifluoride solution**

2818 **Ammonium polysulphide solution**

2819 **Amyl acid phosphate**

2820 **Butyric acid**

2821 **Phenol solution**

2822 **2-Chloropyridine**

2823 **Crotonic acid, solid**

2826 **Ethyl chlorothioformate**

2829 **Caproic acid**

2830 **Lithium ferrosilicon**

2831 **1,1,1-Trichloroethane**

2834 **Phosphorous acid**

2835 **Sodium aluminium hydride**

2837 **Bisulphates, aqueous solution**

2838 **Vinyl butyrate, stabilized**

2839 **Aldol**

2840 **Butyraldoxime**

2841 **Di-n-amylamine**

2842 **Nitroethane**

2844 **Calcium manganese silicon**

2845 **Pyrophoric liquid, organic, n.o.s.***

2846 **Pyrophoric solid, organic, n.o.s.**

2849 **3-Chloropropanol-1**

2850 **Propylene tetramer**

2851 **Boron trifluoride dihydrate**

2852 **Dipicryl sulphide, wetted** with not less than 10% water, by mass

2853 **Magnesium fluorosilicate**

2854 **Ammonium fluorosilicate**

2855 **Zinc fluorosilicate**

2856 **Fluorosilicates, n.o.s.**

2857 **Refrigerating machines** containing non-flammable, non-toxic gases or ammonia solutions (UN 2672)

2858 **Zirconium, dry**, coiled wire, finished metal sheets, strip (thinner than 254 microns but not thinner than 18 microns)

2859 **Ammonium metavanadate**

2861 **Ammonium polyvanadate**

2862 **Vanadium pentoxide**, non-fused form

2863 **Sodium ammonium vanadate**

2864 **Potassium metavanadate**

2865 **Hydroxylamine sulphate**

2869 **Titanium trichloride mixture**

2870 **Aluminium borohydride**
or **Aluminium borohydride in devices**

2871 **Antimony powder**

2872 **Dibromochloropropanes**

2873 **Dibutylaminoethanol**

2874 **Furfuryl alcohol**

2875 **Hexachlorophene**

2876 **Resorcinol**

2878 **Titanium sponge granules**
or **Titanium sponge powders**

2879 **Selenium oxychloride**

2880 **Calcium hypochlorite, hydrated** with not less than 5.5% but not more than 16% water
or **Calcium hypochlorite, hydrated mixture** with not less than 5.5% but not more than 16% water

2881 **Metal catalyst, dry**

2900 **Infectious substance, affecting animals** only

2901 **Bromine chloride**

2902 **Pesticide, liquid, toxic, n.o.s.**

2903 **Pesticide, liquid, toxic, flammable, n.o.s.**, flash point not less than 23°C

2904 **Chlorophenolates, liquid**

or **Phenolates, liquid**

2905 **Chlorophenolates, solid**

or **Phenolates, solid**

2907 **Isosorbide dinitrate mixture** with not less than 60% lactose, mannose, starch or calcium hydrogen phosphate

2908 **Radioactive material, excepted package — empty packaging**

2909 **Radioactive material, excepted package — articles manufactured from natural uranium** or **depleted uranium** or **natural thorium**

or **Radioactive material, excepted package — articles manufactured from natural uranium** or **depleted uranium** or **natural thorium**

2910 **Radioactive material, excepted package — limited quantity of material**

2911 **Radioactive material, excepted package — instruments** or **articles**

2912 **Radioactive material, low specific activity (LSA-I)**, non-fissile or fissile excepted

2913 **Radioactive material, surface contaminated objects (SCO-I** or **SCO-II)**, non-fissile or fissile excepted

2915 **Radioactive material, Type A package**, non-special form, non-fissile or fissile excepted

2916 **Radioactive material, Type B(U) package**, non-fissile or fissile excepted

2917 **Radioactive material, Type B(M) package**, non-fissile or fissile excepted

2919 **Radioactive material, transported under special arrangement**, non-fissile or fissile excepted

2920 **Corrosive liquid, flammable, n.o.s.**

2921 **Corrosive solid, flammable, n.o.s.**

2922 **Corrosive liquid, toxic, n.o.s.**

2923 **Corrosive solid, toxic, n.o.s.**

2924 **Flammable liquid, corrosive, n.o.s.**

2925 **Flammable solid, corrosive, organic, n.o.s.**

2926 **Flammable solid, toxic, organic, n.o.s.**

2927 **Toxic liquid, corrosive, organic, n.o.s.**

2928 **Toxic solid, corrosive, organic, n.o.s.**

2929 **Toxic liquid, flammable, organic, n.o.s.**

2930 **Toxic solid, flammable, organic, n.o.s.**

2931 **Vanadyl sulphate**

2933 **Methyl 2-chloropropionate**

2934 **Isopropyl 2-chloropropionate**

2935 **Ethyl 2-chloropropionate**

2936 **Thiolactic acid**

2937 **alpha-Methylbenzyl alcohol, liquid**

2940 **Cyclooctadiene phosphines**

or **9-Phosphabicyclononanes**

2941 **Fluoroanilines**

2942 **2-Trifluoromethylaniline**

2943 **Tetrahydrofurfurylamine**

2945 **N-Methylbutylamine**

2946 **2-Amino-5-diethylaminopentane**

2947 **Isopropyl chloroacetate**

2948 **3-Trifluoromethylaniline**

2949 **Sodium hydrosulphide, hydrated** with not less than 25% water of crystallization

2950 **Magnesium granules, coated**, particle size not less than 149 microns

2956 **5-tert-Butyl-2,4,6-trinitro-m-xylene**

or **Musk xylene**

2965 **Boron trifluoride dimethyl etherate**

2966 **Thioglycol**

2967 **Sulphamic acid**

2968 **Maneb preparation, stabilized** against self-heating

or **Maneb stabilized** against self-heating

2969 **Castor beans**

or **Castor flake**

or **Castor meal**

or **Castor pomace**

2977 **Radioactive material, uranium hexafluoride, fissile**

2978 **Radioactive material, uranium hexafluoride**, non-fissile or fissile excepted

2983 **Ethylene oxide and propylene oxide mixture**, not more than 30% ethylene oxide

2984 **Hydrogen peroxide, aqueous solution** with not less than 8% but less than 20% hydrogen peroxide (stabilized as necessary)

2985 **Chlorosilanes, flammable, corrosive, n.o.s.**

2986 **Chlorosilanes, corrosive, flammable, n.o.s.**

2987 **Chlorosilanes, corrosive, n.o.s.**

2988 **Chlorosilanes, water-reactive, flammable, corrosive, n.o.s.**

2989 **Lead phosphite, dibasic**

2990 **Life-saving appliances, self-inflating**

2991 **Carbamate pesticide, liquid, toxic, flammable**, flash point not less than 23ºC

2992 **Carbamate pesticide, liquid, toxic**

2993 **Arsenical pesticide, liquid, toxic, flammable**, flash point not less than 23ºC

2994 **Arsenical pesticide, liquid, toxic**

2995 **Organochlorine pesticide, liquid, toxic, flammable**, flash point not less than 23°C

2996 **Organochlorine pesticide, liquid, toxic**

2997 **Triazine pesticide, liquid, toxic, flammable**, flash point not less than 23°C

2998 **Triazine pesticide, liquid, toxic**

3005 **Thiocarbamate pesticide, liquid, toxic, flammable**, flash point not less than 23°C

3006 **Thiocarbamate pesticide, liquid, toxic**

3009 **Copper based pesticide, liquid, toxic, flammable**, flash point not less than 23ºC

3010 **Copper based pesticide, liquid, toxic**

3011 **Mercury based pesticide, liquid, toxic, flammable**, flash point not less than 23°C

3012 **Mercury based pesticide, liquid, toxic**

3013 **Substituted nitrophenol pesticide, liquid, toxic, flammable**, flash point not less than 23°C

3014 **Substituted nitrophenol pesticide, liquid, toxic**

3015 **Bipyridilium pesticide, liquid, toxic, flammable**, flash point not less than 23ºC

3016 **Bipyridilium pesticide, liquid, toxic**

3017 **Organophosphorus pesticide, liquid, toxic, flammable**, flash point not less than 23°C

3018 **Organophosphorus pesticide, liquid, toxic**

3019 **Organotin pesticide, liquid, toxic, flammable**, flash point not less than 23°C

3020 **Organotin pesticide, liquid, toxic**

3021 **Pesticide, liquid, flammable, toxic, n.o.s.**, flash point less than 23°C

3022 **1,2-Butylene oxide, stabilized**

3023 **2-Methyl-2-heptanethiol**

3024 **Coumarin derivative pesticide, liquid, flammable, toxic**, flash point less than 23ºC

3025 **Coumarin derivative pesticide, liquid, toxic, flammable**, flash point not less than 23ºC

3026 **Coumarin derivative pesticide, liquid, toxic**

3027 **Coumarin derivative pesticide, solid, toxic**

3028 **Batteries, dry, containing potassium hydroxide solid**, electric storage

3048 **Aluminium phosphide pesticide**

3054 **Cyclohexyl mercaptan**

3055 **2-(2-Aminoethoxy)ethanol**

3056 **n-Heptaldehyde**

3057 **Trifluoroacetyl chloride**

3064 **Nitroglycerin solution in alcohol** with more than 1% but not more than 5% nitroglycerin

3065 **Alcoholic beverages** containing more than 70% alcohol by volume

or **Alcoholic beverages** containing more than 24% but not more than 70% alcohol by volume

3066 **Paint** (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base)

or **Paint related material** (including paint thinning or reducing compound)

3070 **Ethylene oxide and dichlorodifluoromethane mixture**, with not more than 12.5% ethylene oxide

3071 **Mercaptan mixture, liquid, toxic, flammable, n.o.s.**

or **Mercaptans, liquid, toxic, flammable, n.o.s.**

3072 **Life-saving appliances, not self-inflating** containing dangerous goods as equipment

3073 **Vinylpyridines, stabilized**

3077 **Environmentally hazardous substance, solid, n.o.s.**

3078 **Cerium**, turnings or gritty powder

3079 **Methacrylonitrile, stabilized**

3080 **Isocyanate solution, toxic, flammable, n.o.s.**

or **Isocyanates, toxic, flammable, n.o.s.**

3082 **Environmentally hazardous substance, liquid, n.o.s.**

3083 **Perchloryl fluoride**

3084 **Corrosive solid, oxidizing, n.o.s.**

3085 **Oxidizing solid, corrosive, n.o.s.**

3086 **Toxic solid, oxidizing, n.o.s.**

3087 **Oxidizing solid, toxic, n.o.s.**

3088 **Self-heating solid, organic, n.o.s.**

3089 **Metal powder, flammable, n.o.s.**

3090 **Lithium metal batteries** (including lithium alloy batteries)

3091 **Lithium metal batteries contained in equipment** (including lithium alloy batteries)

or **Lithium metal batteries packed with equipment** (including lithium alloy batteries)

3092 **1-Methoxy-2-propanol**

3093 **Corrosive liquid, oxidizing, n.o.s.**

3094 **Corrosive liquid, water-reactive, n.o.s.**

3095 **Corrosive solid, self-heating, n.o.s.**

3096 **Corrosive solid, water-reactive, n.o.s.**

3097 **Flammable solid, oxidizing, n.o.s.**

3098 **Oxidizing liquid, corrosive, n.o.s.**

3099 **Oxidizing liquid, toxic, n.o.s.**

3100 **Oxidizing solid, self-heating, n.o.s.**

3103 **Organic peroxide type C, liquid**

3104 **Organic peroxide type C, solid**

3105 **Organic peroxide type D, liquid**

3106 **Organic peroxide type D, solid**

3107 **Organic peroxide type E, liquid**

3108 **Organic peroxide type E, solid**

3109 **Organic peroxide type F, liquid**

3110 **Organic peroxide type F, solid**

3113 **Organic peroxide type C, liquid, temperature controlled**

3114 **Organic peroxide type C, solid, temperature controlled**

3115 **Organic peroxide type D, liquid, temperature controlled**

3116 **Organic peroxide type D, solid, temperature controlled**

3117 **Organic peroxide type E, liquid, temperature controlled**

3118 **Organic peroxide type E, solid, temperature controlled**

3119 **Organic peroxide type F, liquid, temperature controlled**

3120 **Organic peroxide type F, solid, temperature controlled**

3121 **Oxidizing solid, water-reactive, n.o.s.**

3122 **Toxic liquid, oxidizing, n.o.s.**

3123 **Toxic liquid, water-reactive, n.o.s.**

3124 **Toxic solid, self-heating, n.o.s.**

3125 **Toxic solid, water-reactive, n.o.s.**

3126 **Self-heating solid, corrosive, organic, n.o.s.**

3127 **Self-heating solid, oxidizing, n.o.s.**

3128 **Self-heating solid, toxic, organic, n.o.s.**

3129 **Water-reactive liquid, corrosive, n.o.s.**

3130 **Water-reactive liquid, toxic, n.o.s.**

3131 **Water-reactive solid, corrosive, n.o.s.**

3132 **Water-reactive solid, flammable, n.o.s.**

3133 **Water-reactive solid, oxidizing, n.o.s.**

3134 **Water-reactive solid, toxic, n.o.s.**

3135 **Water-reactive solid, self-heating, n.o.s.**

3136 **Trifluoromethane, refrigerated liquid**

3137 **Oxidizing solid, flammable, n.o.s.**

3138 **Ethylene, acetylene and propylene mixture, refrigerated liquid** containing at least 71.5% ethylene with not more than 22.5% acetylene and not more than 6% propylene

3139 **Oxidizing liquid, n.o.s.**

3140 **Alkaloid salts, liquid, n.o.s.**

or **Alkaloids, liquid, n.o.s.**

3141 **Antimony compound, inorganic, liquid, n.o.s.**

3142 **Disinfectant, liquid, toxic, n.o.s.**

3143 **Dye intermediate, solid, toxic, n.o.s.**

or **Dye, solid, toxic, n.o.s.**

3144 **Nicotine compound, liquid, n.o.s.**

or **Nicotine preparation, liquid, n.o.s.**

3145 **Alkylphenols, liquid, n.o.s.** (including C_2-C_{12} homologues)

3146 **Organotin compound, solid, n.o.s.**

3147 **Dye intermediate, solid, corrosive, n.o.s.**

or **Dye, solid, corrosive, n.o.s.**

3148 **Water-reactive liquid, n.o.s.**

3149 **Hydrogen peroxide and peroxyacetic acid mixture** with acid(s), water and not more than 5% peroxyacetic acid, **stabilized**

3150 **Devices, small, hydrocarbon gas powered** with release device

or **Hydrocarbon gas refills for small devices** with release device

3151 **Polyhalogenated biphenyls, liquid**

or **Polyhalogenated terphenyls, liquid**

3152 **Polyhalogenated biphenyls, solid**

or **Polyhalogenated terphenyls, solid**

3153 **Perfluoro(methyl vinyl ether)**

3154 **Perfluoro(ethyl vinyl ether)**

3155 **Pentachlorophenol**

3156 **Compressed gas, oxidizing, n.o.s.**

3157 **Liquefied gas, oxidizing, n.o.s.**

3158 **Gas, refrigerated liquid, n.o.s.**

3159 **Refrigerant gas R 134a**

or **1,1,1,2-Tetrafluoroethane**

3160 **Liquefied gas, toxic, flammable, n.o.s.**

3161 **Liquefied gas, flammable, n.o.s.**

3162 **Liquefied gas, toxic, n.o.s.**

3163 **Liquefied gas, n.o.s.**

3164 **Articles, pressurized, hydraulic** containing non-flammable gas

or **Articles, pressurized, pneumatic** containing non-flammable gas

3165 **Aircraft hydraulic power unit fuel tank** (containing a mixture of anhydrous hydrazine and methyl hydrazine) (M86 fuel)

3166 **Engines, internal combustion, flammable gas powered**

or **Engines, internal combustion, flammable liquid powered**

or **Vehicle, flammable gas powered**

or **Vehicle, flammable liquid powered**

3167 **Gas sample, non-pressurized, flammable, n.o.s.**, not refrigerated liquid

3168 **Gas sample, non-pressurized, toxic, flammable, n.o.s.**, not refrigerated liquid

3169 **Gas sample, non-pressurized, toxic, n.o.s.**, not refrigerated liquid

3170 **Aluminium remelting by-products**

or **Aluminium smelting by-products**

3171 **Battery-powered equipment**

or **Battery-powered vehicle**

3172 **Toxins, extracted from living sources, liquid, n.o.s.**

3174 **Titanium disulphide**

3175 **Solids containing flammable liquid, n.o.s.**

3176 **Flammable solid, organic, molten, n.o.s.**

3178 **Flammable solid, inorganic, n.o.s.**

3179 **Flammable solid, toxic, inorganic, n.o.s.**

3180 **Flammable solid, corrosive, inorganic, n.o.s.**

3181 **Metal salts of organic compounds, flammable, n.o.s.**

3182 **Metal hydrides, flammable, n.o.s.**

3183 **Self-heating liquid, organic, n.o.s.**

3184 **Self-heating liquid, toxic, organic, n.o.s.**

3185 **Self-heating liquid, corrosive, organic, n.o.s.**

3186 **Self-heating liquid, inorganic, n.o.s.**

3187 **Self-heating liquid, toxic, inorganic, n.o.s.**

3188 **Self-heating liquid, corrosive, inorganic, n.o.s.**

3189 **Metal powder, self-heating, n.o.s.**

3190 **Self-heating solid, inorganic, n.o.s.**

3191 **Self-heating solid, toxic, inorganic, n.o.s.**

3192 **Self-heating solid, corrosive, inorganic, n.o.s.**

3194 **Pyrophoric liquid, inorganic, n.o.s.**

3200 **Pyrophoric solid, inorganic, n.o.s.**

3205 **Alkaline earth metal alcoholates, n.o.s.**

3206 **Alkali metal alcoholates, self-heating, corrosive, n.o.s.**

3208 **Metallic substance, water-reactive, n.o.s.**

3209 **Metallic substance, water-reactive, self-heating, n.o.s.**

3210 **Chlorates, inorganic, aqueous solution, n.o.s.**

3211 **Perchlorates, inorganic, aqueous solution, n.o.s.**

3212 **Hypochlorites, inorganic, n.o.s.**

3213 **Bromates, inorganic, aqueous solution, n.o.s.**

3214 **Permanganates, inorganic, aqueous solution, n.o.s.**

3215 **Persulphates, inorganic, n.o.s.**

3216 **Persulphates, inorganic, aqueous solution, n.o.s.**

3218 **Nitrates, inorganic, aqueous solution, n.o.s.**

3219 **Nitrites, inorganic, aqueous solution, n.o.s.**

3220 **Pentafluoroethane**

or **Refrigerant gas R 125**

3221 **Self-reactive liquid type B**

3223 **Self-reactive liquid type C**

3224 **Self-reactive solid type C**

3225 **Self-reactive liquid type D**

3226 **Self-reactive solid type D**

3227 **Self-reactive liquid type E**

3228 **Self-reactive solid type E**

3229 **Self-reactive liquid type F**

3230 **Self-reactive solid type F**

3231 **Self-reactive liquid type B, temperature controlled**

3233 **Self-reactive liquid type C, temperature controlled**

3234 **Self-reactive solid type C, temperature controlled**

3235 **Self-reactive liquid type D, temperature controlled**

3236 **Self-reactive solid type D, temperature controlled**

3237 **Self-reactive liquid type E, temperature controlled**

3238 **Self-reactive solid type E, temperature controlled**

3239 **Self-reactive liquid type F, temperature controlled**

3240 **Self-reactive solid type F, temperature controlled**

3241 **2-Bromo-2-nitropropane-1,3-diol**

3242 **Azodicarbonamide**

3243 **Solids containing toxic liquid, n.o.s.**

3244 **Solids containing corrosive liquid, n.o.s.**

3245 **Genetically modified micro-organisms**

or **Genetically modified organisms**

3246 **Methanesulphonyl chloride**

3247 **Sodium peroxoborate, anhydrous**

3248 **Medicine, liquid, flammable, toxic, n.o.s.**

3249 **Medicine, solid, toxic, n.o.s.**

3250 **Chloroacetic acid, molten**

3251 **Isosorbide-5-mononitrate**

3252 **Difluoromethane**

or **Refrigerant gas R 32**

3253 **Disodium trioxosilicate**

3254 **Tributylphosphane**

3255 **tert-Butyl hypochlorite**

3256 **Elevated temperature liquid, flammable, n.o.s.**, with flash point above 60°C, at or above its flash point

3257 **Elevated temperature liquid, n.o.s.**, at or above 100°C and below its flash point (including molten metals, molten salts, etc.)

3258 **Elevated temperature solid, n.o.s.**, at or above 240°C

3259 **Amines, solid, corrosive, n.o.s.**

or **Polyamines, solid, corrosive, n.o.s.**

3260 **Corrosive solid, acidic, inorganic, n.o.s.**

3261 **Corrosive solid, acidic, organic, n.o.s.**

3262 **Corrosive solid, basic, inorganic, n.o.s.**

3263 **Corrosive solid, basic, organic, n.o.s.**

3264 **Corrosive liquid, acidic, inorganic, n.o.s.**

3265 **Corrosive liquid, acidic, organic, n.o.s.**

3266 **Corrosive liquid, basic, inorganic, n.o.s.**

3267 **Corrosive liquid, basic, organic, n.o.s.**

3268 **Air bag inflators**

or **Air bag modules**

or **Seat-belt pretensioners**

3269 **Polyester resin kit**

3270 **Nitrocellulose membrane filters** with not more than 12.6% nitrogen, by dry mass

3271 **Ethers, n.o.s.**

3272 **Esters, n.o.s.**

3273 **Nitriles, flammable, toxic, n.o.s.**

3274 **Alcoholates solution, n.o.s.**, in alcohol

3275 **Nitriles, toxic, flammable, n.o.s.**

3276 **Nitriles, toxic, liquid, n.o.s.**

3277 **Chloroformates, toxic, corrosive, n.o.s.**

3278 **Organophosphorus compound, toxic, liquid, n.o.s.**

3279 **Organophosphorus compound, toxic, flammable, n.o.s.**

3280 **Organoarsenic compound, liquid, n.o.s.**

3281 **Metal carbonyls, liquid, n.o.s.**

3282 **Organometallic compound, toxic, liquid, n.o.s.**

3283 **Selenium compound, solid, n.o.s.**

3284 **Tellurium compound, n.o.s.**

3285 **Vanadium compound, n.o.s.**

3286 **Flammable liquid, toxic, corrosive, n.o.s.**

3287 **Toxic liquid, inorganic, n.o.s.**

3288 **Toxic solid, inorganic, n.o.s.**

3289 **Toxic liquid, corrosive, inorganic, n.o.s.**

3290 **Toxic solid, corrosive, inorganic, n.o.s.**

3291 **Biomedical waste, n.o.s.**

or **Clinical waste, unspecified, n.o.s.**

or **Medical waste, n.o.s**

or **Regulated medical waste, n.o.s.**

3292 **Batteries, containing sodium**

or **Cells, containing sodium**

3293 **Hydrazine, aqueous solution** with not more than 37% hydrazine, by mass

3294 **Hydrogen cyanide, solution in alcohol** with not more than 45% hydrogen cyanide

3295 **Hydrocarbons, liquid, n.o.s.**

3296 **Heptafluoropropane**

or **Refrigerant gas R 227**

3297 **Ethylene oxide and chlorotetrafluoroethane mixture**, with not more than 8.8% ethylene oxide

3298 **Ethylene oxide and pentafluoroethane mixture**, with not more than 7.9% ethylene oxide

3299 **Ethylene oxide and tetrafluoroethane mixture**, with not more than 5.6% ethylene oxide

3300 **Ethylene oxide and carbon dioxide mixture**, with more than 87% ethylene oxide

3301 **Corrosive liquid, self-heating, n.o.s.**

3302 **2-Dimethylaminoethyl acrylate**

3303 **Compressed gas, toxic, oxidizing, n.o.s.**

3304 **Compressed gas, toxic, corrosive, n.o.s.**

3305 **Compressed gas, toxic, flammable, corrosive, n.o.s.**

3306 **Compressed gas, toxic, oxidizing, corrosive, n.o.s.**

3307 **Liquefied gas, toxic, oxidizing, n.o.s.**

3308 **Liquefied gas, toxic, corrosive, n.o.s.**

3309 **Liquefied gas, toxic, flammable, corrosive, n.o.s.**

3310 **Liquefied gas, toxic, oxidizing, corrosive, n.o.s.**

3311 **Gas, refrigerated liquid, oxidizing, n.o.s.**

3312 **Gas, refrigerated liquid, flammable, n.o.s.**

3313 **Organic pigments, self-heating**

3314 **Plastics moulding compound** in dough, sheet or extruded rope form evolving flammable vapour

3315 **Chemical sample, toxic**

3316 **Chemical kit**

or **First aid kit**

3317 **2-Amino-4,6-dinitrophenol, wetted** with not less than 20% water by mass

3318 **Ammonia solution**, relative density less than 0.880 at 15ºC in water, with more than 50% ammonia

3319 **Nitroglycerin mixture, desensitized, solid, n.o.s.** with more than 2% but not more than 10% nitroglycerin, by mass

3320 **Sodium borohydride and sodium hydroxide solution**, with not more than 12% sodium borohydride and not more than 40% sodium hydroxide by mass

3321 **Radioactive material, low specific activity (LSA-II)**, non-fissile or fissile excepted

3322 **Radioactive material, low specific activity (LSA-III)**, non-fissile or fissile excepted

3323 **Radioactive material, Type C package**, non-fissile or fissile excepted

3324 **Radioactive material, low specific activity (LSA-II), fissile**

3325 **Radioactive material, low specific activity (LSA-III), fissile**

3326 **Radioactive material, surface contaminated objects (SCO-I** or **SCO-II), fissile**

3327 **Radioactive material, Type A package, fissile**, non-special form

3328 **Radioactive material, Type B(U) package, fissile**

3329 **Radioactive material, Type B(M) package, fissile**

3330 **Radioactive material, Type C package, fissile**

3331 **Radioactive material, transported under special arrangement, fissile**

3332 **Radioactive material, Type A package, special form**, non-fissile or fissile excepted

3333 **Radioactive material, Type A package, special form, fissile**

3334 **Aviation regulated liquid, n.o.s.**

3335 **Aviation regulated solid, n.o.s.**

3336 **Mercaptan mixture, liquid, flammable, n.o.s.**

or **Mercaptans, liquid, flammable, n.o.s.**

3337 **Refrigerant gas R 404A**

3338 **Refrigerant gas R 407A**

3339 **Refrigerant gas R 407B**

3340 **Refrigerant gas R 407C**

3341 **Thiourea dioxide**

3342 **Xanthates**

3343 **Nitroglycerin mixture, desensitized, liquid flammable, n.o.s.** with not more than 30% nitroglycerin, by mass

3344 **Pentaerythrite tetranitrate mixture desensitized, solid, n.o.s.** with more than 10% but not more than 20% PETN, by mass

or **Pentaerythritol tetranitrate mixture desensitized, solid, n.o.s.** with more than 10% but not more than 20% PETN, by mass

or **PETN mixture desensitized, solid, n.o.s.** with more than 10% but not more than 20% PETN, by mass

3345 **Phenoxyacetic acid derivative pesticide, solid, toxic**

3346 **Phenoxyacetic acid derivative pesticide, liquid, flammable, toxic**, flash point less than 23°C

3347 **Phenoxyacetic acid derivative pesticide, liquid, toxic,flammable**, flash point not less than 23°C

3348 **Phenoxyacetic acid derivative pesticide, liquid, toxic**

3349 **Pyrethroid pesticide, solid, toxic**

3350 **Pyrethroid pesticide, liquid flammable, toxic**, flash point less than 23°C

3351 **Pyrethroid pesticide, liquid, toxic, flammable**, flash point not less than 23°C

3352 **Pyrethroid pesticide, liquid, toxic**

3354 **Insecticide gas, flammable, n.o.s.**

3355 **Insecticide gas, toxic, flammable, n.o.s.**

3356 **Oxygen generator, chemical** (including when contained in associated equipment, e.g. passenger service units (PSUs), protective breathing equipment (PBE), etc.)

3357 **Nitroglycerin mixture, desensitized, liquid, n.o.s.** with not more than 30% nitroglycerin, by mass

3358 **Refrigerating machines** containing flammable, non-toxic, liquefied gas

3361 **Chlorosilanes, toxic, corrosive, n.o.s.**

3362 **Chlorosilanes, toxic, corrosive, flammable, n.o.s.**

3363 **Dangerous goods in apparatus**

or **Dangerous goods in machinery**

3364 **Picric acid, wetted** with not less than 10% water, by mass

or **Trinitrophenol, wetted** with not less than 10% water, by mass

3365 **Picryl chloride, wetted** with not less than 10% water, by mass

or **Trinitrochlorobenzene, wetted** with not less than 10% water, by mass

3366 **TNT, wetted** with not less than 10% water, by mass

or **Trinitrotoluene, wetted** with not less than 10% water, by mass

3367 **Trinitrobenzene, wetted** with not less than 10% water, by mass

3368 **Trinitrobenzoic acid, wetted** with not less than 10% water, by mass

3369 **Sodium dinitro-o-cresolate, wetted** with not less than 10% water, by mass

3370 **Urea nitrate, wetted** with not less than 10% water, by mass

3371 **2-Methylbutanal**

3373 **Biological substance, Category B**

3374 **Acetylene, solvent free**

3375 **Ammonium nitrate emulsion** intermediate for blasting explosives

or **Ammonium nitrate gel** intermediate for blasting explosives

or **Ammonium nitrate suspension** intermediate for blasting explosives

3376 **4-Nitrophenylhydrazine** with not less than 30% water, by mass

3377 **Sodium perborate monohydrate**

3378 **Sodium carbonate peroxyhydrate**

3379 **Desensitized explosive, liquid, n.o.s.**

3380 **Desensitized explosive, solid, n.o.s.**

3381 **Toxic by inhalation liquid, n.o.s.** with an inhalation toxicity lower than or equal to 200ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}

3382 **Toxic by inhalation liquid, n.o.s.** with an inhalation toxicity lower than or equal to 1 000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}

3383 **Toxic by inhalation liquid, flammable, n.o.s.** with an inhalation toxicity lower than or equal to 200 ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}

3384 **Toxic by inhalation liquid, flammable, n.o.s.** with an inhalation toxicity lower than or equal to 1 000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}

3385 **Toxic by inhalation liquid, water-reactive, n.o.s.** with an inhalation toxicity lower than or equal to 200 ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}

3386 **Toxic by inhalation liquid, water-reactive, n.o.s.** with an inhalation toxicity lower than or equal to 1 000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}

3387 **Toxic by inhalation liquid, oxidizing, n.o.s.** with an inhalation toxicity lower than or equal to 200 ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}

3388 **Toxic by inhalation liquid, oxidizing, n.o.s.** with an inhalation toxicity lower than or equal to 1 000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}

3389 **Toxic by inhalation liquid, corrosive, n.o.s.** with an inhalation toxicity lower than or equal to 200 ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}

3390 **Toxic by inhalation liquid, corrosive, n.o.s.** with an inhalation toxicity lower than or equal to 1 000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}

3391 **Organometallic substance, solid, pyrophoric**

3392 **Organometallic substance, liquid, pyrophoric**

3393 **Organometallic substance, solid, pyrophoric, water reactive**

3394 **Organometallic substance, liquid, pyrophoric, water reactive**

3395 **Organometallic substance, solid, water reactive**

3396 **Organometallic substance, solid, water reactive, flammable**

3397 **Organometallic substance, solid, water reactive, self-heating**

3398 **Organometallic substance, liquid, water reactive**

3399 **Organometallic substance, liquid, water reactive, flammable**

3400 **Organometallic substance, solid, self-heating**

3401 **Alkali metal amalgam, solid**

3402 **Alkaline earth metal amalgam, solid**

3403 **Potassium metal alloys, solid**

3404 **Potassium sodium alloys, solid**

3405 **Barium chlorate solution**

3406 **Barium perchlorate solution**

3407 **Chlorate and magnesium chloride mixture solution**

3408 **Lead perchlorate solution**

3409 **Chloronitrobenzenes, liquid**

3410 **4-Chloro-o-toluidine hydrochloride solution**

3411 **beta-Naphthylamine solution**

3412 **Formic acid** with not less than 5% but less than 10% acid by mass

or **Formic acid** with not less than 10% but not more than 85% acid by mass

3413 **Potassium cyanide solution**

3414 **Sodium cyanide solution**

3415 **Sodium fluoride solution**

3416 **Chloroacetophenone, liquid**

3417 **Xylyl bromide, solid**

3418 **2,4-Toluylenediamine solution**

3419 **Boron trifluoride acetic acid complex, solid**

3420 **Boron trifluoride propionic acid complex, solid**

3421 **Potassium hydrogendifluoride solution**

3422 **Potassium fluoride solution**

3423 **Tetramethylammonium hydroxide, solid**

3424 **Ammonium dinitro-o-cresolate solution**

3425 **Bromoacetic acid, solid**

3426 **Acrylamide solution**

3427 **Chlorobenzyl chlorides, solid**

3428 **3-Chloro-4-methylphenyl isocyanate, solid**

3429 **Chlorotoluidines, liquid**

3430 **Xylenols, liquid**

3431 **Nitrobenzotrifluorides, solid**

3432 **Polychlorinated biphenyls, solid**

3434 **Nitrocresols, liquid**

3436 **Hexafluoroacetone hydrate, solid**

3437 **Chlorocresols, solid**

3438 **alpha-Methylbenzyl alcohol, solid**

3439 **Nitriles, toxic, solid, n.o.s.**

3440 **Selenium compound, liquid, n.o.s.**

3441 **Chlorodinitrobenzenes, solid**

3442 **Dichloroanilines, solid**

3443 **Dinitrobenzenes, solid**

3444 **Nicotine hydrochloride, solid**

3445 **Nicotine sulphate, solid**

3446 **Nitrotoluenes, solid**

3447 **Nitroxylenes, solid**

3448 **Tear gas substance, solid, n.o.s.**

3449 **Bromobenzyl cyanides, solid**

3450 **Diphenylchloroarsine, solid**

3451 **Toluidines, solid**

3452 **Xylidines, solid**

3453 **Phosphoric acid, solid**

3454 **Dinitrotoluenes, solid**

3455 **Cresols, solid**

3456 **Nitrosylsulphuric acid, solid**

3457 **Chloronitrotoluenes, solid**

3458 **Nitroanisoles, solid**

3459 **Nitrobromobenzene, solid**

3460 **N-Ethylbenzyltoluidines, solid**

3462 **Toxins, extracted from living sources, solid, n.o.s.**

3463 **Propionic acid** with not less than 90% acid by mass

3464 **Organophosphorus compound, toxic, solid, n.o.s.**

3465 **Organoarsenic compound, solid, n.o.s.**

3466 **Metal carbonyls, solid, n.o.s.**

3467 **Organometallic compound, toxic, solid, n.o.s.**

3468 **Hydrogen in a metal hydride storage system**

or **Hydrogen in a metal hydride storage system contained in equipment**

or **Hydrogen in a metal hydride storage system packed with equipment**

3469 **Paint, flammable, corrosive** (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base)

or **Paint related material, flammable, corrosive** (including paint thinning or reducing compound)

3470 **Paint, corrosive, flammable** (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base)

or **Paint related material corrosive, flammable** (including paint thinning or reducing compound)

3471 **Hydrogendifluorides, solution, n.o.s.**

3472 **Crotonic acid, liquid**

3473 **Fuel cell cartridges**, containing flammable liquids

or **Fuel cell cartridges contained in equipment**, containing flammable liquids

or **Fuel cell cartridges packed with equipment**, containing flammable liquids

3474 **1-Hydroxybenzotriazole, anhydrous, wetted** with not less than 20% water, by mass

3475 **Ethanol and gasoline mixture**, with more than 10% ethanol

or **Ethanol and motor spirit mixture**, with more than 10% ethanol

or **Ethanol and petrol mixture**, with more than 10% ethanol

3476 **Fuel cell cartridges**, containing water-reactive substances

or **Fuel cell cartridges contained in equipment**, containing water-reactive substances

or **Fuel cell cartridges packed with equipment**, containing water-reactive substances

3477 **Fuel cell cartridges**, containing corrosive substances

or **Fuel cell cartridges contained in equipment**, containing corrosive substances

or **Fuel cell cartridges packed with equipment**, containing corrosive substances

3478 **Fuel cell cartridges**, containing liquefied flammable gas

or **Fuel cell cartridges contained in equipment**, containing liquefied flammable gas

or **Fuel cell cartridges packed with equipment**, containing liquefied flammable gas

3479 **Fuel cell cartridges**, containing hydrogen in metal hydride

or **Fuel cell cartridges contained in equipment**, containing hydrogen in metal hydride

or **Fuel cell cartridges packed with equipment**, containing hydrogen in metal hydride

3480 **Lithium ion batteries** (including lithium ion polymer batteries)

3481 **Lithium ion batteries contained in equipment** (including lithium ion polymer batteries)

or **Lithium ion batteries packed with equipment** (including lithium ion polymer batteries)

8000 **Consumer commodity**

Chapter 2

LIST OF N.O.S. AND GENERIC PROPER SHIPPING NAMES

Substances or articles not mentioned specifically by name in Table 3-1 must be classified in accordance with 3;1.2.7. Thus the name in Table 3-1 which most appropriately describes the substance or article should be used as the proper shipping name.

In the list that follows, all the n.o.s. entries and the main generic entries from Table 3-1 are shown, grouped by hazard class or division. Within each hazard class or division the names are placed into three groups, where appropriate, as follows:

— specific entries covering a group of substances or articles of a particular chemical or technical nature;

— pesticide entries, for Class 3 and Division 6.1;

— general entries covering a group of substances or articles having one or more general dangerous properties.

An asterisk following a name indicates that the technical name must be added, see 3;1.2.7.

THE MOST SPECIFIC APPLICABLE NAME MUST ALWAYS BE USED

Class or Division	*Subsidiary risk*	*UN No.*	*Proper shipping name*
CLASS 1			
1		0190	**Samples, explosive*,** other than initiating explosive
Division 1.1			
1.1C		0462	**Articles, explosive, n.o.s.***
1.1D		0463	**Articles, explosive, n.o.s.***
1.1E		0464	**Articles, explosive, n.o.s.***
1.1F		0465	**Articles, explosive, n.o.s.***
1.1L		0354	**Articles, explosive, n.o.s.***
1.1B		0461	**Components, explosive train, n.o.s.***
1.1C		0497	**Propellant, liquid**
1.1C		0498	**Propellant, solid**
1.1A		0473	**Substances, explosive, n.o.s.***
1.1C		0474	**Substances, explosive, n.o.s.***
1.1D		0475	**Substances, explosive, n.o.s.***
1.1G		0476	**Substances, explosive, n.o.s.***
1.1L		0357	**Substances, explosive, n.o.s.***
Division 1.2			
1.2K	6.1	0020	**Ammunition, toxic*** with burster, expelling charge or propelling charge
1.2C		0466	**Articles, explosive, n.o.s.***
1.2D		0467	**Articles, explosive, n.o.s.***
1.2E		0468	**Articles, explosive, n.o.s.***
1.2F		0469	**Articles, explosive, n.o.s.***
1.2L		0355	**Articles, explosive, n.o.s.***
1.2B		0382	**Components, explosive train, n.o.s.***
1.2L		0248	**Contrivances, water-activated*** with burster, expelling charge or propelling charge
1.2L		0358	**Substances, explosive, n.o.s.***
Division 1.3			
1.3K	6.1	0021	**Ammunition, toxic*** with burster, expelling charge or propelling charge
1.3C		0470	**Articles, explosive, n.o.s.***
1.3L		0356	**Articles, explosive, n.o.s.***
1.3L		0249	**Contrivances, water-activated*** with burster, expelling charge or propelling charge
1.3C		0132	**Deflagrating metal salts of aromatic nitro-derivatives, n.o.s.**
1.3C		0495	**Propellant, liquid**

Class or Division	*Subsidiary risk*	*UN No.*	*Proper shipping name*
1.3C		0499	**Propellant, solid**
1.3C		0477	**Substances, explosive, n.o.s.***
1.3G		0478	**Substances, explosive, n.o.s.***
1.3L		0359	**Substances, explosive, n.o.s.***
Division 1.4			
1.4B		0350	**Articles, explosive, n.o.s.***
1.4C		0351	**Articles, explosive, n.o.s.***
1.4D		0352	**Articles, explosive, n.o.s.***
1.4E		0471	**Articles, explosive, n.o.s.***
1.4F		0472	**Articles, explosive, n.o.s.***
1.4G		0353	**Articles, explosive, n.o.s.***
1.4S		0349	**Articles, explosive, n.o.s.***
1.4B		0383	**Components, explosive train, n.o.s.***
1.4S		0384	**Components, explosive train, n.o.s.***
1.4C		0501	**Propellant, solid**
1.4C		0479	**Substances, explosive, n.o.s.***
1.4D		0480	**Substances, explosive, n.o.s.***
1.4G		0485	**Substances, explosive, n.o.s.***
1.4S		0481	**Substances, explosive, n.o.s.***
Division 1.5			
1.5D		0482	**Substances, E.V.I., n.o.s.***
1.5D		0482	**Substances, explosive, very insensitive, n.o.s.***
Division 1.6			
1.6N		0486	**Articles, E.E.I.**
1.6N		0486	**Articles, explosive, extremely insensitive**
CLASS 2			
Division 2.1			
Specific entries			
2.1		1964	**Hydrocarbon gas mixture, compressed, n.o.s.***
2.1		1965	**Hydrocarbon gas mixture, liquefied, n.o.s.***
2.1		3354	**Insecticide gas, flammable, n.o.s.***
General entries			
2.1		1950	**Aerosols,** flammable
2.1		1954	**Compressed gas, flammable, n.o.s.***
2.1		3312	**Gas, refrigerated liquid, flammable, n.o.s.***
2.1		3167	**Gas sample, non-pressurized, flammable, n.o.s.,** not refrigerated liquid
2.1		3161	**Liquefied gas, flammable, n.o.s.***
Division 2.2			
Specific entries			
2.2		1968	**Insecticide gas, n.o.s.***
2.2		1078	**Refrigerant gas, n.o.s.***
General entries			
2.2		1950	**Aerosols,** non-flammable
2.2		1956	**Compressed gas, n.o.s.***
2.2	5.1	3156	**Compressed gas, oxidizing, n.o.s.***
2.2		3158	**Gas, refrigerated liquid, n.o.s.***
2.2	5.1	3311	**Gas, refrigerated liquid, oxidizing, n.o.s.***
2.2		3163	**Liquefied gas, n.o.s.***
2.2	5.1	3157	**Liquefied gas, oxidizing, n.o.s.***
Division 2.3			
Specific entries			
2.3		1967	**Insecticide gas, toxic, n.o.s.***
2.3	2.1	3355	**Insecticide gas, toxic, flammable, n.o.s.***
General entries			
2.3	2.1	1950	**Aerosols,** flammable, containing toxic gas
2.3		1950	**Aerosols,** non-flammable, containing toxic gas
2.3		1955	**Compressed gas, toxic, n.o.s.***
2.3	8	3304	**Compressed gas, toxic, corrosive, n.o.s.***
2.3	2.1	1953	**Compressed gas, toxic, flammable, n.o.s.***
2.3	2.1 & 8	3305	**Compressed gas, toxic, flammable, corrosive, n.o.s.***

Class or Division	*Subsidiary risk*	*UN No.*	*Proper shipping name*
2.3	5.1	3303	**Compressed gas, toxic, oxidizing, n.o.s.***
2.3	5.1 & 8	3306	**Compressed gas, toxic, oxidizing, corrosive, n.o.s.***
2.3		3169	**Gas sample, non-pressurized, toxic, n.o.s.,** not refrigerated liquid
2.3	2.1	3168	**Gas sample, non-pressurized, toxic, flammable, n.o.s.,** not refrigerated liquid
2.3		3162	**Liquefied gas, toxic, n.o.s.***
2.3	8	3308	**Liquefied gas, toxic, corrosive, n.o.s.***
2.3	2.1	3160	**Liquefied gas, toxic, flammable, n.o.s.***
2.3	2.1 & 8	3309	**Liquefied gas, toxic, flammable, corrosive, n.o.s.***
2.3	5.1	3307	**Liquefied gas, toxic, oxidizing, n.o.s.***
2.3	5.1 & 8	3310	**Liquefied gas, toxic, oxidizing, corrosive, n.o.s.***
CLASS 3			
Specific entries			
3	8	3274	**Alcoholates solution, n.o.s.*,** in alcohol
3		1987	**Alcohols, n.o.s.***
3	6.1	1986	**Alcohols, flammable, toxic, n.o.s.***
3		1989	**Aldehydes, n.o.s.***
3	6.1	1988	**Aldehydes, flammable, toxic, n.o.s.***
3	8	2733	**Amines, flammable, corrosive, n.o.s.***
3	8	2985	**Chlorosilanes, flammable, corrosive, n.o.s.**
3		3379	**Desensitized explosive, liquid, n.o.s.***
3		3272	**Esters, n.o.s.***
3		3271	**Ethers, n.o.s.***
3		3295	**Hydrocarbons, liquid, n.o.s.**
3	6.1	2478	**Isocyanate solution, flammable, toxic, n.o.s.***
3	6.1	2478	**Isocyanates, flammable, toxic, n.o.s.***
3		1224	**Ketones, liquid, n.o.s.***
3	6.1	3248	**Medicine, liquid, flammable, toxic, n.o.s.**
3		3336	**Mercaptan mixture, liquid, flammable, n.o.s.**
3		3336	**Mercaptans, liquid, flammable, n.o.s.**
3	6.1	1228	**Mercaptan mixture, liquid, flammable, toxic, n.o.s.***
3	6.1	1228	**Mercaptans, liquid, flammable, toxic, n.o.s.***
3	6.1	3273	**Nitriles, flammable, toxic, n.o.s.***
3		3357	**Nitroglycerin mixture, desensitized, liquid, n.o.s.**, with not more than 30% nitroglycerin, by mass
3		3343	**Nitroglycerin mixture, desensitized, liquid, flammable, n.o.s.** with not more than 30% nitroglycerin, by mass
3		1268	**Petroleum distillates, n.o.s.**
3		1268	**Petroleum products, n.o.s.**
3	8	2733	**Polyamines, flammable, corrosive, n.o.s.***
3		2319	**Terpene hydrocarbons, n.o.s.**
Pesticides			
3	6.1	2760	**Arsenical pesticide, liquid, flammable, toxic***, flash point <23°C
3	6.1	2782	**Bipyridilium pesticide, liquid, flammable, toxic***, flash point <23°C
3	6.1	2758	**Carbamate pesticide, liquid, flammable, toxic***, flash point <23°C
3	6.1	2776	**Copper based pesticide, liquid, flammable, toxic***, flash point <23°C
3	6.1	3024	**Coumarin derivative pesticide, liquid, flammable, toxic***, flash point <23°C
3	6.1	2772	**Thiocarbamate pesticide, liquid, flammable, toxic***, flash point <23°C
3	6.1	2778	**Mercury based pesticide, liquid, flammable, toxic***, flash point <23°C
3	6.1	2762	**Organochlorine pesticide, liquid, flammable, toxic***, flash point <23°C
3	6.1	2784	**Organophosphorus pesticide, liquid, flammable, toxic***, flash point <23°C
3	6.1	2787	**Organotin pesticide, liquid, flammable, toxic***, flash point <23°C
3	6.1	3021	**Pesticide, liquid, flammable, toxic, n.o.s.***, flash point <23°C
3	6.1	3346	**Phenoxyacetic acid derivative pesticide, liquid, flammable, toxic,** flash point <23°C
3	6.1	3350	**Pyrethroid pesticide, liquid flammable, toxic,** flash point <23°C
3	6.1	2780	**Substituted nitrophenol pesticide, liquid, flammable, toxic***, flash point <23°C
3	6.1	2764	**Triazine pesticide, liquid, flammable, toxic***, flash point <23°C
General entries			
3		3256	**Elevated temperature liquid, flammable, n.o.s.,** with flash point above 60°C, at or above its flash point
3		1993	**Flammable liquid, n.o.s.***
3	8	2924	**Flammable liquid, corrosive, n.o.s.***
3	6.1	1992	**Flammable liquid, toxic, n.o.s.***
3	6.1 & 8	3286	**Flammable liquid, toxic, corrosive, n.o.s.***

	Class or Division	Subsidiary risk	UN No.	Proper shipping name
	CLASS 4			
	Division 4.1			
	Specific entries			
	4.1		3380	**Desensitized explosive, solid, n.o.s.***
	4.1		1353	**Fabrics impregnated with weakly nitrated nitrocellulose, n.o.s.**
	4.1		1353	**Fibres impregnated with weakly nitrated nitrocellulose, n.o.s.**
	4.1		3182	**Metal hydrides, flammable, n.o.s.***
	4.1		3089	**Metal powder, flammable, n.o.s.**
	4.1		3319	**Nitroglycerin mixture, desensitized, solid, n.o.s.** with more than 2% but not more than 10% nitroglycerin, by mass
	4.1		3344	**Pentaerythrite tetranitrate mixture, desensitized, solid, n.o.s.** with more than 10% but not more than 20% PETN, by mass
+	4.1		3344	**Pentaerythritol tetranitrate mixture desensitized, solid, n.o.s.*** with more than 10% but not more than 20% PETN, by mass
+	4.1		3344	**PETN mixture desensitized, solid, n.o.s.*** with more than 10% but not more than 20% PETN, by mass
	4.1		3221	**Self-reactive liquid type B***
	4.1		3223	**Self-reactive liquid type C***
	4.1		3225	**Self-reactive liquid type D***
	4.1		3227	**Self-reactive liquid type E***
	4.1		3229	**Self-reactive liquid type F***
	4.1		3231	**Self-reactive liquid type B, temperature controlled***
	4.1		3233	**Self-reactive liquid type C, temperature controlled***
	4.1		3235	**Self-reactive liquid type D, temperature controlled***
	4.1		3237	**Self-reactive liquid type E, temperature controlled***
	4.1		3239	**Self-reactive liquid type F, temperature controlled***
	4.1		3222	**Self-reactive solid type B***
	4.1		3224	**Self-reactive solid type C***
	4.1		3226	**Self-reactive solid type D***
	4.1		3228	**Self-reactive solid type E***
	4.1		3230	**Self-reactive solid type F***
	4.1		3232	**Self-reactive solid type B, temperature controlled***
	4.1		3234	**Self-reactive solid type C, temperature controlled***
	4.1		3236	**Self-reactive solid type D, temperature controlled***
	4.1		3238	**Self-reactive solid type E, temperature controlled***
	4.1		3240	**Self-reactive solid type F, temperature controlled***
	General entries			
	4.1	8	3180	**Flammable solid, corrosive, inorganic, n.o.s.***
	4.1	8	2925	**Flammable solid, corrosive, organic, n.o.s.***
	4.1		3178	**Flammable solid, inorganic, n.o.s.***
	4.1		1325	**Flammable solid, organic, n.o.s.***
	4.1		3176	**Flammable solid, organic, molten, n.o.s.***
	4.1	5.1	3097	**Flammable solid, oxidizing, n.o.s.***
	4.1	6.1	3179	**Flammable solid, toxic, inorganic, n.o.s.***
	4.1	6.1	2926	**Flammable solid, toxic, organic, n.o.s.***
	4.1		3181	**Metal salts of organic compounds, flammable, n.o.s.***
	4.1		3175	**Solids containing flammable liquid, n.o.s.***
	Division 4.2			
	Specific entries			
	4.2	8	3206	**Alkali metal alcoholates, self-heating, corrosive, n.o.s.***
	4.2		3205	**Alkaline earth metal alcoholates, n.o.s.***
	4.2		1373	**Fabrics, animal, n.o.s.**, with oil
	4.2		1373	**Fabrics, vegetable, n.o.s.**, with oil
	4.2		1373	**Fabrics, synthetic, n.o.s.**, with oil
	4.2		1373	**Fibres, animal** or **vegetable** or **synthetic, n.o.s.**, with oil
	4.2		2881	**Metal catalyst, dry**
	4.2		1378	**Metal catalyst, wetted** with a visible excess of liquid
	4.2		3189	**Metal powder, self-heating, n.o.s.***
	4.2		3313	**Organic pigments, self-heating**
	4.2		3392	**Organometallic substance, liquid, pyrophoric**
	4.2	4.3	3394	**Organometallic substance, liquid, pyrophoric, water-reactive**
	4.2		3391	**Organometallic substance, solid, pyrophoric**
	4.2	4.3	3393	**Organometallic substance, solid, pyrophoric, water-reactive**
	4.2		3400	**Organometallic substance, solid, self-heating**

Class or Division	*Subsidiary risk*	*UN No.*	*Proper shipping name*
4.2		2006	**Plastics, nitrocellulose-based, self-heating, n.o.s.*** or **Pyrophoric alloy, n.o.s.***
4.2		1383	**Pyrophoric alloy, n.o.s.***
4.2		1383	**Pyrophoric metal, n.o.s.***
4.2		3342	**Xanthates**
General entries			
4.2		3194	**Pyrophoric liquid, inorganic, n.o.s.***
4.2		2845	**Pyrophoric liquid, organic, n.o.s.***
4.2		3200	**Pyrophoric solid, inorganic, n.o.s.***
4.2		2846	**Pyrophoric solid, organic, n.o.s.***
4.2	8	3188	**Self-heating liquid, corrosive, inorganic, n.o.s.***
4.2	8	3185	**Self-heating liquid, corrosive, organic, n.o.s.***
4.2		3186	**Self-heating liquid, inorganic, n.o.s.***
4.2		3183	**Self-heating liquid, organic, n.o.s.***
4.2	6.1	3187	**Self-heating liquid, toxic, inorganic, n.o.s.***
4.2	6.1	3184	**Self-heating liquid, toxic, organic, n.o.s.***
4.2	8	3192	**Self-heating solid, corrosive, inorganic, n.o.s.***
4.2	8	3126	**Self-heating solid, corrosive, organic, n.o.s.***
4.2		3190	**Self-heating solid, inorganic, n.o.s.***
4.2		3088	**Self-heating solid, organic, n.o.s.***
4.2	5.1	3127	**Self-heating solid, oxidizing, n.o.s.***
4.2	6.1	3191	**Self-heating solid, toxic, inorganic, n.o.s.***
4.2	6.1	3128	**Self-heating solid, toxic, organic, n.o.s.***
Division 4.3			
Specific entries			
4.3		1421	**Alkali metal alloy, liquid, n.o.s.**
4.3		1389	**Alkali metal amalgam, liquid**
4.3		3401	**Alkali metal amalgam, solid**
4.3		1390	**Alkali metal amides**
4.3		1391	**Alkali metal dispersion**
4.3		1393	**Alkaline earth metal alloy, n.o.s.**
4.3		1392	**Alkaline earth metal amalgam, liquid**
4.3		3402	**Alkaline earth metal amalgam, solid**
4.3		1391	**Alkaline earth metal dispersion**
4.3	3 & 8	2988	**Chlorosilanes, water-reactive, flammable, corrosive, n.o.s.**
4.3		1409	**Metal hydrides, water-reactive, n.o.s.***
4.3		3208	**Metallic substance, water-reactive, n.o.s.***
4.3	4.2	3209	**Metallic substance, water-reactive, self-heating, n.o.s.***
4.3		3398	**Organometallic substance, liquid, water-reactive**
4.3		3399	**Organometallic substance, liquid, water-reactive, flammable**
4.3		3395	**Organometallic substance, solid, water-reactive**
4.3	4.1	3396	**Organometallic substance, solid, water-reactive, flammable**
4.3	4.2	3397	**Organometallic substance, solid, water-reactive, self-heating**
General entries			
4.3		3148	**Water-reactive liquid, n.o.s.***
4.3	8	3129	**Water-reactive liquid, corrosive, n.o.s.***
4.3	6.1	3130	**Water-reactive liquid, toxic, n.o.s.***
4.3		2813	**Water-reactive solid, n.o.s.***
4.3	8	3131	**Water-reactive solid, corrosive, n.o.s.***
4.3	4.1	3132	**Water-reactive solid, flammable, n.o.s.***
4.3	5.1	3133	**Water-reactive solid, oxidizing, n.o.s.***
4.3	4.2	3135	**Water-reactive solid, self-heating, n.o.s.***
4.3	6.1	3134	**Water-reactive solid, toxic, n.o.s.***
CLASS 5			
Division 5.1			
Specific entries			
5.1		1450	**Bromates, inorganic, n.o.s.**
5.1		3213	**Bromates, inorganic, aqueous solution, n.o.s.**
5.1		1461	**Chlorates, inorganic, n.o.s.**
5.1		3210	**Chlorates, inorganic, aqueous solution, n.o.s.**
5.1		1462	**Chlorites, inorganic, n.o.s.**
5.1		3212	**Hypochlorites, inorganic, n.o.s.**
5.1		1477	**Nitrates, inorganic, n.o.s.**

Class or Division	*Subsidiary risk*	*UN No.*	*Proper shipping name*
5.1		3218	**Nitrates, inorganic, aqueous solution, n.o.s.**
5.1		2627	**Nitrites, inorganic, n.o.s.**
5.1		3219	**Nitrites, inorganic, aqueous solution, n.o.s.**
5.1		1481	**Perchlorates, inorganic, n.o.s.**
5.1		3211	**Perchlorates, inorganic, aqueous solution, n.o.s.**
5.1		1482	**Permanganates, inorganic, n.o.s.**
5.1		3214	**Permanganates, inorganic, aqueous solution, n.o.s.**
5.1		1483	**Peroxides, inorganic, n.o.s.**
5.1		3215	**Persulphates, inorganic, n.o.s.**
5.1		3216	**Persulphates, inorganic, aqueous solution, n.o.s.**
General entries			
5.1		3139	**Oxidizing liquid, n.o.s.***
5.1	8	3098	**Oxidizing liquid, corrosive, n.o.s.***
5.1	6.1	3099	**Oxidizing liquid, toxic, n.o.s.***
5.1		1479	**Oxidizing solid, n.o.s.***
5.1	8	3085	**Oxidizing solid, corrosive, n.o.s.***
5.1	4.1	3137	**Oxidizing solid, flammable, n.o.s.***
5.1	4.2	3100	**Oxidizing solid, self-heating, n.o.s.***
5.1	6.1	3087	**Oxidizing solid, toxic, n.o.s.***
5.1	4.3	3121	**Oxidizing solid, water-reactive, n.o.s.***
Division 5.2			
Specific entries			
5.2		3101	**Organic peroxide type B, liquid***
5.2		3111	**Organic peroxide type B, liquid, temperature controlled***
5.2		3102	**Organic peroxide type B, solid***
5.2		3112	**Organic peroxide type B, solid, temperature controlled***
5.2		3103	**Organic peroxide type C, liquid***
5.2		3113	**Organic peroxide type C, liquid, temperature controlled***
5.2		3104	**Organic peroxide type C, solid***
5.2		3114	**Organic peroxide type C, solid, temperature controlled***
5.2		3105	**Organic peroxide type D, liquid***
5.2		3115	**Organic peroxide type D, liquid, temperature controlled***
5.2		3106	**Organic peroxide type D, solid***
5.2		3116	**Organic peroxide type D, solid, temperature controlled***
5.2		3107	**Organic peroxide type E, liquid***
5.2		3117	**Organic peroxide type E, liquid, temperature controlled***
5.2		3108	**Organic peroxide type E, solid***
5.2		3118	**Organic peroxide type E, solid, temperature controlled***
5.2		3109	**Organic peroxide type F, liquid***
5.2		3119	**Organic peroxide type F, liquid, temperature controlled***
5.2		3110	**Organic peroxide type F, solid***
5.2		3120	**Organic peroxide type F, solid, temperature controlled***
CLASS 6			
Division 6.1			
Specific entries			
6.1		3140	**Alkaloid salts, liquid, n.o.s.***
6.1		3140	**Alkaloids, liquid, n.o.s.***
6.1		1544	**Alkaloid salts, solid, n.o.s.***
6.1		1544	**Alkaloids, solid, n.o.s.***
6.1		3141	**Antimony compound, inorganic, liquid, n.o.s.**
6.1		1549	**Antimony compound, inorganic, solid, n.o.s.**
6.1		1556	**Arsenic compound, liquid, n.o.s.**
6.1		1557	**Arsenic compound, solid, n.o.s.**
6.1		1564	**Barium compound, n.o.s.**
6.1		1566	**Beryllium compound, n.o.s.**
6.1		2570	**Cadmium compound**
6.1	8	3277	**Chloroformates, toxic, corrosive, n.o.s.***
6.1	3 & 8	2742	**Chloroformates, toxic, corrosive, flammable, n.o.s.***
6.1	8	3361	**Chlorosilanes, toxic, corrosive, n.o.s.**
6.1	3 & 8	3362	**Chlorosilanes, toxic, corrosive, flammable, n.o.s.**
6.1		1583	**Chloropicrin mixture, n.o.s.**
6.1		1588	**Cyanides, inorganic, solid, n.o.s.***
6.1		1935	**Cyanide solution, n.o.s.**
6.1		3142	**Disinfectant, liquid, toxic, n.o.s.***

Class or Division	*Subsidiary risk*	*UN No.*	*Proper shipping name*
6.1		1601	**Disinfectant, solid, toxic, n.o.s.***
6.1		1602	**Dye intermediate, liquid, toxic, n.o.s.***
6.1		1602	**Dye, liquid, toxic, n.o.s.***
6.1		3143	**Dye intermediate, solid, toxic, n.o.s.***
6.1		3143	**Dye, solid, toxic, n.o.s.***
6.1		2856	**Fluorosilicates, n.o.s.**
6.1		2206	**Isocyanate solution, toxic, n.o.s.***
6.1		2206	**Isocyanates, toxic, n.o.s.***
6.1	3	3080	**Isocyanate solution, toxic, flammable, n.o.s.***
6.1	3	3080	**Isocyanates, toxic, flammable, n.o.s.***
6.1		2291	**Lead compound, soluble, n.o.s.**
6.1		1851	**Medicine, liquid, toxic, n.o.s.**
6.1		3249	**Medicine, solid, toxic, n.o.s.**
6.1	3	3071	**Mercaptan mixture, liquid, toxic, flammable, n.o.s.***
6.1	3	3071	**Mercaptans, liquid, toxic, flammable, n.o.s.***
6.1		2024	**Mercury compound, liquid, n.o.s.**
6.1		2025	**Mercury compound, solid, n.o.s.**
6.1		3281	**Metal carbonyls, liquid, n.o.s.***
6.1		3466	**Metal carbonyls, solid, n.o.s.***
6.1		3144	**Nicotine compound, liquid, n.o.s.**
6.1		1655	**Nicotine compound, solid, n.o.s.**
6.1		3144	**Nicotine preparation, liquid, n.o.s.**
6.1		1655	**Nicotine preparation, solid, n.o.s.**
6.1		3276	**Nitriles, toxic, liquid, n.o.s.***
6.1	3	3275	**Nitriles, toxic, flammable, n.o.s.***
6.1		3439	**Nitriles, toxic, solid, n.o.s.***
6.1		3280	**Organoarsenic compound, liquid, n.o.s.***
6.1		3465	**Organoarsenic compound, solid, n.o.s.***
6.1		3282	**Organometallic compound, toxic, liquid, n.o.s.***
6.1		3467	**Organometallic compound, toxic, solid, n.o.s.***
6.1		3278	**Organophosphorus compound, toxic, liquid, n.o.s.***
6.1	3	3279	**Organophosphorus compound, toxic, flammable, n.o.s.***
6.1		3464	**Organophosphorus compound, toxic, solid, n.o.s.***
6.1		2788	**Organotin compound, liquid, n.o.s.**
6.1		3146	**Organotin compound, solid, n.o.s.**
6.1		2026	**Phenylmercuric compound, n.o.s.**
6.1		3440	**Selenium compound, liquid, n.o.s.**
6.1		3283	**Selenium compound, solid, n.o.s.**
6.1		1693	**Tear gas substance, liquid, n.o.s.***
6.1		3448	**Tear gas substance, solid, n.o.s.***
6.1		3284	**Tellurium compound, n.o.s.**
6.1		1707	**Thallium compound, n.o.s.**
6.1		3285	**Vanadium compound, n.o.s.**
Pesticides			
(a) Solid			
6.1		2759	**Arsenical pesticide, solid, toxic***
6.1		2781	**Bipyridilium pesticide, solid, toxic***
6.1		2757	**Carbamate pesticide, solid, toxic***
6.1		2775	**Copper based pesticide, solid, toxic***
6.1		3027	**Coumarin derivative pesticide, solid, toxic***
6.1		2771	**Thiocarbamate pesticide, solid, toxic***
6.1		2777	**Mercury based pesticide, solid, toxic***
6.1		2761	**Organochlorine pesticide, solid, toxic***
6.1		2783	**Organophosphorus pesticide, solid, toxic***
6.1		2786	**Organotin pesticide, solid, toxic***
6.1		2588	**Pesticide, solid, toxic, n.o.s.***
6.1		3345	**Phenoxyacetic acid derivative pesticide, solid, toxic**
6.1		3349	**Pyrethroid pesticide, solid, toxic**
6.1		2779	**Substituted nitrophenol pesticide, solid, toxic***
6.1		2763	**Triazine pesticide, solid, toxic***
(b) Liquid			
6.1		2994	**Arsenical pesticide, liquid, toxic***
6.1	3	2993	**Arsenical pesticide, liquid, toxic, flammable*,** flash point ≥23°C
6.1		3016	**Bipyridilium pesticide, liquid, toxic***
6.1	3	3015	**Bipyridilium pesticide, liquid, toxic, flammable*,** flash point ≥23°C
6.1		2992	**Carbamate pesticide, liquid, toxic***
6.1	3	2991	**Carbamate pesticide, liquid, toxic, flammable*,** flash point ≥23°C
6.1		3010	**Copper based pesticide, liquid, toxic***

Class or Division	*Subsidiary risk*	*UN No.*	*Proper shipping name*
6.1	3	3009	**Copper based pesticide, liquid, toxic, flammable*,** flash point ≥23°C
6.1		3026	**Coumarin derivative pesticide, liquid, toxic***
6.1	3	3025	**Coumarin derivative pesticide, liquid, toxic, flammable*,** flash point ≥23°C
6.1		3012	**Mercury based pesticide, liquid, toxic***
6.1	3	3011	**Mercury based pesticide, liquid, toxic, flammable*,** flash point ≥23°C
6.1		2996	**Organochlorine pesticide, liquid, toxic***
6.1	3	2995	**Organochlorine pesticide, liquid, toxic, flammable*,** flash point ≥23°C
6.1		3018	**Organophosphorus pesticide, liquid, toxic***
6.1	3	3017	**Organophosphorus pesticide, liquid, toxic, flammable*,** flash point ≥23°C
6.1		3020	**Organotin pesticide, liquid, toxic***
6.1	3	3019	**Organotin pesticide, liquid, toxic, flammable*,** flash point ≥23°C
6.1		2902	**Pesticide, liquid, toxic, n.o.s.***
6.1	3	2903	**Pesticide, liquid, toxic, flammable, n.o.s.*,** flash point ≥23°C
6.1		3348	**Phenoxyacetic acid derivative pesticide, liquid, toxic***
6.1	3	3347	**Phenoxyacetic acid derivative pesticide, liquid, toxic, flammable,** flash point ≥23°C
6.1	3	3352	**Pyrethroid pesticide, liquid, toxic**
6.1	3	3351	**Pyrethroid pesticide, liquid, toxic, flammable,** flash point ≥23°C
6.1		3014	**Substituted nitrophenol pesticide, liquid, toxic***
6.1	3	3013	**Substituted nitrophenol pesticide, liquid, toxic, flammable*,** flash point ≥23°C
6.1		3006	**Thiocarbamate pesticide, liquid, toxic***
6.1	3	3005	**Thiocarbamate pesticide, liquid, toxic, flammable*, flash point** ≥23°C
6.1		2998	**Triazine pesticide, liquid, toxic***
6.1	3	2997	**Triazine pesticide, liquid, toxic, flammable*,** flash point ≥23°C
General entries			
6.1		3315	**Chemical sample, toxic**
6.1		3243	**Solids containing toxic liquid, n.o.s.***
6.1	8	3389	**Toxic by inhalation liquid, corrosive, n.o.s.*** with an inhalation toxicity lower than or equal to 200 ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}
6.1	8	3390	**Toxic by inhalation liquid, corrosive, n.o.s.*** with an inhalation toxicity lower than or equal to 1 000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}
6.1	3	3383	**Toxic by inhalation liquid, flammable, n.o.s.*** with an inhalation toxicity lower than or equal to 200 ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}
6.1	3	3384	**Toxic by inhalation liquid, flammable, n.o.s.*** with an inhalation toxicity lower than or equal to 1 000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}
6.1		3381	**Toxic by inhalation liquid, n.o.s.*** with an inhalation toxicity lower than or equal to 200 ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}
6.1		3382	**Toxic by inhalation liquid, n.o.s.*** with an inhalation toxicity lower than or equal to 1 000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}
6.1	5.1	3387	**Toxic by inhalation liquid, oxidizing, n.o.s.*** with an inhalation toxicity lower than or equal to 200 ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}
6.1	5.1	3388	**Toxic by inhalation liquid, oxidizing, n.o.s.*** with an inhalation toxicity lower than or equal to 1 000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}
6.1	4.3	3385	**Toxic by inhalation liquid, water-reactive, n.o.s.*** with an inhalation toxicity lower than or equal to 200 ml/m^3 and saturated vapour concentration greater than or equal to 500 LC_{50}
6.1	4.3	3386	**Toxic by inhalation liquid, water-reactive, n.o.s.*** with an inhalation toxicity lower than or equal to 1 000 ml/m^3 and saturated vapour concentration greater than or equal to 10 LC_{50}
6.1	8	3289	**Toxic liquid, corrosive, inorganic, n.o.s.***
6.1	8	2927	**Toxic liquid, corrosive, organic, n.o.s.***
6.1	3	2929	**Toxic liquid, flammable, organic, n.o.s.***
6.1		3287	**Toxic liquid, inorganic, n.o.s.***
6.1		2810	**Toxic liquid, organic, n.o.s.***
6.1	5.1	3122	**Toxic liquid, oxidizing, n.o.s.***
6.1	4.3	3123	**Toxic liquid, water-reactive, n.o.s.***
6.1	8	3290	**Toxic solid, corrosive, inorganic, n.o.s.***
6.1	8	2928	**Toxic solid, corrosive, organic, n.o.s.***
6.1	4.1	2930	**Toxic solid, flammable, organic, n.o.s.***

Class or Division	*Subsidiary risk*	*UN No.*	*Proper shipping name*
6.1		3288	**Toxic solid, inorganic, n.o.s.***
6.1		2811	**Toxic solid, organic, n.o.s.***
6.1	5.1	3086	**Toxic solid, oxidizing, n.o.s.***
6.1	4.2	3124	**Toxic solid, self-heating, n.o.s.***
6.1	4.3	3125	**Toxic solid, water-reactive, n.o.s.***
6.1		3172	**Toxins, extracted from living sources, liquid, n.o.s.***
6.1		3462	**Toxins, extracted from living sources, solid, n.o.s.***
Division 6.2			
Specific entries			
6.2		3373	**Biological substance, Category B**
6.2		3291	**Biomedical waste, n.o.s.**
6.2		3291	**Clinical waste, unspecified, n.o.s**
6.2		3291	**Medical waste, n.o.s.**
6.2		3291	**Regulated medical waste, n.o.s.**
General entries			
6.2		2900	**Infectious substance, affecting animals*** only
6.2		2814	**Infectious substance, affecting humans***
CLASS 7			
General entries			
7		2908	**Radioactive material, excepted package — empty packaging**
7		2909	**Radioactive material, excepted package — articles manufactured from natural uranium** or **depleted uranium** or **natural thorium**
7		2910	**Radioactive material, excepted package — limited quantity of material**
7		2911	**Radioactive material, excepted package — instruments** or **articles**
7		2912	**Radioactive material, low specific activity (LSA-I),** non-fissile or fissile excepted
7		2913	**Radioactive material, surface contaminated objects (SCO-I** or **SCO-II),** non-fissile or fissile excepted
7		2915	**Radioactive material, Type A package, non-special form,** non-fissile or fissile excepted
7		2916	**Radioactive material, Type B(U) package,** non-fissile or fissile excepted
7		2917	**Radioactive material, Type B(M) package,** non-fissile or fissile excepted
7		2919	**Radioactive material, transported under special arrangement,** non-fissile or fissile excepted
7		3321	**Radioactive material, low specific activity (LSA-II),** non-fissile or fissile excepted
7		3322	**Radioactive material, low specific activity (LSA-III),** non-fissile or fissile excepted
7		3323	**Radioactive material, Type C package,** non-fissile or fissile excepted
7		3324	**Radioactive material, low specific activity (LSA-II) fissile**
7		3325	**Radioactive material, low specific activity (LSA-III) fissile**
7		3326	**Radioactive material, surface contaminated objects (SCO-I** or **SCO-II), fissile**
7		3327	**Radioactive material, Type A package, fissile,** non-special form
7		3328	**Radioactive material, Type B(U) package, fissile**
7		3329	**Radioactive material, Type B(M) package, fissile**
7		3330	**Radioactive material, Type C package, fissile**
7		3331	**Radioactive material, transported under special arrangement, fissile**
7		3332	**Radioactive material, Type A package, special form,** non-fissile or fissile excepted
7		3333	**Radioactive material, Type A package, special form, fissile**
CLASS 8			
Specific entries			
8		3145	**Alkylphenols, liquid, n.o.s.** (including C_2-C_{12} homologues)
8		2430	**Alkylphenols, solid, n.o.s.** (including C_2-C_{12} homologues)
8		2735	**Amines, liquid, corrosive, n.o.s.***
8	3	2734	**Amines, liquid, corrosive, flammable, n.o.s.***
8		3259	**Amines, solid, corrosive, n.o.s.***
8		2837	**Bisulphates, aqueous solution**

Class or Division	*Subsidiary risk*	*UN No.*	*Proper shipping name*
8		2693	**Bisulphites, aqueous solution, n.o.s.**
8		1719	**Caustic alkali liquid, n.o.s.***
8		2987	**Chlorosilanes, corrosive, n.o.s.**
8	3	2986	**Chlorosilanes, corrosive, flammable, n.o.s.**
8		1903	**Disinfectant, liquid, corrosive, n.o.s.***
8		2801	**Dye intermediate, liquid, corrosive, n.o.s.***
8		3147	**Dye intermediate, solid, corrosive, n.o.s.***
8		2801	**Dye, liquid, corrosive, n.o.s.***
8		3147	**Dye, solid, corrosive, n.o.s.***
8		1740	**Hydrogendifluorides, solid, n.o.s.**
8		3471	**Hydrogendifluorides, solution, n.o.s.**
8		2735	**Polyamines, liquid, corrosive, n.o.s.***
8	3	2734	**Polyamines, liquid, corrosive, flammable, n.o.s.***
8		3259	**Polyamines, solid, corrosive, n.o.s.***
General entries			
8		1760	**Corrosive liquid, n.o.s.***
8		3264	**Corrosive liquid, acidic, inorganic, n.o.s.***
8		3265	**Corrosive liquid, acidic, organic, n.o.s.***
8		3266	**Corrosive liquid, basic, inorganic, n.o.s.***
8		3267	**Corrosive liquid, basic, organic, n.o.s.***
8	3	2920	**Corrosive liquid, flammable, n.o.s.***
8	5.1	3093	**Corrosive liquid, oxidizing, n.o.s.***
8	4.2	3301	**Corrosive liquid, self-heating, n.o.s.***
8	6.1	2922	**Corrosive liquid, toxic, n.o.s.***
8	4.3	3094	**Corrosive liquid, water-reactive, n.o.s.***
8		1759	**Corrosive solid, n.o.s.***
8		3260	**Corrosive solid, acidic, inorganic, n.o.s.***
8		3261	**Corrosive solid, acidic, organic, n.o.s.***
8		3262	**Corrosive solid, basic, inorganic, n.o.s.***
8		3263	**Corrosive solid, basic, organic, n.o.s.***
8	4.1	2921	**Corrosive solid, flammable, n.o.s.***
8	5.1	3084	**Corrosive solid, oxidizing, n.o.s.***
8	4.2	3095	**Corrosive solid, self-heating, n.o.s.***
8	6.1	2923	**Corrosive solid, toxic, n.o.s.***
8	4.3	3096	**Corrosive solid, water-reactive, n.o.s.***
8		3244	**Solids containing corrosive liquid, n.o.s.***
CLASS 9			
General entries			
9		3334	**Aviation regulated liquid, n.o.s.**
9		3335	**Aviation regulated solid, n.o.s.**
9		3257	**Elevated temperature liquid, n.o.s.,** at or above 100°C and below its flash point (including molten metals, molten salts, etc.)
9		3258	**Elevated temperature solid, n.o.s.,** at or above 240°C
9		3082	**Environmentally hazardous substance, liquid, n.o.s.***
9		3077	**Environmentally hazardous substance, solid, n.o.s.***
9		3245	**Genetically modified micro-organisms**
9		3245	**Genetically modified organisms**

Attachment 2

GLOSSARY OF TERMS

Caution: These explanations are only for information. They must not be relied upon for purposes of hazard classification and may not necessarily reflect the information provided to the United Nations at the time the UN numbers were assigned.

Glossary of terms

Term and explanation	*UN Number(s), when relevant*
AIR BAG INFLATORS, PYROTECHNIC or AIR BAG MODULES, PYROTECHNIC or SEAT-BELT PRETENSIONERS, PYROTECHNIC. Articles which contain pyrotechnical substances and are used as life-saving vehicle airbags or seat-belts.	0503, 3268
AIRCRAFT ENGINES. Generic term for engines powering flying craft fuelled by flammable liquid (jet-fuel, petrol, kerosene, etc.) which applies to piston designs, turbine designs and includes auxiliary power units (APU).	3166
ALUMINIUM PROCESSING BY-PRODUCTS. The material, consisting of skimmings of virgin aluminium, rising to the surface of impure molten aluminium metal.	3170
ALUMINIUM POWDER. The uncoated powder may evolve hydrogen in contact with water, and finely divided dust may be ignited by naked lights or sparks. Coated aluminium powders which have been treated with oils or wax for printing or paint purposes are generally not dangerous.	1309, 1396
AMMUNITION. Generic term related mainly to articles of military application consisting of all kinds of bombs, grenades, rockets, mines, projectiles and other similar devices or contrivances.	—
AMMUNITION, ILLUMINATING with or without burster, expelling charge or propelling charge. Ammunition designed to produce a single source of intense light for lighting up an area. The term includes illuminating cartridges, grenades and projectiles; and illuminating and target identification bombs. The term excludes the following articles which are listed separately: CARTRIDGES, SIGNAL; SIGNAL DEVICES, HAND; SIGNALS, DISTRESS; FLARES, AERIAL; and FLARES, SURFACE.	0171, 0254, 0297
AMMUNITION, INCENDIARY. Ammunition containing incendiary substance which may be a solid, liquid or gel including white phosphorus. Except when the composition is an explosive per se, it also contains one or more of the following: a propelling charge with primer and igniter charge; a fuze with burster or expelling charge. The term includes: AMMUNITION, INCENDIARY, liquid or gel, with burster, expelling charge or propelling charge; AMMUNITION, INCENDIARY, with or without burster, expelling charge or propelling charge; AMMUNITION, INCENDIARY, WHITE PHOSPHORUS, with burster, expelling charge or propelling charge.	0009, 0010, 0243, 0244, 0247, 0300
AMMUNITION, PRACTICE. Ammunition without a main bursting charge, containing a burster or expelling charge. Normally it also contains a fuze and a propelling charge. The term excludes the following articles which are listed separately: GRENADES, PRACTICE.	0362, 0488
AMMUNITION, PROOF. Ammunition containing pyrotechnic substance used to test the performance or strength of new ammunition, weapon components or assemblies.	0363
AMMUNITION, SMOKE. Ammunition containing smoke-producing substance such as chlorosulphonic acid mixture, titanium tetrachloride or white phosphorus; or smoke-producing pyrotechnic composition based on hexachloroethane or red phosphorus. Except when the substance is an explosive per se, the ammunition also contains one or more of the following: a propelling charge with primer and igniter charge; a fuze with burster or expelling charge. The term includes 'grenades, smoke' but excludes SIGNALS, SMOKE which are listed separately. The term includes: AMMUNITION, SMOKE, with or without burster, expelling charge or propelling charge; AMMUNITION, SMOKE, WHITE PHOSPHORUS, with burster, expelling charge or propelling charge.	0015, 0016, 0245, 0246, 0303
AMMUNITION, TEAR-PRODUCING with burster, expelling charge or propelling charge. Ammunition containing tear-producing substance. It also contains one or more of the following: a pyrotechnic substance; a propelling charge with primer and igniter charge; a fuze with burster or expelling charge.	0018, 0019, 0301
AMMUNITION, TOXIC, with burster, expelling charge or propelling charge. Ammunition containing toxic agent. It also contains one or more of the following: a pyrotechnic substance; a propelling charge with primer and igniter charge; a fuze with burster or expelling charge.	0020, 0021
ARSENICAL DUST. Smelter dust which contains large proportions of arsenic. These dusts are hazardous due to their toxic characteristics.	1562

Term and explanation	*UN Number(s), when relevant*
ARTICLES, EXPLOSIVE, EXTREMELY INSENSITIVE (ARTICLES, EEI). Articles that contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation (under normal conditions of transport). *Note.— An extremely insensitive detonating substance is a substance which although capable of sustaining a detonation has demonstrated through tests that it is so insensitive that there is very little probability of accidental initiation.*	0486
ARTICLES, PYROPHORIC. Articles which contain a pyrophoric substance capable of spontaneous ignition when exposed to air and an explosive substance or component. The term excludes articles containing white phosphorus.	0380
ARTICLES, PYROTECHNIC for technical purposes. Articles which contain pyrotechnic substances and are used for technical purposes such as heat generation, gas generation, theatrical effects, etc. The term excludes the following articles which are listed separately: all ammunition; CARTRIDGES, SIGNAL; CUTTERS, CABLE, EXPLOSIVE; FIREWORKS; FLARES, AERIAL; FLARES, SURFACE; RELEASE DEVICES, EXPLOSIVE; RIVETS, EXPLOSIVE; SIGNAL DEVICES, HAND; SIGNALS, DISTRESS; SIGNALS, RAILWAY TRACK, EXPLOSIVE; SIGNALS, SMOKE.	0428, 0429, 0430, 0431, 0432
ASBESTOS. Asbestos is a generic name for naturally occurring mineral silicate fibres of the Serpentine and Amphibole series. In the Serpentine series is Chrysotile, commonly known as white asbestos. In the Amphibole series are Actinolite, Amosite or Mysorite (commonly known as brown asbestos), Anthophyllite, Crocidolite (commonly known as blue asbestos) and Tremolite. All types of asbestos can be hazardous to health, blue and brown asbestos being the more dangerous types.	2212, 2590
BATTERIES, CONTAINING SODIUM. Articles consisting of a series of CELLS, CONTAINING SODIUM that are secured within, and fully enclosed by a metal casing so constructed and closed as to prevent the release of dangerous goods under normal conditions of transport. Although designed and intended to provide a source of electrical energy, these batteries are electrically inert at any temperature at which the sodium contained in the battery is in a solid state.	3292
BATTERIES, DRY, CONTAINING POTASSIUM HYDROXIDE, SOLID. Storage batteries filled with potassium hydroxide, solid which are shipped from the factory in their original dry state and filled with the dry alkali. Water would be added to the battery before first being used.	3028
BATTERIES, WET, FILLED WITH ACID OR ALKALI. A series of metal plates immersed in an electrolyte, which is usually dilute sulphuric acid, but for a certain type of battery the electrolyte is a solution of potassium hydroxide. Both of these electrolytes are corrosive liquids. The casing for the acid containing batteries is commonly plastic. Storage batteries of either of these types, when containing electrolyte, are classed as corrosive liquids. Storage batteries in transit may cause damage by leakage of the electrolyte or may produce fire by accidental short-circuiting of the terminals.	2794, 2795
BLACK POWDER (GUNPOWDER). Substance consisting of an intimate mixture of charcoal or other carbon and either potassium nitrate or sodium nitrate, with or without sulphur. It may be meal, granular, compressed or pelletized.	0027, 0028
BOMBS. Explosive articles which are dropped from aircraft. They may contain a flammable liquid with bursting charge, a photo-flash composition or a bursting charge. The term excludes torpedoes (aerial) and includes: BOMBS, PHOTO-FLASH; BOMBS with bursting charge; BOMBS WITH FLAMMABLE LIQUID, with bursting charge.	0033, 0034, 0035, 0037, 0038, 0039, 0291, 0299, 0399, 0400
BOOSTERS. Articles consisting of a charge of detonating explosive with or without means of initiation. They are used to increase the initiating power of detonators or detonating cord.	0042, 0225, 0268, 0283
BURSTERS, explosive. Articles consisting of a small charge of explosive used to open projectiles, or other ammunition in order to disperse their contents.	0043
CAPS, TOY (AMORCES). Articles consisting of a small quantity of an explosive substance between two strips or discs of paper or contained in a plastic cup or covered by varnishing or other means.	—
CARTRIDGES ACTUATING FOR FIRE EXTINGUISHER. Contrivances containing a small explosive charge with a primer, the functioning of which ruptures a metal piece (for example, a bursting disc) and thereby actuates a fire extinguisher.	—
CARTRIDGES, BLANK. Articles which consist of a cartridge case with a centre or rim fire primer and a confined charge of smokeless or black powder but no projectile. Used for training, saluting or in starter pistols, etc.	0014, 0326, 0327, 0338, 0413
CARTRIDGES, FLASH. Articles consisting of a casing, a primer and flash powder, all assembled in one piece ready for firing.	0049, 0050

Term and explanation	*UN Number(s), when relevant*
CARTRIDGES FOR WEAPONS. 1) Fixed (assembled) or semi-fixed (partially-assembled) ammunition designed to be fired from weapons. Each cartridge includes all the components necessary to function the weapon once. The name and description should be used for small arms cartridges that cannot be described as 'cartridges, small arms'. Separate loading ammunition is included under this name and description when the propelling charge and projectile are packed together (see also 'Cartridges, blank'). 2) Incendiary, smoke, toxic and tear-producing cartridges are described in this Attachment under 'ammunition, incendiary' etc.	0005, 0006, 0007, 0014, 0321, 0326, 0327, 0338, 0348, 0412, 0413
CARTRIDGES FOR WEAPONS, INERT PROJECTILE. Ammunition consisting of a projectile without bursting charge but with a propelling charge. The presence of a tracer can be disregarded for classification purposes provided that the predominant hazard is that of the propelling charge.	0012, 0328, 0339, 0417
CARTRIDGES, OIL WELL. Articles consisting of a casing of thin fibre, metal or other material containing only propellant which projects a hardened projectile. The term excludes the following articles which are listed separately: CHARGES, SHAPED.	0277, 0278
CARTRIDGES, POWER DEVICE. Articles designed to accomplish mechanical actions. They consist of a casing with a charge of deflagrating explosive and a means of ignition. The gaseous products of the deflagration produce inflation, linear or rotary motion or activate diaphragms, valves or switches or project fastening devices or extinguishing agents.	0275, 0276, 0323, 0381
CARTRIDGES, SIGNAL. Articles designed to fire coloured flares or other signals from signal pistols, etc.	0054, 0312, 0405
CARTRIDGES, SMALL ARMS. Ammunition consisting of a cartridge case fitted with a centre or rim fire primer and containing both a propelling charge and solid projectile(s). They are designed to be fired in weapons of calibre not larger than 19.1 mm. Shot-gun cartridges of any calibre are included in this definition. The term excludes: CARTRIDGES, SMALL ARMS, BLANK listed separately; and some small arms cartridges which are listed under CARTRIDGES FOR WEAPONS, INERT PROJECTILE.	0012, 0328, 0339, 0417
CASES, CARTRIDGE, EMPTY, WITH PRIMER. Articles consisting of a cartridge case made from metal, plastics or other non-flammable material, in which the only explosive component is the primer.	0055, 0379
CASES, COMBUSTIBLE, EMPTY, WITHOUT PRIMER. Articles consisting of cartridge cases made partly or entirely from nitrocellulose.	0446, 0447
CELLS, CONTAINING SODIUM. Articles consisting of hermetically sealed, metal casings which fully enclose the dangerous goods and which are so constructed and closed as to prevent the release of the dangerous goods under normal conditions of transport. In addition to sodium, cells covered by this entry may also contain sulphur, but no other dangerous goods. Although designed and intended to provide a source of electrical energy, these cells are electrically inert at any temperature at which the sodium contained in the cell is in a solid state.	3292
CHARGES, BURSTING. Articles consisting of a charge of detonating explosive such as hexolite, octolite or plastics bonded explosive designed to produce effect by blast or fragmentation.	—
CHARGES, DEMOLITION. Articles containing a charge of a detonating explosive in a casing of fibre-board, plastic, metal or other material. The term excludes the following articles which are listed separately: bombs, mines, etc.	0048
CHARGES, DEPTH. Articles consisting of a charge of detonating explosive contained in a drum or projectile. They are designed to detonate under water.	0056
CHARGES, EXPELLING. A charge of deflagrating explosive designed to eject the payload from the parent articles without damage.	—
CHARGES, EXPLOSIVE, COMMERCIAL without detonator. Articles consisting of a charge of detonating explosive without means of initiation, used for explosive welding, jointing, forming and other metallurgical processes.	0442, 0443, 0444, 0445
CHARGES, PROPELLING. Articles consisting of a propellant charge in any physical form, with or without a casing, for use as a component of rocket motors or for reducing the drag of projectiles.	0271, 0272, 0415, 0491
CHARGES, PROPELLING FOR CANNON. Articles consisting of a propellant charge in any physical form, with or without a casing, for use in a cannon.	0242, 0279, 0414
CHARGES, SHAPED, without detonator. Articles consisting of a casing containing a charge of detonating explosive with a cavity lined with rigid material, without means of initiation. They are designed to produce a powerful, penetrating jet effect.	0059, 0439, 0440, 0441

Term and explanation	*UN Number(s), when relevant*
CHARGES, SHAPED, FLEXIBLE, LINEAR. Articles consisting of a V-shaped core of a detonating explosive clad by a flexible metal sheath.	0237, 0288
CHARGES, SUPPLEMENTARY, EXPLOSIVE. Articles consisting of a small removable booster used in the cavity of a projectile between the fuze and the bursting charge.	0060
COAL GAS COMPRESSED. The gas obtained by the destructive distillation of bituminous coal.	1023
COATING SOLUTION. Material such as automobile undercoating, drum or barrel lining material, etc., which cannot properly be described as cement, but presents similar hazards during transport. It usually contains flammable solvents.	1139
COMPONENTS, EXPLOSIVE TRAIN, N.O.S. Articles containing an explosive designed to transmit the detonation or deflagration within an explosive train.	0382, 0383, 0384, 0461
CONSUMER COMMODITY. A material which is packed and distributed in a form intended or suitable for retail sales for the purposes of personal care or household use.	—
CONTRIVANCES, WATER-ACTIVATED with burster, expelling charge or propelling charge. Articles whose functioning depends upon physico-chemical reaction of their contents with water.	0248, 0249
COPRA. The dried meat of coconuts used to produce coconut oil. Copra contains up to 67% oil and may be subject to spontaneous combustion.	1363
CORD, DETONATING, flexible. Articles consisting of a core of detonating explosive enclosed in spun fabric with plastic or other covering unless the spun fabric is siftproof.	0065, 0289
CORD (FUSE), DETONATING, metal clad. Articles consisting of a core of detonating explosive clad by a soft metal tube with or without protective covering. When the core contains a sufficiently small quantity of explosive, the words 'mild effect' are added.	0102, 0104, 0290
CORD, IGNITER. Article consisting of textile yarns covered with black powder or another fast burning pyrotechnic composition and of a flexible protective covering; or it consists of a core of black powder surrounded by a flexible woven fabric. It burns progressively along its length with an external flame and is used to transmit ignition from a device to a charge or primer.	0066
CUTTERS, CABLE, EXPLOSIVE. Articles consisting of a knife-edged device which is driven by a small charge of deflagrating explosive into an anvil.	0070
DETONATOR ASSEMBLIES, NON-ELECTRIC, for blasting. Non-electric detonators assembled with and activated by such means as safety fuse, shock tube, flash tube or detonating cord. They may be of instantaneous design or incorporate delay elements. Detonating relays incorporating detonating cord are included. Other detonating relays are included in 'Detonators, non-electric'.	0360, 0361
DETONATORS. Articles consisting of a small metal or plastic tube containing explosives such as lead azide, PETN or combinations of explosives. They are designed to start a detonation train. They may be constructed to detonate instantaneously, or may contain a delay element. The term includes: DETONATORS FOR AMMUNITION and Detonators for blasting both electric and non-electric; Detonating relays without flexible detonating cord are included.	0029, 0030, 0073, 0255, 0267, 0364, 0365, 0366, 0455 0456
DRESSING, LEATHER. A preparation which usually contains a solvent or other liquid with a low flash point.	—
DYE INTERMEDIATE, N.O.S. A cyclic compound, containing an amino, hydroxy, sulfonic acid, or quinone group or a combination of these groups used in the manufacture of dyes.	1602, 2801
ELECTROLYTE. The term commonly applied to the dilute sulphuric acid used in ordinary lead plate storage batteries. The solution of potassium hydroxide used in some storage batteries is also called electrolyte.	—
ENTIRE LOAD. Such a substantial proportion that the practical hazard should be assessed by assuming simultaneous explosion of the whole of the explosive content of the load or package.	—
EXPLODE. The verb used to indicate those explosive effects capable of endangering life and property through blast, heat and projection of missiles. It encompasses both deflagration and detonation.	—
EXPLOSION OF THE TOTAL CONTENTS. The phrase is used in testing a single article or package or a small stack of articles or packages.	—
EXPLOSIVE, BLASTING. Detonating explosive substances used in mining, construction and similar tasks. Blasting explosives are assigned to one of five types. In addition to the ingredients listed, blasting explosives may also contain inert components such as kieselguhr, and minor ingredients such as colouring agents and stabilizers.	0081, 0082, 0083, 0084, 0241, 0331, 0332

Term and explanation	*UN Number(s), when relevant*
EXPLOSIVE, BLASTING, TYPE A. Substances consisting of liquid organic nitrates such as nitroglycerin or a mixture of such ingredients with one or more of the following: nitrocellulose, ammonium nitrate or other inorganic nitrates, aromatic nitro derivatives or combustible materials such as wood-meal and aluminium powder. Such explosives must be in powdery, gelatinous or elastic form. The term includes dynamite, gelatine, blasting and gelatine dynamites.	0081
EXPLOSIVE, BLASTING, TYPE B. Substances consisting of a) a mixture of ammonium nitrate or other inorganic nitrates with an explosive such as trinitrotoluene, with or without other substances such as wood-meal and aluminium powder, or b) a mixture of ammonium nitrate or other inorganic nitrates with other combustible substances which are not explosive ingredients. Such explosives must not contain nitroglycerin, similar liquid organic nitrates, or chlorates.	0082, 0331
EXPLOSIVE, BLASTING, TYPE C. Substances consisting of a mixture of either potassium or sodium chlorate or potassium, sodium or ammonium perchlorate with organic nitro derivatives or combustible materials such as wood-meal or aluminium powder or a hydrocarbon. Such explosives must not contain nitroglycerin or similar liquid organic nitrates.	0083
EXPLOSIVE, BLASTING, TYPE D. Substances consisting of a mixture of organic nitrated compounds and combustible materials such as hydrocarbons and aluminium powder. Such explosives must not contain nitroglycerin, similar liquid organic nitrates, chlorates or ammonium nitrate. The term generally includes plastic explosives.	0084
EXPLOSIVE, BLASTING, TYPE E. Substances consisting of water as an essential ingredient and high proportions of ammonium nitrate or other oxidizers, some or all of which are in solution. The other constituents may include nitro-derivatives such as trinitrotoluene, hydrocarbons or aluminium powder. The term includes explosives, emulsion; explosives, slurry and explosives, water gel.	0241, 0332
EXPLOSIVE, DEFLAGRATING. A substance, e.g. a propellant, which reacts by deflagration rather than detonation when ignited and used in its normal manner.	—
EXPLOSIVE, DETONATING. A substance which reacts by detonation rather than deflagration when initiated and used in its normal manner.	—
EXPLOSIVE, EXTREMELY INSENSITIVE DETONATING SUBSTANCE (EIDS). A substance which, although capable of sustaining a detonation, has demonstrated through tests that it is so insensitive that there is very little probability of accidental initiation.	—
EXPLOSIVE, PRIMARY. An explosive substance manufactured with a view to producing a practical effect by explosion which is very sensitive to heat, impact or friction and which, even in very small quantities, either detonates or burns very rapidly. It is able to transmit detonation (in the case of initiating explosive) or deflagration to secondary explosives close to it. The main primary explosives are mercury fulminate, lead azide and lead styphnate.	—
EXPLOSIVE, SECONDARY. An explosive substance which is relatively insensitive (when compared to primary explosives), which is usually initiated by primary explosives with or without the aid of boosters or supplementary charges. Such an explosive may react as a deflagrating or as a detonating explosive.	—
EXTRACTS, AROMATIC OR EXTRACTS, FLAVOURING. Substances used for fragrances or for flavouring foods or beverages. Where they contain a solvent or other liquid with a sufficiently low flash point they are classified as flammable liquids. However, where they contain a liquid which has corrosive or toxic properties they must be classified according to that criteria. They may have obnoxious properties such that in the event of a leakage from the package they may cause extreme discomfort to the crew or passengers.	1169, 1197
FILMS, NITROCELLULOSE BASE. A type of film which consists mainly of nitrocellulose. As such the material has a low ignition temperature and burns rapidly when ignited, evolving gases which are toxic. When new and in good condition the film is reasonably stable and free from liability to spontaneous heating and combustion. Film that has deteriorated badly becomes very unstable and may be liable to spontaneous heating unless kept under water.	1324
FIRE EXTINGUISHER CHARGES. These commonly consist of packages containing sodium bicarbonate (a dry powder) which is non-hazardous, and bottles containing concentrated sulphuric acid, a corrosive liquid.	1774
FIRELIGHTERS. These are usually made from peat, wood shavings, or sawdust and a flammable liquid.	2623
FIREWORKS. Pyrotechnic articles designed for entertainment.	0333, 0334, 0335 0336, 0337

Term and explanation	*UN Number(s), when relevant*
FLARES. Articles containing pyrotechnic substances which are designed for use to illuminate, identify, signal or warn. The term includes: FLARES, AERIAL; FLARES, SURFACE.	0092, 0093, 0403, 0404, 0418, 0419, 0420, 0421
FLASH POWDER. Pyrotechnic substance which, when ignited, produces an intense light.	0094, 0305
FRACTURING DEVICES, EXPLOSIVE, for oil wells, without detonator. Articles consisting of a charge of detonating explosive contained in a casing without means of initiation. They are used to fracture the rock around a drill shaft to assist the flow of crude oil from the rock.	0099
FUSE/FUZE. Although these two words have a common origin (French *fusée, fusil*) and are sometimes considered to be different spellings of the same word, it is useful to maintain the convention that FUSE refers to a cord-like igniting device whereas FUZE refers to a device used in ammunition which incorporates mechanical, electrical, chemical or hydrostatic components to initiate a train by deflagration or detonation.	—
FUSE, IGNITER, tubular, metal clad. Article consisting of a metal tube with a core of deflagrating explosive.	0103
FUSE, INSTANTANEOUS, NON-DETONATING (QUICKMATCH). Article consisting of cotton yarns impregnated with fine black powder (quickmatch). It burns with an external flame and is used in ignition trains for fireworks, etc.	0101
FUSE, SAFETY. Article consisting of a core of fine-grained black powder surrounded by a flexible woven fabric with one or more protective outer coverings. When ignited it burns at a predetermined rate without any external explosive effect.	0105
FUZES. Articles designed to start a detonation or a deflagration in ammunition. They incorporate mechanical, electrical, chemical or hydrostatic components and generally protective features. The term includes: FUZES, DETONATING; FUZES, DETONATING with protective features; FUZES, IGNITING.	0106, 0107, 0257, 0316, 0317, 0367, 0368, 0408, 0409, 0410
GALLIUM. A silvery-white metal with a melting point of 30°C; it may be under-cooled to almost 0°C without solidifying. It has the property of very rapidly penetrating the grain boundaries of aluminium alloys and other metals and causing embrittlement.	2803
GAS DRIPS, Hydrocarbon. The liquid that condenses on compression of Pintsch Gas or the condensate from gas mains. It consists principally of a mixture of benzene and unsaturated hydrocarbons.	3295
GRENADES, hand or rifle. Articles which are designed to be thrown by hand or to be projected by a rifle. The term includes: GRENADES, hand or rifle, with bursting charge; GRENADES, PRACTICE, hand or rifle. The term excludes 'grenades, smoke' which are listed under AMMUNITION, SMOKE.	0110, 0284, 0285, 0292, 0293, 0318, 0372, 0452
HYDROCARBON GAS, COMPRESSED. Hydrocarbon gas under high pressure, but not in the liquid condition.	1964
HYDROCARBON GAS, LIQUEFIED. Hydrocarbon gas from natural gas or from distillation of petroleum which are liquefied by pressure.	1965
HYPOCHLORITE SOLUTION. Water solutions containing a soluble hypochlorite varying over a wide range in concentration. The solutions are alkaline and corrosive but are not flammable. If the hypochlorite solution contacts strong acids, a decomposition takes place to produce the noxious chlorine-type gases.	1791
IGNITERS. Articles containing one or more explosive substances used to start deflagration in an explosive train. They may be actuated chemically, electrically or mechanically. This term excludes the following articles which are listed separately: CORD, IGNITER; FUSE, IGNITER; FUSE, INSTANTANEOUS, NON-DETONATING; FUZES, IGNITING; LIGHTERS, FUSE; PRIMERS, CAP TYPE; PRIMERS, TUBULAR.	0121, 0314, 0315, 0325, 0454
IGNITION, MEANS OF. A general term used in connection with the method employed to ignite a deflagrating train of explosive or pyrotechnic substances (e.g. a primer for a propelling charge, an igniter for a rocket motor, an igniting fuze).	—

Term and explanation	*UN Number(s), when relevant*
INITIATION, MEANS OF. (1) A device intended to cause the detonation of an explosive (e.g. detonator, detonator for ammunition, detonating fuze). (2) The term "with its own means of initiation" means that the contrivance has its normal initiating device assembled to it and this device is considered to present a significant risk during transport but not one great enough to be unacceptable. The term does not apply, however, to a contrivance packed together with its means of initiation provided the device is packaged so as to eliminate the risk of causing detonation of the contrivance in the event of accidental functioning of the initiating device. The means of initiating can even be assembled to the contrivance provided there are protective features such that the device is unlikely to cause detonation of the contrivance in conditions which are associated with transport. (3) For the purposes of classification any means of initiation without two effective protective features should be regarded as Compatibility Group B; an article with its own means of initiation, without two effective protective features, would be Compatibility Group F. However, a means of initiation which itself possesses two effective protective features would be Compatibility Group D; and an article with a means of initiation which possesses two effective protective features would be Compatibility Group D or E. Means of initiation adjudged as having two effective protective features should have been approved by the appropriate national authority. A common and effective way of achieving the necessary degree of protection is to use a means of initiation which incorporates two or more independent safety features.	—
IRON OXIDE, SPENT OR IRON SPONGE, SPENT. A mixture of wood shavings with iron oxide and possibly lime or other material, which has been obtained from coal gas purification after saturation with sulphur. This spent material is very liable to spontaneous heating and ignition.	1376
ISOCYANATES, N.O.S. OR ISOCYANATE SOLUTION, N.O.S. These include a number of chemical products used in the manufacture of plastic foams, synthetic rubber, etc. Some are sufficiently toxic or lachrymatory to need classification as toxic substances, particularly isocyanates in pure form. Others may need to be classified as flammable liquids, depending on their characteristics, and a number may not be subject to these Instructions.	2206, 2478, 3080
JET PERFORATING GUNS, CHARGED, oil well, without detonator. Articles consisting of a steel tube or metallic strip into which are inserted shaped charges connected by detonating cord, without means of initiation.	0124, 0494
LACQUER BASE OR LACQUER CHIPS, NITROCELLULOSE, DRY. It may consist of a colloided solid mixture of nitrocellulose, pigment, gums, and a plasticizer.	—
LIGHTERS, FUSE. Articles of various design actuated by friction, percussion or electricity and used to ignite safety fuse.	0131
≠ **LITHIUM BATTERY OR LITHIUM CELLS.** A battery is one or more cells which are electrically connected together by a permanent means. A cell is a single encased electromechanical unit which exhibits a voltage differential across its two terminals.	3090, 3091
LITHIUM SILICON. A so-called alloy of metallic lithium and silicon used for industrial purposes.	1417
MAGNESIUM SCRAP. Borings, clippings, scalpings, shavings, sheets or turnings from machining operations or cuttings from thin magnesium metal sheets. The scrap can be ignited by external flame and burns intensely and persistently. It does not heat spontaneously. The scrap may have a bright metal lustre or may be dull and sometimes have a painted surface.	—
MASS EXPLOSION. An explosion which affects almost the entire load virtually instantaneously.	—
MATCHES, SAFETY. Matches, contained in a book, card or box, which are only ignited when struck on a prepared surface.	1944
MATCHES, `STRIKE ANYWHERE' OR FUSEE. They usually contain phosphorus sesquisulphide, potassium chlorate and other ingredients. The 'strike-anywhere' matches are readily ignited by friction on almost any dry surface.	1331, 2254
METHYLACETYLENE AND PROPADIENE MIXTURE, STABILIZED. A flammable gas mixture that is reasonably stable at ordinary temperatures. Although this is an acetylene derivative, the gas is not shipped dissolved in liquid and cylinders do not require an absorbent filler.	1060
MINES. Articles consisting normally of metal or composition receptacles and a bursting charge. They are designed to be operated by the passage of ships, vehicles or personnel. The term includes 'Bangalore torpedoes'.	0136, 0137, 0138, 0294
MOTOR FUEL ANTI-KNOCK MIXTURE. A mixture of one or more organic lead components such as tetraethyl lead, triethylmethyl lead, diethyldimethyl lead, ethyltrimethyl lead, and tetramethyl lead, with one or more halogen compounds such as ethylene dibromide and ethylene dichloride.	1649

Term and explanation	*UN Number(s), when relevant*
NITRATING ACID MIXTURE. A mixture of nitric and sulphuric acids used for the nitration of glycerin, cellulose or other organic substances. This acid mixture coming in contact with organic matter commonly causes fire, unless the mixture contains much water.	1796, 1826
OIL GAS, COMPRESSED. A gas made by the reaction of steam at high temperatures on gas oil or similar fractions of petroleum, or by high-temperature cracking of gas oil. The gas is flammable, but it is classified as a toxic gas because it contains a high proportion of carbon monoxide.	1071
OXYGEN GENERATOR, CHEMICAL. A device containing chemicals which upon activation releases oxygen as a product of chemical reaction. Chemical oxygen generators are used for the generation of oxygen for respiratory support, e.g. in aircraft, submarines, spacecraft, bomb shelters and breathing apparatus. Oxidizing salts such as chlorates and perchlorates of lithium, sodium and potassium, which are used in chemical oxygen generators, evolve oxygen when heated. These salts are mixed (compounded) with a fuel, usually iron powder, to form a chlorate candle, which produces oxygen by continuous reaction. The fuel is used to generate heat by oxidation. Once the reaction begins, oxygen is released from the hot salt by thermal decomposition (a thermal shield is used around the generator). A portion of the oxygen reacts with the fuel to produce more heat which produces more oxygen, and so on. Initiation of the reaction can be achieved by a percussion device, friction device or electric wire.	3356
PLASTIC SOLVENT, N.O.S. A name commonly used for mixtures of liquids employed for dissolving plastics or for thinning plastic cements. In general, they may contain flammable liquids, such as acetone, amyl acetate, or some of the alcohols or ketones. The classification is determined by the flash point.	—
POLYESTER RESIN KIT. The proper shipping name 'Polyester resin kit' covers different kits such as filler, bonding and sealing compounds, chemical anchors and fibreglass repair kits. A polyester resin kit commonly consists of an unsaturated polyester resin mixed with styrene and a separate hardener (usually a phlegmatized organic peroxide) as a minor component. The main component (viscous liquid or paste) is inherently flammable due to the styrene content (flash point 29°C to 32°C).	3269
POLYMERIC BEADS, EXPANDABLE. Semi-processed products used to manufacture polymeric articles, and which have been impregnated with a flammable gas or liquid as a blowing agent. They may evolve small quantities of flammable gas during transport.	2211
POTASSIUM SODIUM ALLOYS. Mixtures of metallic sodium and potassium that are solid at ordinary temperatures. All mixtures, regardless of physical state, will react vigorously with water and may be self-igniting. The mixtures are all combustible.	1422
POTASSIUM SULPHIDE, ANHYDROUS. A reddish-coloured solid having a strong odour. It is hygroscopic and oxidizes spontaneously on contact with air. Spontaneous ignition may occur in material improperly packed.	1382
POWDER CAKE, (POWDER PASTE) WETTED. Substance consisting of nitrocellulose impregnated with not more than 60 per cent of nitroglycerin or other liquid organic nitrates or a mixture of these.	0159, 0433
POWDER, SMOKELESS. Substance based on nitrocellulose used as propellant. The term includes propellants with a single base (nitrocellulose (NC) alone), those with a double base (such as NC and nitroglycerin (NG)) and those with a triple base (such as NC/NG/nitroguanidine). Cast, pressed or bag-charges of smokeless powder are listed under CHARGES, PROPELLING or CHARGES, PROPELLING FOR CANNON.	0160, 0161
PRIMERS, CAP TYPE. Articles consisting of a metal or plastic cap containing a small amount of primary explosive mixture that is readily ignited by impact. They serve as igniting elements in small arms cartridges, and in percussion primers for propelling charges.	0044, 0377, 0378
PRIMERS, TUBULAR. Articles consisting of a primer for ignition and an auxiliary charge of deflagrating explosive such as black powder used to ignite the propelling charge in a cartridge case for cannon, etc.	0319, 0320, 0376
PROJECTILES. Articles such as a shell or bullet which are projected from a cannon or other artillery gun, rifle or other small arm. They may be inert, with or without tracer, or may contain a burster or expelling charge or a bursting charge. The term includes: PROJECTILES, inert, with tracer; PROJECTILES, with burster or expelling charge; PROJECTILES, with bursting charge.	0167, 0168, 0169, 0324, 0344, 0345, 0346, 0347, 0424, 0425, 0426, 0427, 0434, 0435
PROPELLANT, LIQUID. A substance consisting of a deflagrating liquid explosive, used for propulsion.	0495, 0497
PROPELLANTS. Deflagrating explosives used for propulsion or for reducing the drag of projectiles.	—
PROPELLANT, SOLID. A substance consisting of a deflagrating solid explosive, used for propulsion.	0498, 0499

Term and explanation	*UN Number(s), when relevant*
PYROPHORIC LIQUID/SOLID, ORGANIC/INORGANIC. A substance that may ignite in air at or below room temperature in the absence of added heat, shock or friction.	2845, 2846, 3194, 3200
PYROXYLIN SOLUTION. Pyroxylin (nitrocellulose) or soluble cotton dissolved in amyl acetate or other organic solvents. Pyroxylin solution is used as a basis for the manufacture of lacquer, leather coating compounds, leather substitutes, cements, etc. It is generally more viscous than ordinary lacquers.	—
RELEASE DEVICES, EXPLOSIVE. Articles consisting of a small charge of explosive with means of initiation. They sever rods or links to release equipment quickly.	0173
ROCKET MOTORS. Articles consisting of a solid, liquid or hypergolic fuel contained in a cylinder fitted with one or more nozzles. They are designed to propel a rocket or a guided missile. The term includes: ROCKET MOTORS; ROCKET MOTORS WITH HYPERGOLIC LIQUIDS, with or without expelling charge; ROCKET MOTORS, LIQUID FUELLED.	0186, 0250, 0280, 0281, 0322, 0395, 0396
ROCKETS. Articles consisting of a rocket motor and a payload which may be an explosive warhead or other device. The term includes guided missiles and: ROCKETS, LINE-THROWING; ROCKETS, LIQUID FUELLED, with bursting charge; ROCKETS, with bursting charge; ROCKETS, with expelling charge; ROCKETS, with inert head.	0180, 0181, 0182, 0183, 0238, 0240, 0295, 0397, 0398, 0436, 0437, 0438, 0453
SIGNALS. Articles containing pyrotechnic substances designed to produce signals by means of sound, flame or smoke or any combinations thereof. The term includes: SIGNAL DEVICES, HAND; SIGNALS, DISTRESS, ship; SIGNALS, RAILWAY TRACK, EXPLOSIVE; SIGNALS, SMOKE.	0191, 0192, 0193, 0194, 0195, 0196, 0197, 0313, 0373, 0487, 0492, 0493
SLUDGE ACID. The acid waste resulting from oil refining, or from nitrating processes. It generally has somewhat the same hazards as the original acid.	1906
SODA LIME. A mixture of calcium oxide or calcium hydroxide with sodium hydroxide.	1907
SODIUM SULPHIDE, ANHYDROUS. A yellow or reddish-coloured solid having a strong odour. It is hygroscopic and oxidizes spontaneously on contact with air. Spontaneous ignition may occur in material improperly packed.	1385
SOLVENTS. Substances capable of dissolving other substances to form a uniformly dispersed mixture or solution. Examples of organic solvent groups are esters, ethers, ketones, amines and nitrated and chlorinated hydrocarbons. Many solvents are flammable and toxic to varying degrees.	—
SOUNDING DEVICES, EXPLOSIVE. Articles consisting of a charge of detonating explosive. They are dropped from ships and function when they reach a predetermined depth or the sea bed.	0204, 0296, 0374, 0375
STABILIZED. Stabilized means that the substance is in a condition that precludes uncontrolled reaction. This may be achieved by methods such as the addition of an inhibiting chemical, degassing the substance to remove dissolved oxygen and inerting the air space in the package, or maintaining the substance under temperature control.	
SUBSTANCES, EXPLOSIVE, VERY INSENSITIVE (SUBSTANCES, EVI), N.O.S. Substances that present a mass explosion hazard but are so insensitive that there is very little probability of initiation or of transition from burning to detonation (under normal conditions of transport) and that have passed Test Series 5.	0482
SULPHURIC ACID, FUMING. Sulphuric acid in which an excess of sulphur trioxide has been dissolved. It evolves toxic fumes whilst ordinary sulphuric acid does not.	1831
SULPHURIC ACID, SPENT. Sulphuric acid usually of high concentration, which has been used for chemical processes and contains residual organic matter.	1832
TORPEDOES. Articles containing an explosive or non-explosive propulsion system and designed to be propelled through water. They contain an inert head or a warhead. The term includes: TORPEDOES, LIQUID FUELLED, with inert head; TORPEDOES, LIQUID FUELLED, with or without bursting charge; TORPEDOES, with bursting charge.	0329, 0330, 0449, 0450, 0451
TOTAL CONTENTS. Such a substantial proportion that the practical hazard should be assessed by assuming simultaneous explosion of the whole of the explosive content of the load or package.	—
TRACERS FOR AMMUNITION. Sealed articles containing pyrotechnic substances, designed to reveal the trajectory of a projectile.	0212, 0306

	Term and explanation	*UN Number(s), when relevant*
	TURBINE ENGINES. Generic term used for turbine engines fuelled by flammable liquid, flammable gas or other combustible fuels. They may power fixed wing aircraft, rotorcraft, hover craft (cushion craft), marine vessels, land vehicles, pumps and power-generating plants.	3166
	TURPENTINE SUBSTITUTE. A petroleum distillate which might contain some aromatic components and which usually has a flash point of approximately 40°C. White spirit is a synonym for turpentine substitute.	1300
	WARHEADS. Articles consisting of detonating explosives. They are designed to be fitted to a rocket, guided missile or torpedo. They may contain a burster or expelling charge or bursting charge. The term includes: WARHEADS, ROCKET, with burster or expelling charge; WARHEADS, ROCKET, with bursting charge; WARHEADS, TORPEDO, with bursting charge.	0221, 0286, 0287, 0369, 0370, 0371
+	**WATT-HOUR RATING.** Expressed in watt-hours, the watt-hour rating is calculated by multiplying a cell's or battery's rated capacity, in ampere-hours, by its nominal voltage.	3480, 3481
	ZIRCONIUM SUSPENDED IN A FLAMMABLE LIQUID. Very finely divided metallic zirconium which is usually suspended in some highly volatile and flammable liquid. If spilled, the material is liable to self-ignition.	1308

Attachment 3

NOTIFIED VARIATIONS FROM THE INSTRUCTIONS

Chapter 1

VARIATIONS NOTIFIED BY STATES

1.1 Paragraph 2.2.1 of Annex 18 provides that Contracting States shall take the necessary measures to achieve compliance with the detailed provisions of these Technical Instructions. However, where a Contracting State does adopt different provisions from those specified in these Technical Instructions, 2.5 of Annex 18 requires that ICAO be notified promptly of such State provisions for publication in the Technical Instructions.

≠ 1.2 Those different provisions which were notified to ICAO by States, prior to 22 July 2008, appear in Table A-1. The variations notified by States, unless the context makes it otherwise apparent, apply as follows:

a) where such variations result in more restrictive provisions than those contained in these Instructions, they apply to the transport of dangerous goods by air:

   1) to, from or through all territory subject to the sovereignty of the notifying State by all operators; and

   2) outside the territory of the notifying State to all operators for whom the notifying State is the State of the Operator;

b) where such variations result in less restrictive provisions than those contained in these Instructions, the variations are listed for information only and may only be applied within the territory of the notifying State by operators for whom the notifying State is the State of the Operator.

1.3 Throughout the Instructions, the identifying code of each State variation has been placed beneath the heading of the Chapter(s) principally affected. Where State variations apply to specific articles or substances, the identifying code appears in column 6 of Table 3-1 against the appropriate proper shipping name.

1.4 The table of State variations (Table A-1) is based on data provided by the States concerned. This table is provided for information only and any further details required should be obtained from the appropriate government department.

≠ 1.5 If a State needs to make variations based on new requirements appearing in this edition of the Instructions, it should notify ICAO by using the form appearing at the end of this Chapter. If such variations are received by 17 April 2009, they will appear in an Addendum to be published in May 2009.

1.6 Variations have been notified by the following States:

Australia — AU
Belgium — BE
Brunei Darussalam — BN
Canada — CA
China — CN
Denmark — DK
Fiji — DQ
France — FR
Germany — DE
Hong Kong — HK
India — IN
Iran (Islamic Republic of) — IR
Italy — IT
Jamaica — JM
Japan — JP
Macao — MO
Malaysia — MY
Netherlands — NL
Pakistan — PK
Poland — PL
Russian Federation — RU
Saudi Arabia — SA
Singapore — SG
South Africa — ZA
Spain — ES
Sri Lanka — VC
Switzerland — CH
Turkey — TR
Ukraine — UA
United Arab Emirates — AE
United Kingdom — GB
United States — US
Vanuatu — VU

Table A-1. State variations

The identifying code for each State variation consists of the two-letter identifier for that State plus a sequential number. Variations are listed in the alphabetical order of these identifying codes. For each variation the relevant Part and Chapter or paragraph numbers of the Instructions are given.

	Identifying code	*Variation*	*Relevant paragraphs*
		AE — UNITED ARAB EMIRATES	
≠	AE 1	On shipments to, from, within or transiting through the United Arab Emirates (UAE), emergency response information, as described below, must be provided for all dangerous goods for which a Transport Document is required.	
		The Transport Document (shipper's declaration dangerous goods) required by these Instructions must include a 24-hour emergency response telephone number, which must include the international code and area code, for use in the event of an incident or accident involving dangerous good(s). The number must be monitored by an individual who can be contacted in case of an emergency and who:	5;4.1
		1) is able to converse in English; 2) is knowledgeable of the hazards and characteristics of the dangerous good(s) being transported; 3) has comprehensive emergency response and accident mitigation information for the dangerous good(s) or has immediate access to a person who possesses such knowledge and information.	
≠	AE 2	Cargo agents and freight forwarders accepting or processing dangerous goods for transport by air must ensure that they have a minimum of two GCAA dangerous goods certified staff available at all times to handle such consignments. This is a prerequisite for GCAA to approve the dangerous goods freight forwarder application or to renew their certificate. Ground handling agents must only accept dangerous goods from GCAA certified/approved cargo agents or freight forwarders.	1;4
≠	AE 3	The request to carry dangerous goods under exemption or approval by the State or the competent authority must be submitted to the Safety and Security Section of GCAA, at least seven days before the date of flight on which the proposed dangerous goods are planned to be carried. The address and contact details of the Safety and Security Section are as follows: Safety and Security Section Department of Aviation Safety and Security P.O. Box 6558 Abu Dhabi United Arab Emirates Fax: +971 2 4054461	1;1
+	AE 4	The operator must be responsible for coordinating with the shipper and consignee the return of any remaining unclaimed, damaged and/or leaking dangerous goods to the State of Origin whenever instructed to do so by GCAA.	7;3
+	AE 5	Transportation of dangerous goods to, from or within the UAE must be subject to compliance with the provisions of these Instructions and the UAE Civil Aviation Regulations. A copy of the UAE Civil Aviation Regulations can be obtained online using the GCAA official website, i.e. www.gcaa.ae.	
+	AE 6	Dangerous goods must never be loaded in the passenger cabin or the flight deck of the aircraft, except when required to do so in accordance with 8;1.1 of these Instructions and paragraphs 2.3 and 2.5 of the IATA Dangerous Goods Regulations.	7;2
+	AE 7	The ground handling agent and the operator must ensure that any package, overpack, freight container for radioactive material, unit load device, or other type of pallet containing dangerous goods is inspected before being loaded onto an aircraft. No consignment shall be accepted for carriage unless the following conditions of carriage are met: 1) the consignment is appropriately marked and labelled as per the IATA Dangerous Goods Regulations and GCAA requirements; and 2) the consignment is leakproof and its integrity has not been compromised at the time it is loaded onto an aircraft.	7;1, 7;3

	Identifying code	Variation	Relevant paragraphs
+	AE 8	The ground handling agent and the operator must ensure that the required information about the dangerous good(s) to be loaded onto the aircraft is communicated to the person responsible for weight and balance for that particular flight. Such information must include the following, as a minimum: 1) the air waybill number; 2) the proper shipping name, supplemented with the technical name as appropriate and UN or ID number; 3) the class or division and subsidiary risk corresponding to the labels applied and, for Class 1, the compatibility group; 4) the packing group; 5) for non-radioactive material, the number of packages, the net quantity or gross weight, if applicable, in respect of each package; 6) for radioactive material, the number and category of packages, overpacks or freight containers and the transport index and dimensions for each, if applicable; 7) whether the package is restricted to cargo aircraft only; 8) the airport at which the package is to be unloaded; and 9) where applicable, an indication that the dangerous goods are being carried under a State exemption.	7;4
+	AE 9	The dangerous goods acceptance checklist must reflect applicable requirements contained in the latest Instructions and IATA Dangerous Goods Regulations.	7;1.3
+	AE 10	An import permit must be obtained from the Radiation Protection and Control Department of the UAE Federal Environmental Agency before forwarding radioactive material to the UAE. The contact details of the Department of Radiation Protection and Control within the UAE is as follows: Federal Environmental Agency P.O. Box 8820, Dubai Telephone: +971 4 3965888 Facsimile: +971 4 3962113 Website: www.fea.gov.ae	
+	AE 11	Air operator(s) may carry dangerous goods to, from and via UAE provided they are dangerous goods certified by the Civil Aviation Authority of its State of Origin.	
+	AE 12	Dubai-destined arms and ammunitions and explosives and all other Class 1 dangerous goods require import permission from the Dubai police (minimum 48 hours pre-alert notification required). Arms and ammunition may not be imported except with a licence obtained from the UAE Ministry of Defence.	
+	AE 13	Abu Dhabi-destined and transhipments of arms and ammunitions and explosives and all other Class 1 dangerous goods require import permission from the UAE Ministry of Interior of Abu Dhabi before forwarding.	
		AU — AUSTRALIA	
+		The Australian national authority for Annex 18 and competent authority for these Instructions is the: Civil Aviation Safety Authority (CASA) GPO Box 2005 Canberra ACT 2601 Australia E-mail: dg@casa.gov.au Telephone: +61 131757 Facsimile: +61 3 9927 5336 or +61 8 9366 2810 Website: www.casa.gov.au/dg	
	AU 1	Dangerous goods requiring approval under Special Provisions A1 or A2 of the Technical Instructions may only be carried on a passenger aircraft in Australian territory with the permission of the Civil Aviation Safety Authority (CASA). Applications for permission should be lodged with CASA at least ten days prior to the proposed flight.	Table 3-1
	AU 2	Dangerous goods requiring approval under Special Provision A109 of the Technical Instructions may only be carried on a cargo aircraft in Australian territory with the permission of the Civil Aviation Safety Authority (CASA). Applications for permission should be lodged with CASA at least ten days prior to the proposed flight.	Table 3-1 3;3

	Identifying code	Variation	Relevant paragraphs
≠	AU 3	Infectious substances other than human blood products, human urine and human tissue, are prohibited from entry to Australia without prior approval from Australian Health Authorities. Requests for approval should be addressed to: Australian Quarantine and Inspection Service Department of Agriculture, Fisheries and Forestry GPO Box 858 Canberra, ACT 2601 Australia Telephone: +61 2 6272 3933 Website: http://www.aqis.gov.au	Table 3-1
+	AU 4	For the purposes of compliance with 7;4.6, notification of a dangerous goods incident is to be reported to the Civil Aviation Safety Authority (CASA) within two working days. This notification is in addition to, and not instead of, that required under Annex 13.	7;4.6
		BE — BELGIUM	
	BE 1	Definition of "explosive substance": According to the Belgian regulations any substance likely to be used for its explosive, deflagrating or pyrotechnic properties is considered an explosive substance.	1;3.1
	BE 2	No transport by air of any explosive may take place from, to or in transit through Belgium except by authorization of the Minister responsible for the explosives service, who may grant exemptions to the methods of packaging. Applications may be made only by persons or corporations having a residence or an office in Belgium. When this is not the case, the applicant must have a responsible representative, residing in Belgium and approved by Ministerial Decree (information on this subject is obtainable from the: Service des Explosifs Ministère des Affaires Economiques Konig Albert II-laan 16 1000 Bruxelles Telephone: 322 206 4111 Facsimile: 322 206 5752) The authorization for to which reference is made above is furthermore subject to the agreement of the: Belgian Civil Aviation Administration Ministry of Communications and Infrastructure, CCN rue du Progrès 80 1030 Bruxelles Telephone: 322 206 3211 Facsimile: 322 206 3290 These various provisions are issued by the Belgian authority for regulation of explosive (Royal Decree of 23 September 1958, amended), authorization for transport by air being therefore also issued, in practice, only on a case-by-case basis, except with respect to products considered in Belgium as safety ammunition or fireworks for which an authorization covering several shipments over a period of time may in principle be granted. It should be noted that in the case of importation or exportation or transit partially over land, any transport that is authorized only case-by-case is subject to prior application specifying the complete itinerary, including the land portion.	1;1.2 2;1.5 4;3
	BE 3	Those substances listed in Table 3-1 with "BE 3" shown in column 6 are defined as "explosive substances" and are subject to the conditions of Variation BE 2.	Table 3-1
	BE 4	Prior authorization of the: Federal Agency for Nuclear Control Ravensteinstraat 36 1010 Bruxelles Telephone: 322 289 2111 Facsimile: 322 289 2121 E-mail: info@fanc.fgov.bc	1;1.2 2;7 5;1.2.2

Identifying code	*Variation*	*Relevant paragraphs*

is required for transport from, to or in transit through Belgium of radioactive substances and fissile substances of which the quantities exceed the limits of activity defined in the General Regulations for the Protection of the Population, Workers and Environment against the Danger of Ionizing Radiations (Royal Decree of 20 July 2001). Authorization for transport by air is furthermore subject to the agreement of the:

Belgian Civil Aviation Administration
Ministry of Communications and Infrastructure, CCN
rue du Progrès 80
1030 Bruxelles

The carriage in aircraft over the territory of the Kingdom of Belgium of:

1) fissile radioactive material as defined in ICAO Doc 9284, 2;7.1 in quantities exceeding the limits set out in 2;7.2.3.5; and

2) radioactive material:

— in a Type B(U) package containing more than 3000 A_1 or 3000 A_2 or 1000 TBq, whichever is the lower; or
— in a Type B(M) package; or
— in a Type C package containing more than 3000 A_1 or 3000 A_2 or 1000 TBq, whichever is the lower; or
— transported under special arrangement

shall not be accepted without prior permission by the Belgian Civil Aviation Administration.

≠ BE 5 The following requirements apply to aircraft registered: 1;1.2

a) in Belgium no matter where they are operating; and

b) in a State other than Belgium and which are not required to operate under and in accordance with Annex III to Council Regulation (EC) NO. 3922/1991 of 16 December 1991 on the harmonization of technical requirements and administrative procedures in the field of civil aviation (“EU-OPS”), when they are operating in Belgium.

Aircraft may only carry dangerous goods with the prior approval of the Civil Aviation Authority. Carriage of such goods must be in compliance with the ICAO Technical Instructions. Application for a general or special authorization must be submitted to:

Belgian Civil Aviation Authority
Operations Department — Dangerous Goods
CCN — 2nd Floor
Vooruitgangstraat 80 — Bus 5
B-1030 Brussels
Belgium
Telephone: +32 2 277 43 58
Facsimile: +32 277 42 57
E-mail: koenraad.clerbout@mobilit.fgov.be

This variation does not apply:

a) to aircraft registered in a State other than Belgium and which are required to operate under and in accordance with EU-OPS, providing an approval granted by such a State is held and a copy of this approval is submitted to the Belgian Civil Aviation Authority;

b) unless otherwise specified in the ICAO Technical Instructions, to dangerous goods in the case of overflight of the Belgian territory by foreign operators, provided the operator has permission from its State of Registry to carry dangerous goods in accordance with the provisions of these Instructions; or

c) to the transport of dry ice (carbon dioxide, solid), UN 1845, when used for cooling purposes in combination with goods not subject to these Instructions. All other requirements of these Instructions concerning the transport of dry ice remain applicable.

BN — BRUNEI DARUSSALAM

BN 1 Negara Brunei Darussalam has selected the English language for use in all documentation and correspondence with respect to the transport of dangerous goods by air. The English version of Annex 18 and the Technical Instructions will be used. 5;4

	Identifying code	*Variation*	*Relevant paragraphs*
		CA — CANADA	
		Any request concerning the applicability of variations CA 1, CA 2 or CA 3 must be addressed to: Canadian Nuclear Safety Commission Packaging and Transport Licensing Division Materials Regulation Division P.O. Box 1046 Ottawa, Ontario Canada K1P 5S9 Facsimile: (613) 947-2054 E-mail: transport@cnsc-ccsn.gc.ca	
	CA 1	Fissile radioactive material in any quantity may not be transported by aircraft to, from or over Canada without prior permission.	2;7 4;9 5;1, 5;3 6;7 7;1, 7;2
	CA 2	"Type IP-1" and "Type IP-2" as prescribed in 4;9.2.4 for LSA material and SCO "not under exclusive use" shall be replaced with "Type IP-3".	4;9.2.4
	CA 3	Type B(U) radioactive material packages must be approved by the Canadian Nuclear Safety Commission.	2;7 6;7
	CA 4	In addition to the Transportation of Dangerous Goods Regulations and the ICAO Technical Instructions, the transportation by air of radioactive material to, from or within Canada is subject to the provisions of the Packaging and Transport of Nuclear Substances Regulations made by the Canadian Nuclear Safety Commission.	2;7 4;9 5;1, 5;2, 5;3, 5;4 6;7 7;1, 7;2, 7;3, 7;4
	CA 5	Infectious substances are not permitted in the mail in Canada. Infectious substances must comply with all documentation and labelling requirements including the requirements outlined in 1;2.3 of these Instructions.	1;2.3
	CA 6	The transportation by air of dangerous goods to, from or within Canada is subject to the provisions of the Transportation of Dangerous Goods Regulations and of the ICAO Technical Instructions, as referenced in the said Regulations. Requests for a copy of the Transportation of Dangerous Goods Regulations of Canada in document (Doc No. RE-4631), computer or microfiche format should be sent to: Canada Communication Group — Publishing Ottawa, Ontario Canada K1A 0S9 or see the following website for the text of the Transportation of Dangerous Goods Regulations of Canada: http://www.tc.gc.ca/tdg/clear/tofc.htm	1;1 7;1
	CA 7	Dangerous goods requiring approval under Special Provisions A1 or A2 of the Technical Instructions may only be carried on a passenger or cargo aircraft to, from or within Canada with the approval of the Canadian authority for the air transport of dangerous goods.	Table 3-1 3;3
≠	CA 8	Dangerous goods requiring approval under Special Provision A109 of the Technical Instructions, Table 3-1, may only be carried on a cargo aircraft to, from or within Canada with the approval of the Canadian authority for the air transport of dangerous goods. The Canadian authority for the air transport of dangerous goods for CA 7 and CA 8: Chief Air Operator Certification and Operational Standards Transport Canada Civil Aviation Directorate Ottawa, Ontario Canada K1A 0N8 Telephone: (613) 993-6975 Facsimile: (613) 954-1602 E-mail: chapinw@tc.gc.ca	Table 3-1 3;3

	Identifying code	*Variation*	*Relevant paragraphs*
	CA 9	Radioactive material as defined in 2;7.1 is not accepted in the mail by Canada Post.	1;2
≠	CA 10	The entry into Canada of infectious substances affecting animals, UN 2900, is subject to the requirements of the Health of Animals Act (1990, c.21), and prior approval from the Canadian Food Inspection Agency is required. Request for approval should be addressed to: Biohazard Containment, Safety and Facilities Management Division Laboratories Directorate Canadian Food Inspection Agency/CFIA 159 Cleopatra Drive Ottawa, Ontario Canada K1A 0Y9 Telephone: (613) 221-7068 Facsimile: (613) 228-6129 http://www.inspection.gc.ca/english/anima/impe.shtml	Table 3-1
	CA 11	The entry into Canada of infectious substances affecting humans, UN 2814, is subject to the requirements of the Human Pathogens Importation Regulations (SOR/94-558), and prior approval from the Public Health Agency of Canada is required. Requests for approval should be addressed to: Office of Laboratory Security Public Health Agency of Canada 100 Colonnade Rd (6201A) Ottawa, Ontario Canada K1A 0K9 Telephone: (613) 957-1779 Facsimile: (613) 941-0596 http://www.phac-aspc.gc.ca/ols-bsl/index.html	Table 3-1
	CA 12	A person must not handle, offer for transport, or transport explosives into, through or from Canada that: a) are in direct contact with a large means of containment; or b) are also radioactive material. (A “large means of containment” is defined in the Canadian Transportation of Dangerous Goods Regulations as a means of containment that has a cargo capacity greater than 450 L, which is equivalent to 0.45 m^3 or 15.9 ft^3.)	1;1
≠	CA 13	Section 2.43 of the Canadian Transportation of Dangerous Goods Regulations establishes the Canadian classification criteria for miscellaneous products, substances or organisms that may not be listed as dangerous goods in these Instructions but are a marine pollutant and an environmentally hazardous substance.	Table 3-1
	CA 14	The information required on a transport document must be easy to identify, legible, in indelible print and in English or French. (Additional languages are permitted.)	5;1, 5.4 7;1
≠	CA 15	The words “24-hour number” or “numéro de 24-heures” or an abbreviation of these words, followed by a telephone number, including the area code, at which the consignor can be reached immediately and from whom technical information can be obtained about the dangerous goods in transport, without breaking the telephone connection made by the caller, must be included on the dangerous goods transport document. (Include country codes where applicable.) *Note 1.— The terms “24-hour number” or “numéro de 24-heures” refer to the telephone number that must be available when the dangerous goods are in transport. The terms were chosen to emphasize that the requirement is not just applicable during office hours but must be satisfied at any hour of the day while the dangerous goods are in transport.* *Note 2.— The telephone number of a person who is not the consignor, such as CANUTEC, but who is competent to give the technical information required, in English or in French, may be used. However, to use CANUTEC’s telephone number, the consignor must receive permission, in writing, from CANUTEC. A consignor who uses the telephone number of an organization or agency other than CANUTEC must ensure that the organization or agency has current, accurate information on the dangerous goods the consignor offers for transport and, if the organization or agency is located outside Canada, the telephone number must include the country code and, if required, the city code.*	5;1, 5.4 7;1

Identifying code	*Variation*	*Relevant paragraphs*
CA 16	Consignors or their representatives must include on the transport document the: — reference number preceded by ERP or ERAP or PIU when the dangerous goods being transported require an emergency response assistance plan; and — telephone number, including the area code, to immediately activate the plan. If the 24-hour number and the emergency response assistance plan number are the same, that number may be shown on the same line on the shipping document, for example: — 24-hour number and 3-2021 ERP: 613-123-4567 — 24-hour number and 3-2021 ERAP: 613-123-4567 — 3-2021 ERP and 24-hour number: 613-123-4567 — ERAP 3-2021 and 24-hour number: 613-123-4567 *Note.— For information regarding requirements for an emergency response assistance plan, see Part 7 of the Canadian Transportation of Dangerous Goods Regulations.*	5;1, 5;4 7;1
CA 17	A person must not handle, offer for transport, or transport dangerous goods included in Class 2, Gases, in a means of containment unless the means of containment is manufactured, selected and used in accordance with the Canadian Standards Association CSA B340, except clauses 4.1.1.1.5.1.3(a)(ii) and (iii) and 5.1.4(a). *Note.— A person may use a means of containment that is a cylinder or tube to handle, offer for transport, or transport dangerous goods included in Class 2, Gases, if the means of containment:* *a) was manufactured in accordance with CSA B339;* *b) was in use in Canada before 1 January 1993, was authorized for continued use under sections 7.32 and 8.4.2 of the "Transportation of Dangerous Goods Regulations" in effect on 1 January 2001, and the conditions in those sections are complied with; or* *c) was manufactured before 1 January 1993 in accordance with a specification for cylinders set out in 49 CFR and has displayed on it requalification marks as required by CSA B339 or 49 CFR (United States, 49 Code of Regulations), except for means of containment manufactured in accordance with 49 CFR specifications DOT-3B, DOT-3BN, DOT-3E, DOT-4AA480, DOT-4B, DOT-4B240ET, DOT-4BA, DOT-4BW, DOT-4D, DOT-4E, DOT-4L, DOT-8, DOT-8AL or DOT-39 that have a service pressure less than or equal to 6.2 MPa (6200 kPa) (900 psig).* Requests for a copy of the Canadian Standards Association CSA B340 or B339 in document form should be made to: Canadian Standards Association 178 Rexdale Boulevard Etobicoke, Ontario Canada M9W 1R3 Telephone, toll free, Canada and United States: 1-800-463-6727 Facsimile: (416) 747-2575 E-mail: sales@csa.ca	4;4
CA 18	A document that is issued to a foreign member of the flight crew of an aircraft registered in a country that is a member State of the International Civil Aviation Organization and which indicates that the crew member is trained to transport dangerous goods by air is a valid training certificate for the purposes of the Canadian Transportation of Dangerous Goods Regulations when that document is valid in a member State.	1;4
CA 19	When a "dangerous goods accident" or a "dangerous goods incident", as defined in the ICAO Technical Instructions, occurs on board an aircraft in Canada or at a Canadian aerodrome or at a Canadian air cargo handling facility, reporting must be done in accordance with the requirements found in Part 8 — Accidental Release and Imminent Accidental Release, of the Canadian Transportation of Dangerous Goods Regulations.	7;4
CA 20	The shipping document for dangerous goods transported by aircraft must show the information required for the dangerous goods by the ICAO Technical Instructions on a document that has, on the left and right margins, red hatchings that are oriented to the right or to the left.	5;4

	Identifying code	*Variation*	*Relevant paragraphs*
		CH — SWITZERLAND	
	CH 1	Hair curlers and other flammable gas-powered devices and their replacement cartridges are not permitted on one's person or in checked or carry-on baggage.	8;1.2 i)
	CH 2	The operator of an aircraft may use the advanced data transmission ACARS to provide the pilot-in-command with written information concerning dangerous goods that are to be carried. This ACARS-NOTOC specifies at least the following: the drill code; the proper shipping name and UN number as listed in the Technical Instructions; the exact loading location; the total net quantity; for radioactive material the number of packages, overpacks or freight containers, their category, their transport index (if applicable) and their exact loading location; whether the package must be carried on cargo aircraft only; the aerodrome at which the package(s) is to be unloaded and where applicable, an indication that the dangerous goods are being carried under a State exemption.	7;4.1.1
≠	CH 3	According to the radiological protection ordinance, transport within, as well as into and out of Switzerland does not require a prior authorization for the following UN numbers: 2908, 2909, 2910, 2911, 2912, 2915, 2916, 3321 and 3332. Prior authorizations for transport of Class 7 substances under other UN numbers are issued by the: Federal Office of Public Health Radiation Protection Division 3003 Berne, Switzerland Facsimile: +41 31 322 83 83 For further information, please contact the surveillance authority: Suva 6002 Lucerne, Switzerland Telephone: +41 41 419 61 33 Facsimile: +41 41 419 62 13)	1;1.2 5;1.2 7;1
	CH 4	Radioactive material containing plutonium in any quantity must not be transported in Swiss airspace.	2;7 Table 2-12
		CN — CHINA	
	CN 1	Operators wishing to carry dangerous goods in aircraft to, from or over China must obtain prior written permission from the General Administration of Civil Aviation of China. Further information may be obtained from: Department of Flight Standards General Administration of Civil Aviation of China P.O. Box 644 155 Dongsi St. West Beijing, China Telephone: +86 10 64092409 Facsimile: +86 10 64091459	7;1
		DE — GERMANY	
	DE 1	Fissile material as specified under 1) and large sources as specified under 2) shall not be accepted for carriage to/from or through Germany without prior permission by the: Bundesamt für Strahlenschutz Postfach 10 01 49 D-38201 Salzgitter, Germany Telephone: 05341 886-0 Facsimile: 05341 885 705 1) For the purpose of this variation, fissile material (nuclear fuels), as defined in paragraph 2.1 of the German law on atomic energy, are: a) plutonium-239 and plutonium-241; b) uranium enriched with the isotopes uranium-235 or uranium-233; c) any material containing one or more of the materials given in a) and b); and	1;1.2 5;1.2

Identifying code	*Variation*	*Relevant paragraphs*
	d) materials of such kind as to enable a continuous self-sustaining chain reaction to be maintained in a suitable installation (reactor) and which are defined in a legal degree. Materials (other than solidified high radioactive fission product solutions from reprocessing of nuclear fuels) containing the isotopes uranium-233, uranium-235, plutonium-239 and plutonium-241 in such quantities that the total quantity of all these isotopes is not more than 15 g or the concentration of all these isotopes in total is not greater than 15 g per 100 kg are exempted from this variation and therefore do not need prior permission. 2) A shipment is to be treated as a large source if the activity per package exceeds 1000 TBq.	
DE 2	Applications for approval of Type B packages, packages containing fissile material, shipments, special arrangements and notifications should be addressed to: Bundesamt für Strahlenschutz Postfach 10 01 49 D-38201 Salzgitter, Germany Telephone: (05341) 885 701 Facsimile: (05341) 885 705	5;1.2 6;7
DE 3	Applications for approval of special form radioactive material should be addressed to: Bundesanstalt für Materialforschung und prüfung, Fachgruppe III.3 D-12200 Berlin, Germany Telephone: (030) 8104 1330 Facsimile: (030) 8104 1237	2;7.2.3.3
DE 4	For exemptions to the Technical Instructions the following authority should be contacted for all classes: Luftfahrt-Bundesamt, Gruppe Luftverkehrssicherheit Sachgebiet Gefahrgut Kelstarbacher Str. 23 Telephone: (06142) 9461-0 Facsimile: (06142) 9461-59	1;1.1
DE 5	A substance, mixture or solution, liquid or solid, classified as UN 3077 Environmentally hazardous substance, solid, n.o.s. or UN 3082 Environmentally hazardous substance, liquid, n.o.s. by the regulations of other modes of transport must also be transported by air under these entries.	2;0, 2;9
	DK — DENMARK	
DK 1	The carriage by aircraft to, from, through or over the territory of the Kingdom of Denmark, including Greenland and the Faroe Islands, of: 1) fissile radioactive material as defined in ICAO Doc 9284, 2;7.1.3 in quantities exceeding the limits set out in 2;7.23.5; and 2) radioactive material: — in a Type B(U) package containing more than 3000 A_1 or 3000 A_2 or 1000 TBq, whichever is the lower; or — in a Type B(M) package; or — in a Type C package containing more than 3000 A_1 or 3000 A_2, as appropriate, or 1000 TBq, whichever is the lower; or — as a special arrangement in the sense of the transport regulations; shall not be accepted without prior permission by the Civil Aviation Administration. Applications should be sent to the: National Institute of Radiation Hygiene Knapholm 7 DK-2730 Herlev Telephone: 45.44 54 3454 (Mon.–Fri. 10:00–15:00) Facsimile: 45.44 54 34 50 E-mail: sis@sis.dk	2;7.1.3, 2;7.2.3.5

Identifying code	*Variation*	*Relevant paragraphs*
	DQ — FIJI	
DQ 1	Radioactive material in any quantity may not be transported by aircraft to, from, within or over Fiji without prior permission of the Civil Aviation Authority of the Fiji Islands (CAAFI).	2;7
DQ 2	A person must not handle or offer for transport explosives classified as Class 1 in the ICAO Technical Instructions to, from, within or over Fiji without prior permission of CAAFI. This includes ammunition for sporting weapons, Division 1.4S.	2;1
DQ 3	Infectious substances, including diagnostic specimens or biological products are not permitted in national or international mail to, from, within or over Fiji.	1;2.3
DQ 4	The English language shall be used for marking and labelling any form of dangerous goods documentation transported by air.	5;2.5
	All questions and requests for permission or approval shall be lodged with CAAFI ten days prior to the proposed flight. The correspondence should be addressed to: The Civil Aviation Authority of the Fiji Islands (CAAFI) Private Mail Bag NAP 0354 Nadi Airport Fiji Islands Telephone: (679) 672-1555 Facsimile: (679) 672-1500/(679) 672-5125	
	ES — SPAIN	
ES 1	In domestic transport and in international transport originating in Spain, Spanish shall be used in all the markings and in the dangerous goods transport document, in addition to the languages required by the States of transit and destination.	5;2.5 5;4.1.6.3
	FR — FRANCE	
FR 2	Except for shipments of radioactive material described in FR 4, the competent authority for France for the transport of dangerous goods by air is: Direction Générale de l'Aviation Civile (DGAC) Service de la Formation Aéronautique et du Contrôle Technique Mission Marchandises Dangereuses 50, rue Henry Farman 75720 PARIS CEDEX 15 Telephone: +33.(0)1.58.09.49.70 Facsimile:+33.(0)1.58.09.45.52 Authorization to ship by air any dangerous goods covered by the published variations for France must be requested from the competent authority at least ten working days prior to the date of the proposed flight.	
FR 3	All questions relating to the transport by air of radioactive and fissile material for civilian use should be directed, in accordance with the instructions contained in the variation concerned, to DGAC, DGSNR and DDSC/COAD: Direction Générale de l'Aviation Civile (DGAC) Service de la Formation Aéronautique et du Contrôle Technique Mission Marchandises Dangereuses 50, rue Henri Farman 75720 PARIS CEDEX 15 Telephone: +(33).(0)1.58.09.49.70 Facsimile: +(33).(0)1.58.09.45.52 Direction Générale de la Sûreté Nucléaire et de la Radioprotection (DGSNR) 10, Route du panorama Robert Schuman 92266 FONTENAY AUX ROSES CEDEX Telephone: +(33).(0)1.43.19.70.39 Facsimile: +(33).(0)1.43.19.70.27	1;1.2 5;1.2

Identifying code	*Variation*	*Relevant paragraphs*
	Direction de la Défense et de la Sécurité Civiles (DDSC) Centre Opérationnel d'Aide à la Décision (COAD) 87-95 Quai du Docteur Dervaux 92600 ASNIERES Telephone: +(33).(0)1.56.04.72.40 Facsimile: +(33).(0)1.47.90.09.07	
FR 4	Transport by air of the following radioactive material to, from, through or over French territory cannot be performed without a shipping permit issued by DGSNR: — in the case of radioactive material in special form, if the activity transported in the package is higher than or equal to 3000 A_1, or 100000 A_2 , if the latter value is lower than the 3000 A_1 value; — in the case of all other radioactive material, if the activity transported is higher than or equal to 3000 A_2. Once a permit has been issued, DGAC and DDSC/COAD must be advised of the shipment at least 48 hours in advance.	5;1.2 7;1.1
FR 5	An aircraft whose internal surfaces have been contaminated by radioactive material may be reused on French territory only after approval by an authorized expert. DGSNR must be consulted on the selection of the expert. Such approval must be entered in the maintenance log of the aircraft. DGAC must be advised of such contamination and approval before the aircraft is reused.	
FR 6	Category B infectious materials and biological products listed under UN number 3373 may only be transported by air to, from or through France under the conditions described below. These do not apply to the non-stop overflight of French territory: — dangerous goods training as outlined in the ICAO Technical Instructions, Part 1, Chapter 4, paragraph 4.1.1 a) is strongly recommended for shippers of Category B infectious materials; — the proper shipping name, the UN number and the name, address and telephone number of a responsible person must indicated on the package; — the operator must put in place dangerous goods training as outlined in the ICAO Technical Instructions, Part 1, Chapter 4, Table 1-4, for the personnel in charge of the transport by air and the handling of Category B infectious material; UN 3373; — the operator must establish procedures so that: — the incidents related to Category B infectious materials, UN 3373, are reported to the competent authority and handled as Category A infectious materials incidents; — the emergency measures to be taken for Category B infectious materials, UN 3373, are expedited to those of Category A infectious materials.	
FR 7	Respiratory protective smoke hoods containing chemical oxygen generators listed under UN 3356 may only by transported by air to, from or through French territory under the following conditions: — only one package containing a maximum of two (2) smoke hoods may be accepted on a passenger flight; — all the other regulatory provisions remain unchanged and are fully applicable.	
FR 8	Dangerous goods as described in the ICAO Technical Instructions may not be transported by airmail to, from or through French territory. This prohibition is applied in the following manner for articles listed in Part 1, Chapter 2, paragraph 2.3.2 of the ICAO Technical Instructions: — those listed in 2.3.2 a) (including diagnostic samples and biological substances); — those listed in 2.3.2 b), when transported by international airmail. Transport by international airmail of radioactive material designated in 2.3.2 b) is subject to official approval of the shipper by the competent authority, DGSNR (see FR 3).	1;2
≠ FR 9	The emergency response information described below must appear on shipments of dangerous goods to, from, within or transiting through France. This provision does not apply to the transport of magnetized material or dangerous goods for which no transport document is required.	7;4

Identifying code	*Variation*	*Relevant paragraphs*
	Telephone number — The transport document required under the ICAO Technical Instructions must contain a telephone number by means of which emergency response information can be obtained in case of an incident and/or accident involving the dangerous goods being transported. — This telephone number must be available 24 hours a day and must include the regional codes and, for international numbers outside France, the country and city codes needed to complete the call from France. — This number must be monitored at all times by a person who: — is knowledgeable concerning the hazards and characteristics of the dangerous goods being transported; — has comprehensive emergency response and accident mitigation information for the dangerous goods; — can immediately call upon a person who possesses such knowledge and information.	7;4.8
FR 10	An operator involved in a dangerous goods incident and/or accident in France must provide the competent authority with information needed to limit the hazards of that incident/accident. A written report on any incident/accident occurring in France must be submitted by the operator (or his/her representative) to the competent authority of France (see FR 2) within 72 hours. On French territory, these provisions also apply to: — the ground handling company acting on behalf of the operator; — any company responsible for loading/unloading dangerous goods; — any company responsible for the handling and storage of dangerous goods at an airport facility.	7;4.6
	GB — UNITED KINGDOM	
GB 1	National regulations require that most explosives which are to be imported be classified before they are brought into the United Kingdom, by HM Explosives Inspectorate of the Health and Safety Executive or the Explosives Storage and Transport Committee. It is the responsibility of the importer to obtain the classification. Explosives manufactured in the United Kingdom are required to have been classified before they are transported.	2;1.5 5;1.1
≠ GB 2	The following requirements apply to aircraft registered: a) in the United Kingdom no matter where they are operating; and b) in a State other than the United Kingdom and which are not required to operate under and in accordance with Annex III to Regulation (EC) NO. 3922/1991 (“EU-OPS”), when they are operating in the United Kingdom: Aircraft may only carry dangerous goods with the prior approval of the Civil Aviation Authority. Carriage of such goods must be in compliance with these Instructions. Application for permission should be made at least ten working days before the date of the first flight on which dangerous goods are to be carried and should be submitted to: Dangerous Goods Office Civil Aviation Authority 1W, Aviation House Gatwick Airport South West Sussex RH6 0YR Telephone: 01293 573800 Facsimile: 01293 573991 E-mail: dgo@caa.co.uk	1;1.2

	Identifying code	*Variation*	*Relevant paragraphs*
		EU-OPS aircraft Aircraft registered in a State other than the United Kingdom and which are required to operate under and in accordance with EU-OPS do not require the approval of the Civil Aviation Authority providing an approval granted by such a State is held.	
≠	GB 3	The following requirement applies to aircraft registered in a State other than the United Kingdom and which are not required to operate under and in accordance with Annex III to Regulation (EC) No. 3922/1991 ("EU-OPS"), when they are operating in the United Kingdom, excluding those only overflying: Dangerous goods requiring approval under Special Provisions A1 or A2 of these Instructions, may only be carried on a passenger aircraft with the permission of the Civil Aviation Authority, irrespective of whether or not the United Kingdom is the State of Origin. Application for permission should be made at least ten working days prior to the proposed flight date and must be submitted to the address stated in GB 2. Dangerous goods may be carried into the United Kingdom on a cargo aircraft under an A2 or A109 State of Origin approval providing the Civil Aviation Authority has been notified in writing at least two working days in advance of the proposed flight date. Additionally, since controls exist for the quantities of some explosives which may be carried to or from specific airfields in the United Kingdom, operators must seek advice from the Civil Aviation Authority as to the suitability of the intended airfield of landing and unloading when Class 1 dangerous goods are being carried under an A2 or A109 approval. **EU-OPS aircraft** Aircraft registered in a State other than the United Kingdom and which are required to operate under and in accordance with EU-OPS do not require the approval of the Civil Aviation Authority providing an approval granted by such a State is held.	Table 3-1 3;3 Table S-3-1
	GB 4	For the purposes of compliance with 7;4.6, notification of dangerous goods on an aircraft involved in an aircraft accident or serious incident or other incident in the United Kingdom should be sent by the quickest means possible to: Dangerous Goods Office Civil Aviation Authority 1W, Aviation House Gatwick Airport South West Sussex, RH6 0YR Telephone: + 44 (0)1293-573800, for notifications Monday to Friday between the hours of 0900 and 1700 UK time, or + 44 (0)1293-567171, at all other times. This notification is in addition to, and not instead of, that required under Annex 13.	7;4.6
	GB 5	Infectious substances of Category A (UN 2814 and UN 2900) and Biological substances, Category B (UN 3373) are not permitted in international mail either to or from the United Kingdom. Infectious substances of Category A (UN 2814 and UN 2900) are not permitted in domestic mail. Biological substances, Category B (UN 3373) are not permitted in domestic mail except under special arrangements. Exempt patient specimens are not permitted in international or domestic mail except under special arrangements.	1;2.3
	GB 6	When any operator intends to overfly the United Kingdom carrying any package containing radioactive material with an activity greater than: (a) for special form 3000 A_1 or 100000 A_2, whichever is the lower; or (b) for all other radioactive material 3000 A_2, it must notify the Dangerous Goods Office (contact details as in GB 2) at least two working days before the expected date of the flight, providing the information required by 5;1.2.1.4 d), together with the names and addresses of the shipper and consignee, and the contact details for the operator. If the flight does not take place as planned, or if there are any changes in the information provided, the Dangerous Goods Office must be notified immediately. The operator is not required to wait for any acknowledgement or acceptance before carrying out the flight.	5;1.2.1.4
		HK — HONG KONG SPECIAL ADMINISTRATIVE REGION, CHINA	
	HK 1	Operators wishing to carry dangerous goods in aircraft to, from or over the Territory of Hong Kong must obtain prior written permission from the Director of Civil Aviation. Applications must include details of dangerous goods training programmes. Further information may be obtained from the:	1;4 7;1

Identifying code	*Variation*	*Relevant paragraphs*
	Director of Civil Aviation Dangerous Goods Office Airport Standards Division Civil Aviation Department Room 6T067, Passenger Terminal building Hong Kong International Airport 1 Cheong Hong Road Lantau, Hong Kong	
HK 2	English must be used in addition to the language which may be required by the State of Origin, and each language must be given equal prominence.	5;2.5 5;4.1.6.3
HK 3	The shipment by air from Hong Kong of explosive articles and substances originating in Hong Kong is prohibited. Explosives previously imported may be exported by air providing that the classification has been approved by the appropriate authority of the State of Origin or Manufacture.	2;1.5 5;1.1
	IN — INDIA	
IN 1	Dangerous goods may be carried to/from/within/over India provided that the operator is certified by the State of the operator to carry such goods and also that all the requirements specified in the ICAO Technical Instructions are complied with.	1;1 7;1
IN 2	For transportation of radioactive materials to/from/within India (not over India), the operator must ensure that the consignor/consignee is in possession of authorization issued by the Government of India in pursuance of Section 16 of the Atomic Energy Act, 1962. Application for permission for carriage of radioactive material may be addressed to: Atomic Energy Regulatory Board Radiological Safety Division Niyamak Bhavan Anushakti Nagar Mumbai — 400 094 India	5;1 7;1
IN 3	For carriage of arms, ammunition and munitions of war, etc., to, from or over India, written permission under rule 8 of the Aircraft Rules, 1937, shall be required. Application for such permission may be addressed to: Director General of Civil Aviation Opp. Safdarjung Airport New Delhi — 110 003 India	5;1
	IR — ISLAMIC REPUBLIC OF IRAN	
IR 1	The importation of radioactive material to the Islamic Republic of Iran is subject to prior permission from the Atomic Energy Organization of the Islamic Republic of Iran. Any request concerning the applicability of this variation must be addressed to: Radiation Protection Department Atomic Energy Organization of the Islamic Republic of Iran P.O. Box 41/2663 Tehran — Islamic Republic of Iran Telephone: (021) 891080 — 891085 Telex: 212165	1;1.1 5;1.2 7;1.1
IR 2	In addition to the application of the regulations described in Table 7-1, packages containing Division 6.1 from Class 8 and Divisions 4.1 and 4.3 must be segregated from each other.	7;2.2
IR 3	Dangerous goods which are principally forbidden for air transport and are subjected to Special Provisions A1 or A2 and A109 of the Technical Instructions may be imported to the Islamic Republic of Iran subject to prior permission from the Civil Aviation Organization of Iran. Application for permission should be made at least fifteen days prior to the proposed flight date and must be addressed to:	Table 3-1 3;3

Identifying code	*Variation*	*Relevant paragraphs*
	Vice President C.A.O.I.R. of Iran Deputy of Flight Standard Civil Aviation Organization Mehrabad International Airport Tehran, Islamic Republic of Iran Fax: + 98 (21) 6025066	
	IT — ITALY	
IT 1	The transport by air of radioactive and fissile material to/from/through Italian territory can be performed by authorized carriers only. Application for authorization can be made at the following address: Ministero dell'Industria Direzione Generale Fonti di Energia Via Molise, 2 I-00187 — ROMA	1;1.1 5;1.2 7;1
IT 2	Prior approval of the shipment by the Italian Competent Authority (ENEA-DISP) is requested for: — Type B (M) packages; — Fissile Class I, II or III packages; and — Type B (U) packages containing radioactive material with activity greater than 3 × 1000 A_1 or 3 × 1000 A_2 as appropriate or 1000 TBq (30000 Ci), whichever is the lower. Beyond the approval, such shipments must be notified at least 48 hours in advance to ENEA/DISP. Application for approval and notification can be made at the following address: ENEA/DISP Divisione Trasporti Via Vitaliano Brancati, 48 I-00144 — ROMA	5;1.2.1
IT 4	Further utilization of an aircraft having undergone radioactive contamination must be certified by a qualified expert and registered on the efficiency technical book.	7;3.2
IT 5	The transport of arms, ammunitions and explosives to/from/through Italian territory must previously be authorized by: Ministero dei Trasporti Ente Nazionale per l'Aviazione Civile (ENAC) Via di Villa Ricotti 42 00161 — ROMA	1;1 5;1.1 7;1
IT 7	The transport of dangerous goods in portable tanks is subject to prior approval of the shipment by the Italian Competent Authority. Application for the approval, together with a safety analysis, must be made at the following address: Ministero dei Trasporti Ente Nazionale per l'Aviazione Civile (ENAC) Via di Villa Ricotti 42 00161 — ROMA	4;1 5;3
	JM — JAMAICA	
JM 1	Applications for approval to transport dangerous goods under Special Provisions A1, A2 and A109 and exemption applications must be directed to: The Director General Jamaica Civil Aviation Authority 4 Winchester Road Kingston 10 Jamaica, West Indies	3;3
JM 2	On shipments to, from, within or transiting through Jamaica, emergency response information, as described in JM-3, must be provided for all dangerous goods other than magnetized material and dangerous goods for which no Transport Document is required.	5;4

Identifying code	*Variation*	*Relevant paragraphs*
JM 3	*Emergency Response Information.* The Transport Document required by these Technical Instructions must include a 24-hour emergency response telephone number (including all area codes, and for international numbers for locations outside Jamaica, the international access code and country and city codes needed to complete the call from within Jamaica). The number must be monitored by an individual who: — speaks English fluently; — is knowledgeable of the hazards and characteristics of the dangerous good(s) being transported; — has comprehensive emergency response and accident mitigation information for the dangerous good(s); — has immediate access to a person who possesses such knowledge and information.	5;4
JM 4	Transport of dangerous goods by air must be in accordance with the current edition of the ICAO *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284). Failure to comply with the Technical Instructions is a violation of the Jamaica Civil Aviation Regulations, 2004.	
	JP — JAPAN	
JP 2	Radiation level at 1 m from the external surface of the package must not exceed 0.1 mSv/h (10 mrem/h) even if the package is being transported as a full load.	4;9.1 5;1.2.3
JP 3	"Excepted radioactive material" must not contain pyrophoric (liquid) or explosive radioactive material.	1;6.1.5
JP 8	All Type B(U) and Type B(M) packages, and packages containing 0.1 kg or more of uranium hexafluoride require both packages design approvals and shipment approvals of the appropriate authorities of Japan.	5;1.2.2 6;7.5.4 6;7.8
JP 9	The labels shall be affixed to two opposite sides of the outside of the unit load device containing radioactive material.	5;3.2.7
JP 10	"Excepted radioactive material" must not be carried in the cabin or cockpit of an aircraft.	7;2.1
JP 11	Radioactive material (Class 7), except for "Excepted radioactive material" must not be stowed in the same cargo compartment together with packages containing Class 1, 2, 3 or 8 dangerous goods.	7;2.2
JP 12	Handling and loading of radioactive material must be made in such a manner that no person other than ground handling and loading staff can have access to the area.	7;2.9
JP 17	The radiation level of "Freight container" and "Overpack" containing radioactive material must not exceed 2 mSv/h at the external surface and 0.1 mSv/h at 1 m from the external surface.	4;9.1
JP 20	The requirement set out in 4;1.1.13 must be applied also for combination packagings containing flammable liquids in inner packagings of 120 mL or less.	4;1.1.13
JP 21	"Poison" subsidiary risk labels must be applied for all the substances with a subsidiary risk of Division 6.1.	Table 3-1 5;3.2.2
JP 22	All the packages bearing the "Cargo aircraft only" label, except those containing radioactive material (Class 7), must be accessible in flight.	7;2.4.1
JP 23	Radioactive material of Class 7 in excepted packages with an associated risk of another class specified in 3;5 must be subject to the provisions of 1;6.1.5, 3;5 and to the variations JP 3 and JP 9.	1;6 3;5
JP 24	Any substance bearing "Toxic (Poisonous)" label or "Toxic (Poisonous) Gas" label including subsidiary risk label must not be packed in the same outer packaging with foodstuffs, feed or other edible substances intended for consumption by humans or animals.	4;1
JP 26	Neither packages containing fissile material nor packages having greater radioactivity than the following values shall be transported by air within the territorial airspace of Japan: 1) for special form radioactive material — 3000 A_1 or 100000 A_2, whichever is the lower; or 2) for all other radioactive material — 3000 A_2.	2;7.2.4.6 6;7.10

	Identifying code	*Variation*	*Relevant paragraphs*
		MO — MACAO	
≠	MO 1	Operators wishing to carry dangerous goods in aircraft to, from or over Macao, China, must obtain prior written permission from the Civil Aviation Authority — Macao, China. Further information may be obtained from: Flight Standards Alameda Dr. Carlos D'Assumpção, 336-342 Centro Comercial Cheng Feng, 18º andar Macao, China Tel: (853) 28511213 Fax: (853) 28338089	7;1
		MY — MALAYSIA	
≠	MY 1	Operators wishing to carry all classes of dangerous goods from, over or to the territory of Malaysia must obtain prior written permission from the Director General, Department of Civil Aviation, Malaysia. Request for approval should be addressed to: The Director General Department of Civil Aviation, Malaysia Level 1-4, Block Podium Lot 4G4, Precinct 4 Federal Government Administrative Centre 62570 Putrajaya, Malaysia. AFTN: WMKKYAYX Tel: 603-8871 4000 Fax: 603-8889 5691	5;1.1
	MY 2	The transport of radioactive material by air to or from Malaysia will be considered for approval by the Director General, Department of Civil Aviation, Malaysia, provided prior permit or approval from the Atomic Energy Licensing Board of Malaysia has been obtained. Application for a permit or approval from the Atomic Energy Licensing Board of Malaysia can be made at the following address: The Atomic Energy Licensing Board of Malaysia Ministry of Science, Technology and Innovation Batu 24, Jalan Dengkil 43800 Dengkil, Selangor Tel: 03-8928 4100 03-8926 7699 Fax: 03-8922 3685	5;1.1
	MY 3	Individual shippers wishing to transport arms, ammunition and explosives to or from Malaysian territory must first obtain a permit from the Inspector General of Police, Malaysia. Having obtained the permit from the Inspector General of Police, Malaysia, shippers then should forward their application to the Director General, Department of Civil Aviation, Malaysia for approval to carry arms, ammunition and explosives by air.	5;1.1
	MY 4	If an in-flight emergency occurs within Malaysian airspace the pilot-in-command must inform the appropriate air traffic services unit, for the information of aerodrome authorities, of any dangerous goods on board the aircraft. The information must include the primary hazard, subsidiary risks for which labels are required and the quantity and location aboard the aircraft of the dangerous goods. If the situation permits, the information should also include the proper shipping name, class or division, and in the case of Class 1, the compatibility group.	7;4.3
	MY 5	An operator who is involved in a dangerous goods incident in Malaysian territory must provide the Malaysian Authority with information required to minimize hazards created by any spillage, leakage of fluid or radiation, breakage, or other damage to dangerous goods.	7;4.6.2
	MY 6	English must be used in addition to the language which may be requested by the State of Origin and each language must be given equal prominence.	5;2.5 5;4.1.6.3

	Identifying code	*Variation*	*Relevant paragraphs*
		NL — NETHERLANDS	
	NL 1	Dangerous goods requiring approval under Special Provisions A1, A2 or A109 of these Instructions, may not be transported on a passenger aircraft or cargo aircraft (as appropriate) to, from or through the Netherlands without prior approval of the Ministry of Transport, Public Works and Water Management, irrespective of whether or not the Netherlands is the State of Origin. Application for all approvals should be made at least 10 days prior to the proposed flight date and must be submitted to: State Traffic Inspectorate Supervision Services Unit Object Certifications P.O. Box 90653 2509 LR The Hague The Netherlands Telephone: +31 70 4562430 Facsimile: +31 70 4562413	Table 3-1 3;3 Table 3-1
≠	NL 2	Dangerous goods, as defined in these Instructions, are not permitted in airmail to, from or through the Netherlands. This prohibition includes the items which are mentioned in 1;2.3.2 b) and c). Excluded from this requirement are patient specimens as defined in 2;6.3.1.4 provided that they are classified, packed and marked as required by 2;6.3.2.3.6.	1;2.3
	NL 3	Consignments containing more than 15 g unirradiated uranium-235, or uranium-233 or plutonium unless the content of Pu-238 is more than 80% by mass, or uranium enriched to 20% uranium-235 or more, or more than 1 kg uranium enriched to 10% uranium-235 but less than 20%, or 10 kg enriched uranium enriched above natural but not more than 10%, or irradiated fissile material shall not be accepted for carriage to, from, through or over the Netherlands without written permission by the Ministry of Housing, Spatial Planning and the Environment. Consignments containing uranium, plutonium and thorium with concentrations of 0.1%, 0.1% and 3% by mass respectively and exceeding the exemption limits of Table 2-15 shall not be accepted for carriage to, through or from the Netherlands without written permission. Consignments of consumer goods containing added radioactivity exceeding the exemption levels of Table 2-15, or medicinal products containing added radioactivity shall not be accepted for carriage to or from the Netherlands without written permission. Consignments containing other radioactive material exceeding the exemption limits of Table 2-15 shall not be accepted for carriage to, through or from the Netherlands without prior notification. Notification may be done by the shipper, consignee, operator or other party, but must be verified by the operator. The operator is not required to wait for any acknowledgement or acceptance before carrying out the flight. *Note.— Written permission for transport to, from or through the Netherlands may be obtained by the shipper, consignee, operator or other party, but must be verified by the operator at time of acceptance.* Applications for permits or notifications should be addressed to: SenterNovem Team stralingsbescherming P.O. Box 3144 2509 AC The Hague The Netherlands Telephone: +31 70 373 5000 Facsimile: +31 70 373 5100	1;1.3 5;1.2 7;1
	NL 4	Any substance, liquid or solid solutions and mixtures (such as preparations and wastes), which cannot be classified in the other classes and that meet the criteria for substances pollutant to the aquatic environment as described in the European Agreement concerning the international carriage of dangerous goods by road (ADR), are to be assigned as Class 9 — miscellaneous dangerous goods “Environmentally hazardous substance, liquid, n.o.s.” or “Environmentally hazardous substance, solid, n.o.s.”. This variation does only apply in case of connecting road transport to, through or from the Netherlands. This variation does not apply to transit and overflights.	2;0, 2;9
≠	NL 5	Not used.	

Identifying code	*Variation*	*Relevant paragraphs*
NL 6	National legislation in the Netherlands specifies that an operator shall not carry dangerous goods without the prior permission of the Civil Aviation Authority in the Netherlands (CAA-NL) and that when such goods are carried, it must be in compliance with the Technical Instructions. This applies to operators carrying dangerous goods to and from the Netherlands (excluding overflight). Permission is provided by the issuance of a dangerous goods licence to the operator and it will only be provided if the operator is in the possession of staff who received training in accordance with the provisions in the Technical Instructions. Application for a dangerous goods licence shall be made at least six weeks before the date of the first flight on which dangerous goods are to be carried. An application form is available from: State Traffic Inspectorate Supervision Services Unit Object Certifications P.O. Box 90653 2509 LR The Hague The Netherlands Telephone: +31 70 4562430 Facsimile: +31 70 4562413	1;1.2
	PL — POLAND	
PL 1	Transport of spent nuclear fuel or radioactive waste to, from, through or over the territory of Poland shall not be accepted without permission by the President of the Civil Aviation Office (CAO) after consultation with the President of the National Atomic Energy Agency. Every correspondence should be sent to the President of the CAO no later than thirty working days before planned flight. The applications should be addressed to: President of Civil Aviation Office Żelazna 59 Street 00-848 Warsaw Poland	7;1
	PK — PAKISTAN	
PK 1	The English language must be used for marking of packages and overpacks. However, if the language of the State of Origin is to be used, both these languages must be written side by side with prominent effect.	5;2.5
PK 2	A brief text indicating the nature of the risk involved must appear in English on all hazard labels.	5;3.2.11 5;3.5.1.1
PK 3	While English must be used in addition to the language of the State of Origin for the dangerous goods transport document, the document itself is to conform to the IATA type shipper's declaration.	5;4.1.6.3
	RU — RUSSIAN FEDERATION	
RU 1	Radioactive material can only be classified as excepted radioactive material under 2;7.2.4.1.1 if the following additional requirements are met: a) the radiation level at any point on the external surface of the package does not exceed 3 μSv/h (0.3 mrem/h); and b) for closed products the radiation level at a distance of 100 mm does not exceed 1 μSv/h (0.1 mrem/h).	1;6.1.5 2;7.2.4.1.1
RU 2	Fissile radioactive material in any quantity shall not be accepted in the Russian Federation for carriage on aircraft, shall not be transported into Russia and shall not be transported through its territory without prior permission from:	

Identifying code	*Variation*	*Relevant paragraphs*

Russian Federal Supervisory Body for Nuclear and Radiation Safety
(GOSATOMNADZOR)
Ul. Taganskaya, 34
109147 Moscow
Russia
Telephone: 095-912-39-11
Facsimile: 095-278-89-90

This variation covers fissile radioactive material and articles thereof, containing uranium-233, uranium-235, plutonium and other isotopes of transuranic elements.

SA — SAUDI ARABIA

SA 1 The transport of alcoholic beverages for delivery to any destination in Saudi Arabia is forbidden.

SA 2 The shipper of any dangerous goods must provide a written undertaking to re-ship the consignment at the shipper's cost and risk if the shipment is not cleared and received by the consignee within 15 working days from the arrival of the consignment at any destination in Saudi Arabia.

SA 3 The name, address and telephone number of the consignee must be written in full on the air waybill as well as on the package of dangerous goods being shipped to any destination in Saudi Arabia.

SA 4 Prior permission is required from the concerned government departments for the importation of the following:

a) explosives and munitions of war, which require further approval from:

Presidency of Civil Aviation
Air Transport Department
P.O. Box 887
Jeddah 21421
Saudi Arabia

b) chemical products, except for perfumery products, cosmetics and dry ice;

c) radioactive material. The final destination of radioactive material must be Jeddah, Riyadh or Dammam only, except those for medical purposes, which may be imported to any point in Saudi Arabia.

SG — SINGAPORE

SG 1 Operators wishing to carry dangerous goods in aircraft to, from or via Singapore must obtain prior written approval from the Director-General of Civil Aviation. All applications are to be made on prescribed forms and addressed to: 7;1

Director-General of Civil Aviation
Civil Aviation Authority of Singapore
Singapore Changi Airport
P.O. Box 1
SINGAPORE 9181

TR — TURKEY

TR 1 The Authority responsible for dangerous goods in Turkey is the Directorate General of Civil Aviation, one of the departments of the Ministry of Transportation:

Directorate General of Civil Aviation
Bosna Hersek Cad. 90. Sok. No. 5
Emek — Ankara
Telephone: (0312) 215 50 82
215 61 72
215 73 73

Identifying code	*Variation*	*Relevant paragraphs*

Facsimile: (0312) 212 46 84
215 80 94
Comm: CIVIL AIR
Telex: 44659 CAD TR
AFTN: LTAYAAT
SITA: ANKYXYA

TR 2 In the following cases, applications for diplomatic transit and landing flights authorization shall be made 10 work days before the planned flight:

— aircraft carrying explosives, weapons and ammunitions;
— aircraft carrying army personnel and staff;
— aircraft carrying radioactive material to/from Turkey.

UA — UKRAINE

UA 1 The exportation, importation and transit of all radioactive material, without exceptions, are subject to the approval of the State Export Control Service of Ukraine and a decision from the Environmental Safety Ministry (State Nuclear Regulatory Administration of Ukraine). Any questions regarding this variation should be addressed to: 5;1.2 7;1

State Export Committee of Ukraine
19/21 Frunze Street
Kiev, 254080
UKRAINE
Telephone/facsimile: 044-4624970

or

State Nuclear Regulatory Administration of Ukraine
9/11 Arsenaina Street
Kiev, 01011
UKRAINE
Telephone: 044-2944224
Facsimile: (044) 2948895

US — UNITED STATES

≠ US 1 Transport of dangerous goods by air must be in accordance with United States' Regulations (49 CFR 171-180) or these Technical Instructions as limited by 49 CFR Part 171, Subpart C. The requirements of 49 CFR 175 apply to all shipments offered for air transport to, from, or within the United States, including when the shipment is prepared in accordance with these Technical Instructions. Part 175 contains additional requirements applicable to any person who performs, attempts to perform, or is required to perform a function subject to 49 CFR and is also applicable to air passengers and crew. 1;1.4

When the Technical Instructions are used for consignments of dangerous goods, failure to comply with the Technical Instructions and all relevant United States' variations is a violation of the United States' regulations.

The appropriate national authority for the United States is:

Associate Administrator for Hazardous Materials Safety
Pipeline and Hazardous Materials Safety Administration
U.S. Department of Transportation
Washington, D.C. 20590-0001

English must be used for all required package markings and for the dangerous goods transport document. Abbreviations may not be used unless they are specifically authorized by these Instructions or by Subpart D of 49 CFR 172. 5;2.5 5;4.1.6.3

A copy of the transport document, or an electronic image thereof, must be retained by the shipper for not less than two years after the dangerous goods are accepted by the initial operator. Each shipping paper copy must include the date of acceptance by the initial operator, except that the date on the air waybill or bill of lading may be used in place of the date of acceptance by the initial carrier. For a hazardous waste, the transport document must be retained for three years after the waste material is accepted by the initial operator.

	Identifying code	*Variation*	*Relevant paragraphs*
		Note.— The United States' Regulations, as well as interpretations regarding their use, are available via the internet at http://hazmat.dot.gov/regs/rules.htm. Questions regarding the Regulations may be directed to the Office of Hazardous Materials Safety Information Center at (800) 467-4922, (202) 366-4488 or by e-mail at infocntr@dot.gov.	
≠	US 2	In addition to the dangerous goods included in the Dangerous Goods List (Table 3-1) with the word "Forbidden" shown in columns 2 and 3, any material forbidden for transport by the United States' Regulations is also forbidden for transport under any circumstances to, from or within the United States (see 49 CFR 173.21 and the Hazardous Materials Table in 49 CFR 172.101). Unless specifically authorized by the Hazardous Material Table in 49 CFR 172.101, the transport of a liquid with a vapour inhalation toxicity meeting the criteria of Division 6.1, Packing Group I or a gas meeting the criteria of Division 2.3 is forbidden for transport aboard passenger and cargo aircraft to, from or within the United States. Primary (non-rechargeable) lithium metal batteries and cells UN 3090, are forbidden for transportation aboard passenger-carrying aircraft. Equipment containing or packed with primary (non-rechargeable) lithium metal batteries and cells UN 3091, are forbidden from transport aboard passenger-carrying aircraft except if they meet the conditions of Special Provision A101 or A102 (see 49 CFR 172.102). Packages containing primary (non-rechargeable) lithium metal batteries and cells that meet the exceptions in 49 CFR 173.185 (b) or (c) or Section II of Packing Instructions 968, 969 or 970 of the Technical Instructions and are forbidden for transport on passenger aircraft must be marked "PRIMARY LITHIUM BATTERIES — FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT". *Note.— Dangerous goods that are forbidden on passenger aircraft by 49 CFR 172.101 (Column 9A) are also forbidden on passenger aircraft even when the ICAO TI permit such carriage. Dangerous goods that are forbidden on cargo aircraft by 49 CFR 172.101 (Column 9B) are also forbidden on cargo aircraft even when the ICAO TI permit such carriage.*	1;2.1 3;2
≠	US 3	For substances where this variation is identified in column 6 of Table 3-1, the following provisions apply: 1) if A1 appears in column 7, the substance may not be transported to, from or within the United States aboard a passenger aircraft without the prior approval of the appropriate authority of the U.S. (see US 1); 2) if A2 appears in column 7, the substance may not be transported to, from or within the United States aboard a passenger or cargo aircraft without the prior approval of the appropriate authority of the U.S. (see US 1); 3) if A109 appears in column 7, the substance may only be transported to, from or within the United States aboard a cargo aircraft with the prior approval of the appropriate authority of the U.S. (see US 1); 4) prototype lithium batteries and cells transported in accordance with Special Provision A88, and organic peroxides and self-reactive substances that are not identified by a technical name in 49 CFR 173.225(b) may not be transported to, from, or within the United States aboard a passenger or cargo aircraft without the prior approval of the appropriate authority of the U.S. (see US 1).	3;1 Table 3-1
≠	US 4	Substances subject to additional requirements for air transport to, from or within the United States are described below. The additional requirements in III also apply to U.S. carriers operating outside the U.S. I. *Hazardous substances.* When a substance, including its mixtures and solutions, listed in Appendix A to 49 CFR 172.101 is offered for transport in a package in which the net quantity of the substance equals or exceeds the reportable quantity (RQ) indicated for the substance in Appendix A, the substance, mixture or solution is considered a hazardous substance unless: — it is a petroleum product that is a lubricant or fuel; or — it is in a concentration less than that shown in the following table based on the RQ specified for the material:	

Identifying code	*Variation*	*Relevant paragraphs*

RQ Kilograms	*Concentration by weight Per cent*	*PPM*
45.4	0.2	2 000
4.54	0.02	200
0.45	0.002	20

For mixtures of radionuclides, see Note 7 to Appendix A to 49 CFR 172.101.

Hazardous substances, except for those that are hazardous wastes as defined in Section II below, must comply with the following requirements:

a) For a hazardous substance that is a dangerous good according to these Technical Instructions other than under the proper shipping names "ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S." or "ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.":

1) unless already included in the required shipping name, and except for radioactive material in Class 7, the name of the hazardous substance shall be shown in parentheses, in association with the dangerous goods description on the transport document and in association with the proper shipping name on package marking; and

2) the letters "RQ" shall be entered on the transport document either before or after the basic description and in association with the proper shipping name required to be marked on the package.

b) For hazardous substances that do not meet any other definition of dangerous goods according to these Technical Instructions:

1) the hazardous substance shall be shipped under the basic dangerous goods description "ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., Class 9, UN 3082, III" or "ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., Class 9, UN 3077, III", as appropriate, and in accordance with the requirements of these Technical Instructions applying to the shipment of goods under this description;

2) the package must meet all applicable General Packing Requirements of Part 4, Chapter 1 of these Instructions that would apply to dangerous goods of Packing Group III;

3) the letters "RQ" shall be entered on the transport document either before or after the basic description and in association with the proper shipping name required to be marked on the package; and

4) the name of the hazardous substance shall be shown in parentheses, in association with the dangerous goods description on the transport document and in association with the proper shipping name on package marking. If the material contains more than two hazardous substances, only the two hazardous substances having the lowest reportable quantities must be identified.

Note.— The list of Hazardous Substances and the applicable RQ as shown in Appendix A to 49 CFR 172.101 is available via the internet at:

http://hazmat.dot.gov/regs/intl/icaovar.htm.

II. *Hazardous waste.* A hazardous waste is any material that is subject to the hazardous waste manifest requirements of the United States Environmental Protection Agency (EPA) specified in 40 CFR Part 262. The following requirements apply to the transport of hazardous wastes:

a) For a hazardous waste that is a dangerous good according to these Technical Instructions other than under the proper shipping names "ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S." or "ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.":

1) the word "WASTE" must precede the proper shipping name in the transport document and package markings; and

2) the requirements of 49 CFR 172.205, with respect to the hazardous waste manifest apply.

Identifying code	*Variation*	*Relevant paragraphs*

b) For hazardous wastes that do not meet any other definition of dangerous goods according to these Technical Instructions:

1) the hazardous wastes shall be shipped under the basic dangerous goods description "WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., Class 9, UN 3082, III" or "WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., Class 9, UN 3077, III", as appropriate, and in accordance with the requirements of these Technical Instructions applying to the shipment of goods under this description;

2) the package must meet all applicable General Packing Requirements of Part 4, Chapter 1 that would apply to dangerous goods of Packing Group III;

3) the requirements of 49 CFR 172.205 with respect to the hazardous waste manifest apply; and

4) for those hazardous wastes that meet the definition of a hazardous substance, the letters "RQ" and the name of the hazardous substance in parentheses shall be shown in association with the basic description on transport documents and package markings.

Note 1.— Hazardous wastes can only be transported within the United States by carriers who have obtained a Waste Transporter Identification Number from the Environmental Protection Agency (EPA).

Note 2.— The assignment of substances described in I and II above to UN 3077 and UN 3082 is in accordance with special provision A97 of these Technical Instructions.

Note 3.— The list of Hazardous Substances and the applicable RQ as shown in Appendix A to 49 CFR 172.101 is available via the internet at:

http://hazmat.dot.gov/regs/intl/icaovar.htm.

III. *Other materials.* Materials which are not subject to the requirements of these Technical Instructions but meet the definition of a hazard class in 49 CFR Parts 171-180 must be transported in accordance with those regulations.

≠	US 5	An explosives article or substance may not be transported to, from or within the United States without prior approval by the appropriate authority of the U.S. (see US 1), Attention: Office of Hazardous Materials Special Permits and Approvals (PHH-30)). Such approval remains valid for subsequent transport of the article or substance provided there is no change in its composition, design or packaging. Except as otherwise provided in 49 CFR 172.320, each package containing an explosives article or substance must be marked with the EX-number assigned in the approval for each substance, article or device contained in the package. The EX-number may also be provided in association with the description of dangerous goods on the transport document rather than marked on the package as provided in 49 CFR 172.320(d). Cartridges, small arms of the kind listed in 49 CFR 173.56(h) do not require prior approval or an EX-number.	2;1.3
≠	US 6	Cylinders transported to, from or within the United States must be manufactured, inspected and tested in accordance with the applicable specifications given in 49 CFR 178, except that foreign cylinders received in the United States for charging may be transported for purposes of export from the United States in accordance with 49 CFR 171.23(a)(4). Portable tanks other than UN portable tanks manufactured outside the United States that meet the applicable requirements of the UN Model Regulations must be designed and approved in accordance with the requirements of 49 CFR 178.270 through 178.272.	Table 3-1
		Except as provided in 49 CFR 173.306, aerosol containers larger than 120 millilitres capacity (four fluid ounces) must be non-refillable metal receptacles. Aerosols must consist of a gas compressed, liquefied or dissolved under pressure, with the sole purpose of expelling a nonpoisonous (other than a Division 6.1 Packing Group III material) liquid, paste or powder and fitted with a self-closing release device allowing contents to be ejected by the gas.	2;2 PI 203, PI 204, PI Y204 (UN 1950)
≠	US 7	Lighters or other similar devices containing flammable gas (e.g. lighters for fireplaces and torches) may not be transported to, from or within the United States, unless the design of the device has been examined and tested by a person authorized by the appropriate authority of the United States (see US 1). For design samples being submitted for examination and testing, see 49 CFR 173.308.	

Identifying code	*Variation*	*Relevant paragraphs*
	Until 1 January 2012, approval numbers issued by the appropriate authority of the United States (see US 1) prior to 1 January 2007 may continue to be marked on packages and annotated on the transport document where applicable. After that time, previously issued approvals (i.e. T-***) will no longer be valid and each lighter design currently in production must be re-examined and tested under the provisions of 49 CFR 173.308.	5;2 5;4
≠ US 10	The following additional requirements or limitations apply to the transport of radioactive material to, from or within the United States:	
	a) Radioactive material, other than that contained in excepted packagings, may not be offered for transport aboard passenger aircraft unless the radioactive material is intended for use in, or incident to, research or medical diagnosis or treatment. The transport document for the radioactive material, other than that contained in excepted packagings aboard a passenger aircraft, must contain a certification stating that the shipment contains radioactive material intended for use in, or incident to, research or medical diagnosis or treatment.	5;1.2 7;1
	b) No person may offer for transport aboard a passenger aircraft a package or an overpack with a transport index greater than 3.0.	
	c) No person may offer or transport plutonium aboard an aircraft unless: 1) the plutonium is contained in a medical device designed for individual human application; 2) the specific activity of the material containing the plutonium is less than 1 Bq/g; 3) the plutonium is shipped in a single package containing no more than an A2 quantity of plutonium in any isotope or form and is shipped in accordance with applicable provisions of these Instructions for Class 7 radioactive material; or 4) the plutonium is specifically authorized for air shipment by the appropriate authority of the U.S.	
	d) For a package containing radioactive material with an activity greater than: 1) 3000 × A_1; 2) 3000 × A_2; or 3) 1000 TBq (27000 Ci), whichever is least, the notation “highway route controlled quantity” must appear on the transport document.	
	e) Packages containing: 1) 3000 × A_1; 2) 3000 × A_2; or 3) 1000 TBq (27000 Ci); whichever is least, must bear the Radioactive material, Class 7, Category III — Yellow label.	5;1.2.3.1.4
	f) All Type B(U), Type B(M), Type H(U), Type H(M) and fissile package designs must be certified by the U.S. Department of Transportation. Individual packages with a criticality safety index exceeding 50, and shipments of packages with a total criticality safety index greater than 50 on passenger aircraft and 100 on cargo aircraft, may not be transported to, from or within the United States aboard a passenger or cargo aircraft without the prior approval of the appropriate authority of the United States (see US 1). Requests for package design certification and approvals should be directed to the appropriate authority of the U.S., Attention: Radioactive Materials Branch (PHH-23).	6;7.7 6;7.8
	g) Except for low specific activity material and surface contaminated objects, activity limits for Type A and Type B packages shall be limited in accordance with 49 CFR 173.431.	
US 11	A nonspillable wet electric storage battery may only be regarded as not subject to these Instructions if the battery and its outer packaging are plainly and durably marked “NONSPILLABLE” or “NONSPILLABLE BATTERY” and the battery meets the conditions for being regarded as not subject to these Instructions contained in Special Provision A67.	Table 3-2

	Identifying code	*Variation*	*Relevant paragraphs*
≠	US 12	On shipments to, from, within or transiting through the U.S., emergency response information as described below must be provided for all dangerous goods other than magnetized material, dangerous goods for which no Transport document is required, and Other Regulated Material as defined in 49 CFR 173.144.	5;4.1.4 7;4.4

Telephone number. The transport document required by these Instructions must include an emergency response telephone number (including area codes and for international numbers for locations outside the U.S., the country and city codes needed to complete the call from within the U.S.) for use in the event of an incident involving the dangerous good(s). The number must be monitored at all times while the dangerous good is in transportation, including storage incident to transportation, by a person who:

1) is knowledgeable of the hazards and characteristics of the dangerous good(s) being transported;
2) has comprehensive emergency response and accident mitigation information for the dangerous good(s); or
3) has immediate access to a person who possesses such knowledge and information.

The telephone number must be entered on the Transport document and its purpose clearly identified (e.g. “EMERGENCY CONTACT: ***”), either:

1) immediately following the description of the dangerous good listed on the document, or
2) if only one number applies to each dangerous good listed on the Transport document, the information may be entered in a single prominent location, provided that the number is identified as the emergency response telephone number.

The telephone number must be the number of the person offering the dangerous goods for transportation or the number of an agency or organization capable of, and accepting responsibility for, providing the detailed information concerning the dangerous good. A person offering a dangerous good for transportation who lists the telephone number of an agency or organization must ensure that agency or organization has received current information on the material before it is offered for transportation.

An emergency response telephone number is not required for materials properly described under the shipping names “Battery-powered equipment”, “Battery-powered vehicle”, “Carbon dioxide, solid”, “Consumer commodity”, “Dry ice”, “Engines, internal combustion (flammable gas powered)”, “Engines, internal combustion (flammable liquid powered)”, “Vehicle (flammable gas powered)”, “Vehicle (flammable liquid powered)”. “Castor beans, flakes, meal or pomace”. “Refrigerating machines” and materials transported under the limited quantity provisions.

Emergency response information. Emergency response information relative to the dangerous good being transported must be immediately available at all times the dangerous good is present. This information should be appropriate for use in emergency and accident response to an incident, including an incident occurring during ground operations. The information must include as a minimum:

1) the description of the dangerous good in accordance with 5;4. of these Instructions;
2) immediate hazards to health;
3) risks of fire or explosion;
4) immediate precautions to be taken in the event of an accident or incident;
5) immediate methods for handling fires;
6) initial methods for handling spills or leaks in the absence of a fire; and
7) preliminary first aid measures.

The information must be printed in English, available away from the package containing the dangerous goods and immediately accessible in the event of an incident. Methods of compliance include, but are not limited to:

1) including the information on the Transport document;
2) locating the information in a separate document such as a material safety data sheet which includes at least all of the information listed above; or

Identifying code	*Variation*	*Relevant paragraphs*
	3) providing the information for use in conjunction with the Transport document (or aboard aircraft, in conjunction with the Information to Pilot-in-Command as required in 7;4.1 of these Instructions), in a separate document, such as the ICAO *Emergency Response Guidance for Aircraft Incidents involving Dangerous Goods* (Doc 9481).	
≠ US 13	Operators must comply with all requirements of 49 CFR, Part 175 (see US 1). These requirements include, but are not limited to, the following:	
	a) A package prepared in accordance with these Technical Instructions for transport to, from or within the United States must not be accepted unless the shipper has complied with all applicable United States variations indicated in these Technical Instructions.	7;1
	b) A copy of the transport document, or an electronic image thereof, must be retained by the initial operator for not less than one year after the dangerous goods are accepted by the initial operator. Each shipping paper copy must include the date of acceptance by the initial operator. The date on the shipping paper may be the date a shipper notifies the air carrier that a shipment is ready for transportation, as indicated on the airway bill or bill of lading, as an alternative to the date the shipment is picked up or accepted by the carrier. For a hazardous waste, the transport document copy must be retained for three years after the waste material is accepted by the initial operator.	7;1
	c) The notification to pilot-in-command must list, and provide the required information for, those additional materials considered to be dangerous goods under United States' regulations as indicated through United States variations.	7;4.1.1
	d) Except for "Other Regulated Materials" as defined in 49 CFR 173.144, substances of Class 9, radioactive material, aircraft batteries transported as items of replacement, and those articles and substances considered to be dangerous goods under these Technical Instructions but which are not subject to 49 CFR Parts 170-180, the following limitations apply: No more than 25 kg net weight of dangerous goods, and in addition thereto, 75 kg net weight of non-flammable gas, that are permitted to be carried aboard a passenger aircraft may be carried aboard an aircraft: 1) in an inaccessible cargo compartment; 2) in any freight container within an accessible cargo compartment; or 3) in any accessible cargo compartment of a cargo aircraft if the dangerous goods are loaded so as to be inaccessible unless in a freight container. For transport by cargo aircraft, the following additional substances are also excepted from this variation: 1) Division 6.1 (poisonous) materials (except those labelled FLAMMABLE); 2) Materials in Division 6.2 (etiologic or infectious substances); 3) Class 3 (flammable liquid) materials with a flashpoint above 23°C (73°F) that do not meet the definition of another hazard class.	
	The following tables provide the limits imposed by this variation:	

Identifying code	*Variation*	*Relevant paragraphs*

PASSENGER AIRCRAFT

Packages authorized for transport aboard a passenger aircraft

In an accessible cargo compartment		
If packages are accessible	If packages are inaccessible	If packages are in a freight container
No limit	25 kg per compartment plus an additional 75 kg of Division 2.2 material	25 kg per container plus an additional 75 kg of Division 2.2 material

In an inaccessible cargo compartment	
If packages are not in a freight container	If packages are in freight container
25 kg per compartment plus an additional 75 kg of Division 2.2 material	25 kg per compartment plus an additional 75 kg of Division 2.2 material

CARGO ONLY AIRCRAFT

Packages authorized for transport aboard a passenger aircraft

In an accessible cargo compartment		
If packages are accessible	If packages are inaccessible	If packages are in a freight container
No limit	25 kg per compartment plus an additional 75 kg of Division 2.2 material	25 kg per container plus an additional 75 kg of Division 2.2 material

In an inaccessible cargo compartment	
If packages are not in a freight container	If packages are in freight container
25 kg per compartment plus an additional 75 kg of Division 2.2 material	25 kg per compartment plus an additional 75 kg of Division 2.2 material

Identifying code	*Variation*	*Relevant paragraphs*

Packages only authorized for transport aboard a cargo aircraft

In an accessible cargo compartment			
If packages are accessible	If packages are inaccessible	If packages are in a freight container and are accessible	If packages are in a freight container and are inaccessible
No limit	Forbidden. Except the following materials are not subject to this restriction: a. Class 3, PG III (unless the hazardous material meets the definition of another hazard class) b. Class 6, (unless also labelled as a flammable liquid) c. Class 7, (unless the hazardous material meets the definition of another hazard class)	No Limit	Forbidden. Except the following materials are not subject to this restriction: a. Class 3, PG III (unless the hazardous material meets the definition of another hazard class) b. Class 6, (unless also labelled as a flammable liquid) c. Class 7, (unless the hazardous material meets the definition of another hazard class)

In an inaccessible cargo compartment	
If packages are not in a freight container	If packages are in a freight container
Forbidden. Except the following materials are not subject to this restriction: a. Class 3, PG III (unless the hazardous material meets the definition of another hazard class) b. Class 6, (unless also labelled as a flammable liquid) c. Class 7, (unless the hazardous material meets the definition of another hazard class)	Forbidden. Except the following materials are not subject to this restriction: a. Class 3, PG III (unless the hazardous material meets the definition of another hazard class) b. Class 6, (unless also labelled as a flammable liquid) c. Class 7, (unless the hazardous material meets the definition of another hazard class)

e) Operators must comply with the incident reporting requirements of 49 CFR 171.15, 171.16 and discrepancy reporting under 175.31. — 7;4.4

Note.— Copies of the incident reporting form and guidance for completing it may be downloaded at http://hazmat.dot.gov/enforce/spills/spills.htm.

≠ US 15 Except as provided for cylinders of compressed oxygen, no person may load or transport to, from or within the United States a package containing a dangerous good requiring an OXIDIZER label in an inaccessible cargo compartment that is not equipped with a fire or smoke detection system and a fire suppression system. — Table 3-1 PI 200 7;2 7;4.1

Cylinders of compressed oxygen must be transported in accordance with the following:

a) No more than a combined total of six cylinders of compressed oxygen per aircraft may be stowed in cargo compartments not equipped with a fire or smoke detection system and a fire suppression system;

	Identifying code	*Variation*	*Relevant paragraphs*
		b) Except for oxygen cylinders allowed to be transported in the passenger compartment under the conditions given below, oxygen cylinders transported on passenger aircraft or in an inaccessible cargo location on a cargo aircraft must be stowed horizontally as close as practicable to the floor of the cargo compartment or unit load device;	
		c) When transported in a Category B compartment or its equivalent (i.e. an accessible compartment equipped with a fire detection system), cylinders of compressed oxygen must be loaded in a manner that a crew member can see, handle and, when size and weight permit, separate the cylinders from other cargo during flight. No more than six cylinders of compressed oxygen and, in addition, one cylinder of medical-use compressed oxygen per passenger needing oxygen at destination — with a rated capacity of 1 000 L (34 cubic feet) or less of oxygen — may be carried in a Class B aircraft cargo compartment or its equivalent; and	
		d) Each cylinder must conform to the requirements identified in US Variation 6 and when loaded into a passenger-carrying aircraft or in an inaccessible cargo location of a cargo-only aircraft, must be placed in an overpack or outer packaging that conforms to the performance criteria of Air Transport Association (ATA) Specification 300 for Category I shipping containers.	
		A cylinder containing medical-use compressed oxygen, owned or leased by an aircraft operator or offered for transportation by a passenger needing it for personal medical use at destination, may be carried in the cabin of a passenger aircraft in accordance with the following provisions:	8;1.1.2
		a) No more than six cylinders belonging to the aircraft operator and, in addition, no more than one cylinder per passenger needing the oxygen at destination, may be transported in the cabin of the aircraft;	
		b) The rated capacity of each cylinder may not exceed 1 000 L (34 cubic feet);	
		c) Each cylinder must conform to the requirements identified in US Variation 6 and must be placed in an overpack or outer packaging that conforms to the performance criteria of Air Transport Association (ATA) Specification 300 for Category I or placed in a metal, plastic or wood outer packaging that conforms to a UN standard at the Packing Group I or II performance level; and	
		d) Oxygen cylinders transported under these provisions must be included in the information provided to the pilot-in-command in accordance with 7;4.1 of these Instructions.	
≠	US 16	Air bag inflators, air bag modules and seat-belt pretensioners may not be transported to, from or within the United States without prior approval by the appropriate authority of the United States (see US 1), Attention: Office of Hazardous Materials Special Permits and Approvals (PHH-30). Such approval remains valid for subsequent transport provided there is no change in its composition, design or packaging. Air bag inflators, modules and pretensioners that meet the criteria for a Division 1.4G explosive must be transported using the description “Articles, pyrotechnic for technical purposes”, UN 0431. The dangerous goods transport document (shipping papers) must contain the EX number or product code for each approved inflator, module or pretensioner in association with the basic description required in 5;4.1.4. If product codes are used, they must be traceable to the specific EX number assigned to the inflator, module or pretensioner, as applicable, by the appropriate authority of the United States. The EX number or product code is not required to be marked on the outer package.	
	US 17	Shippers and operators must comply with the security requirements as prescribed in Part 172, Subpart I, as applicable.	1;5
+	US 18	A package containing Oxygen, compressed, UN 1072, or any of the following oxidizing gases must be packaged as required by Parts 173 and 178 of 49 CFR: Compressed gas, oxidizing, n.o.s., UN 3156; Liquefied gas, oxidizing, n.o.s., UN 3157; Nitrogen trifluoride, UN 2451; and Nitrous oxide, UN 1070.	
		An oxygen generator, chemical (as defined in 49 CFR 171.8) may only be transported on cargo aircraft as provided for in 49 CFR 173.168. An oxygen generator, chemical, UN 3356, is not permitted for transport on passenger aircraft unless approved by the appropriate authority of the United States (see US 1). An oxygen generator, chemical, UN 3356, that is transported with a means of initiation attached must be classed and approved by the appropriate authority of the United States (see US 1) in accordance with the procedures specified in 49 CFR 173.56. This includes oxygen generators installed in personal breathing equipment transported in accordance with Special Provision A144 of these Instructions.	

Identifying code	*Variation*	*Relevant paragraphs*
	VC — SRI LANKA	
VC 1	No aircraft operator shall transport dangerous goods by air to, from or over Sri Lanka without explicit approval in writing from the Director General of Civil Aviation, Sri Lanka.	1;1.2
VC 2	Permission is usually granted for a specified period of time, subject to strict compliance with the ICAO Technical Instructions and any other conditions which the Director General of Civil Aviation deems necessary.	1;1.2
VC 3	Application for permission shall be made to the: Director General of Civil Aviation Department of Civil Aviation 64, Galle Road Colombo-03 Sri Lanka Facsimile: 94-1-440231 or 94-1-424540 at least ten days before the date of the first flight on which dangerous goods are to be carried.	1;1.2
VC 4	Infectious substances, including diagnostic specimens and biological products, are not permitted in international mail either to or from Sri Lanka.	1;2.3
VC 5	The English language shall be used for marking packages and overpacks.	5;2.5
VC 6	A brief text in the English language indicating the nature of the risk involved shall appear on all hazard labels.	5;3
VC 7	On shipments to, from or transiting through Sri Lanka, a 24-hour emergency response telephone number of a person who has all the information on the contents in the package (including access, country and city codes) must be provided on the shipper's declaration form.	5;4
	VU — VANUATU	
VU 1	The marking of packages and overpacks and the Dangerous Goods Transport Document accompanying dangerous goods consignments must be in English or French. If the State of Origin requires another language each shall be given equal prominence.	5;2.5 5;4.1.6.3
VU 2	Infectious substances are prohibited from entry to Vanuatu without prior approval from the Vanuatu Government Department of Health. Requests for approval should be addressed to: Director of Health P.O. Box 102, Port-Vila Vanuatu	1;1.2
VU 3	If an in-flight emergency occurs within Vanuatu airspace the pilot-in-command must inform the appropriate air traffic services unit, for the information of aerodrome authorities, of any dangerous goods on board the aircraft. The information must include the primary hazard, subsidiary risks for which labels are required and the quantity and location aboard the aircraft of the dangerous goods. If the situation permits, the information should also include the proper shipping name, class or division and, in the case of Class 1, the compatibility group.	7;4.3
VU 4	An operator who is involved in a dangerous goods incident in Vanuatu Territory must provide the authorities with information required to minimize hazards created by any spillage, leakage of fluid or other damage to dangerous goods.	7;4.6.2
VU 5	All hazards labels, including those identifying a subsidiary risk, must include text indicating the nature of the risk. The text must appear prominently in English or French in the lower half of the label as described in 5;3.5.	5;3.5
	ZA — SOUTH AFRICA	
ZA 1	Applications for approval to transport dangerous goods under Special Provision A1, A2 and A109 and exemption applications must be directed to:	3;1 (Table 3-1) 3;3

Identifying code	*Variation*	*Relevant paragraphs*

The Commissioner for Civil Aviation
South Africa Civil Aviation Authority
Private Bag X08
Waterkloof 0145
Republic of South Africa

Individual shippers must obtain a permit for the carriage by air of the following commodities in respect of each consignment before it is tendered for carriage to/from or through the airspace:

Explosives: Class 1

Chief Inspector of Explosives
Private Bag X624
Pretoria 0001
Republic of South Africa

For military armaments and ammunition of war:

The Commissioner for Civil Aviation
South African Civil Aviation Authority
Private Bag X08
Waterkloof 0145
Republic of South Africa

(See Note below.)

Note.— Where armaments and/or ammunition are regarded as munitions of war or if they are to be used for military purposes, the approval of the Commissioner for Civil Aviation is required in terms of Section 15A of the Aviation Act No. 74 of 1962.

ZA 2 Transport of dangerous goods by air must be in accordance with the current edition of the ICAO *Technical Instructions for the Safe Transport of Dangerous Goods by Air*, (Doc 9284-AN/905). Failure to comply with the Technical Instructions and all relevant South African variations is a violation of the South African Civil Aviation Regulations, 1997 as amended.

ZA 3 On shipments to, from or transiting through South Africa, the shipper's declaration required by the Technical Instructions, must include a 24-hour emergency response telephone number (including applicable area and international codes) for use in the event of an incident involving the dangerous goods. 5;4.1

The number must be monitored at all times by a person who:

1) is knowledgeable of the hazards and characteristics of the dangerous goods being transported; or

2) has immediate access to a person who possesses such knowledge and information.

ZA 4 Radioactive material and infectious substances (including diagnostic specimens and biological products), are not permitted in airmail either to, from or through South Africa.

≠

STATE VARIATIONS FROM THE TECHNICAL INSTRUCTIONS FOR THE SAFE TRANSPORT OF DANGEROUS GOODS BY AIR

To: Secretary, Dangerous Goods Panel
International Civil Aviation Organization
999 University Street
Montreal, Quebec
CANADA H3C 5H7

E-MAIL: krooney@icao.int

_____ (State) wishes the following variation(s) to be included in the Addendum to the 2009-2010 Edition of the Technical Instructions:

Variation	*Relevant paragraphs*

_____ Signature

_____ Title

(To be returned to reach ICAO not later than 17 April 2009)

Chapter 2

VARIATIONS NOTIFIED BY AIRLINE OPERATORS

2.1 It is hoped that all airline operators will abide completely by the requirements of the Technical Instructions and thus assist the smooth and rapid carriage of dangerous goods by air. If some special concerns or problems make it necessary for individual airlines to impose some more restrictive requirements, they are invited to notify such variations to ICAO for inclusion in this section.

≠ 2.2 Those variations which were notified to ICAO by airline operators prior to 22 July 2008 appear in Table A-2. Such variations, unless the context makes it otherwise apparent, are assumed to apply to all air transport performed by the operators concerned. Operator variations must not be less restrictive than the requirements of the Instructions and should refer only to safety matters and not to special handling or processing requirements.

≠ 2.3 If an operator needs to make variations based on new requirements appearing in this edition of the Instructions, it should notify ICAO by using the form appearing at the end of this Chapter. If such variations are received by 17 April 2009, they will appear in an Addendum to be published in May 2009.

2.4 The table of operator variations is based on data provided by the operators concerned. This table is provided for information only and should not be interpreted as having any (ICAO) regulatory status. Further information should be obtained from the appropriate airline operator.

2.5 In Table A-2 the affected Chapter(s) or paragraph(s) are indicated for each operator variation. Note that no reference to operator variations is made under the Chapter headings nor in the list of dangerous goods (Table 3-1). Variations have been notified by the following airlines:

Adria Airways — JP
Aer Lingus — EI
Aerolineas Argentinas — AR
\+ Aeromexico — AM
AeroPeru — PL
Aerovias Nacionales de Colombia S.A. (AVIANCA) — AV
Air Algerie — AH
Air Austral — UU
\>
Air Canada Jazz — QK
Air China — CA
Air Europa — UX
Air France — AF
Air Hong Kong — LD
≠ Airkenya Express Ltd — P2
\+ Air Madagascar — MD
Air Mauritius — MK
Air Namibia — SW
Air New Zealand — NZ
Air Niugini — PX
Air Pacific — FJ
Air Tahiti Nui — TN
Air Wisconsin — ZW
Alaska Airlines — AS
Alitalia Airlines — AZ
All Nippon Airways — NH
American Airlines — AA
America West Airlines — HP
Asiana Airlines — OZ
\>
Austrian Airlines — OS
Bangkok Airways — PG
Biman Bangladesh Airlines — BG
bmi — BD
British Airways — BA
\>
Brussels Airlines — SN
Cameroon Airlines — UY
Cargolux Airlines — CV
\+ Carpatair SA — V3
≠ Carribean Airlines — BW
Cathay Pacific Airways — CX
China Eastern Airlines — MU
China Southern — CZ
China Airlines — CI
Comair Pty — MN
Continental Airlines — CO
Continental Micronesia — CS
COPA Airlines — Cargo — CM
Corsair — SS
Corse Méditerranée — XK
Croatia Airlines — OU
Czech Airlines — OK
Delta Air Lines — DL
Deutsche Lufthansa/Lufthansa Cargo AG — LH
DHL Air Limited — DHL — DO
\+ DHL Aero Expreso S.A. — D5
El Al Israel Airlines — LY
Emirates — EK
ERA Aviation — 7H
\+ ETIHAD Airways — EY
EVA Airways — BR
European Air Transport — DHL — QY
Egyptair — MS
Federal Express — FX
Finnair — AY
\>
Garuda Indonesia — GA
\+ Great Wall Airlines — IJ
Gulf Air — GF
Hapag-Lloyd Flug GmbH — HF
Hawaiian Airlines — HA
Hong Kong Dragon Airlines (Dragonair) — KA
IBERIA, Líneas Aéreas de España — IB
Iberworld Airlines — TY
Indian Airlines — IC
Iran Air — IR
Japan Air Lines — JL
JAT — Yugoslav Airlines — JU

Jetstar — JQ
\+ Jett8 Airlines Cargo — JX
Kenya Airways — KQ
KLM, Royal Dutch Airlines/KLM Cityhopper B.V. — KL
Korean Airlines — KE
≠ LAN Airlines — LA
Lauda Air Luftfahrt AG — NG
Luxair — LG
Malaysia Airlines — MH
Malev Hungarian Airlines — MA
Martinair Holland — MP
Mexicana Airlines — MX
Miami Air International — GL
Middle East Airlines — ME
Nippon Cargo Airlines — KZ
Northwest Airlines — NW
Philippine Airlines — PR
Qantas Airways — QF
Royal Jordanian — RJ
Saudi Arabian Airlines — SV
Scandinavian Airlines System (SAS) — SK
Singapore Airlines/Singapore Airlines Cargo — SQ
Skippers Aviation — JW
SkyWest Airlines — OO
Southern Air — 9S
Southern Air Transport — SJ
Spanair — JK
Swiss International — LX
TAM Linhas Aereas — JJ
Tampa Cargo — QT
Thai Airways International — TG
Transavia Airlines C.V. — HV
> Transportes del Mercosul — TAM — PZ
Tunis Air — TU
Turkish Airlines — TK
United Airlines — UA
United Parcel Service — 5X
USAfrica Airways — E8
US Airways — US
Varig Airlines — RG
> Vietnam Airlines — VN
Virgin Atlantic — VS
Yemen Airways — IY
>

Table A-2. Operator variations

The identifying code for each operator variation consists of a two- or three-character identifier for that operator plus a sequential number. Variations are listed in the alphabetical order of these identifying codes. For each variation, the relevant Part and Chapter or paragraph numbers of the Instructions are given.

Note.— Unless otherwise indicated, references cited within the text of the operator variations refer to the IATA Dangerous Goods Regulations.

	Identifying code	*Variation*	*Relevant paragraphs*
		AA — AMERICAN AIRLINES	
	AA-01	Substances with a primary or subsidiary risk of Division 6.1 will not be accepted for carriage.	2;6
	AA-02	Hazardous waste in any form, as defined by any regulation, will not be accepted for carriage.	
	AA-03	Mercurial barometers will not be accepted for carriage as carry-on or checked baggage.	8;1
	AA-04	Salvage packagings will not be accepted for carriage.	4;1.4
		AC — AIR CANADA	
≠	AC-01	Not used.	
≠	AC-02	Dangerous goods packaged, labelled, marked and in quantities acceptable on both passenger and cargo aircraft must not be included in the same shipper's declaration as goods acceptable solely on "cargo aircraft only", though they may be part of the same consignment.	5;4
	AC-03	Not used.	
		AF — AIR FRANCE	
≠	AF-01	The following dangerous goods will not be accepted for carriage (see packing instructions [–] listed after each substance): a) all explosive articles classified in Division 1.1 and 1.2.	Table 3-1

	Identifying code	*Variation*	*Relevant paragraphs*
		b) Division 4.3, UN 3132 — Water-reactive solid, flammable, n.o.s. [411, 415, Y415, 417, 419, Y419, 420] and UN 3135 — Water-reactive solid, self-heating, n.o.s. [411, 415, 417, 419 and 420].	
		c) Class 8, UN 1798 — Nitrohydrochloric acid [809].	
≠	AF-02	Infectious substances, patient specimens, diagnostic specimens, clinical specimens and biological substances (human or animal) will only be accepted if assigned to UN 2814 or UN 2900, as appropriate. The only exceptions to this variation are: — dried blood spots, collected by applying a drop of blood onto absorbent material; — pathogen-free blood or blood components collected for transfusion or for the preparation of blood products to be used for human or animal transfusion or transplantation; — any tissues or organs intended for use in human or animal transplantation. In these cases, the air waybill must bear a detailed description to enable identification as non-regulated material.	2;6 Table 3-1 5;4
≠	AF-03	Prior Air France approval is required for transport of dangerous goods under appropriate National Authorities' exemptions or approvals.	
		AH — AIR ALGERIE	
≠	AH-01	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in case of an accident or incident concerning (each of) the dangerous goods being transported. This telephone number, including country and area code, preceded by the words "Emergency contact" or "24-hour number" must be inserted on the shipper's declaration for dangerous goods (DGD) preferably in the "Additional handling information" box, e.g. "Emergency contact +47 67 50 00 00". A 24-hour emergency telephone number is not required for shipments that do not require a DGD.	5;4
	AH-02	Class 1 — Explosives. Due to the requirements of the Algerian Civil Aviation Authority, shippers must obtain prior approval from Air Algerie for all explosives, including ammunition in passenger baggage, transported to, from or through Algeria. The request must be submitted at least five (5) days prior to shipment or travel.	2;1 8;1
+		**AM — AEROMEXICO**	
+	AM-01	Class 1 — Explosives will not be accepted for carriage, except for Class 1.4S (and Cartridges, power device (UN 0323) as COMAT). (See subsection 5.1 of the IATA Dangerous Goods Regulations.)	2;1
+	AM-02	Division 2.3 — Toxic gases will not be accepted for carriage (exception: COMAT parts and supplies).	2;2
+	AM-03	Class 3 — Flammable liquids will not be accepted for carriage, except: — when they are included in first aid kits; — Paint related material (UN 1263) in Packing Group III only; and — Perfumery products (UN 1266) in Packing Group III.	2;3 Table 3-1
+	AM-04	Class 4 — Flammable solids will not be accepted for carriage.	2;4
+	AM-05	Class 5 — Oxidizers and organic peroxides will not be accepted for carriage.	2;5
+	AM-06	Division 6.1 and 6.2 substances will not be accepted for carriage.	2;6
+	AM-07	Class 7 — Radioactive materials of Categories I, II and III will be accepted for carriage, provided the following conditions are complied with:	2;7 5;4

	Identifying code	Variation	Relevant paragraphs
		— the radioactive materials must be for medical diagnosis or medical research or treatment; or — to be used in analysis for medical purposes with direct relation to human health; and — the total transport index (TI) in one package or in a group of packages must not exceed 3.0. The shipper's declaration accompanying each shipment of radioactive material of Categories I, II or III must show the following endorsement: “This radioactive material is intended for use in, or incidental to, research or medical diagnosis or treatment”.	
+	AM-08	Class 8 — Corrosives will not be accepted for carriage (exception: COMAT parts and supplies).	2;8
+	AM-09	Class 9 — Commodities pertaining to this class will not be accepted for carriage, with the exception of the following products (exception: COMAT parts and supplies): UN 1845 — Carbon dioxide, solid (dry ice) UN 2071 — Ammonium nitrate fertilizers UN 3072 — Life-saving applicances, not self-inflating UN 3166 — Engines, internal combustion, flammable liquid powered UN 3166 — Vehicle, flammable liquid powered UN 3245 — Genetically modified micro-organisms UN 3245 — Genetically modified organisms UN 3268 — Air bag modules UN 3268 — Seat-belt pretensioners UN 3316 — Chemical kit UN 3316 — First aid kit UN 3334 — Aviation regulated liquid, n.o.s. UN 3335 — Aviation regulated solid, n.o.s. UN 3363 — Dangerous goods in apparatus UN 3363 — Dangerous goods in machinery ID 8000 — Consumer commodity.	2;9 Table 3-1
+	AM-10	Infected animals, dead or alive, will not be accepted for carriage.	2;6
+	AM-11	Dangerous goods in excepted quantities will not be accepted for carriage (see 2.7 of the IATA Dangerous Goods Regulation).	3;5
+	AM-12	Genetically modified micro-organisms and organisms must not cause a risk to humans, animals or plants.	2;6
>			
		AR — AEROLINEAS ARGENTINAS	
	AR-01	Dangerous goods in excepted quantities will not be accepted.	3;5
		AS — ALASKA AIRLINES	
	AS-01	Any device known as an oxygen generator (e.g. Oxygen generator, chemical; 5.1; UN 3356; PG II) will not be accepted for carriage, either via passenger or cargo aircraft.	2;5 Table 3-1
	AS-02	Division 6.1 — No substance required to bear a “Toxic” label will be accepted for carriage.	2;6 Table 3-1 5;3
	AS-03	Division 2.3 — No substance required to bear a “Toxic gas” label will be accepted for carriage.	2;3 Table 3-1 5;3
	AS-04	For cargo aircraft only, Class 7 radioactive material will only be accepted in passenger aircraft quantities (total of 50 TI per aircraft and a maximum of 3 TI per package or overpack).	2;7 7;2.9
	AS-05	Class 8 — The following Class 8 corrosive substance will not be accepted for carriage (see packing instruction [–] listed after the substance): UN 1787 — Hydriodic acid [809, Y809, 813, 819, Y819 and 821].	2;8 Table 3-1

	Identifying code	*Variation*	*Relevant paragraphs*
	AS-06	Class 9 — The following miscellaneous dangerous goods will not be accepted for carriage (see packing instruction [–] listed after the substance): UN 2211 — Polymeric beads, expandable, evolving flammable vapour [908].	2;9 Table 3-1
	AS-07	Hazardous waste as defined by any regulation will not be accepted for carriage.	
	AS-08	Division 6.2 — Infectious substances, will only be accepted for carriage when: — being transmitted to a medical or diagnostic facility; or — are finished biological products bearing a U.S. government licence number of manufacture; and — are intended for human or veterinary use.	2;6
	AS-09	Carriers operating as code-share partners using an AS flight number may not accept dangerous goods for shipment. Contact the operating carrier for specific information.	
		AV — AEROVIAS NACIONALES DE COLOMBIA S.A. (AVIANCA)	
	AV-01	Other than explosives of Division 1.4S packed for passenger aircraft, Class 1 — Explosives will not be accepted for carriage.	2;1
	AV-02	Not used.	
+	AV-03	Hazardous waste in any form, as defined by any regulation, will not be accepted for carriage.	
+	AV-04	Division 2.3 — Toxic gases will not be accepted for carriage.	2;2
+	AV-05	Wheelchairs with spillable batteries will be accepted only when the battery is removed from the wheelchair and packaged as outlined in paragraphs 2.3.2.4 and 9.3.15 of the IATA Dangerous Goods Regulations.	8;1
+	AV-06	Oxygen, compressed, UN 1072, with a 5.1 subsidiary hazard, required by passengers for medical use, will not be accepted for carriage. Avianca will provide the oxygen cylinders with prior booking.)	8;1
+	AV-07	Dangerous goods including infectious substances, biological products and radioactive material are not accepted for carriage in mail. (See 2.4 and 10.2.2 of the IATA Dangerous Goods Regulations.)	1;2.3
+	AV-08	Class 7 — Fissile radioactive material will not be accepted for carriage. (See 10.5.15 of the IATA Dangerous Goods Regulations.)	2;7
+	AV-09	Class 7 — Radioactive material of Categories I, II and III will be accepted for carriage, provided the radioactive material is intended for medical diagnosis or treatment or medical and/or industrial research.	2;7 5;1
		AY — FINNAIR	
≠	AY-01	For information concerning operational limitations on Finnair flights and embargoes on Finnair destinations, the local Finnair cargo office or GSA agency should be contacted in advance. Contact information can be found from www.finnaircargo.com > Customer Service > Contacts.	
≠	AY-02	Dangerous goods as defined in the IATA Dangerous Goods Regulations, including items exempted in subsection 2.4, will not be accepted in airmail. The only exception to this are patient specimens provided they meet the requirements of subsection 2.4.2(b).	1;2.3
+	AY-03	In case of shipments transported under State exemptions or approvals (e.g. required by Special Provision A1, A2, A106 or A109), Cargo Traffic Center must be contacted and copies of the DGD and approval or exemption, as applicable, must be provided by fax or other means. Shipments will not be accepted unless approval is granted by Cargo Traffic Center. Finnair Cargo Traffic Center HEL-FL-AY Telephone: +358-9-818 5450 Facsimile: +358-9-818 5448 E-mail: cargotraffic-center@finnair.com	3;3 5;4

	Identifying code	Variation	Relevant paragraphs
+	AY-04	Single packagings containing liquid dangerous goods are not acceptable for transport unless overpacked with, for example, a suitably sized wooden pallet to protect at least the top and bottom of the packagings.	4;1
		AZ — ALITALIA AIRLINES	
	AZ-01	Dangerous goods in consolidations will only be accepted for carriage where the consolidations contain only dangerous goods and must not include other non-regulated cargo.	7;1
		BA — BRITISH AIRWAYS	
	BA-01	UN 1169, UN 1197, UN 3334. With the exception of composite packaging, single packaging is not acceptable for liquids of concentrates or essences with strongly irritating or smelling properties, such as garlic, unless in sturdy, leakproof supplementary packaging forming an overpack for each single packaging used. The overpack must meet the marking, labelling and documentary requirements for an overpack and must bear orientation labels.	Table 3-1 4;5, 4;11 5;2, 5;3
≠	BA-02	UN 3090 — Lithium batteries. Primary (non-rechargeable) lithium (metal) batteries and cells are prohibited from carriage as cargo on passenger aircraft. (See Packing Instruction 968.) This prohibition does not apply to: — UN 3091, UN 3480, UN 3481; — lithium batteries (rechargeable and non-rechargeable) covered by the provisions for dangerous goods carried by passengers or crew. (See Table 2.3.A of the IATA Dangerous Goods Regulations.)	Table 3-1 4;11 8;1
≠	BA-03	Infectious substances (UN 2814, UN 2900 and UN 3373) and biological products are not acceptable for carriage in mail.	1;2.3 2;6 Table 3-1
	BA-04	Hazardous waste in any form, as defined by any Regulation, will not be accepted for carriage.	5;1.1
≠	BA-05	UN 3356 — Oxygen generator, chemical, is prohibited from carriage.	2;5
	BA-06	Class 7 — Radioactive material of any kind will not be accepted for carriage.	2;7
		BD — bmi	
	BD-01	UN 1845 — Carbon dioxide, solid (dry ice) is restricted to 200 kg per aircraft hold.	Table 3-1 7;2
		BG — BIMAN BANGLADESH AIRLINES	
	BG-01	Dangerous goods in excepted quantities will not be accepted.	3;5
		BR — EVA AIRWAYS	
	BR-01	Dangerous goods requiring a cargo aircraft only (CAO) label will not be accepted except for: — Division 2.2 — Non-flammable, non-toxic gas without a subsidiary risk; — Class 3 — Flammable liquid, Packing Group II or III and without a subsidiary risk; and — Class 9 — Miscellaneous dangerous goods.	Table 3-1 5;3
	BR-02	Dangerous goods in Packing Group I will not be accepted.	Table 3-1
	BR-03	Other than explosives of Division 1.4S, Class 1 — Explosives will not be accepted for carriage.	2;1

	Identifying code	*Variation*	*Relevant paragraphs*
	BR-04	Dangerous goods in excepted quantities will not be accepted for carriage.	3;5
≠	BR-05	Dangerous goods as defined in the IATA Dangerous Goods Regulations will not be accepted in airmail.	1;2.3
≠	BR-06	Dangerous goods in consolidations will not be accepted for carriage, except for: — consolidations having one master air waybill with one house air waybill; or — consolidations having multi house air waybill containing ID 8000 (consumer commodity) and/or UN 1266 (Perfumery products) and/or UN 2807 (Magnetized material); or — consolidations having multi house air waybill containing ID 8000 (consumer commodity) and/or UN 1266 (Perfumery products) and/or UN 2807 (Magnetized material) including other general cargo; or — consolidations having multi house air waybill containing UN 1845 (Carbon dioxide, solid/dry ice) when used as a refrigerant for non-dangerous goods.	7;1
≠	BR-07	Dangerous goods shipments transhipped to/from other operators will not be accepted for carriage, with the exception of UN 2807 (Magnetized material) and some class(es) or division(s) provided prior approval from Eva Air Headquarters has been obtained.	Table 3-1
≠	BR-08	UN 3356 — Oxygen generator, chemical, will not be accepted for carriage. *Note.— Items from EVA's COMAT materials and EGAT'S AOG materials which are listed in subsection 4.2 of the IATA Dangerous Goods Regulations will be exempted from the applicability of BR-01, BR-02, BR-03, BR-08 and BR-15.*	2;5 Table 3-1
≠	BR-09	Division 2.1 — Flammable gas. The following flammable gases will not be accepted for carriage (see packing instructions [–] listed after the substance): UN 1057 — Lighters, disposable lighter with high tensile nylon or plastic body [201].	2;2 Table 3-1
	BR-10	Division 2.3 — Toxic gases will not be accepted.	2;2
	BR-11	Class 7 — Radioactive material, Category II-Yellow, III-Yellow, fissile material and excepted packages will not be accepted.	1;6.2 7;5.1
	BR-12	Class 8 — Corrosives. The following corrosives will not be accepted for carriage (see packing instructions [–] listed after each substance): UN 1787 — Hydriodic acid [809, Y809, 813, 819, Y819, 821] UN 2803 — Gallium [804].	2;8 Table 3-1
	BR-13	Class 9 — Miscellaneous dangerous goods. The following goods will not be accepted (see packing instructions [–] listed after the substance): UN 2211 — Polymeric beads, expandable, evolving flammable vapour [908].	2;9 Table 3-1
≠	BR-14	Division 6.2 — Infectious substances in Category A must be loaded on a cargo aircraft.	2;6 7;2
≠	BR-15	Dangerous goods with final destinations EVA Air does not serve with their own aircraft (off-line station) can be accepted on board BR flights when advance arrangements have been made by reservation staff of the origin station in regard to the trucking to final destination. *Note.— The restrictions list in all EVA variations do not apply to materials for R.O.C Military Logistic Command.*	
	BR-16	Dangerous goods are not accepted to load on MD90 aircraft, except for: UN 1845 — Carbon dioxide, solid/dry ice which is used as a refrigerant for non-dangerous goods.	Table 3-1 7;2
		BW —CARIBBEAN AIRLINES	
≠	BW-01	Caribbean Airlines will not accept for carriage on its aircraft substances with a primary or subsidiary risk of 6.1 in any form.	2;6 Table 3-1

	Identifying code	Variation	Relevant paragraphs
		CA — AIR CHINA	
	CA-01	Dangerous goods in consolidations will not be accepted for carriage, except for: — consolidations containing UN 1845 — Carbon dioxide, solid (dry ice) when used as a refrigerant; and — consolidations with only one house air waybill.	7;1
	CA-02	Not used.	
≠	CA-03	Not used.	
	CA-04	Sufficient absorbent material to absorb the contents of all inner packagings must be used for combination packagings containing corrosive liquid in Packing Groups I, II and III.	4;1
≠	CA-05	The telephone or facsimile number of the consignee must be shown on the air waybill.	5;4
	CA-06	Dangerous goods originating from China will not be accepted for carriage in airmail, except for radioactive material in excepted packages which meet the requirement of 2.4.1 in these regulations.	1;2.3, 1;6
	CA-07	Dangerous goods in excepted quantities originating from China will not be accepted, except for radioactive material in excepted packages.	1;6 3;5
	CA-08	Cold storage for dangerous goods is not available, except for carbon dioxide, solid (dry ice) when used as a refrigerant.	
	CA-09	Fireworks originating from China will not be accepted for carriage.	
		CI — CHINA AIRLINES	
	CI-01	No consignment of dangerous goods as shown in these Instructions will be accepted for carriage by China Airlines on its international passenger flights and domestic flights, with the exception of Class 9 and AOG (excluding oxygen generators).	Table 3-1
	CI-02	Dangerous goods in excepted quantities will not be accepted.	3;5
	CI-03	Dangerous goods in consolidations will not be accepted for carriage except for: — consolidations having one master air waybill with one house air waybill; or — consolidations having multiple house air waybills containing ID 8000 — consumer commodity; or — consolidations having multiple house air waybills containing UN 1266 — Perfumery products; or — consolidations having multiple house air waybills containing ID 8000 and/or UN 1266 mixed with general cargo.	7;1
	CI-04	Any liquid dangerous goods having primary hazard or subsidiary hazard of Class 8 — Corrosives must be packed in combination packaging.	2;8 Table 3-1 4;1
		CM — COPA AIRLINES — CARGO	
	CM-01	Explosives will not be accepted for carriage (excepted: Explosives of Division 1.4S packed on passenger aircraft).	2;1 Table 3-1
	CM-02	Division 2.1 — Flammable gas will not be accepted for carriage.	2;2 Table 3-1
	CM-03	Oxidizers and organic peroxides will not be accepted for a primary or subsidiary risk (excepted: UN 1072 — Oxygen compressed, with a subsidiary hazard).	2;5 Table 3-1
	CM-04	Radioactive material will not be accepted for carriage.	2;7 Table 3-1

	Identifying code	*Variation*	*Relevant paragraphs*
		CO — CONTINENTAL AIRLINES	
	CO-01	Class 1 — Explosives will not be accepted for carriage (exception: COMAT parts and supplies). (See Packing Instructions 101 to 143.)	2;1 Table 3-1
	CO-02	Division 2.1 — Flammable gases will not be accepted for carriage (exception: COMAT parts and supplies). (See Packing Instructions 200 to 214.)	2;2 Table 3-1
≠	CO-03	All liquid dangerous goods, in all classes and divisions, must be packed in combination packagings. Single packagings are not allowed. An overpack, by definition, is not a combination packaging. (See definitions in 1;3.)	1;3 4;1
	CO-04	Class 4 — Division 4.1 — Flammable solids; Division 4.2 — Substances liable to spontaneous combustion; Division 4.3 — Substances which, in contact with water, emit flammable gases will not be accepted for carriage as a primary or subsidiary risk (exception: COMAT parts and supplies). (See Packing Instructions 400 to Y434.)	2;4 Table 3-1
≠	CO-05	Class 5 — Division 5.1 — Oxidizers and Division 5.2 — Organic peroxides will not be accepted for carriage as a primary or subsidiary risk (exception: Oxygen, compressed, UN 1072, with a 5.1 subsidiary hazard and COMAT parts and supplies with a primary or subsidiary risk of Division 5.1 or 5.2). (See Packing Instructions 500 to 523.)	2;5 Table 3-1
	CO-06	Division 6.1 — Toxic substances will not be accepted for carriage as a primary or subsidiary risk. (See all 600 series Packing Instructions except 602, 622 and 650.)	2;6 Table 3-1
≠	CO-07	Division 6.2 — Infectious substances, Category A and B (UN 2814, UN 2900 and UN 3373), other than substances transmitted to laboratories for diagnostic purposes or finished biological products bearing the U.S. government licence number of manufacture and intended for human or veterinary use, will not be accepted for carriage. For exempt patient specimens (human or animal), a rigid outer package must be used. (See 3.6.2 of the IATA Dangerous Goods Regulations and Packing Instructions 602, 622 and 650.)	2;6 Table 3-1
	CO-08	All international and domestic shipments of dangerous goods requiring a DGD, including interline shipments and COMAT parts and supplies, as defined by the IATA Dangerous Goods Regulations, must be booked. United States and Canadian locations must contact the Continental Airlines' Customer Service Center for reservations (281-553-5050 or 1-800-421-2456) (SITA address: IAHFCCO). International locations must call the local cargo station. (See 1.3.2 and 9.1.1 of the IATA Dangerous Goods Regulations.)	5;1, 5;4
≠	CO-9	The carriage of UN 1845 — Carbon dioxide, solid (dry ice) will be limited to the following established limits: — all narrow-body aircraft (B737, B757, ERJ) — 114 kg (250 lb) per aircraft; — all wide-body aircraft (B767, B777) — 200 kg (440 lb) per aircraft. Exception: Due to the limited sublimation rate of dry ice when carried in "refrigerated/ insulated" containers, the following quantities of dry ice may be carried in any containers with carrier code "PC" or any containers with a prefix code beginning with "R": B777-200 — 1,088 kg (2,400 lb); B767-400 — 816 kg (1,800 lb); B767-200 — 635 kg (1,400 lb); B757-200 — 590 kg (1,300 lb); B757-300 — 725 kg (1,600 lb); or B737-(all series) — 430 kg (950 lb). The above container limitations are per aircraft. (See 9.3.12 of the IATA Dangerous Goods Regulations and Packing Instruction 904.) All domestic and international shipments containing Carbon dioxide, solid (dry ice), UN 1845, must have a Class 9 label affixed to the package.	2;9 Table 3-1 5;3 7;2.11
≠	CO-10	In addition to the forbidden items in the State Variations and 4.2 (List of Dangerous Goods) of the IATA Dangerous Goods Regulations, the following substances are forbidden for transport on Continental Airlines:	Table 3-1 4;11

	Identifying code	*Variation*	*Relevant paragraphs*
		UN 3090 — Lithium batteries. Primary (non-rechargeable) lithium (metal) batteries and cells are prohibited from carriage as cargo. (See Packing Instruction 968.) This prohibition does not apply to: — UN 3091, UN 3480, UN 3481; — lithium batteries (rechargeable and non-rechargeable) covered by the provisions for dangerous goods carried by passengers or crew. (See Table 2.3.A of the IATA Dangerous Goods Regulations.)	8;1
+	CO-11	Continental Airlines will not prepare, insert or amend the handling information section and/or the nature and quantity of goods section on an air waybill for dangerous goods which are listed in subsection 4.2 (List of Dangerous Goods) in the current IATA Dangerous Goods Regulations.	Table 3-1 5;4
		CS — CONTINENTAL MICRONESIA	
≠	CS-01	Class 1 — Explosives will not be accepted for carriage (exception: COMAT parts and supplies). (See Packing Instructions 101 to 143.)	2;1 Table 3-1 4;3
≠	CS-02	Class 2 — Division 2.1 — Flammable gases will not be accepted for carriage (exception: COMAT parts and supplies). (See Packing Instructions 200 to 214.)	2;2 Table 3-1 4;4
≠	CS-03	All liquid dangerous goods, in all classes and divisions, must be packed in combination packaging. Single packagings are not allowed. An overpack, by definition, is not a combination packaging. (See definitions in 1;3.)	1;3 4;1
≠	CS-04	Class 4 — Division 4.1 — Flammable solids; Division 4.2 — Substances liable to spontaneous combustion; Division 4.3 — Substances which, in contact with water, emit flammable gases will not be accepted for carriage as a primary or subsidiary risk (exception: COMAT parts and supplies). (See Packing Instructions 400 to Y434.)	2;4 Table 3-1 4;6
≠	CS-05	Class 5 — Division 5.1 — Oxidizers and Division 5.2 — Organic peroxides will not be accepted for carriage as a primary or subsidiary risk (exception: Oxygen, compressed, UN 1072, with a 5.1 subsidiary hazard and COMAT parts and supplies with a primary or subsidiary hazard of Division 5.1 or 5.2). (See Packing Instructions 500 to 523.)	2;5 Table 3-1 4;7
≠	CS-06	Division 6.1 — Toxic substances will not be accepted for carriage as a primary or subsidiary risk. (See all 600 series Packing Instructions except 602, 622 and 650.)	2;6 Table 3-1 4;8
≠	CS-07	Division 6.2 — Infectious substances will be accepted for transport under the following requirements: 1) Infectious substances Category A and B or patient specimens known, suspected or having a minimum likelihood of containing pathogens must be packaged in accordance with Packing Instruction 602 and consigned to (UN 2814 or UN 2900). Additional requirements must be met: a) each completed package is not greater than 460 mm (18 in) in diameter and 405 mm (16 in) in height; b) package(s) must be identified and presented to the carrier by itself and not in consolidation with other shipments; c) infectious substances are not permitted in airmail; d) advance arrangements must be made. 2) Biological substances or patient specimens being transported for initial diagnostic purposes and for which there is no reason to suspect the presence of pathogens must be assigned to UN 3373 and packaged in accordance with Packing Instruction 650. Additional requirements must be met: a) a rigid outer packaging is required; b) package(s) must be identified and presented to the carrier by itself and not in consolidation with other shipments; c) biological substances are not permitted in airmail.	2;6 Table 3-1 4;8

	Identifying code	*Variation*	*Relevant paragraphs*
		d) advance arrangements must be made. 3) Infected animals, dead or alive, and medical and clinical waste are strictly prohibited for carriage.	
≠	CS-08	All international and domestic shipments of dangerous goods requiring DGD, including interline shipments and COMAT parts and supplies, as defined by the IATA Dangerous Goods Regulations, must be booked with the Continental Micronesia Customer Service Centre (SITA address: GUMFSCO, GUMFXCO and GUMFFCO) (671-645-8570). (See 1.3.2 of the Dangerous Goods Regulations.)	5;4
	CS-09	The carriage of Carbon dioxide, solid (dry ice), UN 1845, will be limited to the following established limits: — all narrow-body aircraft (B737, B757, ERJ) — 114 kg (250 lb) per aircraft; — all wide-body aircraft (B767, B777) — 200 kg (440 lb) per aircraft. Exception: Due to the limited sublimation rate of dry ice when carried in "refrigerated/insulated" containers, the following quantities of dry ice may be carried in any containers with carrier code "PC" or any containers with a prefix code beginning with "R": B777-200 — 1,088 kg (2,400 lb); B767-400 — 816 kg (1,800 lb); B767-200 — 635 kg (1,400 lb); B757-200 — 590 kg (1,300 lb); B757-300 — 725 kg (1,600 lb); B737-(all series) — 430 kg (950 lb).	Table 3-1 5;3 7;2.11
≠	CS-10	In addition to the forbidden items in the State Variations and 4.2 (List of Dangerous Goods) of the IATA Dangerous Goods Regulations, the following UN number(s) are forbidden for transport on Continental Micronesia: UN 3090 — Lithium batteries. Primary (non-rechargeable) lithium (metal) batteries and cells are prohibited from carriage as cargo. (See Packing Instruction 968.) This prohibition does not apply to: — UN 3091, UN 3480, UN 3481; — lithium batteries (rechargeable and non-rechargeable) covered by the provisions for dangerous goods carried by passengers or crew. (See Table 2.3.A of the IATA Dangerous Goods Regulations.)	Table 3-1 4;11 8;1
+	CS-11	Continental Airlines will not prepare, insert or amend the handling information section and/or the nature and quantity of goods section on an air waybill for dangerous goods which are listed in subsection 4.2 (List of Dangerous Goods) in the current IATA Dangerous Goods Regulations.	Table 3-1 5;4
		CV — CARGOLUX AIRLINES	
	CV-01	Fissile material, as defined in these Instructions, will not be accepted for carriage.	2;7 Table 3-1
	CV-02	Wastes, any kind, will not be accepted for carriage.	Table 3-1
	CV-03	Dangerous goods in airmail will not be accepted for carriage.	1;2.3
		CX — CATHAY PACIFIC AIRWAYS	
≠	CX-01	Not used.	
	CX-02	All combination packagings containing liquid dangerous goods in Packing Groups I, II or III must contain sufficient absorbent material to absorb the entire contents of all the inner packagings.	4;1
	CX-03	Dangerous goods packed in metal drums (1A1, 1A2, 1B1, 1B2, 1N1 and 1N2) and the following composite packagings (6HA1 and 6HB1) are not acceptable for carriage unless a strong overpack is used.	6;1

	Identifying code	*Variation*	*Relevant paragraphs*
≠	CX-04	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in the case of an accident or incident concerning (each of) the dangerous goods being transported. This telephone number, including the country and area code, preceded by the words “Emergency contact” or “24-hour number”, must be inserted on the DGD, preferably in the “Additional handling information” box, e.g. “Emergency contact +47 67 50 00 00”. (See 8.1.6.11 and 10.8.3.11 of the IATA Dangerous Goods Regulations.) A 24-hour emergency telephone number is not required for shipments that do not require a shipper's declaration for dangerous goods. *Note.— Contact for additional information or operator approval is:* Cargo Services Manager Standards and Performance Cargo Department 9/F South Tower, Cathay Pacific City Hong Kong International Airport HONG KONG Tel: +852-2747 7164 Fax: +852-2141 7164 Teletype: HDQDGCX E-mail: cgo#dgr@cathaypacific.com	5;4
		CZ — CHINA SOUTHERN	
	CZ-01	Dangerous goods in excepted quantities will not be accepted.	3;5
	CZ-02	Dangerous goods in consolidations will not be accepted, except for: — consolidations containing UN 1845, Carbon dioxide, solid (dry ice) when used as a refrigerant; — consolidations with only one house air waybill.	Table 3-1 7;1
	CZ-03	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in the case of an accident or incident concerning each of the dangerous goods being transported. This telephone number, including the country and area code, preceded by the words “Emergency contact” or “24-hour number”, must be inserted on the DGD, preferably in the “Handling information” box. A 24-hour emergency telephone number is not required for shipments that do not require a shipper’s declaration for dangerous goods.	5;4
	CZ-04	Cold storage for dangerous goods is not available, except for carbon dioxide, solid (dry ice) when used as a refrigerant.	
	CZ-05	CSN will not consign sales agents to accept or handle dangerous goods in China.	
	CZ-06	Division 2.3 — Toxic gases will not be accepted.	2;2 Table 3-1
	CZ-07	Only radioactive material Category I-White and Category II-Yellow will be accepted.	2;7 Table 3-1 5;1
≠	CZ-08	Lithium metal or lithium alloy cells and batteries (UN 3090) and lithium metal or lithium alloy cells and batteries packed with or contained in equipment (UN 3091) are prohibited from carriage as cargo on passenger aircraft. (See Packing Instructions 968, 969, 970.) This prohibition does not apply to: — lithium ion batteries (UN 3480) and lithium ion batteries packed with, or contained in, equipment (UN 3481); — lithium batteries (rechargeable and non-rechargeable) covered by the Provisions for Dangerous Goods Carried by Passengers or Crew. (See Table 2.3.A of the IATA Dangerous Goods Regulations.)	Table 3-1 4;11 8;1

	Identifying code	*Variation*	*Relevant paragraphs*
		DL — DELTA AIRLINES	
	DL-01	Class 7 — Only the following radioactive material will be accepted for carriage: — radioactive material in “excepted packages”; and — “other form” radioactive material packaged in Type A packagings not exceeding the A_2 values.	1;6 2;7 5;1
	DL-02	Hazardous waste or any dangerous goods meeting the definition of hazardous waste will not be accepted for carriage.	Table 3-1
≠	DL-03	Not used.	
		DO — DHL AIR LIMITED — DHL	
≠	DO-01	Dangerous goods shipments transported by DHL will only be accepted by advance arrangements and approval by the Restricted Commodities Group — DHL EECC. Restricted Commodities Group — DHL EECC Tel: +32 (2) 711 7654 Fax: +32 (2) 711 7010 E-mail: rcgalert@dhl.com	
	DO-02	Explosives transported from, to or in transit through Belgian territory are summarized under BEG-01, BEG-02 and BEG-03, and need advance arrangements and approval by the Restricted Commodities Group — DHL EECC 48 hours before presenting for transport.	2;1 Table 3-1
	DO-03	Explosives transported outside Belgian territory, including BEG-01 and BEG-02 material, will only be accepted by advance arrangements and approval by the Restricted Commodities Group — DHL EECC 24 hours before presenting for transport.	2;1 Table 3-1
	DO-04	It is forbidden to carry weapons, munitions of war or parts of them, except with the express exemption of the national authorities. In this case, they must be carried in the aircraft in a place which is inaccessible to passengers during flight and, in the case of firearms, uncharged. Such items can only be accepted by advance arrangements and approval by the Restricted Commodities Group — DHL EECC.	2;1 Table 3-1 7;2
	DO-05	Radioactive and fissile material will only be accepted by advance arrangements and approval by the Restricted Commodities Group — DHL EECC. The request requires the following information: UN number, isotope, activity, number/type of packaging, transport index (TI) and label.	2;7
	DO-06	Radioactive and fissile wastes will not be accepted for carriage.	2;7
	DO-07	Not used.	
	DO-08	Not used.	
	DO-09	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in the case of an accident or incident concerning each of the dangerous goods being transported. This telephone number, including the country and area code, preceded by the words “Emergency contact” or “24-hour number”, must be inserted on the DGD, preferably in the “Handling information” box. A 24-hour emergency telephone number is not required for shipments that do not require a shipper’s declaration for dangerous goods.	5;4
+		**D5 — DHL AERO EXPRESO S.A.**	
+	D5-01	Class 1 — Explosive articles will not be accepted for carriage or handling by DHL Aero Expreso S.A. or any other operator flying on our behalf. This variation does not apply to those parts or devices used for the DHL Aero Expreso aircraft during normal operations, where a written authorization must be obtained from the Network Operations Department.	2;1
+	D5-02	With the exception of excepted quantities of radioactive material (RRE), DHL Aero Expreso will not accept for carriage any other article or substance belonging to Class 7.	1;6 2;7 3;5

	Identifying code	*Variation*	*Relevant paragraphs*
+	D5-03	Dangerous goods in airmail will not be accepted for carriage.	1;2.3
+	D5-04	Shipments under State approval in accordance with Special Provision A2 or A109 will not be accepted.	3;3
+	D5-05	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in case of an accident or incident concerning (each of) the dangerous goods being transported. This telephone number, including country and area code, preceded by the words "Emergency contact" or "24-hour number" must be inserted on the shipper's declaration for dangerous goods (DGD) preferably in the "Additional handling information" box, e.g. "Emergency contact +47 67 50 00 00". A 24-hour emergency telephone number is not required for shipments that do not require a DGD.	5;4
		EI — AER LINGUS	
	EI-01	Single packagings containing liquid dangerous goods packed in steel or aluminium drums (1A1, 1A2, 1B1, 1B2) will be accepted for transport only when overpacked.	4;1 6;1
	EI-02	In addition to the requirement of 6.0.4.1 of the IATA Dangerous Goods Regulations, packages where UN specification marking is printed on a label which is attached to the package will not be accepted for transport.	5;2, 5;3
	EI-03	Salvage packaging will not be accepted for transport.	4;1
		EK — EMIRATES	
	EK-01	An emergency response contact number provided by the shipper must be inserted in the "Additional handling information" box of the shipper's declaration for dangerous goods.	5;4
+		**EY — ETIHAD AIRWAYS**	
+	EY-01	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in case of an accident or incident concerning (each of) the dangerous goods being transported. This telephone number, including country and area code, preceded by the words "Emergency contact" or "24-hour number" must be inserted on the shipper's declaration for dangerous goods (DGD) preferably in the "Additional handling information" box, e.g. "Emergency contact +47 67 50 00 00". A 24-hour emergency telephone number is not required for shipments that do not require a DGD.	5;4
+	EY-02	All Class 1 — Explosives, Division 6.2 — Infectious substances and Class 7 — Radioactive materials, as defined in the IATA Dangerous Goods Regulations, will not be accepted for carriage unless prior approval and booking arrangements are obtained from: ETIHAD Airways Crystal Cargo Dangerous Goods Liaison and Cargo Quality Assurance Manager P.O. Box 35566 Cargo Village, Abu Dhabi International Airport United Arab Emirates Telephone: +971 2 509 1222 Facsimile: +971 2 509 1234 E-mail: cargoreservations@ETIHAD.ae	2;1, 2;6, 2;7
+	EY-03	Dangerous goods in single packagings and cryogenic containers (dewars) are not accepted for carriage unless overpacked on a suitably sized wooden pallet to protect the base of the packaging.	4;1
+	EY-04	Package orientation (This Way Up) labels must be used on any combination and single packagings containing liquid dangerous goods.	5;3
+	EY-05	Dangerous goods in excepted quantities will not be accepted.	3;5

	Identifying code	*Variation*	*Relevant paragraphs*
+	EY-06	Salvage packaging will not be accepted.	4;1
+	EY-07	Dangerous goods as defined in the IATA Dangerous Goods Regulations will not be accepted in airmail.	1;2.3
		E8 — USAFRICA AIRWAYS	
	E8-01	Division 6.1 — Toxic substances (Packing Groups I and II) are not accepted for carriage.	2;6
	E8-02	Class 8 — Corrosives in Packing Groups I and II are not accepted for carriage. (Exception: Company Material, COMAT, in Packing Group II can be accepted.)	2;8
	E8-03	Class 7 — Radioactive material will only be accepted under the following conditions: — for a package required to be labelled Radioactive Yellow-II, the transport index does not exceed 1.0; — for a package required to be labelled Radioactive Yellow-III, the transport index does not exceed 3.0.	2;7 5;1
	E8-04	Hazardous waste, as defined by any regulation, will not be accepted for carriage.	
	E8-05	Wheelchairs with spillable batteries will be accepted only when the battery is removed from the wheelchair and packaged as outlined in paragraphs 2.3.2.4 and 9.3.15 of the IATA Dangerous Goods Regulations.	8;1
		FJ — AIR PACIFIC	
	FJ-01	Radioactive material, including all categories of excepted packages, will not be accepted for transport.	1;6 2;7 3;5
	FJ-02	The carriage of ammunition in checked baggage is not permitted on board Air Pacific aircraft.	8;1
		FX — FEDERAL EXPRESS	
	FX-01	Class 1 articles and substances will not be accepted for carriage outside the U.S. without pre-approval. (See Packing Instructions 101 to 143.) FedEx Express will not accept for carriage any explosives assigned to Division 1.3.	2;1 4;3
≠	FX-02	Except for UN 1230 — Methanol, substances with a primary or subsidiary risk of Division 6.1 in Packing Group I or II: — with an origin and destination within the U.S., will be accepted only if in approved D.O.T. exemption/special permit (SP) packaging; — will only be accepted for international transport in "V" rated combination packaging. Contact FedEx for specific details. Shippers of Division 6.1, Packing Group III, must indicate "PG III" adjacent to the hazard label on the outer package. Poison inhalation hazard (PIH) with a hazard zone "A" or any Class 2 substance with a toxic primary or subsidiary risk label will not be accepted for carriage.	2;6 Table 3-1
	FX-03	Class 7 substances will not be accepted for carriage outside the U.S. without prior approval. Plutonium 239 and 241 will not be accepted as UN 3324, UN 3325, UN 3326, UN 3327, UN 3328, UN 3329, UN 3330, UN 3331 or UN 3333.	2;7
≠	FX-04	The following Class 8 substances will not be accepted for carriage (see packing instructions [–] listed after each substance): UN 1796 — Nitrating acid mixture, over 40 per cent concentration [809] UN 1826 — Nitrating acid mixture, spent over 40 per cent in original solution [809] UN 2031 — Nitric acid over 40 per cent concentration [813].	2;5 Table 3-1

	Identifying code	*Variation*	*Relevant paragraphs*
		When shipping the above substances in acceptable concentrations, the concentration must be indicated on the shipper's declaration in association with the proper shipping name.	
	FX-05	Hazardous waste as defined in USG-04, will not be accepted for carriage.	
≠	FX-06	Polychlorinated biphenyls: The following Class 9 materials, if known or suspected to contain PCBs, must be packaged utilizing as follows: — for liquids: IP3 or IP3A inner metal packagings with absorbent material utilized to fill all available space; — for solids: any inner packaging as per applicable packing instruction is permitted. Outer packaging must be a 1A2 steel drum, 4H2 plastic box, USA DOT-SP 8249, 9168 or 11248 (see packing instructions [–] listed after each substance) UN 2315 — Polychlorinated biphenyls, liquid [907] UN 3077 — Environmentally hazardous substances, solid, n.o.s. [911, Y911] UN 3082 — Environmentally hazardous substances, liquid, n.o.s. [914, Y914] UN 3432 — Polychlorinated biphenyls, solid [911].	2;9 4;11 6;1
≠	FX-07	Not used.	
≠	FX-08	Dry shippers/dry dewars meeting the definition in the note to Packing Instruction 202 must have the outer container marked both "dry dewar" or "dry shipper" and "not restricted" or "non-hazardous".	4;4 5;2
≠	FX-09	Division 6.2 items classed as Risk Group 4 by the World Health Organization (WHO) will not be accepted for carriage.	2;6
≠	FX-10	Lithium metal batteries (primary non-rechargeable), UN 3090, which are shipped either fully regulated or in accordance with Section II of Packing Instruction 968 require pre-approval. See www.fedex.com/us; keyword lithium batteries (search field).	Table 3-1 4;11
≠	FX-11	Dangerous goods packages that cannot accommodate all of the required Federal Express and regulatory documentation as well as all required regulatory markings and labelling on the top or sides of the outer package will not be accepted for carriage. Any required documentation, marking and labelling will not be permitted on the bottom of the package. FedEx branded packaging, including brown boxes, may not be used to ship dangerous goods or dry ice. Exception: UN 3373, Biological substance, Category B, may be shipped in the FedEx UN 3373 Pak.	
≠	FX-12	Handwritten shipper's declarations will not be accepted. The following fields on the shipper's declaration must be typed or computer-generated: UN or ID number including the prefix, proper shipping name, hazard class or division, subsidiary risk or division(s), packing group, packaging type, packaging instruction, authorization and emergency telephone number. For radioactive shipments, in addition to the items listed above, the following must also be typed or computer-generated: radionuclide, special form or physical and chemical form. All other entries may be handwritten. Handwritten alterations/amendments to an entry required to be typed per FX-12 are acceptable if each alteration/amendment is legible and signed with the same signature used to sign the shipper's declaration.	5;4
	FX-13	FedEx Express will only accept Oxygen, compressed (UN 1072) when packed in an ATA Specification 300 Category I outer packaging. Packaging must be marked in accordance with the marking criteria of Air Transportation Association (ATA) Specification No. 300.	
≠	FX-14	When a shipper's declaration is required, three (3) copies must be provided with each shipment at the origin location. At least two of the copies must have the diagonal hatchings printed vertically in the left and right margins and must be printed in red.	5;4
≠	FX-15	The following substances will not be accepted for carriage (see packing instructions [–] listed after each substance): UN 1001 — Acetylene, dissolved [200] UN 1162 — Dimethyldichlorosilane [305, Y305, 307] UN 1308 — Zirconium suspended in a flammable liquid, Packing Group I [303] UN 1873 — Perchloric acid, over 50 per cent concentration [501] .	Table 3-1
+	FX-16	FedEx Express will not accept for transport any item with an A2 Special Provision even with a competent authority approval.	Table 3-1 3;3

Identifying code	*Variation*	*Relevant paragraphs*
	GA — GARUDA INDONESIA	
GA-01	Advance arrangements must be made for all shipments of dangerous goods as defined in the IATA Dangerous Goods Regulations.	
GA-02	Dangerous goods in consolidations will not be accepted for carriage. The only exception is consolidations having one master air waybill with one house air waybill.	7;1
GA-03	Dangerous goods in limited quantities ("Y" packing instructions) will not be accepted for carriage.	3;4
	GF — GULF AIR	
GF-01	Only explosives of Division 1.4S are acceptable for carriage and only with prior approval from Gulf Air.	2;1 Table 3-1
GF-02	Prior approval is required for the carriage of munitions of war, sporting weapons and ammunition.	2;1 Table 3-1
GF-03	The carriage of dangerous goods in excepted quantities is restricted. Apply to Gulf Air for details.	3;5
GF-04	The carriage of limited quantities of dangerous goods ("Y" packing instructions) is not permitted.	3;4
GF-05	Not used.	
GF-06	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in the case of an accident or incident concerning each of the dangerous goods being transported. This telephone number, including the country and area code, preceded by the words "Emergency contact" or "24-hour number", must be inserted on the DGD, preferably in the "Handling information" box, e.g. "Emergency contact +47 67 50 00 00".	5;4
GF-07	Fissile radioactive material in any quantity will not be accepted for carriage on GF services.	2;7 Table 3-1
	GL — MIAMI AIR INTERNATIONAL	
GL-01	Prior approval is required for shipments containing mercury.	
	HA — HAWAIIAN AIRLINES	
HA-01	Division 6.1 — Toxic substances are not accepted for carriage.	2;6 Table 3-1
HA-02	Division 2.3 — Toxic gases are not accepted for carriage.	2;2 Table 3-1
HA-03	Division 6.2 — Infectious substances are not accepted for carriage.	2;6 Table 3-1
	HF — HAPAG-LLOYD FLUG GMBH	
HF-01	Class 7 — Fissile radioactive material will not be accepted for carriage on HF flights.	2;7 Table 3-1
	HP — AMERICA WEST AIRLINES	
HP-01	Dangerous goods in excepted quantities will not be accepted.	3;5
HP-02	Carbon dioxide, solid (dry ice), UN 1845, is accepted only as a refrigerant subject to restrictions of 5 lb or less per package.	Table 3-1

	Identifying code	*Variation*	*Relevant paragraphs*
		HV — TRANSAVIA AIRLINES C.V.	
	HV-01	Class 7 — Radioactive material is not accepted for carriage.	2;7 Table 3-1
		IB — IBERIA, LÍNEAS AÉREAS DE ESPAÑA	
	IB-01	Not used.	
	IB-02	Class 7 — Fissile radioactive material will not be accepted for carriage on passenger aircraft.	2;7 Table 3-1
		IC — INDIAN AIRLINES	
	IC-01	Class 1 — Explosives are not permitted and will not be accepted for carriage except items covered under UN 0012.	2;1 Table 3-1
	IC-02	Not used.	
	IC-03	Class 3 — Flammable liquids in Packing Group I are not accepted for carriage.	2;3 Table 3-1
	IC-04	Division 4.3 — Substances which, in contact with water, emit flammable gases are not accepted for carriage.	2;4 Table 3-1
	IC-05	Not used.	
	IC-06	Division 6.1 — "Toxic" substances in Packing Group I are not accepted for carriage.	2;6 Table 3-1
	IC-07	Class 8 — Corrosives in Packing Group I are not accepted for carriage. The following articles, even in Packing Groups II and III, are not accepted for carriage (see packing instructions [–] listed after each substance): UN 1787 — Hydriodic acid [809, Y809, 813, 819, Y819, 821]; and UN 2803 — Gallium (liquid or solid) [804]. Exception: When used in a chemical kit, which is used for medical and diagnostic purposes.	2;8 Table 3-1
≠	IC-08	Class 9 — Miscellaneous dangerous goods — The following are not accepted for carriage: 1) yeast, active; 2) carbon dioxide, solid (dry ice) over 200 kg per aircraft. Dry ice used as part of food beverage service is exempted from this limit; 3) polymeric beads or granules (see Packing Instruction 908).	2;9 Table 3-1 4;11
	IC-09	All hazard labels must include text indicating the nature of risk.	5;3.2.12 5;3.5.1
≠	IC-10	Not more than one hazard class of dangerous goods may be listed on the same shipper's declaration and air waybill except when Carbon dioxide, solid (dry ice) is used as a refrigerant for dangerous goods that require a shipper's declaration.	5;4
≠	IC-11	A 24-hour emergency telephone number of the consignee must be shown in the "Handling information" box of the shipper's declaration and air waybill.	5;4
+	IC-12	Dangerous goods in consolidations will not be accepted for carriage.	
+	IC-13	Fissile material will not be accepted for carriage.	2;7 Table 3-1
+		**IJ — GREAT WALL AIRLINES**	
+	IJ-01	Only explosives of Division 1.4S, packed for passenger aircraft, will be accepted and these must be loaded in the lower deck of all aircraft.	2;1 Table 3-1

	Identifying code	*Variation*	*Relevant paragraphs*
+	IJ-02	Items with a primary or subsidiary risk of Division 2.1, Class 3, Class 4 and Class 5, when packed for cargo aircraft only, will not be accepted for carriage.	2;2, 2;3, 2;4, 2;5 Table 3-1
+	IJ-03	Class 7 — Fissile material (uranium-233/235 and plutonium-238/239/241) will not be accepted on any aircraft.	2;7 Table 3-1
+	IJ-04	Dangerous goods sent as airmail will not be accepted for uplift.	1;2.3
+	IJ-05	Oxygen generators, chemical (UN 3356) will not be accepted on any aircraft.	Table 3-1
+	IJ-06	Infected animals, dead or alive, will not be accepted for carriage.	2;6
+	IJ-07	Dangerous goods in excepted quantities originating from China will not be accepted for carriage. However, this prohibition does not apply to radioactive materials in excepted packages.	3;5
+	IJ-08	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in case of an accident or incident concerning (each of) the dangerous goods being transported. This telephone number, including country and area code, preceded by the words “Emergency contact” or “24-hour number” must be inserted on the shipper’s declaration for dangerous goods (DGD) preferably in the “Additional handling information” box, e.g. “Emergency contact +47 67 50 00 00”. A 24-hour emergency telephone number is not required for shipments that do not require a DGD.	5;4
+	IJ-09	Dangerous goods shipments from other carriers will not be accepted unless prior special arrangements have been made with IJ. For more details, please refer to IJ Ground Services Department.	
+	IJ-10	Biological substance, Category B (UN 3373), will not be accepted.	Table 3-1
+	IJ-11	Dangerous goods in consolidations will not be accepted for carriage, except for: — consolidations containing UN 1845 — Carbon dioxide, solid (dry ice) when used as a refrigerant; and — consolidations with only one house air waybill.	
+	IJ-12	Dangerous goods in “limited quantities“ (“Y“ packing instructions) will not be accepted for carriage. (See 2.8 of the IATA Dangerous Goods Regulations and all “Y” packing instructions).	3;4
+	IJ-13	Only Division 6.2, Class 7 and Class 9, will be uplifted into/over the United States.	2;6, 2;7, 2;9
		IR — IRAN AIR	
≠	IR-01	Not used.	
	IR-02	Dangerous goods in consolidations will not be accepted for carriage, except for carbon dioxide, solid (dry ice) when used as a refrigerant.	7;1
	IR-03	All package and overpack markings required by these Instructions must be in English. If the State of Origin requires markings in a language other than English, both languages are to be given equal prominence.	5;2.5
	IR-04	Carriage of Class 1 — Explosives on Iran Air flights is strictly prohibited with the exception of: — cartridges, power device, UN 0323, Division 1.4S, Packing Instruction 134, will only be accepted for Iran Air use as aircraft spare parts (A.O.G.). — maximum 2 kg per package on passenger aircraft; — maximum 5 kg per package on cargo aircraft. — cartridges for sporting purposes, UN 0012 and UN 0014, Division 1.4S, Packing Instruction 130, will be accepted as cargo when limited to: — maximum 5 kg per package on passenger aircraft; — maximum 25 kg per package on cargo aircraft.	2;1 Table 3-1

Identifying code	*Variation*	*Relevant paragraphs*
IR-05	Oxygen generators (chemical) under the following descriptions will not be accepted for carriage (see packing instructions [–] listed after each substance): UN 1325 — Flammable solid, organic, n.o.s.* (Division 4.1) [415, Y415, 417, 419, Y419, 420] UN 1449 — Barium peroxide (Division 5.1, Subsidiary risk 6.1) [509, Y509, 512] UN 1479 — Oxidizing solid, n.o.s.* (Division 5.1) [508, Y508, 509, 511, 512, 516, Y516, 518] UN 1489 — Potassium perchlorate (Division 5.1) [508, Y508, 511] UN 1491 — Potassium peroxide (Division 5.1) [512] UN 1495 — Sodium chlorate (Division 5.1) [509, Y509, 512] UN 1504 — Sodium peroxide (Division 5.1) [512] UN 2466 — Potassium superoxide (Division 5.1) [512] UN 2547 — Sodium superoxide (Division 5.1) [512] UN 3356 —Oxygen generator, chemical (Division 5.1) [523]. All carriage of oxygen generators containing substances such as iron powder, iron dust, silicon dioxide and manganese dioxide, which do not have specific proper shipping names, are prohibited.	2;5 Table 3-1
IR-06	The following dangerous goods will not be accepted for carriage on Iran Air (see packing instructions [–] listed after each substance): UN 1040 — Ethylene oxide [200] UN 1063 — Methyl chloride (Division 2.1) [200] UN 1261 — Nitromethane [307] UN 1294 — Toluene (Class 3) [305, Y305, 307] UN 1410 — Lithium aluminium hydride [412 >] UN 1715 — Acetic anhydride (Class 8) [809, Y809, 813] UN 1739 — Benzyl chloroformate [809] UN 1786 — Hydrofluoric acid and sulphuric acid mixture [809] UN 1838 — Titanium tetrachloride [–] UN 1950 — Aerosols, flammable gas and corrosive (Division 2.1) [203, Y203] UN 2428 — Sodium chlorate, aqueous solution (Division 5.1) [503, Y503, 505] UN 2495 — Iodine pentafluoride [–] UN 2806 — Lithium nitride (Division 4.3) [411].	Table 3-1
	IY — YEMEN AIRWAYS	
IY-01	Shippers wishing to ship dangerous goods shipment to Yemen must give an undertaking stating that the consignee will take delivery in Yemen within 15 days of arrival of the shipment. Otherwise shippers will take back their shipments at their own cost.	
	JJ — TAM LINHAS AEREAS	
JJ-01	Class 1 — Explosives will not be accepted for carriage.	2;1 Table 3-1
JJ-02	Fuel products will not be accepted for carriage.	Table 3-1
JJ-03	The shipper's declaration for dangerous goods as defined in the IATA Dangerous Goods Regulations must include a 24-hour emergency response phone number.	5;4
JJ-04	The following maximum loading limits for radioactive material will be applied: — Fokker 100 — 3 TI per hold; — Airbus 319/320/330 — 5 TI per hold.	7;2
JJ-05	Material safety data sheets (MSDS) must be provided for all dangerous goods classes, except for carbon dioxide, solid (dry ice). The MSDS may be written in Portuguese, Spanish or English. The MSDS must include the UN number, proper shipping name and all other relevant transport information. This variation applies to domestic and international flights.	5;4
JJ-06	Diagnostic specimens will be accepted only if the shipper complies with the following requirements:	2;6 Table 3-1

	Identifying code	*Variation*	*Relevant paragraphs*
		— the shipper must provide a document complying with the classification on UN 3373; — the substances must be packed according to Packing Instruction 650.	
		JK — SPANAIR	
≠	JK-01	Not used.	
	JK-02	Dangerous goods in consolidations will not be accepted for carriage.	7;1
	JK-03	Infected animals (Division 6.2), dead or alive, are not accepted for carriage.	2;6 Table 3-1
≠	JK-04	Only radioactive material of Categories I-White and II-Yellow, as well as excepted packages of radioactive material, will be accepted.	2;7 Table 3-1
	JK-05	Wheelchairs with spillable batteries are not accepted for carriage on Spanair aircraft.	8;1
≠	JK-06	UN 3090 — Lithium batteries. Primary (non-rechargeable) lithium (metal) batteries and cells are prohibited from carriage as cargo. (See Packing Instruction 968.) This prohibition does not apply to: — UN 3091, UN 3480, UN 3481; — lithium batteries (rechargeable and non-rechargeable) covered by the provisions for dangerous goods carried by passengers or crew. (See Table 2.3.a of the IATA dangerous goods regulations).	Table 3-1 4;11 8;1
+	JK-07	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in case of an accident or incident concerning (each of) the dangerous goods being transported. This telephone number, including country and area code, preceded by the words "Emergency contact" must be inserted in the "Additional handling information" box on the shipper's declaration for dangerous goods (DGD). A 24-hour emergency telephone number is not required for shipments that do not require a DGD.	5;4
		JL — JAPAN AIR LINES	
	JL-01	Not used.	
	JL-02	Not used.	
	JL-03	Type B(M) or fissile material packages and/or any SCO or LSA materials in industrial packagings will not be accepted for carriage.	2;7 Table 3-1
	JL-04	Not used.	
	JL-05	No Type B(U) packages will be accepted for carriage on passenger aircraft.	2;7 Table 3-1
	JL-06	Magnetized material will not be carried aboard an aircraft if the net weight of the magnet itself exceeds: — 2 000 kg or 4 400 lb in one unit load device (ULD) on B747F or B747 aircraft; — 1 200 kg or 2 640 lb in one unit load device (ULD) on DC10 or MD11 aircraft; — 2 000 kg or 4 400 lb in one aircraft on B767 aircraft; — 2 000 kg or 4 400 lb in one aircraft on B777 aircraft; or — 600 kg or 1 320 lb in one aircraft on B-737 aircraft.	2;9 7;2
	JL-07	Not used.	
	JL-08	Division 6.1 — Toxic substances in Packing Group I will not be accepted for carriage.	2;6 Table 3-1
	JL-09	Dangerous goods in single packagings of UN specification "1A1 steel drums" will not be accepted unless overpacked with, for example, suitably-sized wooden pallets to protect at least the top and bottom of the packaging.	6;1

	Identifying code	Variation	Relevant paragraphs
	JL-10	Not used.	
≠	JL-11	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in the case of an accident or incident concerning each of the dangerous goods being transported. This telephone number, including the country and area code, preceded by the words “Emergency contact” or “24-hour number”, must be inserted on the shipper’s declaration for dangerous goods (DGD), preferably in the “Handling information” box, e.g. “Emergency contact +47 67 50 00 00”. (See 8.1.6.11 and 10.8.3.11 of the IATA Dangerous Goods Regulations.) A 24-hour emergency telephone number is not required for shipments that do not require a DGD.	5;4
		JP — ADRIA AIRWAYS	
	JP-01	Dangerous goods, as defined by these Instructions, will not be accepted for carriage on board Adria Airways Services, including shipments of dangerous goods in excepted quantities, radioactive material, excepted package shipments and shipments of carbon dioxide, solid (dry ice), even when used as a refrigerant for non-dangerous goods.	Table 3-1
		JQ — JETSTAR	
	JQ-01	All hazard labels must include text indicating the nature of the risk. This text must appear prominently in English in the lower half of the label as described in 7.2.2.4 of the IATA Dangerous Goods Regulations. If the State of Origin requires text in a language other than English, both languages are to be given equal prominence.	5;3
	JQ-02	Division 4.1 — Flammable solids. Passengers and crew are not permitted to bring book matches onto aircraft for personal use. Book matches are only allowed as correctly packed and declared dangerous goods consignments.	8;1
		JU — JAT — YUGOSLAV AIRLINES	
	JU-01	The import of dangerous goods waste for the purposes of temporary or permanent warehousing within the territory of Yugoslavia is forbidden.	
	JU-02	Permission of the Federal Secretariat for Internal Affairs is necessary for the transport of explosive materials to, from or through Yugoslavia.	
	JU-03	Permission of the Federal Ministry of Health with the consent of the Federal Secretariat for Internal Affairs is necessary for the transport of toxic agents to, from, through or over Yugoslavia.	
	JU-04	Permission of the Federal Ministry of Health with the consent of the Federal Secretariat for Internal Affairs is necessary for the transport of radioactive elements to, from or through Yugoslavia.	
	JU-05	Aircraft loaded only with dangerous goods may only overfly the territory of Yugoslavia with the permission of the Federal Ministry for Transport and Communications of Yugoslavia.	
		JW — SKIPPERS AVIATION	
	JW-01	All hazard labels must include text indicating the nature of the risk. This text must appear prominently in English in the lower half of the label as described in 7.2.2.4 of the IATA Dangerous Goods Regulations. If the State of Origin requires text in a language other than English, both languages are to be given equal prominence.	5;3.5
	JW-02	Division 4.1 — Flammable solids. Passengers and crew are not permitted to bring book matches onto aircraft for personal use. Book matches are only allowed as correctly packed and declared dangerous goods consignments.	8;1
≠	JW-03	Not used.	

	Identifying code	*Variation*	*Relevant paragraphs*
	JW-04	Division 5.2 — Organic peroxide. No substance required to bear an "Organic peroxide" hazard label will be accepted for carriage.	2;5 Table 3-1
		JX — JETT8 AIRLINES CARGO	
+	JX-01	Class 7 — Fissile material will not be accepted.	2;7
+	JX-02	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in case of an accident or incident concerning (each of) the dangerous goods being transported. This telephone number, including country and area code, preceded by the words "Emergency contact" or "24-hour number" must be inserted on the shipper's declaration for dangerous goods (DGD) preferably in the "Additional handling information" box, e.g. "Emergency contact +47 67 50 00 00". A 24-hour emergency telephone number is not required for shipments that do not require a DGD.	5;4
+	JX-03	Dangerous goods in excepted quantities will not be accepted. (See 2.7 of the IATA Dangerous Goods Regulations.)	3;5
+	JX-04	Dangerous goods in salvage packagings will not be accepted for carriage. (See 5.0.1.6, 6.0.7, 6.7.7.1.5, 7.2.3.11 of the IATA Dangerous Goods Regulations.)	4;1
		KA — HONG KONG DRAGON AIRLINES (DRAGONAIR)	
≠	KA-01	Not used.	
	KA-02	All combination packagings containing liquid dangerous goods in Packing Groups I, II or III must contain sufficient absorbent material to absorb the entire contents of all the inner packagings. (See 5.0.2.12.2 of the IATA Dangerous Goods Regulations.)	4;1
	KA-03	Dangerous goods packed in metal drums (1A1, 1A2, 1B1, 1B2, 1N1 and 1N2) and the following composite packagings (6HA1 and 6HB1) are not acceptable for carriage unless a strong overpack is used. (See 5.0.1.5 of the IATA Dangerous Goods Regulations.)	6;1
≠	KA-04	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in case of an accident or incident concerning (each of) the dangerous goods being transported. This telephone number, including country and area code, preceded by the words "Emergency contact" or "24-hour number" must be inserted on the shipper's declaration for dangerous goods (DGD) preferably in the "Additional handling information" box, e.g. "Emergency contact +47 67 50 00 00". A 24-hour emergency telephone is not required for shipments that do not require a DGD. *Note.— Contact for additional information or operator approval is:* Cargo Services Manager Standards and Performance Cargo Department 9/F South Tower, Cathay Pacific City Hong Kong International Airport HONG KONG Tel: +852-2747 7164 Fax: +852-2141 7164 Teletype: HDQDGCX E-mail: cgo#dgr@cathaypacific.com	5;4
+	KA-05	Not used.	
+	KA-06	Not used.	
+	KA-07	Not used.	

	Identifying code	Variation	Relevant paragraphs
		KE — KOREAN AIRLINES	
≠	KE-01	Dangerous goods in consolidations will not be accepted for carriage, except for the following shipments: — consolidations having one master air waybill with one house air waybill; — consolidations containing UN 1845 — Carbon dioxide, solid (dry ice) when used as a refrigerant.	7;1
	KE-02	Reservations must be made well in advance for any shipment containing dangerous goods as defined in these Instructions.	
	KE-03	Shipper's declarations for dangerous goods must be completed in English, with copies requested by KE but not less than two copies for each shipment. All package and overpack markings required by these Instructions must also be completed in English.	5;2.5 5;4
	KE-04	Not used.	
	KE-05	Radioactive Type B(M) packages will not be accepted for carriage.	2;7 Table 3-1
	KE-06	Dangerous goods, including "Dangerous goods in excepted quantity" and "Radioactive material in excepted package", will not be accepted for carriage on KE's passenger flights. The only exceptions are UN 3166, ID 8000, UN 1845 and UN 3373.	1;6 3;5
≠	KE-07	All liquid dangerous goods must comply with the following packaging requirements in addition to those specified in the packing instructions: — Single packaging using UN specification packaging is: — acceptable if it is a steel drum (1A1 or 1A2) or composite packaging — plastic receptacle with outer steel drum (6HA1); — acceptable if it is overpacked by a strong wooden crate. — Combination packaging using limited quantity packaging is: — acceptable if it is overpacked by a strong wooden crate.	4;1 6;1
>			
		KL — KLM, ROYAL DUTCH AIRLINES/KLM CITYHOPPER B.V.	
≠	KL-01	For Class 1 — Explosives, the shipper must obtain all authorizations required by the State(s) of origin, transit and destination. Written authorization is not required for Division 1.4S, with the exclusion of UN 0012, 0014, 0044, 0055, 0110, 0337, 0345, 0366, 0376 and 0481. Written authorization is required for these and all other Class 1 Explosives. Applications in writing must be submitted to: KLM Royal Dutch Airlines Dangerous Goods Competence Centre — SPL/KI P.O. Box 7700, 1117 ZL, Schiphol Airport THE NETHERLANDS Fax: +31 20 64 88271 E-mail: DGCC@KLMCargo.com Ammunition (UN 0012 and UN 0014) in checked baggage can be accepted under the provisions of 8;1.	2;1 Table 3-1 8;1
	KL-02	Class 7 — Radioactive material (including excepted packages) will not be accepted for transport and handling.	2;7 Table 3-1
	KL-03	Dangerous goods offered under State exemptions or approvals can be accepted provided a written authorization is granted by the Dangerous Goods Competence Centre — SPL/KI (see KL-01).	
		KQ — KENYA AIRWAYS	
	KQ-01	Dangerous goods in consolidations will not be accepted for carriage except for:	7;1

	Identifying code	*Variation*	*Relevant paragraphs*
		— ID 8000 — Consumer commodity; — UN 1845 — Carbon dioxide, solid or dry ice when used as a refrigerant for non-dangerous goods consignments.	
	KQ-02	Dangerous goods in excepted quantities will not be accepted for transport.	3;5
	KQ-03	Dangerous goods in airmail will not be accepted for transport.	1;2.3
	KQ-04	Dangerous goods shipments bearing toxic gas labels (Division 2.3) will not be accepted for carriage.	Table 3-1 5;3
	KQ-05	The shipper must provide a 24-hour emergency telephone number of a person that has knowledge of the hazards, characteristics and action to be taken in the event of an accident or incident concerning all dangerous goods being transported by air. The telephone number, which must include the country and area code, should be shown in the additional handling information box of the shipper's declaration for dangerous goods and on the package.	5;4
	KQ-06	Salvage packages will not be accepted for carriage.	4;1
	KQ-07	Interline transfer of dangerous goods will not be accepted unless a copy of the acceptance checklist accompanies the consignment together with the shipper's declaration for dangerous goods and the air waybill.	5;4 7;1
		KZ — NIPPON CARGO AIRLINES	
	KZ-01	Advance arrangements must be made for all shipments of dangerous goods as defined in these Instructions.	
	KZ-02	Any Type B package, Type C package, SCO or LSA materials in industrial packaging, packages containing uranium hexafluoride, and fissile material (including fissile-excepted) will not be accepted for all sectors. However, the following radioactive material which does not contain fissile-excepted will be accepted with the prior approval of the government of Japan, authorities of States concerned and the General Manager, Traffic Department, Nippon Cargo Airlines. UN 2916 — Radioactive material, Type B(U) package, non-fissile or fissile excepted.	2;7 Table 3-1 5;1
≠	KZ-03	Not used.	
≠	KZ-04	For UN 2807, Magnetized material, the net weight of the magnetized material (magnet itself) must be provided in the "Additional handling information" box of the shipper's declaration. The maximum net weight of the magnetized material (magnet itself) per package is limited to 2 000 kg. (See Packing Instruction 902.)	2;9 4;11 5;4
≠	KZ-05	Dangerous goods in consolidations will not be accepted for carriage except for the following shipments: — consolidated shipments/consolidations containing carbon dioxide, solid (dry ice) when used as a refrigerant for non-dangerous goods; — one master air waybill with one house air waybill; or — one master air waybill with more than one house air waybills which have the same shipper and different consignees.	7;1
	KZ-06	In the case of a transhipment, a photocopy of the shipper's declaration will not be accepted. Two copies of the shipper's declaration must be forwarded with the shipment.	5;4
	KZ-07	The following metal packagings without overpack are not acceptable for single and combination packaging: — 1A1/1A2/1B1/1B2/1N1/1N2 — 3A1/3A2/3B1/3B2.	6;1
	KZ-08	Dangerous goods in salvage packagings will not be accepted for carriage.	4;1

	Identifying code	Variation	Relevant paragraphs
+	KZ-09	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in case of an accident or incident concerning (each of) the dangerous goods being transported. This telephone number, including country and area code, preceded by the words “Emergency contact” or “24-hour number” must be inserted on the shipper’s declaration for dangerous goods (DGD) preferably in the “Additional handling information” box, e.g. “Emergency contact +47 67 50 00 00”. A 24-hour emergency telephone number is not required for shipments that do not require a DGD.	5;4
+	KZ-10	Dangerous Goods as defined in the IATA Dangerous Goods Regulations, including items exempted in subsection 2.4, will not be accepted in airmail.	1;2.3
+	KZ-11	For vehicles, machines or equipment with gasoline powered engines that have large capacity fuel tanks fitted, any remaining fuel must not exceed one quarter of the tank capacity, or 60 L, whichever is the lower quantity.	Table 3-1
≠		**LA — LAN AIRLINES** LA Variations apply to LAN Airlines and its affiliates.	
≠	LA-01	Dangerous goods offered for transport under an exemption as provided by 2.6.1 of the IATA Dangerous Goods Regulations will be accepted only after prior review and approval of the LAN Dangerous Goods Technical Committee. Any requirement regarding the granting of exemptions and approvals will be coordinated by the LAN Cargo Safety Department, which will refer any decision to the LAN Dangerous Goods Technical Committee. For additional information contact: LAN Cargo Safety Department Tel: +56-2-694 7684, +56-2-694 7608, +56-2-694 7758 Fax: +56-2-601 9119 E-mail: GrpSafCarga@lan.com	1;2.2
≠	LA-02	Dangerous goods consignments must be delivered early enough to allow sufficient time for the completion of the acceptance checks and document preparation. Shippers should contact the local LAN Cargo office to confirm the cutoff time.	
	LA-03	Not used.	
≠	LA-04	Not used.	
≠	LA-05	Oxygen generators, chemical, will only be accepted for carriage when the following conditions are met: — the oxygen generator must be in its original packaging, which has not been opened or damaged; and — the packaging or attached documentation must confirm that the oxygen generator has not passed its expiration date or been used.	4;1
≠	LA-06	Division 6.1 — Toxic substances or Division 2.3 — Toxic gases. The following requirements must be complied with: — Toxic substances of Division 6.1, Packing Group I, that are toxic by inhalation, will not be accepted for carriage unless a prior approval has been obtained (see LA-01). — Toxic gases of Division 2.3, will not be accepted for carriage unless a prior approval has been obtained (see LA-01) — When the substance to be carried has an inhalation, mist, powder or vapour hazard, the shipper's declaration must have the following endorsement in the “Additional handling information” box: “Mist, powder or vapour (as appropriate) inhalation hazard”. *Note 1.— This requirement only applies to the primary risk.* *Note 2.— Where the substance has more than one route of toxicity, the risk that determined the packing group must be used.*	2;3, 2;6 5;4 6;1

	Identifying code	*Variation*	*Relevant paragraphs*
		— Solid toxic substances of any kind will not be accepted for carriage in bags 5H2, 5H3, 5H4 or 5M2 as single packagings unless contained in a strong hot sealed polyethylene bag at least 200 microns thick. — If these types of packages are offered overpacked in a warehouse pallet, they will be accepted for carriage provided: — the warehouse pallet is rigid and strong enough to support the weight assembled on it, without bending when fork lifted; — the surface of the warehouse pallet is continuous, soft and free of sharp protruding points which could pierce the bags; and — the warehouse pallet is provided with separation bars from the floor for the use of a forklift.	
≠	LA-07	Infectious substances will be accepted under advance arrangement and the following requirements must be met: a) Documentation requirements. The shipper must prove by a document such as a fax, telex, letter, etc., that the infectious substance can legally enter the country of destination and has complied with all the requirements of the countries of origin and destination of the shipment. b) The shipper must attach a certificate duly signed and issued by a medical, scientific or other similar professional which confirms the classification of these specimens in the following case: — shipment of any patient specimens prepared according 3.6.2.2.3. c) Prohibitions. Infected animals, dead (whole bodies) or alive will not be accepted for carriage.	2;6 5;4
≠	LA-08	Transport of batteries will be subject to prior arrangement to ensure that the following requirements are complied with: a) Batteries, wet, filled with corrosive liquid electrolyte, will only be accepted as cargo aircraft only (CAO), and in addition to the requirements of Packing Instruction 800, each battery must be individually packed with absorbent and cushioning material. The absorbent and cushioning material must not react with the liquid electrolyte. The only exceptions to a) above are: — vehicles as provided in LA-10; — batteries shipped as “company material” belonging to the LAN Airlines and its affiliates; and — batteries shipped as part of a passenger's battery-powered wheelchair or mobility aid. b) Special Provision A67, applicable to “Batteries, wet, non-spillable” will apply only to new batteries that meet the following requirements: — documentation must be attached to the shipment to certify that the batteries are new and that they meet the requirements of Special Provision A67; and — the battery terminals must be insulated or otherwise protected from short-circuit.	2;2 3;3 4;1, 4;10 5;4
≠	LA-09	Mercury will be accepted for carriage, provided the following requirements are met: — acceptance will be subject to cargo aircraft only; — only combination packages will be accepted; — inner packagings must be IP2 — plastic, or iron steel “quicksilver” flasks. IP1 and IP8 inner packagings must not be used; — outer packaging fibre drums (1G) or fibreboard boxes (4G) must not be used; — outer packagings must have a strong inner lining, be puncture-resistant, leakproof and impervious to mercury and must meet the requirements for Packing Group I;	1;6 Table 3-1

	Identifying code	Variation	Relevant paragraphs
		— each package must not exceed 1 L;	
≠	LA-10	Acceptance of vehicles such as automobiles, self-propelled vehicles and other related articles is subject to the following conditions: — the fuel tank must be drained and securely closed; and — batteries filled with liquid corrosive electrolyte will only be accepted in a vehicle that is unlikely to be carried in other than the upright position.	
≠	LA-11	Where there is any doubt regarding the classification of a substance, the shipper must provide, upon request, LAN Airlines with a copy of the material safety data sheet for the substance, or a declaration on company letterhead confirming the classification.	5;4
≠	LA-12	Dangerous goods in excepted quantities will only be accepted under advance arrangement. Please contact the local LAN Cargo Office.	3;5
≠	LA-13	Not used.	
≠	LA-14	The marking required by 7.1.5 of the IATA Dangerous Goods Regulations and application of hazard and handling labels on packages containing dangerous goods must not be applied to the top or bottom of the packages. These markings and labels must be applied to the sides of packages. This requirement does not apply to marking of the full name and address of the shipper and consignee.	5;2
+	LA-15	LAN Airlines will not accept for carriage fissile material as defined in 10.3.7 of the IATA Dangerous Goods Regulations.	2;7 Table 3-1
		LD — AIR HONG KONG	
≠	LD-01	Not used.	
+	LD-02	All combination packagings containing liquid dangerous goods in Packing Groups I, II or III must contain sufficient absorbent material to absorb the entire contents of all the inner packagings. (See. 5.0.2.12.2 of the IATA Dangerous Goods Regulations.)	4;1
+	LD-03	Dangerous goods packed in metal drums (1A1, 1A2, 1B1, 1B2, 1N1 and 1N2) and the following composite packagings (6HA1 and 6HB1) are not acceptable for carriage unless a strong overpack is used. (See. 5.0.1.5 of the IATA Dangerous Goods Regulations.)	6;1
+	LD-04	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in case of an accident or incident concerning (each of) the dangerous goods being transported. This telephone number, including country and area code, preceded by the words “Emergency contact” or “24-hour number” must be inserted on the shipper’s declaration for dangerous goods (DGD) preferably in the “Additional handling information” box, e.g. “Emergency contact +47 67 50 00 00”. A 24-hour emergency telephone number is not required for shipments that do not require a DGD. *Note.— Contact for additional information or operator approval is:* Manager Cargo Services 4/F South Tower, Cathay Pacific City Hong Kong International Airport HONG KONG Tel: +852-2761 8447 Fax: +852-2761 8586 Teletype: HDQFZLD E-mail: edwick.wong@airhongkong.com.hk	5;4
		LG — LUXAIR	
	LG-01	Class 7 — Fissile radioactive material will not be accepted for carriage on passenger aircraft.	2;7 Table 3-1

	Identifying code	*Variation*	*Relevant paragraphs*
	LG-02	Radioactive material is accepted for carriage on passenger aircraft with a maximum transport index (TI) of two per aircraft. (See 9.3.10.3 and 10.5.17 of the IATA Dangerous Goods Regulations.) Radioactive material is forbidden on Embraer and DHC8-400 aircraft with the exception of UN 2908, UN 2910 and UN 2911 (Radioactive material, excepted packages).	2;7 Table 3-1 5;1 7;2
		LH — DEUTSCHE LUFTHANSA/LUFTHANSA CARGO AG	
	LH-01	Dangerous goods in "limited quantities" (packing instructions "Y") will not be accepted for carriage.	3;4
	LH-02	Dangerous goods in consolidations will not be accepted for carriage, except for the following shipments: — consolidations containing UN 1845, Carbon dioxide, solid (dry ice) when used as a refrigerant; — consolidations with only one house air waybill; — consolidations with more than one house air waybill, in case of identical shipper.	7;1
≠	LH-03	UN 3373 will not be accepted in airmail.	1;2.3
≠	LH-04	Oxygen generators will not be accepted.	Table 3-1
≠	LH-05	Biological substance, Category B (UN 3373), will not be accepted.	Table 3-1
≠	LH-06	Fissile material will not be accepted.	Table 3-1
	LH-07	Not used.	
	LH-08	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in case of an accident or incident concerning (each of) the dangerous goods being transported. This telephone number, including the country and area code, preceded by the words Emergency contact or 24-hour number must be inserted on the shipper's declaration for dangerous goods (DGD) preferably in the "Handling information" box, e.g. "Emergency contact +47 67 50 00 00". A 24-hour emergency telephone number is not required for shipments that do not require a DGD.	5;4
	LH-09	Not used.	
≠	LH-10	Not used.	
	LH-11	Not used.	
≠	LH-12	Not used.	
≠	LH-13	Not used.	
		LX — SWISS INTERNATIONAL	
	LX-01	The following Class 7 articles or substances will not be accepted for carriage: UN 2919 — Radioactive material, transported under special arrangement), non-fissile or fissile excepted UN 2977 — Radioactive material, uranium hexafluoride, fissile UN 3321 — Radioactive material, low specific activity (LSA-II), non-fissile or fissile excepted UN 3322 — Radioactive material, low specific activity (LSA-III), non-fissile or fissile excepted UN 3324 — Radioactive material, low specific activity (LSA-II), fissile UN 3325 — Radioactive material, low specific activity (LSA-III), fissile UN 3326 — Radioactive material, surface contaminated objects (SCO-I or SCO-II), fissile UN 3327 — Radioactive material, Type A package, fissile UN 3328 — Radioactive material, Type B(U) package, fissile	2;7 Table 3-1

	Identifying code	Variation	Relevant paragraphs
		UN 3329 — Radioactive material, Type B(M) package, fissile UN 3330 — Radioactive material, Type C package, fissile UN 3331 — Radioactive material, transported under special arrangement, fissile UN 3333 — Radioactive material, Type A package, special form, fissile.	
	LX-02	"Dangerous goods in limited quantities" (packing instructions "Y") will not be accepted for carriage.	3;4
	LX-03	Mercurial barometers or thermometers will not be accepted for carriage in baggage, except a small medical or clinical thermometer for personal use when in its protective case.	8;1
	LX-04	Used camping stoves (fuel or gas) will not be accepted for carriage in baggage, even if thoroughly cleaned.	8;1
+	LX-05	The shipper must provide a 24-hour emergency telephone number of a person who is knowledgeable of the hazards, characteristics and actions to be taken in the case of an accident or incident. The telephone number must include the country and area code and preceded by the words "Emergency contact" or "24-hour number" and must be inserted on the shipper's declaration for dangerous goods, preferably in the "Handling information" box. A 24-hour emergency telephone is not required for shipments that do not require a shipper's declaration for dangerous goods.	5;4
		LY — EL AL ISRAEL AIRLINES	
≠	LY-01	No dangerous goods will be accepted as part of a consolidated air waybill and the following endorsement is required in the "Nature and quantity of goods" box: "Consolidation — shipment does not contain dangerous goods".	5;4
≠	LY-02	Not used.	
≠	LY-03	Not used.	
≠	LY-04	Dangerous goods not acceptable on El Al passenger aircraft: Class 1 — Explosives Except: Those explosives in Division 1.4S permitted by the IATA Dangerous Goods Regulations. Class 2 Division 2.1 — Flammable gas Division 2.2 — Non-flammable, non-toxic gas Division 2.3 — Toxic gas Except: — Fire extinguishers, UN 1044; — Oxygen compressed, UN 1072, Division 2.2 with subsidiary risk Division 5.1, as spare parts prior/after use of oxygen supply for passengers requiring medical attention may be carried on passenger aircraft provided the article is packed in specially designed container, part no. 24303 and part no. 9353103; — Compressed gas, n.o.s. — UN 1956. Class 3 — Flammable liquids Except: Perfumery products, UN 1266, packed according to Packing Instruction 305, Packing Group II or packed according to Packing Instruction 309, Packing Group III may be carried on Boeing 747, Boeing 767 and Boeing 777 passenger aircraft, provided the products are palletized in a maximum of two pallets per aircraft (only one pallet per compartment). Class 4 Division 4.1 — Flammable solids Division 4.2 — Spontaneously combustible Division 4.3 — Dangerous when wet Class 5 Division 5.1 — Oxidizing substances Division 5.2 — Organic peroxides	Table 3-1 7;1, 7;2

	Identifying code	*Variation*	*Relevant paragraphs*
		Class 6 Division 6.1 — Toxic substances, Packing Group I and/or II Except: 1) Medicine, liquid, toxic, n.o.s.,* UN 1851. 2) Medicine, solid, toxic, n.o.s.,* UN 3249. 3) Toxic substances, without a subsidiary risk, Packing Group III.	
		Class 9 — Miscellaneous dangerous goods Except: 1) Life-saving appliance, self-inflating, UN 2990. 2) Consumer commodity, ID 8000, Packing Instruction 910, prepared according to the IATA Dangerous Goods Regulations. 3) Battery-powered vehicle or Battery-powered equipment, UN 3171, engines, internal combustion, vehicle flammable gas powered or vehicle flammable liquid powered, UN 3166, may be carried on passenger aircraft, provided the standard precautions for carriage include defuelling so that the fuel and/or diesel engines have no more than one quarter tank of fuel. 4) Shipments of crated self-propelled vehicles and equipment such as cars, motorcycles and lawnmowers must be carried as per the following regulations: — loading in an upright position; — retaining up to one quarter tank of gasoline or diesel. 5) Engine internal combustion, UN 3166 — jet engines must be totally defuelled and the air waybill must show the following mandatory shipper statement: "We hereby declare that the engines have been defuelled completely and no evidence of leakage of fuel and oil are shown." *Note.— Shippers wishing to ship crated items mentioned above must be advised of El Al requirements and be requested to state on the air waybill that "El Al regulations have been complied with."* 6) Magnetized material, UN 2807. 7) Carbon dioxide, solid (dry ice), UN 1845, not more than 200 kg per hold and not more than 400 kg in the lower deck.	
≠	LY-05	Dangerous goods not acceptable on El Al cargo aircraft: Class 2, Division 2.3 — Toxic gas. Class 6, Division 6.1 — Toxic substances, liquids having a vapour inhalation toxicity of Packing Group I.	Table 3-1
		MA — MALEV HUNGARIAN AIRLINES	
	MA-01	Material safety data sheets (MSDS) are required for dangerous goods belonging to Division 6.1, Toxic substances, whether in export, import or transit.	
	MA-02	Mercurial barometers or thermometers will not be accepted for carriage in baggage, except a small medical or clinical thermometer for personal use when in its protective case.	8;1
	MA-03	Wheelchairs or other battery-powered mobility devices with spillable batteries will not be accepted for carriage as checked baggage.	8;1
	MA-04	Passengers and crew are not permitted to bring book matches onto aircraft for personal use. Book matches are only allowed as correctly packed and declared dangerous goods consignments.	8;1
	MA-05	Used camping stoves (fuel or gas) will not be accepted for carriage in baggage, even if thoroughly cleaned.	8;1

	Identifying code	Variation	Relevant paragraphs
+		**MD — AIR MADAGASCAR**	
+	MD-01	Fissile material, as defined in the IATA Dangerous Goods Regulations, will not be accepted for carriage.	2;7 Table 3-1
+	MD-02	Radioactive material of categories I-White, II-Yellow and III-Yellow will be accepted on board Air Madagascar long-haul flights provided the following conditions are complied with: a) the radioactive material must be used in analysis for medical purposes with direct relation to human health or for medical diagnostic and medical research; b) the total transport index (TI) in a group of packages or in one package must not exceed 3.0; c) prior approval of the Civil Aviation Authority and Air Madagascar Regulation Department has been obtained.	Table 3-1 5;1
+	MD-03	Class 7 — Radioactive materials of any kind will not be accepted for carriage on Air Madagascar domestic flights.	2;7 Table 3-1
+	MD-04	Class 1 — Explosives. Shippers must obtain prior approval from the Civil Aviation Authority and the Air Madagascar regulation department for all explosives transported to and through Madagascar. The request must be submitted at least five working days prior to shipment.	2;1
+	MD-05	Fireworks will not be accepted for carriage.	Table 3-1
		ME — MIDDLE EAST AIRLINES	
	ME-01	Dangerous goods in excepted quantities will not be accepted for carriage.	3;5
	ME-02	Dangerous goods in consolidations will not be accepted for carriage.	7;1
	ME-03	Advance arrangements must be made for all shipments containing dangerous goods as defined in these Instructions.	
	ME-04	Cars and crated self-propelled vehicles or battery-powered equipment or other machines incorporating internal combustion engines may be carried provided the standard precautions include the following: — complete defuelling, except cars, which may retain up to one quarter of the tank capacity; — disconnecting the battery leads; — insulating the battery terminals.	4;11
	ME-05	Dangerous goods in salvage packaging will not be accepted for carriage.	4;1
	ME-06	Hazardous waste, as defined by any regulation of the IATA Dangerous Goods Regulations, will not be accepted for carriage.	
	ME-07	Oxygen generator, chemical, UN 3356, Oxidizing solid, n.o.s.*, UN 1479, Flammable solid, organic, n.o.s.*, UN 1325 or any oxygen generator containing any of the following substances will not be accepted for carriage (see packing instructions [–] listed after each substance): UN 1449 — Barium peroxide [509, Y509, 512] UN 1489 — Potassium perchlorate [508, Y508, 511] UN 1491 — Potassium peroxide [512] UN 1495 — Sodium chlorate [509, Y509, 512] UN 1504 — Sodium peroxide [512] UN 2466 — Potassium superoxide [512] UN 2547 — Sodium superoxide [512]. Also carriage of oxygen generators containing substances such as iron powder, iron dust, silicon dioxide and manganese dioxide which do not have specific proper shipping names are prohibited.	Table 3-1 4;7
	ME-08	Not used.	

	Identifying code	*Variation*	*Relevant paragraphs*
	ME-09	Package orientation (This Way Up) labels must be used on any combination and single packaging containing dangerous goods.	5;3
		MH — MALAYSIA AIRLINES	
≠	MH-01	Advance arrangements must be made for all shipments of dangerous goods as defined in the IATA Dangerous Goods Regulations. Dangerous goods without bookings will be rejected. *Note.— All dangerous goods in liquid form when transported on narrow-body aircraft, e.g. B737, must be packed in combination packagings. Single packagings are not permitted.*	
	MH-02	Dangerous goods including infectious substances, biological products and radioactive material are not accepted for carriage in mail.	1;2.3
	MH-03	Salvage packaging will not be accepted.	4;1
	MH-04	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in the case of an accident or incident concerning each of the dangerous goods being transported. This telephone number, including the country and area code, preceded by the words “Emergency contact” or “24-hour number”, must be inserted in the “Additional handling information” box of the DGD. A 24-hour emergency telephone number is not required for shipments that do not require a shipper's declaration for dangerous goods.	5;4
	MH-05	Dangerous goods in consolidations will not be accepted for carriage except for the following shipments: — consolidated shipments/consolidations containing carbon dioxide, solid (dry ice) when used as a refrigerant; — one master air waybill with one house air waybill; or — one master air waybill with more than one house air waybill from the same shipper and different consignees.	7;1
	MH-06	Dangerous goods in excepted quantities will not be accepted for carriage.	3;5
	MH-07	All dangerous goods must be secured to prevent movement and damage.	4;1 7;2
	MH-08	UN 2803 — Gallium will not be carried under any circumstances.	Table 3-1
	MH-09	UN 2211 — Polymeric beads, expandable, will not be accepted for carriage.	Table 3-1
	MH-10	Class 8 — Corrosive materials (Packing Groups I and II) will not be accepted for carriage.	2;8 Table 3-1
	MH-11	Explosives will not be accepted for carriage, except substances and articles of Division 1.4S.	2;1 Table 3-1
	MH-12	UN 3166 — Engines, internal combustion and vehicle flammable liquid powered: if not able to be handled in other than an upright position, all fluids must be drained and the battery removed, e.g. motorcycles, lawnmowers, outboard motors and other vehicles, machines or equipment.	Table 3-1 4;11
	MH-13	Material safety data sheets (MSDS) must be provided for dangerous goods except for dangerous goods in Class 7; vehicles; dangerous goods in apparatus or machinery and engines; ID 8000; magnetized material; carbon dioxide, solid (dry ice) and Division 6.2. The MSDS must be written in English. The MSDS must include the UN number, proper shipping name and other relevant transport information.	5;4
	MH-14	Dangerous goods in limited quantities (“Y” packing instructions) will not be accepted.	3;4
	MH-15	Radioactive material in Type A packages will be accepted for carriage on passenger aircraft subject to the limitations of MH-18.	2;7 Table 3-1

	Identifying code	*Variation*	*Relevant paragraphs*
	MH-16	Radioactive material in Type B(U), Type B(M) and Type C packages will only be accepted for carriage on cargo aircraft.	2;7
	MH-17	Class 7 — Fissile radioactive material will not be accepted.	2;7 Table 3-1
	MH-18	The carriage of Class 7 — Radioactive material is subject to the following limitations: — maximum of 3.0 TI per package on passenger aircraft; — maximum 3.0 total sum of TI per narrow-body passenger aircraft; — maximum 25.0 total sum of TI per wide-body passenger aircraft; and — maximum 50.0 total sum of TI per cargo aircraft.	2;7 7;2
		MK — AIR MAURITIUS	
	MK-01	Class 7 — Radioactive material of categories White–I, Yellow–II and Yellow–III will be accepted for carriage provided the following conditions are complied with: — the radioactive material must be for medical diagnosis or medical research or treatment; or — to be used in analysis for medical purposes with direct relation to human health; and — the total transport index (TI) in one package or in group of packages must not exceed 3.0. The shipper's declaration accompanying each shipment of radioactive material of categories White–I, Yellow–II or Yellow–III must show the following endorsement: "This radioactive material is intended for use in, or incidental to, medical research, diagnosis or treatment".	5;1, 5;4
	MK-02	Fireworks will not be accepted for carriage.	Table 3-1
≠	MK-03	Class 1 — Explosives will not be accepted for carriage, with the exception of explosives in Division 1.4S, UN 0012 and UN 0014, packed for passenger aircraft.	2;1 Table 3-1
	MK-04	Dangerous goods in excepted quantities will not be accepted for carriage.	3;5
	MK-05	Shipper's declarations must be in English and typewritten or computer-generated. Handwritten forms will not be accepted.	5;4
	MK-06	Dangerous goods in limited quantities ("Y" packing instructions) will only be accepted for carriage under advance arrangement with the local MK Cargo Office.	3;4
+	MK-07	Infectious substances and biological products will not be accepted for carriage in airmail.	1;2.3 2;6
+	MK-08	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in case of an accident or incident concerning (each of) the dangerous goods being transported. This telephone number, including country and area code, preceded by the words "Emergency contact" or "24-hour number" must be inserted on the shipper's declaration for dangerous goods (DGD) preferably in the "Additional handling information" box.	5;4
+	MK-09	The telephone number of the consignee must be shown on the air waybill.	5;4
+	MK-10	All hazard labels must include text indicating the nature of the risk. This text must appear prominently in English in the lower half of the label in addition to the class or division number or compatibility group as described in 7.2.2.4 of the IATA Dangerous Goods Regulations. This will be mandatory as from January 2010.	5;3
+	MK-11	Single packagings are not acceptable for liquids of concentrates or essences with strongly irritating or smelling properties unless in sturdy, leakproof supplementary packaging forming an overpack for each single packaging used. The overpack must meet the marking, labelling and documentary requirements for an overpack and must bear orientation labels.	4;1 5;1, 5;2, 5;3
+	MK-12	Dangerous goods in single packagings of UN specification 1A1, steel drums and 3A1, steel jerricans will not be accepted unless overpacked with, for example, suitably-sized wooden pallets to protect at least the top and bottom of the packaging.	6;1

	Identifying code	Variation	Relevant paragraphs
		MN — COMAIR PTY	
	MN-01	Dangerous goods, as defined by these regulations, will not be accepted for carriage, with the exception of those permitted for passengers and crew.	8;1
	MN-02	Oxygen or air. Small cylinders containing gaseous oxygen or air required for medical use are not permitted in passenger checked or carry-on baggage. Should a passenger require supplementary oxygen, this will be provided by the operator at a cost.	8;1
	MN-03	Non-infectious human blood samples classified as UN 3373 will be accepted for transportation provided they are accompanied by a doctor's letter. This is outside the company policy as specified in MN-01	2;6 Table 3-1
		MP — MARTINAIR HOLLAND	
	MP-01	Not used.	
	MP-02	Salvage packagings will not be accepted for carriage.	4;1
≠	MP-03	When a shipper's declaration is required, three (3) original copies (no photocopies) must be provided with each shipment. If a shipment is transferred to MP by another operator, then two (2) originals must accompany the air waybill.	5;4
≠	MP-04	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in the case of an accident or incident concerning each of the dangerous goods being transported. This telephone number, including the country and area code, preceded by wording indicating 24-hour availability must be inserted on the DGD.	5;4
+	MP-05	Class 7 — Radioactive materials, with the exception of UN 2908, UN 2909, UN 2910 and UN 2911, are not accepted for carriage.	2;7 Table 3-1
		MS — EGYPTAIR	
	MS-01	The transport of dangerous goods on Egyptair must comply with the following: — the name, address and telephone number of the consignee must be written in full on the air waybill and on the package(s); — the shipper of any dangerous goods must provide a written undertaking to re-ship the consignment at the shipper's cost and risk if the consignment is not cleared, or received by the consignee, within fifteen (15) working days from the arrival of the consignment.	5;4
	MS-02	Dangerous goods in excepted quantities originating in Egypt will not be accepted.	3;5
	MS-03	Infected animals, dead or alive, will not be accepted.	2;6 Table 3-1
		MU — CHINA EASTERN AIRLINES	
	MU-01	Fissile material will not be accepted.	7;1 Table 3-1
	MU-02	Dangerous goods in consolidations will not be accepted, except for: — consolidations containing UN 1845, Carbon dioxide, solid (dry ice) when used as a refrigerant; — consolidations with only one house air waybill.	7;1
	MU-03	Dangerous goods in airmail originating from China will not be accepted for carriage.	1;2.3
	MU-04	Fireworks originating from China will not be accepted for carriage.	Table 3-1
	MU-05	Small gaseous oxygen or air cylinders required for medical use are not permitted in passenger checked or carry-on baggage. Should a passenger require supplementary oxygen, a prior request must be made to China Eastern Airlines.	8;1

	Identifying code	*Variation*	*Relevant paragraphs*
		MX — MEXICANA AIRLINES	
	MX-01	Other than Cartridges for small arms, UN 0012, and Cartridges for weapons, blank, UN 0014 (and Cartridges, power device, UN 0323, as COMAT), Class 1 — Explosives will not be accepted for carriage.	2;1 Table 3-1
	MX-02	Class 2 — Gases will not be accepted for carriage, except nitrogen refrigerated liquid when used as refrigerant for medical shipments (exception: COMAT parts and supplies).	2;2 Table 3-1
	MX-03	Class 3 — Flammable liquids will not be accepted for carriage, except when included in first aid kits (exception: COMAT parts and supplies).	2;3 Table 3-1
	MX-04	Class 4 — Flammable solids will not be accepted for carriage.	2;4 Table 3-1
	MX-05	Class 5 — Oxidizer and organic peroxides will not be accepted for carriage.	2;5 Table 3-1
	MX-06	Class 6 — Toxic substances of Division 6.1 will not be accepted for carriage. Infectious substances of Division 6.2 will not be accepted for carriage, except when they are used for medical purposes.	2;6 Table 3-1
	MX-07	Class 7 — Radioactive material of Categories I, II and III will be accepted for carriage, provided the following conditions are complied with: — the radioactive material must be for medical diagnosis, or medical research or treatment; or — to be used in analysis for medical purposes with direct relation to human health; and — the total transport index (TI) in one package or in a group of packages must not exceed 3.0. The shipper's declaration accompanying each shipment of radioactive material of Categories I, II or III must show the following endorsement: “This radioactive material is intended for use in, or incidental to, research or medical diagnosis or treatment.”	2;7 Table 3-1 5;4
	MX-08	Except for batteries when part of a battery-powered wheelchair or mobility aid, Class 8, Corrosives, will not be accepted (exception: COMAT parts and supplies).	2;8 Table 3-1
	MX-09	Class 9 — Commodities pertaining to this class will not be accepted for carriage, with the exception of the following products (exception: COMAT parts and supplies): — consumer commodities; — carbon dioxide, solid (dry ice); — magnetized material; and — engines internal combustion.	2;9 Table 3-1
	MX-10	An emergency response contact number provided by the shipper must be inserted in the “Additional handling information” box of the shipper's declaration for dangerous goods. This number must include the country and area codes.	5;4
	MX-11	Infected animals, dead or alive, will not be accepted for carriage.	2;6 Table 3-1
	MX-12	Dangerous goods in excepted quantities will not be accepted for carriage.	3;5
		NG — LAUDA AIR LUFTFAHRT AG	
	NG-01	Booking and confirmation are required for all dangerous goods shipments as defined in the IATA Dangerous Goods Regulations.	
		NH — ALL NIPPON AIRWAYS	
	NH-01	Advance arrangements must be made for all shipments of dangerous goods as defined in these Instructions.	
≠	NH-02	Radioactive material will not be accepted for carriage unless the radioactive material is intended for use in, or incidental to, research or medical diagnosis or treatment, and shipment approval confirming such purposes has been obtained.	2;7 Table 3-1

	Identifying code	Variation	Relevant paragraphs
≠	NH-03	Type B(U), Type B(M), Type C, fissile material packages, SCO and LSA material in industrial packagings will not be accepted for carriage.	2;7 5;1.1
≠	NH-04	Dangerous goods in consolidations will not be accepted for carriage except for the following shipments: — consolidations having one master air waybill with one house air waybill; — consolidations containing UN 1845 — Carbon dioxide, solid (dry ice) when used as a refrigerant; — consolidations containing dangerous goods in excepted quantities and/or radioactive material, excepted package.	7;1
≠	NH-05	Dangerous goods in salvage packagings will not be accepted for carriage.	4;1
≠	NH-06	Dangerous goods packed in single metal packagings (1A1, 1A2, 1B1, 1B2, 3A1, 3A2, 3B1 and 3B2) are not acceptable for carriage unless an overpack is used.	6;1
		NW — NORTHWEST AIRLINES	
	NW-01	Commercially offered dangerous goods shipments may be accepted by Northwest Airlines Cargo except as noted in NW-02. All dangerous goods shipments require advance arrangements and are subject to route (origin and destination) restrictions. Some routes may require ground transportation on a portion of the routing. For a list of all approved routes, see www.cargo.nwa.com.	
	NW-02	Shipments bearing a toxic gas label (Division 2.3) will not be accepted for carriage under any circumstances.	Table 3-1 5;3.
	NW-03	All packed in one (APIO) packages containing both a “hydroxide” and an “acid” in the proper shipping name or technical name must be accompanied by the following, signed, statement of safety from the shipper: This shipment complies with 5.0.2.11. The acid and hydroxide, if mixed, will not react dangerously. This statement must appear in the “Additional handling information” area of the shipper’s declaration for dangerous goods and be signed by the same person who signs the completed shipper’s declaration.	Table 3-1 5;4
	NW-04	Dangerous goods packages marked, labelled and in quantities acceptable on both passenger and cargo aircraft must not be included on the same shipper’s declaration for dangerous goods as “cargo aircraft only” dangerous goods. Separate shipper’s declarations must be provided even though they may be part of the same consignment.	5;4
+	NW-05	Dangerous goods packaged as an all packed in one (APIO) contained within an overpack will not be accepted.	
≠	NW-06	UN 3090 — Lithium batteries. Primary (non-rechargeable) lithium (metal) batteries and cells are prohibited from carriage as cargo unless consigned as cargo aircraft only (CAO) consignments. (See Packing Instruction 968.) This prohibition does not apply to: — UN 3091, UN 3480, UN 3481; — lithium batteries (rechargeable and non-rechargeable) covered by the provisions for dangerous goods carried by passengers or crew. (See Table 2.3.A of the IATA Dangerous Goods Regulations.)	Table 3-1 4;11 8;1
		NZ — AIR NEW ZEALAND	
	NZ-01	Passengers and crew are not permitted to bring book matches onto aircraft for personal use. Book matches are only allowed as correctly packed and declared dangerous goods consignments.	8;1

	Identifying code	Variation	Relevant paragraphs
		OK — CZECH AIRLINES	
	OK-01	Dangerous goods as defined in these Instructions will not be accepted in airmail.	1;2.3
	OK-02	Not used.	
	OK-03	Fissile radioactive material will not be accepted for carriage.	2;7 Table 3-1
≠	OK-04	Liquid dangerous goods packed in single metal packagings (1A1, 1A2, 1B1, 1B2) will not be accepted unless safely overpacked to protect the base of the packaging. (See 5.0.1.5 of the IATA Dangerous Goods Regulations.)	4;1 6;1
≠	OK-05	Small oxygen cylinders containing gaseous oxygen or air required for medical use are not permitted on the person or in checked or carry-on baggage. Czech Airlines provides oxygen cylinders at the request of passengers at the time of booking, but at least 48 hours in advance.	8;1
		OO — SKYWEST AIRLINES	
	OO-01	Commercial shipments of dangerous goods are limited only to UN 3373 — Category B infectious substances. UN 3373 will be accepted subject to the following criteria: — appropriate dry ice packaging requirements are followed; — each package must be labelled that DRY ICE is present; — maximum quantity per package must not exceed 4 kg for solids and 4 L for liquids.	2;6 Table 3-1 4;11
		OS — AUSTRIAN AIRLINES	
	OS-01	Booking and confirmation is required for all dangerous goods shipments as defined in these Instructions.	
	OS-02	Wheelchairs or other battery-powered mobility devices with spillable batteries will not be accepted for carriage as checked or carry-on baggage.	8;1
+	OS-03	Not used.	
+	OS-04	Infectious substances, UN 2814, UN 2900 and UN 3373, will not be accepted in airmail.	1;2.3 Table 3-1
		OU — CROATIA AIRLINES	
	OU-01	Advance arrangements must be made for all shipments of dangerous goods as defined in the IATA Dangerous Goods Regulations. (See 1.3.2 and 9.1.1.)	
	OU-02	Small gaseous oxygen or air cylinders required for medical use will only be accepted empty as checked baggage. Should a passenger require supplementary oxygen, this will be provided by the operator at a cost with prior arrangements. (See 2.3.4.1 of the IATA Dangerous Goods Regulations.)	8;1
	OU-03	Wheelchairs or other battery-powered mobility devices with spillable batteries will not be accepted for carriage. (See 2.3.2.4 and 9.3.15 of the IATA Dangerous Goods Regulations.)	8;1
	OU-04	Dangerous goods in “limited quantities“ (“Y“ packing instructions) will not be accepted for carriage. (See 2.8 of the IATA Dangerous Goods Regulations and all Y packing instructions.)	3;4
	OU-05	Dangerous goods in excepted quantities will not be accepted for carriage. (See 2.7 of the IATA Dangerous Goods Regulations.)	3;5
	OU-06	Biological substances, Category B (UN 3373), will not be accepted in airmail.	1;2.3 Table 3-1
	OU-07	Oxygen generators will not be accepted.	Table 3-1
	OU-08	Salvage packagings will not be accepted.	4;1

	Identifying code	*Variation*	*Relevant paragraphs*
	OU-09	Class 7 — Fissile radioactive materials will not be accepted.	2;7 Table 3-1
	OU-10	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in the case of an accident or incident concerning each of the dangerous goods being transported. This telephone number, including the country and area code, preceded by the words "Emergency contact" or "24-hour number" must be inserted in the Additional handling information box on the DGD. (See 8.1.6.11 or 10.8.3.11 of the IATA Dangerous Goods Regulations.)	5;4
	OU-11	Explosives will not be accepted for carriage, except substances and articles of Division 1.4S. (See 5.1 of the Dangerous Goods Regulations.)	2;1 Table 3-1
	OU-12	Infected animals, dead or alive, will not be accepted for carriage.	2;6 Table 3-1
	OU-13	Dangerous goods are not accepted on ATR-42 type of aircraft, except dry ice in limited quantities as a refrigerant for perishable goods.	7;1, 7;2
	OU-14	Dangerous goods in consolidations will not be accepted for carriage, except for UN 1845, Carbon dioxide, solid (dry ice) when used as a refrigerant. (See 8.1.2.4 of the IATA Dangerous Goods Regulations.)	7;1, 7;2
	OU-15	Self-inflating rafts, aircraft survival kits, or evacuation slides, are limited to not more than one per aircraft, packed in accordance with Packing Instruction 905.	4;11
	OU-16	Biological substances Category B, UN 3373 (human or animal) will only be accepted if assigned to UN 2814 or UN 2900 as appropriate. *Note.— Biological substances, Category B (UN 3373), are not permitted for transport in checked or carry-on baggage and must not be carried on a person.* The only exceptions to this variation are: — any tissues or organs intended for use in human or animal transplantation; — pathogen-free blood or blood components collected for transfusion or for the preparation of blood to be used for human or animal transfusion or transplantation. In these cases, the air waybill must bear a detailed description to enable identification as non-regulated material. (See Packing Instruction 602 and 8.2 of the IATA Dangerous Goods Regulations.)	2;6 Table 3-1 5;4
		OZ — ASIANA AIRLINES	
	OZ-01	Advance arrangements must be made for all shipments of dangerous goods as defined in the IATA Dangerous Goods Regulations. Dangerous goods without booking will be rejected.	
≠	OZ-02	Dangerous goods in consolidations will not be accepted for carriage, except for the following shipments: — consolidations having one master air waybill with one house air waybill; — consolidations containing UN 1845, Carbon dioxide, solid (dry ice) when used as a refrigerant for non-dangerous goods; — consolidations having only ID 8000, Consumer commodities; or — consolidations having the same shipper and consignee in each house air waybill.	7;1
≠	OZ-03	Class 1 — Explosives are acceptable for carriage provided that prior approval has been received from Asiana Airlines. This does not apply to COMAT parts and supplies containing explosives, and small quantities of ammunition in passenger baggage permitted by 2.3.2.2 of the IATA Dangerous Goods Regulations. Contact for additional information or operator approval is:	2;1 Table 3-1 8;1

Identifying code	*Variation*	*Relevant paragraphs*
	Asiana Airlines, Cargo Service Team P.O. Box 400-340 # 2165-160 Woonseo-Dong Joong-Gu, Incheon, Korea Fax: +82-32-744-2779 E-mail: aacy@flyasiana.com	
OZ-04	Class 3 — Flammable liquids in Packing Group I will not be accepted for carriage.	2;3 Table 3-1
OZ-05	Oxygen generator, chemical — UN 3356 will not be accepted for carriage.	Table 3-1
OZ-06	Class 7 — Radioactive material: Type B(M), fissile material and Type C packages will not be accepted for carriage.	2;7 Table 3-1 5;1
OZ-07	Class 7 — Radioactive material: Type B(U) packages will only be accepted for carriage on cargo aircraft.	2;7 Table 3-1
	PG — BANGKOK AIRWAYS	
PG-01	Dangerous goods, as defined by the IATA Dangerous Goods Regulations, will not be accepted for carriage, with the exception of those articles and substances permitted for passengers and crew. (See 2.3 and Table 2.3.A of the IATA Dangerous Goods Regulations.)	8;1
PG-02	Commercial shipments of dangerous goods will not be accepted. Properly prepared company material (COMAT), aircraft spares shipments will be accepted. (See 2.5.2 of the IATA Dangerous Goods Regulations.) *Note.— Contact for additional information, evaluation or operator approval is:* Jirapon Hirunrat (Mr.) Senior Flight Operations Control Manager BANGKOK AIRWAYS CO., LTD. 2FL, Bangkok Air Operations Complex 999 Mu. 4 Bangna-Tart Road, Bangchalong Bangplee, Samutprakarn 10540 THAILAND Tel: +662 328 3309, +662 328 3306 Fax: +662 325 0647 e-mail: jirapon@bangkokair.com e-mail: bkkocc@bangkokair.com AFTN: VTBSBKPX SITA: BKKOCPG	7;1
	PL — AEROPERU	
PL-01	No explosives are accepted for transport by air.	2;1 Table 3-1
	PR — PHILIPPINE AIRLINES	
PR-01	The following dangerous goods under Class 1 — Explosives, Division 1.4S, are acceptable to Philippine Airlines for air carriage (see packing instructions [–] listed after each substance): UN 0012 — Cartridges for weapons, inert projectile [130] UN 0012 — Cartridges, small arms [130] UN 0014 — Cartridges for weapons, blank [130] UN 0014 — Cartridges, small arms, blank [130] UN 0044 — Primers, cap type [133] UN 0055 — Cases, cartridge, empty, with primer [136] UN 0323 — Cartridges, power device [134] UN 0405 — Cartridges, signal [135].	2;1 Table 3-1

	Identifying code	*Variation*	*Relevant paragraphs*
		Any other dangerous goods under Division 1.4S wherein these Instructions stipulate acceptance for shipments by passenger or cargo aircraft should be referred to the Safety Department for evaluation and approval: VP — Safety and Environment Department Philippine Airlines Intermediate Level, South Wing Centennial Terminal 2, NAIA 1300 Pasay City, Metro Manila PHILIPPINES Tel: +63 (2) 833 3862/879 5714 Fax: +63 (2) 8311810 Telex: MNLNWPR E-mail: Safety@pal.com.ph	
	PR-02	Wheelchairs or other battery-powered mobility devices with spillable batteries will not be accepted for carriage as checked baggage.	8;1
	PR-03	Fuel containers for camping stoves that have contained a flammable liquid fuel will not be accepted for carriage as checked baggage.	8;1
		PX — AIR NIUGINI	
	PX-01	All package and overpack markings required by these Instructions must be in English. If the State of Origin requires markings in a language other than English, both languages are to be given equal prominence.	5;2
	PX-02	All hazard labels must include text indicating the nature of the risk. This text must appear prominently in English in the lower half of the label as described in 7.2.2.4 of the IATA Dangerous Goods Regulations. If the State of Origin requires text in a language other than English, both languages are to be given equal prominence.	5;3
	PX-03	Dangerous goods in consolidations are not permitted on PX services and airlines handled by PX except for dry ice when used as a refrigerant.	7;1
	PX-04	Radioactive material shipments for both inbound and outbound (Type A/Type B(U)) will only be accepted on PX services and airlines handled by PX if prior approval is in place. Such approval must be in place at least one week prior to date of uplift. For approval refer to: Cargo Systems and Training Air Niugini P.O. Box 7186 Boroko Papua New Guinea TTY: POMFUPX or POMFBPX Attn: Cargo Training and Systems Office	2;7 5;1
	PX-05	Dangerous goods offered under the provisions of “Excepted quantities” will not be accepted on PX services. However, this item can only be accepted with prior approval from PX.	3;5
	PX-06	Division 4.1 — Flammable solids — Book matches taken into aircraft cabin by crew and passengers for personal use are not permitted. Such items must be declared as dangerous goods through PX cargo agent offices.	8;1
≠	PX-07	Material safety data sheets (MSDS) must be provided for dangerous goods except for dangerous goods in Class 7, UN 2794, UN 3166, UN 3363, UN 3358. The MSDS must be written in English. The material safety data sheet must include the UN number, proper shipping name and other relevant transport information. This variation only applies to shipments within and from Papua New Guinea and does not apply to transhipments from an international origin.	Table 3-1 5;4
≠	PX-08	Infectious substances packed in accordance with Packing Instruction 650 are not permitted in the passenger cabin and must be lodged as cargo.	2;6 4;7
+	PX-09	All outbound dangerous goods accepted through freight forwarders and cargo agents must be checked by the agent's certified personnel before lodging it with the operator. A copy of the checklist must be attached.	5;4

	Identifying code	*Variation*	*Relevant paragraphs*
		This variation only applies to shipments within and from Papua New Guinea and does not apply to transhipments from an international origin.	
		PZ — TRANSPORTES DEL MERCOSUL — TAM	
	PZ-01	Class 1 — Explosives will not be accepted for carriage.	2;1 Table 3-1
	PZ-02	Fuel products will not be accepted for carriage.	
	PZ-03	The shipper's declaration for dangerous goods as defined in the IATA Dangerous Goods Regulations must include a 24-hour emergency response phone number.	5;4
	PZ-04	The following maximum loading limits for radioactive material will be applied: Fokker 100 — 3 TI per hold Airbus 319/320/330 — 5 TI per hold.	7;2
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≠		**P2 — AIRKENYA EXPRESS LTD**	
≠	P2-01	Dangerous goods, as defined by these Instructions, will not be accepted for carriage, with the exception of those articles and substances permitted for passengers and crew and UN 1845 — Carbon dioxide, solid (dry ice) when used as a refrigerant for non-dangerous goods.	8;1
		QF — QANTAS	
	QF-01	All hazard labels must include text indicating the nature of the risk. This text must appear prominently in English in the lower half of the label as described in 7.2.2.4 of the IATA Dangerous Goods Regulations. If the State of Origin requires markings in a language other than English, both languages are to be given equal prominence.	5;2, 5;3
	QF-02	Division 4.1 — Flammable solids — Passengers and crew are not permitted to bring book matches onto aircraft for personal use. Book matches are only allowed as correctly packed and declared dangerous goods consignments.	8;1
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		QT — TAMPA CARGO	
	QT-01	Dangerous goods in excepted quantities will not be accepted for carriage.	3;5
	QT-02	Mercury — UN 2809 or mercury contained in manufactured articles will not be accepted for carriage under any circumstances.	Table 3-1
	QT-03	Class 7 — Radioactive material, including UN 2908, UN 2909, UN 2910, UN 2911, will not be accepted for carriage.	2;7 Table 3-1
≠	QT-04	For shipments of more than 10 UN numbers per air waybill, the shipper must provide all the documentation and cargo 24 hours prior to scheduled time of departure (STD).	5;4
		QY — EUROPEAN AIR TRANSPORT — DHL	
	QY-01	Dangerous goods shipments transported by European Air Transport/DHL will only be accepted by advance arrangements with, and approval by, the Restricted Commodities Group — DHL EECC. Restricted Commodities Group — DHL EECC Tel: +32 (2) 711 7654 Fax: +32 (2) 711 7010 E-mail: rcgalert@dhl.com	
	QY-02	Explosives transported from, to, or in transit through Belgian territory are summarized under BE 1, BE 2 and BE 3, and need advance arrangements with, and approval by, the Restricted Commodities Group — DHL EECC, 48 hours before presenting for transport.	2;1 Table 3-1

	Identifying code	*Variation*	*Relevant paragraphs*
	QY-03	Explosives transported outside Belgian territory, including BE 1 and BE 2 material, will only be accepted by advance arrangements with, and approval by, the Restricted Commodities Group — DHL EECC, 24 hours before presenting for transport.	2;1 Table 3-1
≠	QY-04	It is forbidden to carry weapons, munitions of war or parts of them, except with the express exemption of the national authorities. In this case, they must be carried in the aircraft in a place which is inaccessible to passengers during flight and, in the case of firearms, uncharged. Such items can only be accepted by advance arrangements with, and approval by, the Restricted Commodities Group —DHL EECC.	2;1 Table 3-1 7;2
	QY-05	Radioactive and fissile material will only be accepted by advance arrangements with, and approval by, the Restricted Commodities Group — DHL EECC. The request requires the following information: UN number, isotope, activity, number/type of packaging, transport index (TI) and label.	2;7 Table 3-1
	QY-06	Radioactive and fissile wastes will not be accepted for carriage.	2;7 Table 3-1
	QY-07	Not used.	
	QY-08	Not used.	
	QY-09	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in the case of an accident or incident concerning each of the dangerous goods being transported. This telephone number, including the country and area code, preceded by the words “Emergency contact” or “24-hour number”, must be inserted on the DGD, preferably in the “Handling information” box. A 24-hour emergency telephone number is not required for shipments that do not require a shipper’s declaration for dangerous goods.	5;4
		RG — VARIG AIRLINES	
	RG-01	The “Toxic” subsidiary risk label must be applied for all substances with a subsidiary risk of 6.1.	Table 3-1 5;3
	RG-02	All combination packagings containing liquid dangerous goods must contain sufficient absorbent material to absorb the entire contents of all the inner packagings independently of packing groups.	4;1
	RG-03	Dangerous goods in excepted quantities as provided for in 3;5 will not be accepted for transport on Varig Airlines.	3;5
		The following dangerous goods will not be accepted for carriage on Varig Airlines: UN 1063 — Methyl chloride [200] UN 1090 — Acetone [305, Y305, 307] UN 1155 — Ethyl ether [302, 303] UN 1294 — Toluene [305, Y305, 307] UN 1490 — Potassium permanganate [508, Y508, 511] UN 1715 — Acetic anhydride [809, Y809, 813] UN 1789 — Hydrochloric acid [809, Y809, 813] UN 1830 — Sulphuric acid with more than 51% acid [809, Y809, 813] UN 1832 — Sulphuric acid, spent [813] UN 1888 — Chloroform [610, Y610, 612] UN 2796 — Sulphuric acid with not more than 51% acid [809, Y809, 813] UN 2837 — Bisulphates aqueous solution [809, Y809, 813].	Table 3-1
	RG-05	For international routes, reservations must be made for all shipments containing dangerous goods as defined in these Instructions.	
	RG-06	Telephone number: The shipper’s declaration for dangerous goods as defined in these Instructions must include a 24-hour emergency response telephone number (including area codes and international access codes). Emergency response information: Besides the shipper’s declaration for dangerous goods, all shipments containing dangerous goods must be accompanied by their respective material safety data sheets which must include at least: a) the description of the dangerous goods;	5;4

	Identifying code	*Variation*	*Relevant paragraphs*
		b) immediate hazards to health; c) risks of fire or explosion; d) immediate precautions to be taken in the event of an accident or incident; e) immediate methods for handling fire; f) initial methods for handling spills or leaks in the absence of a fire; g) preliminary first aid measures. This requirement does not apply to shipments of carbon dioxide, solid (dry ice); battery-powered vehicles and equipment; internal combustion engines; vehicles or magnetized material. The English language must be used when international shipments are made. For domestic shipments within Brazil the Portuguese language is acceptable.	
	RG-07	Salvage packages will not be accepted for transportation on VARIG Airlines.	4;1
		RJ — ROYAL JORDANIAN	
	RJ-01	Advance arrangements must be made for all shipments of dangerous goods as defined in these Instructions.	
	RJ-02	Dangerous goods in consolidations are accepted except Class 1 — Explosives, Class 7 — Radioactive material, Class 8 — Corrosives and items required to be shipped as "cargo aircraft only".	7;1
		SJ — SOUTHERN AIR TRANSPORT	
	SJ-01	Prior approval is required for shipments containing mercury.	
		SK — SCANDINAVIAN AIRLINES SYSTEM (SAS)	
≠	SK-01	UN 3090 — Lithium batteries. Primary (non-rechargeable) lithium (metal) batteries and cells are prohibited from carriage as cargo. (See Packing Instruction 968.) This prohibition does not apply to: — UN 3091, UN 3480, UN 3481; — lithium batteries (rechargeable and non-rechargeable) covered by the provisions for dangerous goods carried by passengers or crew. (See Table 2.3.A of the IATA Dangerous Goods Regulations.)	Table 3-1 4;11 8;1
	SK-02	Not used.	
	SK-03	Not used.	
	SK-04	Single packagings containing liquid are not accepted for carriage on SAS aircraft unless overpacked by use of, for example, a suitably sized wooden pallet to protect the base of the packaging.	4;1
	SK-05	Not used.	
	SK-06	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in the case of an accident or incident concerning each of the dangerous goods being transported. This telephone number, including the country and area code, preceded by the words, e.g. "Emergency contact" or "24-hour number", must be inserted on the shipper's declaration for dangerous goods (DGD), preferably in the "Handling information" box, e.g. "Emergency contact +47 67 50 00 00". A 24-hour emergency telephone number is not required for shipments that do not require a DGD.	5;4
	SK-07	Dangerous goods in consolidations will not be accepted for carriage, except for the following shipments: — consolidations containing UN 1845, Carbon dioxide, solid (dry ice) when used as a refrigerant;	7;1

	Identifying code	*Variation*	*Relevant paragraphs*
		— consolidations with only one house air waybill; — consolidations with more than one house air waybill, in case of identical shipper.	
	SK-08	Not used.	
		SN — BRUSSELS AIRLINES	
	SN-01	Used camping stoves (fuel or gas) will not be accepted for carriage in baggage, even if thoroughly cleaned.	8;1
	SN-02	Small gaseous oxygen or air cylinders required for medical use will only be accepted empty as checked baggage.	8;1
		SQ — SINGAPORE AIRLINES/SINGAPORE AIRLINES CARGO	
≠	SQ-01	Only explosives of Division 1.4S packed for "passenger and cargo aircraft" will be accepted. For main deck loading refer to carrier.	2;1 Table 3-1 7;2
	SQ-02	Items with a primary or subsidiary risk of Division 2.1 and Class 4, when packed for "passenger and cargo aircraft", must be loaded in the lower deck.	2;1 Table 3-1 7;2
≠	SQ-03	Items with a primary or subsidiary risk of Division 2.1 and Class 4, when packed for cargo aircraft only, will not be accepted.	2;4 Table 3-1
≠	SQ-04	Class 7 — Fissile material will not be accepted.	2;7 Table 3-1
	SQ-05	Only Division 6.2, Class 7 and Class 9 will be uplifted into/over the United States. (Division 6.2 will only be carried on freighter aircraft.)	Table 3-1
≠	SQ-06	Oxygen generators, chemical (UN 3356) will not be accepted on any aircraft.	2;5 Table 3-1
	SQ-07	Items with a primary or subsidiary risk of Class 3 or 5, packed for "passenger and cargo aircraft" or "cargo aircraft only" may be accepted. For main deck loading refer to carrier.	2;3, 2;5 Table 3-1 7;2
	SQ-08	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in the case of an accident or incident concerning each of the dangerous goods being transported. This telephone number, including the country and area code, preceded by the words, e.g "Emergency contact" or "24-hour number", must be inserted on the shipper's declaration for dangerous goods (DGD), preferably in the "Handling information" box, e.g. "Emergency contact +47 67 50 00 00". A 24-hour emergency telephone number is not required for shipments that do not require a DGD.	5;4
	SQ-09	Dangerous goods shipments from other carriers will not be accepted unless prior arrangements have been made with SQ. For carrier details, please refer to SIA Cargo Office.	7;1
+	SQ-10	Carriage of Category B infectious substances, UN 3373 (Biological substance, Category B) is subject to specific requirements. Shippers wishing to consign UN 3373 are requested to contact the Singapore Airlines cargo office for these requirements.	2;6 Table 3-1
		SS — CORSAIR	
	SS-01	Class 7 — Radioactive material, including all categories of excepted packages, will not be accepted for transport.	1;6 2;7 Table 3-1 3;5
		SV — SAUDI ARABIAN AIRLINES	
	SV-01	Dangerous goods in excepted quantities will not be accepted.	3;5

	Identifying code	*Variation*	*Relevant paragraphs*
	SV-02	The carriage of limited quantities of dangerous goods ("Y" packing instructions) is not permitted, except for Perfumery products (UN 1266).	3;4 Table 3-1
≠	SV-03	Dangerous goods in consolidations will not be accepted for carriage.	7;1
	SV-04	Package orientation (This Way Up) labels must be used on any combination and single package containing liquid dangerous goods, excluding infectious substances, if primary receptacles contain less than 50 mL, and radioactive material.	5;3
	SV-05	Maximum net weight of carbon dioxide, solid (dry ice) accepted for loading is 200 kg per inaccessible hold of a passenger aircraft.	7;2
	SV-06	Salvage packagings will not be accepted for carriage without prior approval of cargo services support.	4;1
	SV-07	Steel drums (1A1) with plastic pullout spout or cap will not be accepted for carriage on any aircraft.	6;1
	SV-08	Packages with UN specification markings written by hand or affixed will not be accepted.	5;2
	SV-09	Class 7 — Fissile radioactive material will not be accepted for carriage.	2;7 Table 3-1
≠	SV-10	Not used.	
	SV-11	Fuel containers for camping stoves that have contained a flammable liquid fuel will not be accepted for carriage as checked baggage.	8;1
+	SV-12	All shipments of infectious substances, patient specimens, diagnostic specimens, clinical specimens, biological substances (human or animal), whether subject to regulation or exempt from regulation, must be manifested as cargo and will not be permitted in the aircraft cabin.	2;7 7;2
		SW — AIR NAMIBIA	
	SW-01	Dangerous goods, as defined in these Instructions, will not be accepted for carriage on the Beechcraft B1900 aircraft.	Table 3-1 7;2
	SW-02	Dangerous goods in limited quantities ("Y" packing instructions) will not be accepted for carriage.	3;4
	SW-03	Dangerous goods in consolidations will not be accepted for carriage, except for: — consolidations containing UN 1845, Carbon dioxide, solid (dry ice) when used as a refrigerant; — consolidations with only one house air waybill; — for a single shipper, consolidations with more than one house air waybill.	7;1
		TG — THAI AIRWAYS INTERNATIONAL	
	TG-01	Dangerous goods in excepted quantities will not be accepted.	3;5
≠	TG-02	All dangerous goods packed in single packaging UN specification 1A1 or 1A2 steel drums or composite packaging plastic receptacle with outer steel drum (6HA1) are not acceptable for carriage unless overpacked with a suitably sized wooden pallet to protect the top and base of the packaging.	4;1 6;1
+	TG-03	Class 1 — All kinds of explosives will not be accepted for carriage, except the substances and articles of Division 1.4S which fall under COMAT, AOG aircraft parts and supplies.	2;1 Table 3-1
+	TG-04	Only radioactive material with a maximum transport index not exceeding 3.0 which is intended for medical purposes will be accepted for carriage.	Table 3-1 5;1
+	TG-05	Radioactive material packed in Type B(U), Type B(M) packages and SCO or LSA packed in industrial packages will not be accepted for carriage.	2;7 Table 3-1 4;9

	Identifying code	*Variation*	*Relevant paragraphs*
+	TG-06	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in case of an accident or incident concerning (each of) the dangerous goods being transported. This telephone number, including country and area code, preceded by the words “Emergency contact” or “24-hour number” must be inserted on the shipper’s declaration for dangerous goods (DGD) preferably in the “Additional handling information” box, e.g. “Emergency contact +47 67 50 00 00”.	5;4
+	TG-07	Shipments under State approval in accordance with Special Provision A1 or A2 will not be accepted.	3;3
		TK — TURKISH AIRLINES	
≠	TK-01	Not used.	
	TK-02	Emergency response: The shipper must provide a 24-hour emergency telephone number of a person/agency, who is knowledgeable of the hazards, characteristics and actions to be taken in case of an accident or incident concerning each of the dangerous goods being transported. This telephone number, including the country and area code, preceded by the words “Emergency contact” or “24-hour number” must be inserted in the “Handling information” box of the DGD and also outside of the package. A 24-hour emergency telephone number is not required for shipments that do not require a shipper’s declaration for dangerous goods.	5;4
	TK-03	Dangerous goods in consolidations will not be accepted for carriage except for the following shipments: — consolidated shipments/consolidations containing carbon dioxide, solid (dry ice) when used as a refrigerant; — one master air waybill with one house air waybill; — one master air waybill with more than one house air waybill, which have the same shipper and different consignees.	7;1
≠	TK-04	Booking and confirmation are required for all dangerous goods shipments as defined in the IATA Dangerous Goods Regulations. Turkish Cargo Reservation Department Tel: +90 212 465 22 22 Fax: +90 212 465 24 78 SITA: ISTFCTK	
≠	TK-05	Not used.	
	TK-06	All dangerous goods classes and radioactive material will not be accepted in airmail.	1;2.3 2;7
≠	TK-07	Infected animals, dead or alive, will not be accepted for carriage.	2;6 Table 3-1
≠	TK-08	Not used.	
		TN — AIR TAHITI NUI	
	TN-01	All State variations of France (FR), Japan (JP) and the United States (US) are applicable on TN flights regardless of the flight's origin and destination.	Table 3-1
	TN-02	Shipments under State approval in accordance with Special Provision A1 or A2 are not accepted.	3;3
	TN-03	Cylinders of oxygen, compressed (UN 1072), either as cargo or (for medical use only) as baggage, are accepted only if contained in a fire-resistant outer packaging meeting ATA 300 Type I shipping container specification or equivalent.	
	TN-04	Dangerous goods in limited quantities (“Y” packing instructions) will not be accepted for carriage.	3;4

Identifying code	*Variation*	*Relevant paragraphs*
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	TU — TUNIS AIR	
TU-01	Class 1 — Explosives are not acceptable for carriage with the exception of those in Division 1.4S.	2;1 Table 3-1
TU-02	Division 2.1 — Flammable gases are not acceptable for carriage with the exception of Aerosols, flammable, UN 1950.	2;2 Table 3-1
TU-03	Division 2.3 — Toxic gases are not acceptable for carriage.	2;2 Table 3-1
TU-04	The following substances or articles or substances are not acceptable for carriage (see packing instructions [–] listed after each substance): UN 1003 — Air, refrigerated liquid [202] UN 1724 — Allytrichlorosilane, stabilized [813] UN 1732 — Antimony pentafluoride [813] UN 1747 — Butyltrichlorosilane [813] UN 1753 — Chlorophenyltrichlorosilane [813] UN 1762 — Cyclohexenyltrichlorosilane [813] UN 1763 — Cyclohexyltrichlorosilane [813] UN 1769 — Diphenyldichlorosilane [813] UN 1771 — Dodecyltrichlorosilane [813] UN 1784 — Hexyltrichlorosilane [813] UN 1792 — Iodine monochloride [817] UN 1796 — Nitrating acid mixture [809, 813] UN 1799 — Nonyltrichlorosilane [813] UN 1800 — Octadecyltrichlorosilane [813] UN 1801 — Octyltrichlorosilane [813] UN 1802 — Perchloric acid [813] UN 1806 — Phosphorus pentachloride [817] UN 1808 — Phosphorus tribromide [813] UN 1809 — Phosphorus trichloride [–] UN 1810 — Phosphorus oxychloride [–] UN 1816 — Propyltrichlorosilane [813] UN 1826 — Nitrating acid mixtures, spent [809, 813] UN 1906 — Sludge acid [813] UN 1832 — Sulphuric acid, spent [813] UN 1837 — Thiophosphoryl chloride [813] UN 1912 — Methyl chloride and methylene chloride mixture [200] UN 1939 — Phosphorus oxybromide [817] UN 2028 — Bombs, smoke, non-explosive [801] UN 2031 — Nitric acid [807, Y807, 809, 813] UN 2073 — Ammonia solutions [200] UN 2691 — Phosphorus pentabromide [817] UN 2799 — Phenyl phosphorus thiodichloride [812]. The following articles and substances in Class 9 are not acceptable for carriage: UN 2211 — Polymeric beads, expandable [908] UN 2590 — White asbestos [909].	Table 3-1
TU-05	Class 3 — Flammable liquids (Packing Group I) are not acceptable for carriage.	2;3 Table 3-1
TU-06	Class 4 substances (Packing Group I) are not acceptable for carriage.	2;4 Table 3-1
TU-07	The following articles and substances in Class 4 are not acceptable for carriage (see packing instructions [–] listed after each substance): UN 1390 — Alkali metal amides [416, Y416, 418] UN 1415 — Lithium [412] UN 1420 — Potassium metal alloys, liquid [409] UN 1428 — Sodium [412] UN 1868 — Decaborane [418] UN 2257 — Potassium [412] UN 2813 — Water-reactive solid, n.o.s. [411, 415, Y415, 417, 419, Y419, 420] UN 3404 — Potassium sodium alloys, solid [412].	2;4 Table 3-1

	Identifying code	*Variation*	*Relevant paragraphs*
	TU-08	Class 5 substances (Packing Groups II and III) are only acceptable for carriage with prior arrangements. Class 5 substances (Packing Group I) are not acceptable for carriage.	2;5 Table 3-1
	TU-09	Division 6.1 substances (Packing Group I) are not acceptable for carriage.	2;6 Table 3-1
	TU-10	Shippers of radioactive material must submit with the shipper's declaration for dangerous goods a certificate from the competent authority of the State of Origin specifying that the shipment complies with the Instructions. Type B(M) packages of radioactive material are not acceptable for carriage.	2;7 Table 3-1 5;4
	TU-11	Class 8 — Corrosive materials (Packing Group I) are not acceptable for carriage.	2;8 Table 3-1
	TU-12	The following substances in Class 8 are not acceptable for carriage (see packing instructions [–] listed after each substance): UN 1766 — Dichlorophenytrichlorosilane [813] UN 1767 — Diethyldichlorosilane [813] UN 2798 — Phenyl phosphorus dichloride [812].	2;8 Table 3-1
		TY — IBERWORLD AIRLINES	
	TY-01	Dangerous goods in excepted quantities are not accepted in Iberworld's aircraft.	3;5
	TY-02	Consolidated dangerous goods will not be accepted for transportation.	7;1
	TY-03	Infected alive or dead animals will not be accepted for transportation.	2;6 Table 3-1
	TY-04	Radioactive material will not be accepted in any case.	2;7 Table 3-1
	TY-05	Wheelchairs with spillable batteries will not be accepted for transportation in Iberworld's aircraft.	8;1
	TY-06	Carbon dioxide, solid (dry ice), as cargo, will not be accepted for carriage.	2;9 Table 3-1
		UA — UNITED AIRLINES	
	UA-01	Division 6.1 primary and subsidiary hazard class toxic substances are not accepted for carriage.	2;6 Table 3-1
	UA-02	The following Class 3 flammable liquids will not be accepted for carriage: UN 1146 — Cyclopentane UN 1159 — Diisopropyl ether UN 1165 — Dioxane UN 1166 — Dioxolane UN 1203 — Motor spirit, gasoline or petrol UN 1208 — Hexanes UN 1248 — Methyl propionate UN 1249 — Methyl propyl ketone UN 2298 — Methyl cyclopentane UN 2301 — 2-Methylfuran UN 2376 — 2,3-Dihydropyran UN 2457 — 2,3-Dimethylbutane UN 2461 — Methyl pentadiene.	2;3 Table 3-1
≠	UA-03	The following Class 8 corrosive substance will not be accepted for carriage: UN 1787 — Hydriodic acid.	2;8 Table 3-1

	Identifying code	*Variation*	*Relevant paragraphs*
	UA-04	The following Class 9 miscellaneous dangerous goods will not be accepted for carriage: UN 2211 — polymeric beads, expandable; ID 8000 — consumer commodity containing substances in Division 6.1 (Packing Group III).	2;9 Table 3-1
≠	UA-05	Hazardous waste as defined in State variation US 4 will not be accepted for carriage.	
	UA-06	Dangerous goods in consolidations must not be accepted for carriage, except for the following shipments: — consolidations having one master air waybill and one house air waybill; — consolidations having one master air waybill with more than one house air waybill which have the same shipper and different consignees; — consolidations containing UN 1845, Carbon dioxide solid (dry ice) when used as a refrigerant.	7;1
	UA-07	Salvage packaging will not be accepted for carriage.	4;1
	UA-08	Carriers operating as a code-share, Star-Alliance or United Express partner using a UA flight number may not accept dangerous goods for shipment. Contact the appropriate operating carrier for acceptance criteria.	7;1
	UA-09	Type B(U), Type B(M), Type C, SCO and LSA industrial packagings and all fissile radioactive material will not be accepted for carriage.	Table 3-1 5;1
	UA-10	Division 5.1 — Primary risk oxidizers will not be accepted for carriage.	2;7 Table 3-1
	UA-11	Dangerous goods in excepted quantities will not be accepted.	3;5
	UA-12	If an article meets the requirements of Special Provision A26, A67, A70, A98, A114 or A152, the statement “Not restricted—provisions of Axx are fulfilled” must be inserted in the “Nature and quantity of goods” box of the air waybill to indicate that it has been checked.	3;3 5;4
	UA-13	Oxygen, compressed, UN 1072, will only be accepted when packed in ATA Specification 300 Category 1 outer packaging. Packaging must be marked in accordance with the ATA Specification 300 marking criteria.	Table 3-1 4;1
	UA-14	Select agents or toxins regulated by the Centers for Disease Control (CDC) under 42 CFR Part 73 and the Department of Agriculture under 9 CFR Part 121.3 (risk classification 6.2) will not be accepted for transport.	
		US — US AIRWAYS	
≠	US-01	Shipments which contain articles and substances listed in these Instructions and/or DOT Hazardous Materials Regulations and revisions thereto will not be accepted for carriage, except for the following: — articles listed as not restricted or non-regulated in said Instructions; — carbon dioxide, solid (dry ice) in individual packages with 4.4 pounds (2.0 kg) or less per package cooling non-restricted contents; — envirotainer — unit load device equipment with dry ice cooling non-restricted contents; — US Airways company material transported as aircraft replacement items.	2;6 Table 3-1
	US-04	Not used.	
	US-05	Not used.	
	US-06	Not used.	
	US-08	Not used.	
	US-09	Not used.	

	Identifying code	*Variation*	*Relevant paragraphs*
		UU — AIR AUSTRAL	
	UU-01	Dangerous goods as defined in the current edition of the IATA Dangerous Goods Regulations will not be accepted in airmail.	1;2.3
	UU-02	Dangerous goods as defined below will not be accepted for carriage on board Air Austral aircraft (see packing instructions [–] listed after each substance): — infected or venomous animals; — corrosive material: UN 1798 — Nitrohydrochloric acid [809]. — substances which in contact with water emit flammable gases: UN 3132 — Water-reactive solid, flammable, n.o.s.* [411]; UN 3135 — Water-reactive solid, self-heating, n.o.s.* [415, Y415, 417, 419, Y419, 420].	Table 3-1
	UU-03	Radioactive material will not be accepted for carriage.	2;7 Table 3-1
	UU-04	Dangerous goods departing from: Johannesburg (South Africa), Moroni (Republic of Comores), Maurice (Mauritius), Antananarivo, Nosy-Be, Toamasina, Majunga (Madagascar Island), Mahe (Seychelles) are subject to prior approval from Air Austral. Authorization must be requested ten days in advance and must be provided by the cargo manager, SITA telex: RUNDKUU, copy RUNFKUU.	
≠	UU-05	All blood products and biological samples, human or animal origin, must be carried as cargo. They are not permitted as baggage. They must be classified as UN 2814, Infectious substance, affecting humans (liquid or solid) or UN 2900, Infectious substance, affecting animals (liquid or solid) both in Division 6.2 and packed according to Packing Instruction 602. The only exception to this rule is human or animal blood and plasma free from any pathogen and destined for human or veterinary treatment. In these cases, the shipment must be classified as non-dangerous pharmaceuticals, life-saving drugs. The air waybill must bear a detailed commodity description to enable identification. Biological substance, Category B, UN 3373, may be accepted only as cargo and as long as a valid and free from any pathogen biological certification is duly given to the operator and is packed in accordance with Packing Instruction 602.	2;6 Table 3-1 4;8 5;4
	UU-06	Not used.	
	UU-07	Special cargo — advance arrangements must be made with the operator for all shipments of VAL, AVI, HUM, ICE, PER, DIP and LHO. Requests can be forwarded by telephone, fax, SITA (RUNDKUU, copy RUNFKUU) or the Internet.	
	UU-08	Dangerous goods in limited quantities (“Y” packing instructions) will not be accepted for carriage.	3;4
≠	UU-09	Not used.	
		UX — AIR EUROPA	
	UX-01	Dangerous goods in excepted quantities will not be accepted for carriage.	3;5
	UX-02	Dangerous goods in limited quantities, (except for COMAT, AOG, aircraft parts and supplies) will not be accepted for carriage.	3;4
	UX-03	Dangerous goods in consolidated packages will not be accepted for carriage, except for: — consolidations containing UN 1845, Carbon dioxide, solid (dry ice) when used as a refrigerant for non-dangerous goods.	7;1
	UX-04	Division 6.1 — Toxic substances — dangerous goods in which the primary or secondary hazard belongs to Division 6.1 (except for COMAT, AOG, aircraft parts and supplies) will not be accepted for carriage.	2;6 Table 3-1
	UX-05	Dangerous goods of which the primary hazard is Class 4 (4.1, 4.2, 4.3) (except for COMAT, AOG, aircraft parts and supplies) will not be accepted for carriage.	2;4 Table 3-1

	Identifying code	*Variation*	*Relevant paragraphs*
	UX-06	Dangerous goods of which the primary hazard belongs to Division 5.2 will not be accepted for carriage.	2;5 Table 3-1
	UX-07	The following dangerous goods will not be accepted for carriage (see packing instructions [–] listed after each substance): UN 1787 — Hydriodic acid [809, Y809, 813, 819, Y819 and 821] UN 2803 — Gallium [804].	Table 3-1
	UX-08	Hazardous waste in any form, as defined by any regulation of the IATA Dangerous Goods Regulations, will not be accepted for carriage.	
	UX-09	Salvage packagings will not be accepted for carriage.	4;1
	UX-10	Class 7 — Radioactive material will not be accepted for carriage.	2;7 Table 3-1
	UX-11	Not used.	
		UY — CAMEROON AIRLINES	
	UY-01	Dangerous goods in excepted quantities as defined in 1;2.5 will not be accepted for carriage.	3;5
		VN — VIETNAM AIRLINES	
	VN-01	Advance arrangements must be made for all shipments of dangerous goods as defined in these Instructions. An approval from Cargo Marketing and Planning Division shall be required before loading the dangerous goods on VN flights. All requests should be sent to the following address: Teletype: HDQUDVN	
	VN-02	Dangerous goods in excepted quantities will not be accepted for carriage, except radioactive material in empty packages.	3;5
	VN-03	Dangerous goods in airmail will not be accepted for carriage.	1;2.3
	VN-04	All dangerous goods of Packing Group I will not be accepted for carriage.	2;0
	VN-05	Class 1 — All kinds of explosives will not be accepted for carriage, except the substances and articles of Division 1.4S.	2;1 Table 3-1
	VN-06	Division 2.1 — Flammable gases and Division 2.3 —Toxic gases will not be accepted for carriage (exception: COMAT parts and supplies.)	2;2 Table 3-1
	VN-07	Class 4 — All dangerous goods of Division 4.3 will not be accepted for carriage.	2;4 Table 3-1
	VN-08	Not used.	
	VN-09	Class 7 — Radioactive material packed in Type B(U), Type B(M) or Type C packages and SCO or LSA packed in industrial packages, and radioactive material with transport index exceeding 3.0 will not be accepted for carriage.	2;7 Table 3-1 5;1
	VN-10	Not used.	
	VN-11	Class 9 — Yeast active; dry ice exceeding 400 kg (882 lb); polymeric beads or granules; and magnetized material exceeding 2 000 kg (4 400 lb) will not be accepted for carriage.	2;0 Table 3-1
≠	VN-12	Dangerous goods in consolidations will not be accepted for carriage, except for: — consolidations having one master air waybill with one house air waybill; — consolidations having multi house air waybill containing ID 8000 (consumer commodity); or; — consolidations having multi house air waybill containing UN 1845 (Carbon dioxide, solid/dry ice) when used as a refrigerant for non-dangerous goods.	7;1

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	Identifying code	Variation	Relevant paragraphs
		VS — VIRGIN ATLANTIC	
≠	VS-01	Radioactive material will not be accepted for carriage, apart from excepted packages: UN 2908, UN 2909, UN 2910, UN 2911.	2;7 Table 3-1
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+		**V3 — CARPATAIR SA**	
+	V3-01	Dangerous goods of Class 1 — Explosives and Class 7 — Radioactive material will not be accepted for carriage.	2;1, 2;7 Table 3-1
+	V3-02	The shipper must provide a 24-hour emergency telephone number of a person/agency who is knowledgeable of the hazards, characteristics and actions to be taken in case of an accident or incident concerning (each of) the dangerous goods being transported. This telephone number, including country and area code, preceded by the words "Emergency contact" or "24-hour number" must be inserted on the shipper's declaration for dangerous goods (DGD) preferably in the "Additional handling information" box, e.g. "Emergency contact +47 67 50 00 00". A 24-hour emergency telephone number is not required for shipments that do not require a DGD.	5;4
		XK — CORSE MÉDITERRANÉE	
≠	XK-01	Explosives will not be accepted for carriage, except substances and articles of Division 1.4S. (See Packing Instructions 101–143.)	2;1 Table 3-1
≠	XK 02	Dangerous goods are prohibited in airmail.	1;2.3
≠	XK 03	Dangerous goods in limited quantities ("Y" packing instructions) will not be accepted for carriage.	3;4
+	XK-04	Division 2.3 — Toxic gases will not be accepted for carriage.	2;2 Table 3-1
+	XK-05	Division 6.1 and 6.2 substances will not be accepted for carriage except for UN 3373 (Biological substances, Category B).	2;6 Table 3-1
+	XK-06	Class 7 — Radioactive material (Category II and III) will not be accepted for carriage.	2;7 Table 3-1
		ZW — AIR WISCONSIN	
	ZW-01	Commercial shipments of dangerous goods will not be accepted. Properly prepared company material (COMAT) shipments will be accepted.	
>			
		5X — UNITED PARCEL SERVICE	
≠	5X-01	UPS small package service shipments of dangerous goods having an origin and destination within the United States will be accepted by contract only, in accordance with the current UPS "Hazardous Materials Guide". This information is posted under the SUPPORT topic on the UPS home page (www.ups.com). See also the SITE GUIDE on the UPS home page.	
≠	5X-02	Shipments of dangerous goods in the UPS small package service, including shipments of excepted quantities and biological substances, Category B, will be accepted by contract only. When shipping packages requiring an IATA shipper's declaration for dangerous goods, combination packagings must be used and packages must not exceed 30 kg gross weight. Other than specifically approved shipments of dangerous goods in excepted quantities, the following classes/divisions of dangerous goods are prohibited from UPS international small package services under any circumstances: — Class 1 (Explosives); — Division 2.3 (Toxic gas); — Division 4.2 (Spontaneously combustible); — Division 4.3 (Dangerous when wet); — Division 5.1 (Oxidizer);	Table 3-1

	Identifying code	*Variation*	*Relevant paragraphs*
		— Division 5.2 (Organic peroxide); — Division 6.1 — Substances requiring a “Toxic” label; — Division 6.2 (Infectious substances, Category A); — Class 7 — Substances requiring a “Radioactive” White-I, Yellow-II, Yellow-III or Fissile label; — Radioactive material, excepted package shipments are also prohibited.	
≠	5X-03	Dangerous goods shipments will be accepted by UPS Air Cargo Service by contract only. All contract applications must be reviewed and approved by the UPS Air Dangerous Goods Department (SDF) and Air Cargo Service (UPS Air Group-SDF). Hazardous classes accepted in UPS Air Cargo Service are subject to approval, and shipments are subject to advance arrangement.	
+	5X-04	Dangerous goods shipments in UPS freight air services are accepted by arrangements between UPS Airlines and UPS Supply Chain Solutions. Prohibited hazard classes include: — Divisions 1.1, 1.2, 1.3, 1.4F, 1.5 and 1.6 (Explosives); — Division 2.3 (Toxic gas); — Materials having either a primary or subsidiary hazard of Division 6.1 with a Packing Group I inhalation toxicity; — Division 6.2 — Infectious substances, Category A materials; — Class 7 (outside of the United States, Canada and Mexico) — substances requiring a “Radioactive” White-I, Yellow-II or Yellow-III label; — Materials requiring a fissile label are not accepted in any UPS service; — Radioactive material, excepted package shipments are also prohibited outside the United States, Canada and Mexico.	Table 3-1
+	5X-05	When an IATA shipper's declaration for dangerous goods is required, the shipper must present three original copies.	5;4
		7H — ERA AVIATION	
	7H-01	Shipments under the United States Department of Transportation exemption (DOT-E) must be accompanied by one copy of the exemption document describing the regulation that is exempt and the conditions/provisions thereof. (See 2.6 and 8.1.6.9.4 of the IATA Dangerous Goods Regulations.)	
	7H-02	Hazardous waste may not be accepted. Thirty (30) days written notification required for determination. (See Packing Instruction 622 and 8.1.3.3 of the IATA Dangerous Goods Regulations.)	
		9S — SOUTHERN AIR	
	9S-01	Class 7 — Radioactive material will not be accepted for carriage outside the United States. (See 10.10.3 of the IATA Dangerous Goods Regulations.)	2;7 Table 3-1

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**AIRLINE OPERATOR VARIATIONS FROM
THE TECHNICAL INSTRUCTIONS FOR THE
SAFE TRANSPORT OF DANGEROUS GOODS BY AIR**

To: Secretary, Dangerous Goods Panel
International Civil Aviation Organization
999 University Street
Montréal, Quebec
CANADA H3C 5H7

E-MAIL: krooney@icao.int

Please include in the Addendum to the 2009-2010 Edition of the Technical Instructions the following operator variation(s):

Variation *Relevant paragraphs*

_____ Signature

_____ Title

(To be returned to reach ICAO not later than 17 April 2009)

Attachment 4

REFORMATTED PACKING INSTRUCTIONS (APPLICABLE FROM 1 JANUARY 2011)

Reformatted packing instructions

The packing instructions have undergone an extensive review by the Dangerous Goods Panel (DGP) which will result in revisions to their design and content. The new packing instructions will become applicable on 1 January 2011; they are presented here for information purposes only. They can also be found on the ICAO packing instructions website at www.icao.int/anb/FLS/dangerousgoods/packinginstructions along with more detailed information.

The new packing instructions use a more rational numbering system and remove many of the anomalies and inconsistencies which exist in the present system. As much as possible, they are consistent in structure and facilitate the allocation of packing instructions to substances which might be added to the dangerous goods list. Particular points of note include:

a) IP codes for inner packagings have been removed from the packing instructions. This is consistent with the approach taken in the UN Model Regulations. The packing instructions contain a reference to Part 6;3.2 which describes the requirements for the different inner packagings.

b) The packing instructions will retain the three numeric numbering scheme with the first number identifying the applicable class. To ensure that there is no confusion between the current packing instructions and those which are new, all new numbers have been applied. Table A-3 provides a cross reference between the existing and new packing instruction numbers listed by UN number and packing group. This list can also be downloaded from www.icao.int/anb/FLS/dangerousgoods/packinginstructions in Excel worksheet format.

c) The requirement for inner liners, which had been introduced for liquid dangerous goods, are removed from all packing instructions except those for substances in Packing Group I. This is replaced by a requirement that there must be positive means of ensuring that closures remain effective; a liner will still be required where secondary means of closure cannot be applied. This requirement is specifically identified in each packing instruction by reference to 4;1.1.4, which will be amended as follows:

1.1.4 The body and closure of any packaging must be so constructed as to be able to adequately resist the effects of temperature and vibration occurring in normal conditions of transport. Closures must be held securely, tightly and effectively in place by secondary means. Examples of such methods include: adhesive tape, friction sleeves, welding or soldering, positive locking wires, locking rings, induction heat seals and child-resistant closures. The closure device must be so designed that it is unlikely that it can be incorrectly or incompletely closed.

1.1.4.1 When secondary means of closure cannot be applied to an inner packaging containing liquids the inner packaging must be securely closed and placed in a leakproof liner and then placed in an outer packaging.

Comments on the reformatted packing instructions are welcome and should be submitted through the ICAO packing instructions website at www.icao.int/anb/FLS/dangerousgoods/packinginstructions. These will be reviewed by the DGP in October 2009 and minor amendments may be made based on this review.

Table A-3. Packing instruction numbers

UN No.	*PG*	*Limited quantity*		*Passenger*		*Cargo*	
		Current	*New*	*Current*	*New*	*Current*	*New*
1088	II	Y305	Y341	305	353	307	364
1089	I	F	F	F	F	304	361
1090	II	Y305	Y341	305	353	307	364
1091	II	Y305	Y341	305	353	307	364
1093	I	F	F	F	F	303	361
1099	I	F	F	F	F	303	361
1100	I	F	F	F	F	303	361
1104	III	Y309	Y344	309	355	310	366
1105	II	Y305	Y341	305	353	307	364
1105	III	Y309	Y344	309	355	310	366
1106	II	Y305	Y340	305	352	307	363
1106	III	Y309	Y342	309	354	310	365
1107	II	Y305	Y341	305	353	307	364
1108	I	F	F	302	351	303	361
1108	I	F	F	302	351	303	361
1109	III	Y309	Y344	309	355	310	366
1110	III	Y309	Y344	309	355	310	366
1111	II	Y306	Y341	306	352	308	363
1112	III	Y309	Y344	309	355	310	366
1113	II	Y305	Y341	305	353	307	364
1114	II	Y305	Y341	305	353	307	364

UN No.	*PG*	*Limited quantity*		*Passenger*		*Cargo*	
		Current	*New*	*Current*	*New*	*Current*	*New*
1120	II	Y305	Y341	305	353	307	364
1120	III	Y309	Y344	309	355	310	366
1123	II	Y305	Y341	305	353	307	364
1123	III	Y309	Y344	309	355	310	366
1125	II	Y305	Y340	305	352	307	363
1126	II	Y305	Y341	305	353	307	364
1127	II	Y305	Y341	305	353	307	364
1128	II	Y305	Y341	305	353	307	364
1129	II	Y305	Y341	305	353	307	364
1130	III	Y309	Y344	309	355	310	366
1133	I	F	F	302	351	303	361
1133	II	Y305	Y341	305	353	307	364
1133	III	Y309	Y344	309	355	310	366
1134	III	Y309	Y344	309	355	310	366
1136	II	Y305	Y341	305	353	307	364
1136	III	Y309	Y344	309	355	310	366
1139	I	F	F	302	351	303	361
1139	II	Y305	Y341	305	353	307	364
1139	III	Y309	Y344	309	355	310	366
1144	I	F	F	302	351	303	361
1145	II	Y305	Y341	305	353	307	364

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
1146	II	Y305	Y341	305	353	307	364
1147	III	Y309	Y344	309	355	310	366
1148	II	Y305	Y341	305	353	307	364
1148	III	Y309	Y344	309	355	310	366
1149	III	Y309	Y344	309	355	310	366
1150	II	Y305	Y341	305	353	307	364
1152	III	Y309	Y344	309	355	310	366
1153	II	Y305	Y341	305	353	307	364
1153	III	Y309	Y344	309	355	310	366
1154	II	Y306	Y340	306	352	308	363
1155	I	F	F	302	351	303	361
1155	I	F	F	302	351	303	361
1156	II	Y305	Y341	305	353	307	364
1157	III	Y309	Y344	309	355	310	366
1158	II	Y305	Y340	305	352	307	363
1159	II	Y305	Y341	305	353	307	364
1160	II	Y305	Y340	305	352	307	363
1161	II	Y305	Y341	305	353	307	364
1162	II	F	F	305	352	307	363
1164	II	Y305	Y341	305	353	307	364
1165	II	Y305	Y341	305	353	307	364
1166	II	Y305	Y341	305	353	307	364
1167	I	F	F	306	351	308	361
1169	II	Y305	Y341	305	353	307	364
1169	III	Y309	Y344	309	355	310	366
1170	II	Y305	Y341	305	353	307	364
1170	III	Y309	Y344	309	355	310	366
1170	II	Y305	Y341	305	353	307	364
1170	III	Y309	Y344	309	355	310	366
1170	II	Y305	Y341	305	353	307	364
1170	III	Y309	Y344	309	355	310	366
1170	II	Y305	Y341	305	353	307	364
1170	III	Y309	Y344	309	355	310	366
1171	III	Y309	Y344	309	355	310	366
1172	III	Y309	Y344	309	355	310	366
1173	II	Y305	Y341	305	353	307	364
1175	II	Y305	Y341	305	353	307	364
1176	II	Y305	Y341	305	353	307	364
1177	III	Y309	Y344	309	355	310	366
1178	II	Y305	Y341	305	353	307	364
1179	II	Y305	Y341	305	353	307	364
1180	III	Y309	Y344	309	355	310	366
1181	II	Y609	Y641	609	654	611	662
1183	I	F	F	F	F	409	480
1184	II	Y306	Y340	306	352	308	364
1188	III	Y309	Y344	309	355	310	366
1189	III	Y309	Y344	309	355	310	366
1190	II	Y305	Y341	305	353	307	364
1191	III	Y309	Y344	309	355	310	366
1192	III	Y309	Y344	309	355	310	366
1193	II	Y305	Y341	305	353	307	364
1193	II	Y305	Y341	305	353	307	364
1195	II	Y305	Y341	305	353	307	364
1196	II	F	F	306	352	304	362
1197	II	Y305	Y341	305	353	307	364
1197	III	Y309	Y344	309	355	310	366
1198	III	Y309	Y342	309	354	310	365
1199	II	Y609	Y641	609	654	611	662
1201	II	Y305	Y341	305	353	307	364
1201	III	Y309	Y344	309	355	310	366
1202	III	Y309	Y344	309	355	310	366
1202	III	Y309	Y344	309	355	310	366
1202	III	Y309	Y344	309	355	310	366
1203	II	Y305	Y341	305	353	307	364
1203	II	Y305	Y341	305	353	307	364
1203	II	Y305	Y341	305	353	307	364

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
1204	II	Y306	Y341	306	372	308	372
1206	II	Y305	Y341	305	353	307	364
1207	III	Y309	Y344	309	355	310	366
1208	II	Y305	Y341	305	353	307	364
1210	I	F	F	302	351	303	361
1210	II	Y305	Y341	305	353	307	364
1210	III	Y309	Y344	309	355	310	366
1210	I	F	F	302	351	303	361
1210	II	Y305	Y341	305	353	307	364
1210	III	Y309	Y344	309	355	310	366
1212	III	Y309	Y344	309	355	310	366
1212	III	Y309	Y344	309	355	310	366
1213	II	Y305	Y341	305	353	307	364
1214	II	Y305	Y340	305	352	307	363
1216	II	Y305	Y341	305	353	307	364
1218	I	F	F	302	351	303	361
1219	II	Y305	Y341	305	353	307	364
1219	II	Y305	Y341	305	353	307	364
1220	II	Y305	Y341	305	353	307	364
1221	I	F	F	302	350	303	360
1222	II	Y305	Y341	305	353	307	364
1223	III	Y309	Y344	309	355	310	366
1224	II	Y305	Y341	305	353	307	364
1224	III	Y309	Y344	309	355	310	366
1228	II	F	F	F	F	308	374
1228	III	Y306	Y373	306	373	308	373
1228	II	F	F	F	F	308	374
1228	III	Y306	Y373	306	373	308	373
1229	III	Y309	Y344	309	355	310	366
1230	II	Y305	Y341	305	352	307	364
1231	II	Y305	Y341	305	353	307	364
1233	III	Y309	Y344	309	355	310	366
1234	II	Y305	Y341	305	353	307	364
1235	II	Y305	Y340	305	352	307	363
1237	II	Y305	Y341	305	353	307	364
1242	I	F	F	F	F	409	480
1243	I	F	F	302	351	303	361
1245	II	Y305	Y341	305	353	307	364
1246	II	Y305	Y341	305	353	307	364
1247	II	Y305	Y341	305	353	307	364
1248	II	Y305	Y341	305	353	307	364
1249	II	Y305	Y341	305	353	307	364
1250	II	F	F	306	352	304	363
1261	II	F	F	F	F	307	364
1262	II	Y305	Y341	305	353	307	364
1263	I	F	F	302	351	303	361
1263	II	Y305	Y341	305	353	307	364
1263	III	Y309	Y344	309	355	310	366
1263	I	F	F	302	351	303	361
1263	II	Y305	Y341	305	353	307	364
1263	III	Y309	Y344	309	355	310	366
1264	III	Y309	Y344	309	355	310	366
1265	I	F	F	302	351	303	361
1265	II	Y305	Y341	305	353	307	364
1266	II	Y305	Y341	305	353	307	364
1266	III	Y309	Y344	309	355	310	366
1267	I	F	F	302	351	303	361
1267	II	Y305	Y341	305	353	307	364
1267	III	Y309	Y344	309	355	310	366
1268	I	F	F	302	351	303	361
1268	II	Y305	Y341	305	353	307	364
1268	III	Y309	Y344	309	355	310	366
1268	I	F	F	302	351	303	361
1268	II	Y305	Y341	305	353	307	364
1268	III	Y309	Y344	309	355	310	366
1272	III	Y309	Y344	309	355	310	366

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
1274	II	Y305	Y341	305	353	307	364
1274	III	Y309	Y344	309	355	310	366
1274	II	Y305	Y341	305	353	307	364
1274	III	Y309	Y344	309	355	310	366
1275	II	Y305	Y341	305	353	307	364
1276	II	Y305	Y341	305	353	307	364
1277	II	Y306	Y340	306	352	308	363
1278	II	F	F	F	F	308	364
1279	II	Y306	Y341	306	353	308	364
1280	I	F	F	306	351	304	361
1281	II	Y305	Y341	305	353	307	364
1282	II	Y305	Y341	305	353	307	364
1286	II	Y305	Y341	305	353	307	364
1286	III	Y309	Y344	309	355	310	366
1287	II	Y305	Y341	305	353	307	364
1287	III	Y309	Y344	309	355	310	366
1288	II	Y305	Y341	305	353	307	364
1288	III	Y309	Y344	309	355	310	366
1289	II	Y305	Y340	305	352	307	363
1289	III	Y309	Y342	309	354	310	365
1292	III	Y309	Y344	309	355	310	366
1293	II	Y305	Y341	305	353	307	364
1293	III	Y309	Y344	309	355	310	366
1294	II	Y305	Y341	305	353	307	364
1296	II	Y305	Y340	305	352	307	363
1297	I	F	F	302	350	303	360
1297	II	Y305	Y340	305	352	307	363
1297	III	Y309	Y342	309	354	310	365
1298	II	Y306	Y340	306	352	304	362
1299	III	Y309	Y344	309	355	310	366
1300	II	Y305	Y341	305	353	307	364
1300	III	Y309	Y344	309	355	310	366
1301	II	Y305	Y341	305	353	307	364
1302	I	F	F	306	351	304	361
1303	I	F	F	302	351	303	361
1304	II	Y305	Y341	305	353	307	364
1305	II	F	F	306	352	304	363
1306	II	Y305	Y341	305	353	307	364
1306	III	Y309	Y344	309	355	310	366
1307	II	Y305	Y341	305	353	307	364
1307	III	Y309	Y344	309	355	310	366
1308	I	F	F	F	F	303	361
1308	II	Y305	Y341	305	353	307	364
1308	III	Y309	Y344	309	355	310	366
1309	II	Y415	Y441	415	445	417	448
1309	III	Y419	Y443	419	446	420	449
1310	I	F	F	416	451	416	451
1312	III	Y419	Y443	419	446	420	449
1313	III	Y422	Y443	422	446	421	449
1314	III	Y422	Y443	422	446	421	449
1318	III	Y422	Y443	422	446	421	449
1320	I	F	F	416	451	412	451
1321	I	F	F	416	451	412	451
1322	I	F	F	416	451	412	451
1323	II	Y415	Y441	415	445	417	448
1324	III	Y400	Y454	400	454	400	454
1325	II	Y415	Y441	415	445	417	448
1325	III	Y419	Y443	419	446	420	449
1326	II	Y416	Y441	416	445	418	448
1328	III	Y419	Y443	419	446	420	449
1330	III	Y419	Y443	419	446	420	449
1332	III	Y419	Y443	419	446	420	449
1333	II	Y415	Y441	415	445	417	448
1334	III	Y419	Y443	419	446	420	449
1334	III	Y419	Y443	419	446	420	449
1336	I	F	F	416	451	412	451

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
1336	I	F	F	416	451	412	451
1337	I	F	F	416	451	412	451
1338	III	Y422	Y443	422	446	421	449
1339	II	Y416	Y441	416	445	418	448
1340	II	Y416	Y475	416	483	418	490
1341	II	Y416	Y441	416	445	418	448
1343	II	Y416	Y441	416	445	418	448
1344	I	F	F	416	451	412	451
1344	I	F	F	416	451	412	451
1345	II	Y415	Y441	415	445	417	448
1345	II	Y415	Y441	415	445	417	448
1346	III	Y419	Y443	419	446	420	449
1348	I	F	F	416	451	412	451
1349	I	F	F	F	F	412	451
1350	III	Y419	Y443	419	446	420	449
1352	II	Y416	Y441	416	445	418	448
1353	III	Y419	Y443	419	446	420	449
1353	III	Y419	Y443	419	446	420	449
1354	I	F	F	416	451	416	451
1355	I	F	F	416	451	416	451
1356	I	F	F	416	451	416	451
1356	I	F	F	416	451	416	451
1357	I	F	F	416	451	412	451
1358	II	Y416	Y441	416	445	418	448
1360	I	F	F	F	F	412	487
1362	III	F	F	426	472	426	472
1369	II	F	F	416	467	418	470
1378	II	F	F	F	F	416	473
1382	II	F	F	416	467	418	470
1382	II	F	F	416	467	418	470
1384	II	F	F	416	467	418	470
1384	II	F	F	416	467	418	470
1385	II	F	F	416	467	418	470
1385	II	F	F	416	467	418	470
1389	I	F	F	F	F	409	480
1390	II	Y416	Y475	416	483	418	489
1391	I	F	F	F	F	409	480
1391	I	F	F	F	F	409	480
1392	I	F	F	F	F	409	480
1393	II	Y415	Y475	415	484	417	490
1394	II	Y416	Y475	416	484	418	489
1395	II	Y415	Y474	415	483	417	490
1396	II	Y415	Y475	415	484	417	490
1396	III	Y419	Y477	419	486	420	491
1397	I	F	F	F	F	412	487
1398	III	Y419	Y477	419	486	420	491
1400	II	Y415	Y475	415	484	417	490
1401	II	Y415	Y475	415	484	417	490
1402	I	F	F	F	F	412	487
1402	II	Y416	Y475	416	484	418	489
1403	III	Y419	Y477	419	486	420	491
1404	I	F	F	F	F	412	487
1405	II	Y415	Y475	415	484	417	490
1405	III	Y419	Y477	419	486	420	491
1407	I	F	F	F	F	412	487
1408	III	Y422	Y477	422	485	421	491
1409	II	Y416	Y475	416	484	418	490
1409	I	F	F	F	F	412	487
1410	I	F	F	F	F	412	487
1411	I	F	F	F	F	409	480
1413	I	F	F	F	F	412	487
1414	I	F	F	F	F	412	487
1415	I	F	F	F	F	412	487
1417	II	Y416	Y475	416	483	418	489
1418	I	F	F	F	F	411	488
1418	II	F	F	415	483	417	490

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
1418	III	F	F	419	486	420	491
1418	I	F	F	F	F	411	488
1418	II	F	F	415	483	417	490
1418	III	F	F	419	486	420	491
1419	I	F	F	F	F	412	487
1420	I	F	F	F	F	409	480
1421	I	F	F	F	F	409	480
1422	I	F	F	F	F	409	480
1423	I	F	F	F	F	412	487
1426	I	F	F	F	F	412	487
1427	I	F	F	F	F	412	487
1428	I	F	F	F	F	412	487
1431	II	F	F	416	466	418	470
1432	I	F	F	F	F	412	487
1433	I	F	F	F	F	412	487
1435	III	Y419	Y477	419	486	420	491
1436	I	F	F	F	F	411	488
1436	II	F	F	415	483	417	490
1436	III	F	F	419	486	420	491
1436	I	F	F	F	F	411	488
1436	II	F	F	415	483	417	490
1436	III	F	F	419	486	420	491
1437	II	Y416	Y441	416	445	418	448
1438	III	Y516	Y546	516	559	518	563
1439	II	Y508	Y544	508	558	511	562
1442	II	Y509	Y544	509	558	512	562
1444	III	Y516	Y546	516	559	518	563
1445	II	Y509	Y543	509	558	512	562
1446	II	Y508	Y543	508	558	511	562
1447	II	Y508	Y543	508	558	511	562
1448	II	Y508	Y543	508	558	511	562
1449	II	Y509	Y543	509	558	512	562
1450	II	Y508	Y544	508	558	511	562
1451	III	Y516	Y546	516	559	518	563
1452	II	Y509	Y544	509	558	512	562
1453	II	Y509	Y544	509	558	512	562
1454	III	Y516	Y546	516	559	518	563
1455	II	Y508	Y544	508	558	511	562
1456	II	Y508	Y544	508	558	511	562
1457	II	Y508	Y544	508	558	511	562
1458	II	Y509	Y544	509	558	512	562
1458	III	Y517	Y546	517	559	519	563
1459	II	Y509	Y544	509	558	512	562
1459	III	Y517	Y546	517	559	519	563
1461	II	Y509	Y544	509	558	512	562
1462	II	Y509	Y544	509	558	512	562
1463	II	Y508	Y544	508	558	511	562
1465	III	Y516	Y546	516	559	518	563
1466	III	Y516	Y546	516	559	518	563
1467	III	Y516	Y546	516	559	518	563
1469	II	Y508	Y543	508	558	511	562
1470	II	Y508	Y543	508	558	511	562
1471	II	Y509	Y544	509	558	512	562
1471	II	Y509	Y544	509	558	512	562
1472	II	Y509	Y544	509	558	512	562
1473	II	Y508	Y544	508	558	511	562
1474	III	Y516	Y546	516	559	518	563
1475	II	Y508	Y544	508	558	511	562
1476	II	Y508	Y544	508	558	511	562
1477	II	Y508	Y544	508	558	511	562
1477	III	Y516	Y546	516	559	518	563
1479	I	F	F	509	557	512	561
1479	II	Y508	Y544	508	558	511	562
1479	III	Y516	Y546	516	559	518	563
1481	II	Y508	Y544	508	558	511	562
1481	III	Y516	Y546	516	559	518	563

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
1482	II	Y508	Y544	508	558	511	562
1482	III	Y516	Y546	516	559	518	563
1483	II	Y509	Y544	509	558	512	562
1483	III	Y517	Y546	517	559	519	563
1484	II	Y508	Y544	508	558	511	562
1485	II	Y509	Y544	509	558	512	562
1486	III	Y516	Y546	516	559	518	563
1487	II	Y508	Y544	508	558	511	562
1488	II	Y508	Y544	508	558	511	562
1489	II	Y508	Y544	508	558	511	562
1490	II	Y508	Y544	508	558	511	562
1491	I	F	F	F	F	512	561
1492	III	Y516	Y546	516	559	518	563
1493	II	Y508	Y544	508	558	511	562
1494	II	Y508	Y544	508	558	511	562
1495	II	Y509	Y544	509	558	512	562
1496	II	Y509	Y544	509	558	512	562
1498	III	Y516	Y546	516	559	518	563
1499	III	Y516	Y546	516	559	518	563
1500	III	Y516	Y546	516	559	518	563
1502	II	Y508	Y544	508	558	511	562
1503	II	Y508	Y544	508	558	511	562
1504	I	F	F	F	F	512	561
1505	III	Y516	Y546	516	559	518	563
1506	II	Y509	Y544	509	558	512	562
1507	III	Y516	Y546	516	559	518	563
1508	II	Y508	Y544	508	558	511	562
1509	II	Y508	Y544	508	558	511	562
1511	III	Y517	Y545	517	559	519	563
1512	II	Y508	Y544	508	558	511	562
1513	II	Y509	Y544	509	558	512	562
1514	II	Y508	Y544	508	558	511	562
1515	II	Y508	Y544	508	558	511	562
1516	II	Y508	Y544	508	558	511	562
1517	I	F	F	416	451	412	451
1544	I	F	F	606	666	607	673
1544	II	Y613	Y644	613	669	615	676
1544	III	Y619	Y645	619	670	619	677
1544	I	F	F	606	666	607	673
1544	II	Y613	Y644	613	669	615	676
1544	III	Y619	Y645	619	670	619	677
1545	II	F	F	F	F	612	661
1546	II	Y613	Y644	613	669	615	676
1547	II	Y609	Y641	609	654	611	662
1548	III	Y619	Y645	619	670	619	677
1549	III	Y619	Y645	619	670	619	677
1550	III	Y619	Y645	619	670	619	677
1551	III	Y619	Y645	619	670	619	677
1553	I	F	F	603	652	604	658
1554	II	Y613	Y644	613	669	615	676
1555	II	Y613	Y644	613	669	615	676
1556	I	F	F	603	652	604	658
1556	II	Y609	Y641	609	654	611	662
1556	III	Y611	Y642	611	655	618	663
1557	I	F	F	606	666	607	673
1557	II	Y613	Y644	613	669	615	676
1557	III	Y619	Y645	619	670	619	677
1558	II	Y613	Y644	613	669	615	676
1559	II	Y613	Y644	613	669	615	676
1561	II	Y613	Y644	613	669	615	676
1562	II	Y613	Y644	613	669	615	676
1564	II	Y613	Y644	613	669	615	676
1564	III	Y619	Y645	619	670	619	677
1565	I	F	F	606	666	607	673
1566	II	Y613	Y644	613	669	615	676
1566	III	Y619	Y645	619	670	619	677

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
1567	II	Y613	Y644	613	668	615	675
1570	I	F	F	606	666	607	673
1571	I	F	F	F	F	416	451
1572	II	Y613	Y644	613	669	615	676
1573	II	Y613	Y644	613	669	615	676
1574	II	Y613	Y644	613	669	615	676
1575	I	F	F	606	666	607	673
1577	II	Y609	Y641	609	654	611	662
1578	II	Y613	Y644	613	669	615	676
1579	III	Y619	Y645	619	670	619	677
1585	II	Y613	Y644	613	669	615	676
1586	II	Y613	Y644	613	669	615	676
1587	II	Y613	Y644	613	669	615	676
1588	I	F	F	606	666	607	673
1588	II	Y613	Y644	613	669	615	676
1588	III	Y619	Y645	619	670	619	677
1590	II	Y609	Y641	609	654	611	662
1591	III	Y611	Y642	611	655	618	663
1593	III	Y605	Y642	605	655	612	663
1594	II	Y609	Y641	609	654	611	662
1596	II	Y613	Y644	613	669	615	676
1597	II	Y609	Y641	609	654	611	662
1597	III	Y611	Y642	611	655	618	663
1598	II	Y613	Y644	613	669	615	676
1599	II	Y609	Y641	609	654	611	662
1599	III	Y611	Y642	611	655	618	663
1601	I	F	F	606	666	607	673
1601	II	Y613	Y644	613	669	615	676
1601	III	Y619	Y645	619	670	619	677
1602	I	F	F	603	652	604	658
1602	II	Y609	Y641	609	654	611	662
1602	III	Y611	Y642	611	655	618	663
1602	I	F	F	603	652	604	658
1602	II	Y609	Y641	609	654	611	662
1602	III	Y611	Y642	611	655	618	663
1604	II	Y808	Y840	808	851	812	855
1606	II	Y613	Y644	613	669	615	676
1607	II	Y613	Y644	613	669	615	676
1608	II	Y613	Y644	613	669	615	676
1611	II	Y609	Y641	609	654	611	662
1616	III	Y619	Y645	619	670	619	677
1617	II	Y613	Y644	613	669	615	676
1618	II	Y613	Y644	613	669	615	676
1620	II	Y613	Y644	613	669	615	676
1621	II	Y613	Y644	613	669	615	676
1622	II	Y613	Y644	613	669	615	676
1623	II	Y613	Y644	613	669	615	676
1624	II	Y613	Y644	613	669	615	676
1625	II	Y613	Y644	613	669	615	676
1626	I	F	F	606	666	607	673
1627	II	Y613	Y644	613	669	615	676
1629	II	Y613	Y644	613	669	615	676
1630	II	Y613	Y644	613	669	615	676
1631	II	Y613	Y644	613	669	615	676
1634	II	Y613	Y644	613	669	615	676
1636	II	Y613	Y644	613	669	615	676
1637	II	Y613	Y644	613	669	615	676
1638	II	Y613	Y644	613	669	615	676
1639	II	Y613	Y644	613	669	615	676
1640	II	Y613	Y644	613	669	615	676
1641	II	Y613	Y644	613	669	615	676
1642	II	Y613	Y644	613	669	615	676
1643	II	Y613	Y644	613	669	615	676
1644	II	Y613	Y644	613	669	615	676
1645	II	Y613	Y644	613	669	615	676
1646	II	Y613	Y644	613	669	615	676

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
1648	II	Y305	Y341	305	353	307	364
1649	I	F	F	F	F	605	658
1650	II	Y613	Y644	613	669	615	676
1651	II	Y613	Y644	613	669	615	676
1652	II	Y613	Y644	613	669	615	676
1653	II	Y613	Y644	613	669	615	676
1654	II	Y609	Y641	609	654	611	662
1655	I	F	F	606	666	607	673
1655	II	Y613	Y644	613	669	615	676
1655	III	Y619	Y645	619	670	619	677
1655	I	F	F	606	666	607	673
1655	II	Y613	Y644	613	669	615	676
1655	III	Y619	Y645	619	670	619	677
1656	II	Y609	Y641	609	654	611	662
1656	III	Y611	Y642	611	655	618	663
1656	II	Y609	Y641	609	654	611	662
1656	III	Y611	Y642	611	655	618	663
1657	II	Y613	Y644	613	669	615	676
1658	II	Y609	Y641	609	654	611	662
1658	III	Y611	Y642	611	655	618	663
1659	II	Y613	Y644	613	669	615	676
1661	II	Y613	Y644	613	669	615	676
1662	II	Y609	Y641	609	654	611	662
1663	III	Y619	Y645	619	670	619	677
1664	II	Y609	Y641	609	654	611	662
1665	II	Y609	Y641	609	654	611	662
1669	II	Y609	Y641	609	654	611	662
1671	II	Y613	Y644	613	669	615	676
1673	III	Y619	Y645	619	670	619	677
1674	II	Y613	Y644	613	669	615	676
1677	II	Y613	Y644	613	669	615	676
1678	II	Y613	Y644	613	669	615	676
1679	II	Y613	Y644	613	669	615	676
1680	I	F	F	606	666	607	673
1683	II	Y613	Y644	613	669	615	676
1684	II	Y613	Y644	613	669	615	676
1685	II	Y613	Y644	613	669	615	676
1686	II	Y609	Y641	609	654	611	662
1686	III	Y611	Y642	611	655	618	663
1687	II	Y613	Y644	613	669	615	676
1688	II	Y613	Y644	613	669	615	676
1689	I	F	F	606	666	607	673
1690	III	Y619	Y645	619	670	619	677
1691	II	Y613	Y644	613	669	615	676
1692	I	F	F	606	666	607	673
1692	I	F	F	606	666	607	673
1693	II	F	F	F	F	611	659
1694	I	F	F	F	F	605	658
1697	II	F	F	F	F	616	676
1700	II	F	F	F	F	601	679
1701	II	F	F	F	F	612	661
1702	II	Y610	Y641	610	654	612	661
1704	II	Y609	Y641	609	654	611	662
1707	II	Y613	Y644	613	669	615	676
1708	II	Y609	Y641	609	654	611	662
1709	III	Y619	Y645	619	670	619	677
1710	III	Y605	Y642	605	655	612	663
1711	II	Y609	Y641	609	654	611	662
1712	II	Y613	Y644	613	669	615	676
1712	II	Y613	Y644	613	669	615	676
1712	II	Y613	Y644	613	669	615	676
1713	I	F	F	606	666	607	673
1714	I	F	F	F	F	412	487
1715	II	Y809	Y840	809	851	813	855
1716	II	Y808	Y840	808	851	812	855
1717	II	Y306	Y340	306	352	308	363

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
1718	III	Y818	Y841	818	852	820	856
1719	II	Y809	Y840	809	851	813	855
1719	III	Y819	Y841	819	852	821	856
1723	II	Y306	Y340	306	352	304	362
1724	II	F	F	F	F	813	855
1725	II	Y814	Y844	814	859	816	863
1726	II	Y814	Y844	814	859	816	863
1727	II	Y815	Y844	815	859	817	863
1728	II	F	F	F	F	813	855
1729	II	Y808	Y840	808	851	812	855
1730	II	Y808	Y840	808	851	812	855
1731	II	Y808	Y840	808	851	812	855
1731	III	Y818	Y841	818	852	820	856
1732	II	F	F	F	F	813	855
1733	II	Y814	Y844	814	859	816	863
1736	II	Y808	Y840	808	851	812	855
1737	II	Y610	F	610	653	612	660
1738	II	Y610	F	610	653	612	660
1739	I	F	F	F	F	809	854
1740	II	Y815	Y844	815	859	817	863
1740	III	Y825	Y845	825	860	826	864
1742	II	Y808	Y840	808	851	812	855
1743	II	Y808	Y840	808	851	812	855
1747	II	F	F	F	F	813	855
1748	II	Y509	Y544	509	558	512	562
1748	III	Y517	Y546	517	559	519	563
1748	II	Y509	Y544	509	558	512	562
1748	III	Y517	Y546	517	559	519	563
1750	II	Y610	Y640	610	653	612	660
1751	II	Y614	Y644	614	668	616	675
1753	II	F	F	F	F	813	855
1755	II	Y808	Y840	808	851	812	855
1755	III	Y818	Y841	818	852	820	856
1756	II	Y814	Y844	814	859	816	863
1757	II	Y808	Y840	808	851	812	855
1757	III	Y818	Y841	818	852	820	856
1758	I	F	F	807	850	809	854
1759	I	F	F	810	858	811	862
1759	II	Y814	Y844	814	859	816	863
1759	III	Y822	Y845	822	860	823	864
1760	I	F	F	807	850	809	854
1760	II	Y808	Y840	808	851	812	855
1760	III	Y818	Y841	818	852	820	856
1761	II	Y808	Y840	808	851	812	855
1761	III	Y818	Y841	818	852	820	856
1762	II	F	F	F	F	813	855
1763	II	F	F	F	F	813	855
1764	II	Y809	Y840	809	851	813	855
1765	II	Y809	Y840	809	851	813	855
1766	II	F	F	F	F	813	855
1767	II	F	F	F	F	813	855
1768	II	Y809	Y840	809	851	813	855
1769	II	F	F	F	F	813	855
1770	II	Y814	Y844	814	859	816	863
1771	II	F	F	F	F	813	855
1773	III	Y822	Y845	822	860	823	864
1774	II	Y809	Y840	809	851	819	855
1775	II	Y809	Y840	809	851	813	855
1776	II	Y809	Y840	809	851	813	855
1777	I	F	F	807	850	809	854
1778	II	Y809	Y840	809	851	813	855
1779	II	Y808	Y840	808	851	812	855
1780	II	Y808	Y840	808	851	812	855
1781	II	F	F	F	F	813	855
1782	II	Y809	Y840	809	851	813	855
1783	II	Y808	Y840	808	851	812	855

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
1783	III	Y818	Y841	818	852	820	856
1784	II	F	F	F	F	813	855
1786	I	F	F	F	F	809	854
1787	II	Y809	Y840	809	851	813	855
1787	III	Y819	Y841	819	852	821	856
1788	II	Y809	Y840	809	851	813	855
1788	III	Y819	Y841	819	852	821	856
1789	II	Y809	Y840	809	851	813	855
1789	III	Y819	Y841	819	852	821	856
1790	I	F	F	807	850	809	854
1790	II	Y809	Y840	809	851	813	855
1791	II	Y809	Y840	809	851	813	855
1791	III	Y819	Y841	819	852	821	856
1792	II	F	F	F	F	817	863
1793	III	Y822	Y845	822	860	823	864
1794	II	Y814	Y844	814	859	816	863
1796	I	F	F	F	F	809	854
1796	II	F	F	F	F	813	855
1798	I	F	F	F	F	809	854
1799	II	F	F	F	F	813	855
1800	II	F	F	F	F	813	855
1801	II	F	F	F	F	813	855
1802	II	F	F	F	F	813	855
1803	II	Y809	Y840	809	851	813	855
1804	II	F	F	F	F	813	855
1805	III	Y819	Y841	819	852	821	856
1806	II	F	F	F	F	817	863
1807	II	Y815	Y844	815	859	817	863
1808	II	F	F	F	F	813	855
1811	II	Y815	Y844	815	859	817	863
1812	III	Y619	Y645	619	670	619	677
1813	II	Y814	Y844	814	859	816	863
1814	II	Y809	Y840	809	851	813	855
1814	III	Y819	Y841	819	852	821	856
1815	II	Y305	Y340	305	352	307	363
1816	II	F	F	F	F	813	855
1817	II	Y808	Y840	808	851	812	855
1818	II	Y809	Y840	809	851	813	855
1819	II	Y808	Y840	808	851	812	855
1819	III	Y818	Y841	818	852	820	856
1823	II	Y814	Y844	814	859	816	863
1824	II	Y809	Y840	809	851	813	855
1824	III	Y819	Y841	819	852	821	856
1825	II	Y814	Y844	814	859	816	863
1826	I	F	F	F	F	809	854
1826	II	F	F	F	F	813	855
1827	II	Y808	Y840	808	851	812	855
1828	I	F	F	F	F	809	854
1830	II	Y809	Y840	809	851	813	855
1832	II	F	F	F	F	813	855
1833	II	Y808	Y840	808	851	812	855
1835	II	Y808	Y840	808	851	812	855
1835	III	Y818	Y841	818	852	820	856
1837	II	F	F	F	F	813	855
1839	II	Y815	Y844	815	859	817	863
1840	III	Y818	Y841	818	852	820	856
1841	III	F	F	906	956	906	956
1843	II	Y613	Y644	613	669	615	676
1845	III	F	F	904	954	904	954
1846	II	Y610	Y641	610	654	612	661
1847	II	Y814	Y844	814	859	816	863
1848	III	Y818	Y841	818	852	820	856
1849	II	Y814	Y844	814	859	816	863
1851	II	Y609	Y641	609	654	611	662
1851	III	Y609	Y642	609	655	611	663
1862	II	Y305	Y341	305	353	307	364

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
1863	I	F	F	302	351	303	361
1863	II	Y305	Y341	305	353	307	364
1863	III	Y309	Y344	309	355	310	366
1865	II	Y305	Y341	305	353	307	364
1866	I	F	F	302	351	303	361
1866	II	Y305	Y341	305	353	307	364
1866	III	Y309	Y344	309	355	310	366
1868	II	F	F	F	F	418	448
1869	III	Y419	Y443	419	446	420	449
1869	III	Y419	Y443	419	446	420	449
1870	I	F	F	F	F	412	487
1871	II	Y416	Y441	416	445	418	448
1872	III	Y516	Y546	516	559	518	563
1873	I	F	F	F	F	501	553
1884	III	Y619	Y645	619	670	619	677
1885	II	Y613	Y644	613	669	615	676
1886	II	Y609	Y641	609	654	611	662
1887	III	Y611	Y642	611	655	618	663
1888	III	Y610	Y680	610	680	612	680
1891	II	Y609	Y641	609	654	611	662
1894	II	Y613	Y644	613	669	615	676
1895	II	Y613	Y644	613	669	615	676
1897	III	Y605	Y642	605	655	612	663
1898	II	Y808	Y840	808	851	812	855
1902	III	Y818	Y841	818	852	820	856
1903	I	F	F	807	850	809	854
1903	II	Y808	Y840	808	851	812	855
1903	III	Y818	Y841	818	852	820	856
1905	I	F	F	F	F	811	862
1906	II	F	F	F	F	813	855
1907	III	Y822	Y845	822	860	823	864
1908	II	Y809	Y840	809	851	813	855
1908	III	Y819	Y841	819	852	821	856
1910	III	Y822	Y845	822	860	823	864
1914	III	Y309	Y344	309	355	310	366
1915	III	Y309	Y344	309	355	310	366
1916	II	Y610	Y641	610	654	612	661
1917	II	Y305	Y341	305	353	307	364
1918	III	Y309	Y344	309	355	310	366
1919	II	Y305	Y341	305	353	307	364
1920	III	Y309	Y344	309	355	310	366
1921	I	F	F	306	F	304	361
1922	II	Y305	Y340	305	352	307	363
1923	II	F	F	416	467	418	470
1923	II	F	F	416	467	418	470
1928	I	F	F	F	F	409	480
1929	II	F	F	416	467	418	470
1929	II	F	F	416	467	418	470
1931	III	F	F	906	956	906	956
1931	III	F	F	906	956	906	956
1935	I	F	F	610	652	605	658
1935	II	Y617	Y641	617	654	612	661
1935	III	Y612	Y642	612	655	620	663
1938	II	Y808	Y840	808	851	812	855
1938	III	Y818	Y841	818	852	820	856
1939	II	F	F	F	F	817	863
1940	II	Y809	Y840	809	851	813	855
1941	III	Y907	Y964	907	964	907	964
1942	III	Y516	Y546	516	559	518	563
1944	III	Y404	Y455	404	455	404	455
1945	III	Y404	Y455	404	455	404	455
1986	I	F	F	F	F	303	361
1986	II	Y305	Y341	305	352	307	364
1986	III	Y309	Y343	309	355	310	366
1987	II	Y305	Y341	305	353	307	364
1987	III	Y309	Y344	309	355	310	366

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
1988	I	F	F	F	F	303	361
1988	II	Y305	Y341	305	352	307	364
1988	III	Y309	Y343	309	355	310	366
1989	I	F	F	302	351	303	361
1989	II	Y305	Y341	305	353	307	364
1989	III	Y309	Y344	309	355	310	366
1990	III	Y907	Y964	907	964	907	964
1991	I	F	F	F	F	303	361
1992	I	F	F	F	F	303	361
1992	II	Y305	Y341	305	352	307	364
1992	III	Y309	Y343	309	355	310	366
1993	I	F	F	302	351	303	361
1993	II	Y305	Y341	305	353	307	364
1993	III	Y309	Y344	309	355	310	366
1999	II	Y305	Y341	305	353	307	364
1999	III	Y309	Y344	309	355	310	366
2000	III	F	F	407	456	407	456
2001	III	Y419	Y443	419	446	420	449
2004	II	F	F	416	467	418	470
2008	II	F	F	416	467	418	470
2008	III	F	F	416	469	418	471
2009	III	F	F	419	469	420	471
2010	I	F	F	F	F	412	487
2011	I	F	F	F	F	412	487
2012	I	F	F	F	F	412	487
2013	I	F	F	F	F	412	487
2014	II	Y501	Y540	501	550	506	554
2016	II	F	F	F	F	600	679
2017	II	F	F	F	F	600	679
2018	II	Y613	Y644	613	669	615	676
2019	II	Y609	Y641	609	654	611	662
2020	III	Y619	Y645	619	670	619	677
2021	III	Y611	Y642	611	655	618	663
2022	II	Y609	Y640	609	653	611	660
2023	II	Y609	Y641	609	654	611	662
2024	I	F	F	610	652	605	658
2024	II	Y617	Y641	617	654	612	661
2024	III	Y612	Y642	612	655	620	663
2025	I	F	F	606	666	607	673
2025	II	Y613	Y644	613	669	615	676
2025	III	Y619	Y645	619	670	619	677
2026	I	F	F	606	666	607	673
2026	II	Y613	Y644	613	669	615	676
2026	III	Y619	Y645	619	670	619	677
2027	II	Y613	Y644	613	669	615	676
2028	II	F	F	F	F	801	866
2029	I	F	F	F	F	813	854
2030	I	F	F	F	F	809	854
2030	II	F	F	F	F	812	855
2030	III	Y818	Y841	818	852	820	856
2031	I	F	F	F	F	809	854
2031	II	F	F	F	F	813	855
2031	II	Y807	Y840	807	851	813	855
2033	II	Y814	Y844	814	859	816	863
2038	II	Y609	Y641	609	654	611	662
2045	II	Y305	Y341	305	353	307	364
2045	II	Y305	Y341	305	353	307	364
2046	III	Y309	Y344	309	355	310	366
2047	II	Y305	Y341	305	353	307	364
2047	III	Y309	Y344	309	355	310	366
2048	III	Y309	Y344	309	355	310	366
2049	III	Y309	Y344	309	355	310	366
2050	II	Y305	Y341	305	353	307	364
2051	II	Y808	Y840	808	851	812	855
2052	III	Y309	Y344	309	355	310	366
2053	III	Y309	Y344	309	355	310	366

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
2054	I	F	F	807	850	809	854
2055	III	Y309	Y344	309	355	310	366
2056	II	Y305	Y341	305	353	307	364
2057	II	Y305	Y341	305	353	307	364
2057	III	Y309	Y344	309	355	310	366
2058	II	Y305	Y341	305	353	307	364
2059	I	F	F	302	351	303	361
2059	II	Y305	Y341	305	353	307	364
2059	III	Y309	Y344	309	355	310	366
2067	III	Y516	Y546	516	559	518	563
2071		Y909	Y958	909	958	909	958
2074	III	Y619	Y645	619	670	619	677
2075	II	Y609	Y641	609	654	611	662
2076	II	Y609	Y640	609	653	611	660
2077	III	Y619	Y645	619	670	619	677
2078	II	Y609	Y641	609	654	611	662
2079	II	Y808	Y840	808	851	812	855
2205	III	Y611	Y642	611	655	618	663
2206	II	Y609	Y641	609	654	611	662
2206	III	Y611	Y642	611	655	618	663
2206	II	Y609	Y641	609	654	611	662
2206	III	Y611	Y642	611	655	618	663
2208	III	Y517	Y546	517	559	519	563
2209	III	Y818	Y841	818	852	820	856
2210	III	F	F	419	468	420	471
2210	III	F	F	419	468	420	471
2211	III	F	F	908	957	908	957
2213	III	Y419	Y443	419	446	420	449
2214	III	Y822	Y845	822	860	823	864
2215	III	Y822	Y845	822	860	823	864
2218	II	Y808	Y840	808	851	812	855
2219	III	Y309	Y344	309	355	310	366
2222	III	Y309	Y344	309	355	310	366
2224	II	Y609	Y641	609	654	611	662
2225	III	Y818	Y841	818	852	820	856
2226	II	Y808	Y840	808	851	812	855
2227	III	Y309	Y344	309	355	310	366
2233	III	Y619	Y645	619	670	619	677
2234	III	Y309	Y344	309	355	310	366
2235	III	Y611	Y642	611	655	618	663
2236	II	Y609	Y641	609	654	611	662
2237	III	Y619	Y645	619	670	619	677
2238	III	Y309	Y344	309	355	310	366
2239	III	Y619	Y645	619	670	619	677
2240	I	F	F	807	850	809	854
2241	II	Y305	Y341	305	353	307	364
2242	II	Y305	Y341	305	353	307	364
2243	III	Y309	Y344	309	355	310	366
2244	III	Y309	Y344	309	355	310	366
2245	III	Y309	Y344	309	355	310	366
2246	II	Y305	Y341	305	353	307	364
2247	III	Y309	Y344	309	355	310	366
2248	II	Y808	Y840	808	851	812	855
2250	II	Y613	Y644	613	669	615	676
2251	II	Y305	Y341	305	353	307	364
2251	II	Y305	Y341	305	353	307	364
2252	II	Y305	Y341	305	353	307	364
2253	II	Y609	Y641	609	654	611	662
2256	II	Y305	Y341	305	353	307	364
2257	I	F	F	F	F	412	487
2258	II	Y809	Y840	809	851	813	855
2259	II	Y808	Y840	808	851	812	855
2260	III	Y309	Y342	309	354	310	365
2261	II	Y613	Y644	613	669	615	676
2262	II	Y808	Y840	808	851	812	855
2263	II	Y305	Y341	305	353	307	364

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
2264	II	Y808	Y840	808	851	812	855
2265	III	Y309	Y344	309	355	310	366
2266	II	Y305	Y340	305	352	307	363
2267	II	Y609	Y640	609	653	611	660
2269	III	Y818	Y841	818	852	820	856
2270	II	Y306	Y340	306	352	308	363
2271	III	Y309	Y344	309	355	310	366
2272	III	Y611	Y642	611	655	618	663
2273	III	Y611	Y642	611	655	618	663
2274	III	Y611	Y642	611	655	618	663
2275	III	Y309	Y344	309	355	310	366
2276	III	Y309	Y342	309	354	310	365
2277	II	Y305	Y341	305	353	307	364
2278	II	Y305	Y341	305	353	307	364
2279	III	Y611	Y642	611	655	618	663
2280	III	Y822	Y845	822	860	823	864
2281	II	Y609	Y641	609	654	611	662
2282	III	Y309	Y344	309	355	310	366
2283	III	Y309	Y344	309	355	310	366
2284	II	Y305	Y341	305	352	307	364
2285	II	Y609	Y641	609	654	611	662
2286	III	Y309	Y344	309	355	310	366
2287	II	Y305	Y341	305	353	307	364
2288	II	Y305	Y341	305	353	307	364
2289	III	Y818	Y841	818	852	820	856
2290	III	Y611	Y642	611	655	618	663
2291	III	Y619	Y645	619	670	619	677
2293	III	Y309	Y344	309	355	310	366
2294	III	Y611	Y642	611	655	618	663
2296	II	Y305	Y341	305	353	307	364
2297	III	Y309	Y344	309	355	310	366
2298	II	Y305	Y341	305	353	307	364
2299	III	Y611	Y642	611	655	618	663
2300	III	Y611	Y642	611	655	618	663
2301	II	Y305	Y341	305	353	307	364
2302	III	Y309	Y344	309	355	310	366
2303	III	Y309	Y344	309	355	310	366
2305	II	Y808	Y840	808	851	812	855
2306	II	Y609	Y641	609	654	611	662
2307	II	Y609	Y641	609	654	611	662
2308	II	Y809	Y840	809	851	813	855
2309	II	Y305	Y341	305	353	307	364
2310	III	Y309	Y343	309	355	310	366
2311	III	Y611	Y642	611	655	618	663
2313	III	Y309	Y344	309	355	310	366
2315	II	F	F	907	964	907	964
2316	I	F	F	606	666	607	673
2317	I	F	F	603	652	604	658
2318	II	F	F	416	467	418	470
2319	III	Y309	Y344	309	355	310	366
2320	III	Y818	Y841	818	852	820	856
2321	III	Y611	Y642	611	655	618	663
2322	II	Y609	Y641	609	654	611	662
2323	III	Y309	Y344	309	355	310	366
2324	III	Y309	Y344	309	355	310	366
2325	III	Y309	Y344	309	355	310	366
2326	III	Y818	Y841	818	852	820	856
2327	III	Y818	Y841	818	852	820	856
2328	III	Y611	Y642	611	655	618	663
2329	III	Y309	Y344	309	355	310	366
2330	III	Y309	Y344	309	355	310	366
2331	III	Y822	Y845	822	860	823	864
2332	III	Y309	Y344	309	355	310	366
2333	II	Y305	Y341	305	352	307	364
2335	II	Y305	Y341	305	352	307	364
2336	I	F	F	F	F	303	361

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
2338	II	Y305	Y341	305	353	307	364
2339	II	Y305	Y341	305	353	307	364
2340	II	Y305	Y341	305	353	307	364
2341	III	Y309	Y344	309	355	310	366
2342	II	Y305	Y341	305	353	307	364
2343	II	Y305	Y341	305	353	307	364
2344	II	Y305	Y341	305	353	307	364
2344	III	Y309	Y344	309	355	310	366
2345	II	Y305	Y341	305	353	307	364
2346	II	Y305	Y341	305	353	307	364
2347	II	Y306	Y341	306	352	308	363
2348	III	Y309	Y344	309	355	310	366
2350	II	Y305	Y341	305	353	307	364
2351	II	Y305	Y341	305	353	307	364
2351	III	Y309	Y344	309	355	310	366
2352	II	Y305	Y341	305	353	307	364
2353	II	Y305	Y340	305	352	307	363
2354	II	Y305	Y341	305	352	307	364
2356	I	F	F	306	351	304	361
2357	II	Y808	Y840	808	851	812	855
2358	II	Y305	Y341	305	353	307	364
2359	II	Y305	Y340	305	352	307	363
2360	II	Y306	Y341	306	352	308	364
2361	III	Y309	Y342	309	354	310	365
2362	II	Y305	Y341	305	353	307	364
2363	I	F	F	F	F	308	360
2364	III	Y309	Y344	309	355	310	366
2366	III	Y309	Y344	309	355	310	366
2367	II	Y305	Y341	305	353	307	364
2368	III	Y309	Y344	309	355	310	366
2370	II	Y305	Y341	305	353	307	364
2371	I	F	F	306	351	304	361
2372	II	Y305	Y341	305	353	307	364
2373	II	Y305	Y341	305	353	307	364
2374	II	Y305	Y341	305	353	307	364
2375	II	Y305	Y341	305	353	307	364
2376	II	Y305	Y341	305	353	307	364
2377	II	Y305	Y341	305	353	307	364
2378	II	Y305	Y341	305	352	307	364
2379	II	Y305	Y340	305	352	307	363
2380	II	Y305	Y341	305	353	307	364
2381	II	Y305	Y341	305	353	307	364
2383	II	Y305	Y340	305	352	307	363
2384	II	Y305	Y341	305	353	307	364
2385	II	Y305	Y341	305	353	307	364
2386	II	Y305	Y340	305	352	307	363
2387	II	Y305	Y341	305	353	307	364
2388	II	Y305	Y341	305	353	307	364
2389	I	F	F	302	351	303	361
2390	II	Y305	Y341	305	353	307	364
2391	II	Y305	Y341	305	353	307	364
2392	III	Y309	Y344	309	355	310	366
2393	II	Y305	Y341	305	353	307	364
2394	III	Y309	Y344	309	355	310	366
2395	II	Y305	Y340	305	352	307	363
2396	II	Y305	Y341	305	352	307	364
2397	II	Y305	Y341	305	353	307	364
2398	II	Y305	Y341	305	353	307	364
2399	II	Y305	Y340	305	352	307	363
2400	II	Y305	Y341	305	353	307	364
2401	I	F	F	807	850	809	854
2402	II	Y306	Y341	306	352	308	363
2403	II	Y305	Y341	305	353	307	364
2404	II	F	F	F	F	307	364
2405	III	Y309	Y344	309	355	310	366
2406	II	Y305	Y341	305	353	307	364

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
2409	II	Y305	Y341	305	353	307	364
2410	II	Y305	Y341	305	353	307	364
2411	II	Y305	Y341	305	352	307	364
2412	II	Y305	Y341	305	353	307	364
2413	III	Y309	Y344	309	355	310	366
2414	II	Y305	Y341	305	353	307	364
2416	II	Y305	Y341	305	353	307	364
2427	II	Y503	Y540	503	550	505	554
2427	III	Y514	Y541	514	551	515	555
2428	II	Y503	Y540	503	550	505	554
2428	III	Y514	Y541	514	551	515	555
2429	II	Y501	Y540	501	550	506	554
2429	III	Y506	Y541	506	551	507	555
2430	I	F	F	810	858	811	862
2430	II	Y814	Y843	814	859	816	863
2430	III	Y822	Y845	822	860	823	864
2431	III	Y611	Y642	611	655	618	663
2432	III	Y611	Y642	611	655	618	663
2433	III	Y611	Y642	611	655	618	663
2434	II	Y808	Y840	808	851	812	855
2435	II	F	F	F	F	813	855
2436	II	Y305	Y341	305	353	307	364
2437	II	F	F	808	851	812	855
2439	II	Y815	Y844	815	859	817	863
2440	III	Y822	Y845	822	860	823	864
2443	II	F	F	F	F	813	855
2444	I	F	F	F	F	809	854
2446	III	Y619	Y645	619	670	619	677
2456	I	F	F	306	351	304	361
2457	II	Y305	Y341	305	353	307	364
2458	II	Y305	Y341	305	353	307	364
2459	I	F	F	302	351	303	361
2460	II	Y305	Y341	305	353	307	364
2461	II	Y305	Y341	305	353	307	364
2463	I	F	F	F	F	412	487
2464	II	Y508	Y543	508	558	511	562
2465	II	Y508	Y544	508	558	511	562
2465	II	Y508	Y544	508	558	511	562
2466	I	F	F	F	F	512	561
2468	II	Y508	Y544	508	558	511	562
2469	III	Y516	Y546	516	559	518	563
2470	III	Y611	Y642	611	655	618	663
2471	I	F	F	608	666	608	673
2473	III	Y619	Y645	619	670	619	677
2475	III	Y822	Y845	822	860	823	864
2478	II	Y306	Y341	306	352	308	364
2478	III	Y309	Y343	309	355	310	366
2478	II	Y306	Y341	306	352	308	364
2478	III	Y309	Y343	309	355	310	366
2486	II	Y306	Y341	306	352	308	364
2490	II	Y609	Y641	609	654	611	662
2491	III	Y818	Y841	818	852	820	856
2491	III	Y818	Y841	818	852	820	856
2493	II	Y306	Y340	306	352	308	363
2496	III	Y818	Y841	818	852	820	856
2498	III	Y309	Y344	309	355	310	366
2501	II	Y609	Y641	609	654	611	662
2501	III	Y611	Y642	611	655	618	663
2502	II	Y809	Y840	809	851	813	855
2503	III	Y822	Y845	822	860	823	864
2504	III	Y611	Y642	611	655	618	663
2505	III	Y619	Y645	619	670	619	677
2506	II	Y814	Y844	814	859	816	863
2507	III	Y822	Y845	822	860	823	864
2508	III	Y822	Y845	822	860	823	864
2509	II	Y815	Y844	815	859	817	863

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
2511	III	Y818	Y841	818	852	820	856
2512	III	Y619	Y645	619	670	619	677
2513	II	Y808	Y840	808	851	812	855
2514	III	Y309	Y344	309	355	310	366
2515	III	Y611	Y642	611	655	618	663
2516	III	Y619	Y645	619	670	619	677
2518	III	Y611	Y642	611	655	618	663
2520	III	Y309	Y344	309	355	310	366
2522	II	Y609	Y641	609	654	611	662
2524	III	Y309	Y344	309	355	310	366
2525	III	Y611	Y642	611	655	618	663
2526	III	Y309	Y342	309	354	310	365
2527	III	Y309	Y344	309	355	310	366
2528	III	Y309	Y344	309	355	310	366
2529	III	Y309	Y342	309	354	310	365
2531	II	Y808	Y840	808	851	812	855
2533	III	Y611	Y642	611	655	618	663
2535	II	Y305	Y340	305	352	307	363
2535	II	Y305	Y340	305	352	307	363
2536	II	Y305	Y341	305	353	307	364
2538	III	Y419	Y443	419	446	420	449
2541	III	Y309	Y344	309	355	310	366
2542	II	Y609	Y641	609	654	611	662
2545	II	F	F	416	467	418	470
2545	III	F	F	416	469	418	471
2546	II	F	F	416	467	418	470
2546	III	F	F	416	469	418	471
2547	I	F	F	F	F	512	561
2552	II	Y609	Y641	609	654	611	662
2554	II	Y305	Y341	305	353	307	364
2555	II	F	F	416	452	418	453
2556	II	F	F	416	452	418	453
2557	II	F	F	416	452	418	453
2557	II	F	F	416	452	418	453
2557	II	F	F	416	452	418	453
2557	II	F	F	416	452	418	453
2560	III	Y309	Y344	309	355	310	366
2561	I	F	F	302	351	303	361
2564	II	Y809	Y840	809	851	813	855
2564	III	Y819	Y841	819	852	821	856
2565	III	Y818	Y841	818	852	820	856
2567	II	Y613	Y644	613	669	615	676
2570	I	F	F	606	666	607	673
2570	II	Y613	Y644	613	669	615	676
2570	III	Y619	Y645	619	670	619	677
2571	II	Y808	Y840	808	851	812	855
2572	II	Y609	Y641	609	654	611	662
2573	II	Y508	Y543	508	558	511	562
2574	II	Y610	Y641	610	654	612	661
2577	II	Y808	Y840	808	851	812	855
2578	III	Y822	Y845	822	860	823	864
2579	III	Y822	Y845	822	860	823	864
2580	III	Y818	Y841	818	852	820	856
2581	III	Y818	Y841	818	852	820	856
2582	III	Y818	Y841	818	852	820	856
2583	II	Y814	Y844	814	859	816	863
2583	II	Y814	Y844	814	859	816	863
2584	II	Y808	Y840	808	851	812	855
2584	II	Y808	Y840	808	851	812	855
2585	III	Y822	Y845	822	860	823	864
2585	III	Y822	Y845	822	860	823	864
2586	III	Y818	Y841	818	852	820	856
2586	III	Y818	Y841	818	852	820	856
2587	II	Y613	Y644	613	669	615	676
2588	I	F	F	606	666	607	673
2588	II	Y613	Y644	613	669	615	676

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
2588	III	Y619	Y645	619	670	619	677
2589	II	Y609	Y641	609	654	611	662
2590	III	F	F	909	958	909	958
2603	II	Y305	Y341	305	352	307	364
2604	I	F	F	807	850	809	854
2607	III	Y309	Y344	309	355	310	366
2608	III	Y309	Y344	309	355	310	366
2609	III	Y611	Y642	611	655	618	663
2610	III	Y309	Y342	309	354	310	365
2611	II	Y609	Y641	609	654	611	662
2612	II	Y305	Y341	305	353	307	364
2614	III	Y309	Y344	309	355	310	366
2615	II	Y305	Y341	305	353	307	364
2616	II	Y305	Y341	305	353	307	364
2616	III	Y309	Y344	309	355	310	366
2617	III	Y309	Y344	309	355	310	366
2618	III	Y309	Y344	309	355	310	366
2619	II	Y808	Y840	808	851	812	855
2620	III	Y309	Y344	309	355	310	366
2621	III	Y309	Y344	309	355	310	366
2622	II	Y305	Y341	305	352	307	364
2623	III	Y419	Y443	419	446	420	449
2624	II	Y416	Y475	416	483	418	489
2627	II	Y508	Y544	508	558	511	562
2628	I	F	F	606	666	607	673
2629	I	F	F	606	666	607	673
2630	I	F	F	606	666	607	673
2630	I	F	F	606	666	607	673
2642	I	F	F	606	665	607	672
2643	II	Y609	Y641	609	654	611	662
2645	II	Y613	Y644	613	669	615	676
2647	II	Y613	Y644	613	669	615	676
2648	II	Y609	Y641	609	654	611	662
2649	II	Y613	Y644	613	669	615	676
2650	II	Y609	Y641	609	654	611	662
2651	III	Y619	Y645	619	670	619	677
2653	II	Y609	Y641	609	654	611	662
2655	III	Y619	Y645	619	670	619	677
2656	III	Y611	Y642	611	655	618	663
2657	II	Y613	Y644	613	669	615	676
2659	III	Y619	Y645	619	670	619	677
2660	III	Y619	Y645	619	670	619	677
2661	III	Y611	Y642	611	655	618	663
2664	III	Y611	Y642	611	655	618	663
2667	III	Y611	Y642	611	655	618	663
2669	II	Y609	Y641	609	654	611	662
2669	III	Y611	Y642	611	655	618	663
2670	II	Y814	Y844	814	859	816	863
2671	II	Y613	Y644	613	669	615	676
2672	III	Y819	Y841	819	852	813	856
2673	II	Y613	Y644	613	669	615	676
2674	III	Y619	Y645	619	670	619	677
2677	II	Y809	Y840	809	851	813	855
2677	III	Y819	Y841	819	852	821	856
2678	II	Y814	Y844	814	859	816	863
2679	II	Y809	Y840	809	851	813	855
2679	III	Y819	Y841	819	852	821	856
2680	II	Y814	Y844	814	859	816	863
2681	II	Y809	Y840	809	851	813	855
2681	III	Y819	Y841	819	852	821	856
2682	II	Y814	Y844	814	859	816	863
2683	II	Y808	Y840	808	851	812	855
2684	III	Y309	Y342	309	354	310	365
2685	II	Y808	Y840	808	851	812	855
2686	II	Y808	Y840	808	851	812	855
2687	III	Y419	Y443	419	446	420	449

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
2688	III	Y611	Y642	611	655	618	663
2689	III	Y611	Y642	611	655	618	663
2690	II	Y609	Y641	609	654	611	662
2691	II	F	F	F	F	817	863
2693	III	Y818	Y841	818	852	820	856
2698	III	Y822	Y845	822	860	823	864
2699	I	F	F	807	850	809	854
2705	II	Y808	Y840	808	851	812	855
2707	II	Y305	Y341	305	353	307	364
2707	III	Y309	Y344	309	355	310	366
2709	III	Y309	Y344	309	355	310	366
2710	III	Y309	Y344	309	355	310	366
2713	III	Y619	Y645	619	670	619	677
2714	III	Y419	Y443	419	446	420	449
2715	III	Y419	Y443	419	446	420	449
2716	III	Y619	Y645	619	670	619	677
2717	III	Y419	Y443	419	446	420	449
2719	II	Y508	Y543	508	558	511	562
2720	III	Y516	Y546	516	559	518	563
2721	II	Y508	Y544	508	558	511	562
2722	III	Y516	Y546	516	559	518	563
2723	II	Y508	Y544	508	558	511	562
2724	III	Y516	Y546	516	559	518	563
2725	III	Y516	Y546	516	559	518	563
2726	III	Y516	Y546	516	559	518	563
2727	II	Y613	Y644	613	667	615	674
2728	III	Y516	Y546	516	559	518	563
2729	III	Y619	Y645	619	670	619	677
2730	III	Y611	Y642	611	655	618	663
2732	III	Y611	Y642	611	655	618	663
2733	I	F	F	302	350	303	360
2733	II	Y305	Y340	305	352	307	363
2733	III	Y309	Y342	309	354	310	365
2733	I	F	F	302	350	303	360
2733	II	Y305	Y340	305	352	307	363
2733	III	Y309	Y342	309	354	310	365
2734	I	F	F	807	850	809	854
2734	II	Y808	Y840	808	851	812	855
2734	I	F	F	807	850	809	854
2734	II	Y808	Y840	808	851	812	855
2735	I	F	F	807	850	809	854
2735	II	Y808	Y840	808	851	812	855
2735	III	Y818	Y841	818	852	820	856
2735	I	F	F	807	850	809	854
2735	II	Y808	Y840	808	851	812	855
2735	III	Y818	Y841	818	852	820	856
2738	II	Y609	Y641	609	654	611	662
2739	III	Y818	Y841	818	852	820	856
2741	II	Y509	Y543	509	558	512	562
2742	II	Y609	Y640	609	653	611	660
2744	II	Y609	Y640	609	653	611	660
2745	II	Y609	Y640	609	653	611	660
2746	II	Y609	Y641	609	653	611	660
2747	III	Y611	Y642	611	655	618	663
2748	II	Y609	Y640	609	653	611	660
2749	I	F	F	F	F	304	361
2750	II	Y609	Y641	609	654	611	662
2751	II	Y808	Y840	808	851	812	855
2752	III	Y309	Y344	309	355	310	366
2753	III	Y611	Y642	611	655	618	663
2754	II	Y609	Y641	609	654	611	662
2757	I	F	F	606	666	607	673
2757	II	Y613	Y644	613	669	615	676
2757	III	Y619	Y645	619	670	619	677
2758	II	Y305	Y341	305	352	307	364
2758	I	F	F	F	F	303	361

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
2759	I	F	F	606	666	607	673
2759	II	Y613	Y644	613	669	615	676
2759	III	Y619	Y645	619	670	619	677
2760	I	F	F	F	F	303	361
2760	II	Y305	Y341	305	352	307	364
2761	I	F	F	606	666	607	673
2761	II	Y613	Y644	613	669	615	676
2761	III	Y619	Y645	619	670	619	677
2762	I	F	F	F	F	303	361
2762	II	Y305	Y341	305	352	307	364
2763	I	F	F	606	666	607	673
2763	II	Y613	Y644	613	669	615	676
2763	III	Y619	Y645	619	670	619	677
2764	I	F	F	F	F	303	361
2764	II	Y305	Y341	305	352	307	364
2771	I	F	F	606	666	607	673
2771	II	Y613	Y644	613	669	615	676
2771	III	Y619	Y645	619	670	619	677
2772	I	F	F	F	F	303	361
2772	II	Y305	Y341	305	352	307	364
2775	I	F	F	606	666	607	673
2775	II	Y613	Y644	613	669	615	676
2775	III	Y619	Y645	619	670	619	677
2776	I	F	F	F	F	303	361
2776	II	Y305	Y341	305	352	307	364
2777	I	F	F	606	666	607	673
2777	II	Y613	Y644	613	669	615	676
2777	III	Y619	Y645	619	670	619	677
2778	I	F	F	F	F	303	361
2778	II	Y305	Y341	305	352	307	364
2779	I	F	F	606	666	607	673
2779	II	Y613	Y644	613	669	615	676
2779	III	Y619	Y645	619	670	619	677
2780	I	F	F	F	F	303	361
2780	II	Y305	Y341	305	352	307	364
2781	I	F	F	606	666	607	673
2781	II	Y613	Y644	613	669	615	676
2781	III	Y619	Y645	619	670	619	677
2782	I	F	F	F	F	303	361
2782	II	Y305	Y341	305	352	307	364
2783	I	F	F	606	666	607	673
2783	II	Y613	Y644	613	669	615	676
2783	III	Y619	Y645	619	670	619	677
2784	I	F	F	F	F	303	361
2784	II	Y305	Y341	305	352	307	364
2785	III	Y611	Y642	611	655	618	663
2786	I	F	F	606	666	607	673
2786	II	Y613	Y644	613	669	615	676
2786	III	Y619	Y645	619	670	619	677
2787	I	F	F	F	F	303	361
2787	II	Y305	Y341	305	352	307	364
2788	I	F	F	610	652	605	658
2788	II	Y610	Y641	610	654	612	661
2788	III	Y611	Y642	611	655	618	663
2789	II	Y809	Y840	809	851	813	855
2789	II	Y809	Y840	809	851	813	855
2790	II	Y809	Y840	809	851	813	855
2790	III	Y818	Y841	818	852	820	856
2793	III	F	F	419	469	420	471
2793	III	F	F	419	469	420	471
2793	III	F	F	419	469	420	471
2793	III	F	F	419	469	420	471
2794		F	F	800	870	800	870
2795		F	F	800	870	800	870
2796	II	Y809	Y840	809	851	813	855
2796	II	Y809	Y840	809	851	813	855

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
2797	II	Y809	Y840	809	851	813	855
2798	II	F	F	F	F	812	855
2799	II	F	F	F	F	812	855
2800		F	F	806	872	806	872
2801	I	F	F	807	850	809	854
2801	II	Y808	Y840	808	851	812	855
2801	III	Y818	Y841	818	852	820	856
2801	I	F	F	807	850	809	854
2801	II	Y808	Y840	808	851	812	855
2801	III	Y818	Y841	818	852	820	856
2802	III	Y822	Y845	822	860	823	864
2803	III	F	F	804	867	804	867
2805	II	Y416	Y475	416	483	418	489
2806	I	F	F	F	F	411	488
2807		F	F	902	953	902	953
2809	III	F	F	803	868	803	868
2809	III	F	F	See 805	869	See 805	869
2810	I	F	F	603	652	604	658
2810	II	Y609	Y641	609	654	611	662
2810	III	Y611	Y642	611	655	618	663
2811	I	F	F	606	666	607	673
2811	II	Y613	Y644	613	669	615	676
2811	III	Y619	Y645	619	670	619	677
2812	III	Y822	Y845	822	860	823	864
2813	I	F	F	F	F	411	488
2813	II	Y415	Y475	415	484	417	490
2813	III	Y419	Y477	419	486	420	491
2815	III	Y818	Y841	818	852	820	856
2817	II	Y809	Y840	809	851	813	855
2817	III	Y819	Y841	819	852	821	856
2818	II	Y808	Y840	808	851	812	855
2818	III	Y818	Y841	818	852	820	856
2819	III	Y818	Y841	818	852	820	856
2820	III	Y818	Y841	818	852	820	856
2821	II	Y609	Y641	609	654	611	662
2821	III	Y611	Y642	611	655	618	663
2822	II	Y609	Y641	609	654	611	662
2823	III	Y822	Y845	822	860	823	864
2829	III	Y818	Y841	818	852	820	856
2830	II	Y415	Y475	415	484	417	490
2831	III	Y605	Y642	605	655	612	663
2834	III	Y822	Y845	822	860	823	864
2835	II	F	F	F	F	418	489
2837	II	Y809	Y840	809	851	813	855
2837	III	Y819	Y841	819	852	821	856
2838	II	Y305	Y341	305	353	307	364
2839	II	Y609	Y641	609	654	611	662
2840	III	Y309	Y344	309	355	310	366
2841	III	Y309	Y343	309	355	310	366
2842	III	Y309	Y344	309	355	310	366
2844	III	Y419	Y477	419	486	420	491
2849	III	Y611	Y642	611	655	618	663
2850	III	Y309	Y344	309	355	310	366
2851	II	Y808	Y840	808	851	812	855
2852	I	F	F	F	F	416	451
2853	III	Y619	Y645	619	670	619	677
2854	III	Y619	Y645	619	670	619	677
2855	III	Y619	Y645	619	670	619	677
2856	III	Y619	Y645	619	670	619	677
2858	III	Y419	Y443	419	446	420	449
2859	II	Y613	Y644	613	669	615	676
2861	II	Y613	Y644	613	669	615	676
2862	III	Y619	Y645	619	670	619	677
2863	II	Y613	Y644	613	669	615	676
2864	II	Y613	Y644	613	669	615	676
2865	III	Y822	Y845	822	860	823	864

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
2869	II	Y815	Y844	815	859	817	863
2869	III	Y825	Y845	825	860	826	864
2871	III	Y619	Y645	619	670	619	677
2872	II	Y609	Y641	609	654	611	662
2872	III	Y611	Y642	611	655	618	663
2873	III	Y611	Y642	611	655	618	663
2874	III	Y611	Y642	611	655	618	663
2875	III	Y619	Y645	619	670	619	677
2876	III	Y619	Y645	619	670	619	677
2878	III	Y419	Y443	419	446	420	449
2878	III	Y419	Y443	419	446	420	449
2879	I	F	F	807	850	809	854
2880	II	Y508	Y544	508	558	511	562
2880	III	Y516	Y546	516	559	518	563
2880	II	Y508	Y544	508	558	511	562
2880	III	Y516	Y546	516	559	518	563
2881	II	F	F	F	F	416	473
2881	III	F	F	422	473	421	473
2902	I	F	F	603	652	604	658
2902	II	Y609	Y641	609	654	611	662
2902	III	Y611	Y642	611	655	618	663
2903	I	F	F	603	652	604	658
2903	II	Y609	Y641	609	654	611	662
2903	III	Y611	Y642	611	655	618	663
2904	III	Y818	Y841	818	852	820	856
2904	III	Y818	Y841	818	852	820	856
2905	III	Y822	Y845	822	860	823	864
2905	III	Y822	Y845	822	860	823	864
2907	II	Y415	Y441	415	445	417	448
2920	I	F	F	807	850	809	854
2920	II	Y808	Y840	808	851	812	855
2921	I	F	F	810	858	811	862
2921	II	Y814	Y844	814	859	816	863
2922	I	F	F	807	850	809	854
2922	II	Y808	Y840	808	851	812	855
2922	III	Y818	Y841	818	852	820	856
2923	I	F	F	810	858	811	862
2923	II	Y814	Y844	814	859	816	863
2923	III	Y822	Y845	822	860	823	864
2924	I	F	F	302	350	303	360
2924	II	Y305	Y340	305	352	307	363
2924	III	Y309	Y342	309	354	310	365
2925	II	Y415	Y441	415	445	417	448
2925	III	Y419	Y442	419	446	420	449
2926	II	Y415	Y440	415	445	417	448
2926	III	Y419	Y443	419	446	420	449
2927	I	F	F	603	651	604	657
2927	II	Y609	Y640	609	653	611	660
2928	I	F	F	606	665	607	672
2928	II	Y613	Y644	613	668	615	675
2929	I	F	F	603	652	604	658
2929	II	Y609	Y641	609	654	611	662
2930	I	F	F	606	665	607	672
2930	II	Y613	Y644	613	668	615	675
2931	II	Y613	Y644	613	669	615	676
2933	III	Y309	Y344	309	355	310	366
2934	III	Y309	Y344	309	355	310	366
2935	III	Y309	Y344	309	355	310	366
2936	II	Y609	Y641	609	654	611	662
2937	III	Y611	Y642	611	655	618	663
2940	II	F	F	415	467	417	470
2940	II	F	F	415	467	417	470
2941	III	Y611	Y642	611	655	618	663
2942	III	Y611	Y642	611	655	618	663
2943	III	Y309	Y344	309	355	310	366
2945	II	Y305	Y340	305	352	307	363

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
2946	III	Y611	Y642	611	655	618	663
2947	III	Y309	Y344	309	355	310	366
2948	II	Y609	Y641	609	654	611	662
2949	II	Y815	Y844	815	859	817	863
2950	III	Y419	Y477	419	486	420	491
2965	I	F	F	F	F	408	480
2966	II	Y609	Y641	609	654	611	662
2967	III	Y822	Y845	822	860	823	864
2968	III	Y419	Y477	419	486	420	491
2968	III	Y419	Y477	419	486	420	491
2969	II	F	F	906	956	906	956
2969	II	F	F	906	956	906	956
2969	II	F	F	906	956	906	956
2969	II	F	F	906	956	906	956
2983	I	F	F	F	F	304	361
2984	III	Y514	Y541	514	551	515	555
2985	II	F	F	305	352	307	363
2986	II	F	F	808	851	812	855
2987	II	F	F	808	851	812	855
2988	I	F	F	F	F	408	480
2989	II	Y415	Y441	415	445	417	448
2989	III	Y419	Y443	419	446	420	449
2990		F	F	905	955	905	955
2991	I	F	F	603	652	604	658
2991	II	Y609	Y641	609	654	611	662
2991	III	Y611	Y642	611	655	618	663
2992	I	F	F	603	652	604	658
2992	II	Y609	Y641	609	654	611	662
2992	III	Y611	Y642	611	655	618	663
2993	I	F	F	603	652	604	658
2993	II	Y609	Y641	609	654	611	662
2993	III	Y611	Y642	611	655	618	663
2994	I	F	F	603	652	604	658
2994	II	Y609	Y641	609	654	611	662
2994	III	Y611	Y642	611	655	618	663
2995	I	F	F	603	652	604	658
2995	II	Y609	Y641	609	654	611	662
2995	III	Y611	Y642	611	655	618	663
2996	I	F	F	603	652	604	658
2996	II	Y609	Y641	609	654	611	662
2996	III	Y611	Y642	611	655	618	663
2997	I	F	F	603	652	604	658
2997	II	Y609	Y641	609	654	611	662
2997	III	Y611	Y642	611	655	618	663
2998	I	F	F	603	652	604	658
2998	II	Y609	Y641	609	654	611	662
2998	III	Y611	Y642	611	655	618	663
3005	I	F	F	603	652	604	658
3005	II	Y609	Y641	609	654	611	662
3005	III	Y611	Y642	611	655	618	663
3006	I	F	F	603	652	604	658
3006	II	Y609	Y641	609	654	611	662
3006	III	Y611	Y642	611	655	618	663
3009	I	F	F	603	652	604	658
3009	II	Y609	Y641	609	654	611	662
3009	III	Y611	Y642	611	655	618	663
3010	I	F	F	603	652	604	658
3010	II	Y609	Y641	609	654	611	662
3010	III	Y611	Y642	611	655	618	663
3011	I	F	F	603	652	604	658
3011	II	Y609	Y641	609	654	611	662
3011	III	Y611	Y642	611	655	618	663
3012	I	F	F	603	652	604	658
3012	II	Y609	Y641	609	654	611	662
3012	III	Y611	Y642	611	655	618	663
3013	I	F	F	603	652	604	658

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
3013	II	Y609	Y641	609	654	611	662
3013	III	Y611	Y642	611	655	618	663
3014	I	F	F	603	652	604	658
3014	II	Y609	Y641	609	654	611	662
3014	III	Y611	Y642	611	655	618	663
3015	I	F	F	603	652	604	658
3015	II	Y609	Y641	609	654	611	662
3015	III	Y611	Y642	611	655	618	663
3016	I	F	F	603	652	604	658
3016	II	Y609	Y641	609	654	611	662
3016	III	Y611	Y642	611	655	618	663
3017	I	F	F	603	652	604	658
3017	II	Y609	Y641	609	654	611	662
3017	III	Y611	Y642	611	655	618	663
3018	I	F	F	603	652	604	658
3018	II	Y609	Y641	609	654	611	662
3018	III	Y611	Y642	611	655	618	663
3019	I	F	F	603	652	604	658
3019	II	Y609	Y641	609	654	611	662
3019	III	Y611	Y642	611	655	618	663
3020	I	F	F	603	652	604	658
3020	II	Y609	Y641	609	654	611	662
3020	III	Y611	Y642	611	655	618	663
3021	I	F	F	F	F	303	361
3021	II	Y305	Y341	305	352	307	364
3022	II	Y305	Y341	305	353	307	364
3024	I	F	F	F	F	303	361
3024	II	Y305	Y341	305	352	307	364
3025	I	F	F	603	652	604	658
3025	II	Y609	Y641	609	654	611	662
3025	III	Y611	Y642	611	655	618	663
3026	I	F	F	603	652	604	658
3026	II	Y609	Y641	609	654	611	662
3026	III	Y611	Y642	611	655	618	663
3027	I	F	F	606	666	607	673
3027	II	Y613	Y644	613	669	615	676
3027	III	Y619	Y645	619	670	619	677
3028		F	F	802	871	802	871
3048	I	F	F	F	F	616	672
3054	III	Y309	Y344	309	355	310	365
3055	III	Y818	Y841	818	852	820	856
3056	III	Y309	Y344	309	355	310	366
3064	II	F	F	F	F	311	372
3065	II	Y305	Y341	305	353	307	364
3065	III	Y309	Y344	309	355	310	366
3066	II	Y808	Y840	808	851	812	855
3066	III	Y818	Y841	818	852	820	856
3066	II	Y808	Y840	808	851	812	855
3066	III	Y818	Y841	818	852	820	856
3071	II	Y610	Y641	610	653	612	661
3071	II	Y610	Y641	610	653	612	661
3072		F	F	905	955	905	955
3073	II	Y609	Y640	609	653	611	660
3077	III	Y911	Y956	911	956	911	956
3078	II	Y415	Y475	415	484	417	490
3080	II	Y609	Y641	609	654	611	662
3080	II	Y609	Y641	609	654	611	662
3082	III	Y914	Y964	914	964	914	964
3084	I	F	F	810	858	811	862
3084	II	Y814	Y844	814	859	816	863
3085	I	F	F	508	557	511	561
3085	II	Y508	Y544	508	558	511	562
3085	III	Y516	Y545	516	559	518	563
3086	I	F	F	606	665	607	672
3086	II	Y613	Y644	613	667	615	674
3087	I	F	F	508	557	511	561

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
3087	II	Y508	Y543	508	558	511	562
3087	III	Y516	Y546	516	559	518	563
3088	II	F	F	415	467	417	470
3088	III	F	F	419	469	420	471
3089	II	Y415	Y441	415	445	417	448
3089	III	Y419	Y443	419	446	420	449
3090	II	F	F	903	968	903	968
3091	II	F	F	912	970	912	970
3091	II	F	F	918	969	918	969
3092	III	Y309	Y344	309	355	310	366
3093	I	F	F	F	F	809	854
3093	II	Y809	Y840	809	851	813	855
3094	I	F	F	F	F	F	F
3094	II	F	F	809	851	813	855
3095	I	F	F	810	858	811	862
3095	II	F	F	814	859	816	863
3096	I	F	F	810	858	811	862
3096	II	Y814	Y844	814	859	816	863
3098	I	F	F	F	F	501	553
3098	II	Y501	Y540	501	550	506	554
3098	III	Y514	Y541	514	551	515	555
3099	I	F	F	F	F	501	553
3099	II	Y501	Y540	501	550	506	554
3099	III	Y514	Y541	514	551	515	555
3103		F	F	500	570	502	570
3104		F	F	510	570	513	570
3105		F	F	500	570	502	570
3106		F	F	510	570	513	570
3107		F	F	500	570	502	570
3108		F	F	510	570	513	570
3109		F	F	500	570	502	570
3110		F	F	510	570	513	570
3122	I	F	F	F	F	604	657
3122	II	Y609	Y641	609	653	611	659
3123	I	F	F	F	F	604	699
3123	II	F	F	609	653	611	659
3124	I	F	F	606	665	607	672
3124	II	F	F	613	668	615	675
3125	I	F	F	606	699	607	699
3125	II	Y613	Y644	613	668	615	675
3126	II	F	F	415	466	417	470
3126	III	F	F	419	468	420	471
3128	II	F	F	415	466	417	470
3128	III	F	F	419	468	420	471
3129	I	F	F	F	F	408	480
3129	II	F	F	413	F	414	481
3129	III	F	F	414	479	425	482
3130	I	F	F	F	F	408	480
3130	II	F	F	413	F	414	481
3130	III	F	F	414	479	425	482
3131	I	F	F	F	F	411	488
3131	II	Y415	Y475	415	483	417	490
3131	III	Y419	Y476	419	486	420	491
3132	I	F	F	F	F	411	488
3132	II	Y415	Y475	415	483	417	490
3132	III	Y419	Y476	419	486	420	491
3134	I	F	F	F	F	411	488
3134	II	Y415	Y474	415	483	417	490
3134	III	Y419	Y477	419	486	420	491
3135	I	F	F	F	F	411	488
3135	II	F	F	415	483	417	490
3135	III	F	F	419	486	420	491
3139	I	F	F	F	F	501	553
3139	II	Y501	Y540	501	550	505	554
3139	III	Y514	Y541	514	551	515	555
3140	I	F	F	603	652	604	658

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
3140	II	Y609	Y641	609	654	611	662
3140	III	Y611	Y642	611	655	618	663
3140	I	F	F	603	652	604	658
3140	II	Y609	Y641	609	654	611	662
3140	III	Y611	Y642	611	655	618	663
3141	III	Y611	Y642	611	655	618	663
3142	I	F	F	603	652	604	658
3142	II	Y609	Y641	609	654	611	662
3142	III	Y611	Y642	611	655	618	663
3143	I	F	F	606	666	607	673
3143	II	Y613	Y644	613	669	615	676
3143	III	Y619	Y645	619	670	619	677
3143	I	F	F	606	666	607	673
3143	II	Y613	Y644	613	669	615	676
3143	III	Y619	Y645	619	670	619	677
3144	I	F	F	603	652	604	658
3144	II	Y609	Y641	609	654	611	662
3144	III	Y611	Y642	611	655	618	663
3144	I	F	F	603	652	604	658
3144	II	Y609	Y641	609	654	611	662
3144	III	Y611	Y642	611	655	618	663
3145	I	F	F	807	850	809	854
3145	II	Y808	Y840	808	851	812	855
3145	III	Y818	Y841	818	852	820	856
3146	I	F	F	608	666	608	673
3146	II	Y614	Y644	614	669	616	676
3146	III	Y619	Y645	619	670	619	677
3147	I	F	F	810	858	811	862
3147	II	Y814	Y844	814	859	816	863
3147	III	Y822	Y845	822	860	823	864
3147	I	F	F	810	858	811	862
3147	II	Y814	Y844	814	859	816	863
3147	III	Y822	Y845	822	860	823	864
3148	I	F	F	F	F	408	480
3148	II	F	F	413	478	414	481
3148	III	F	F	414	479	425	482
3149	II	Y501	Y540	501	550	506	554
3151	II	F	F	907	964	907	964
3151	II	F	F	907	964	907	964
3152	II	F	F	911	956	911	956
3152	II	F	F	911	956	911	956
3155	II	Y613	Y644	613	669	615	676
3165	I	F	F	F	F	301	373
3166		F	F	F	F	900	951
3166		F	F	900	950	900	950
3166		F	F	F	F	900	951
3166		F	F	900	950	900	950
3170	II	Y415	Y475	415	484	417	490
3170	III	Y419	Y477	419	486	420	491
3170	II	Y415	Y475	415	484	417	490
3170	III	Y419	Y477	419	486	420	491
3171		F	F	900	952	900	952
3171		F	F	900	952	900	952
3172	I	F	F	603	652	604	658
3172	II	Y609	Y641	609	654	611	662
3172	III	Y611	Y642	611	655	618	663
3174	III	F	F	419	469	420	471
3175	II	Y415	Y441	415	445	417	448
3178	II	Y415	Y441	415	445	417	448
3178	III	Y419	Y443	419	446	420	449
3179	II	Y415	Y440	415	445	417	448
3179	III	Y419	Y443	419	446	420	449
3180	II	Y415	Y441	415	445	417	448
3180	III	Y419	Y442	419	446	420	449
3181	II	Y415	Y441	415	445	417	448
3181	III	Y419	Y443	419	446	420	449

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
3182	II	Y416	Y441	416	445	418	448
3182	III	Y422	Y442	422	446	421	449
3183	II	F	F	408	462	414	464
3183	III	F	F	414	463	425	465
3184	II	F	F	408	462	414	464
3184	III	F	F	414	463	425	465
3185	II	F	F	408	462	414	464
3185	III	F	F	414	463	425	465
3186	II	F	F	408	462	414	464
3186	III	F	F	414	463	425	465
3187	II	F	F	408	462	414	464
3187	III	F	F	414	463	425	465
3188	II	F	F	408	462	414	464
3188	III	F	F	414	463	425	465
3189	II	F	F	415	467	417	470
3189	III	F	F	419	469	420	471
3190	II	F	F	415	467	417	470
3190	III	F	F	419	469	420	471
3191	II	F	F	415	466	417	470
3191	III	F	F	419	468	420	471
3192	II	F	F	415	466	417	470
3192	III	F	F	419	468	420	471
3205	II	F	F	416	467	418	470
3205	III	F	F	422	469	421	471
3206	II	F	F	416	466	418	470
3206	III	F	F	422	468	421	471
3208	I	F	F	F	F	412	487
3208	II	Y416	Y475	416	483	418	489
3208	III	Y422	Y476	422	485	421	491
3209	I	F	F	F	F	412	487
3209	II	F	F	416	F	418	489
3209	III	F	F	422	485	421	491
3210	II	Y501	Y540	501	550	506	554
3210	III	Y506	Y541	506	551	507	555
3211	II	Y501	Y540	501	550	506	554
3211	III	Y506	Y541	506	551	507	555
3212	II	Y509	Y544	509	558	512	562
3213	II	Y503	Y540	503	550	505	554
3213	III	Y514	Y541	514	551	515	555
3214	II	Y503	Y540	503	550	505	554
3215	III	Y516	Y546	516	559	518	563
3216	III	Y514	Y541	514	551	515	555
3218	II	Y503	Y540	503	550	505	554
3218	III	Y514	Y541	514	551	515	555
3219	II	Y503	Y540	503	550	505	554
3219	III	Y514	Y541	514	551	515	555
3223		F	F	427	459	428	459
3224		F	F	429	459	430	459
3225		F	F	427	459	428	459
3226		F	F	429	459	430	459
3227		F	F	427	459	428	459
3228		F	F	429	459	430	459
3229		F	F	427	459	428	459
3230		F	F	429	459	430	459
3241	III	Y434	Y457	434	457	434	457
3243	II	Y613	Y644	613	669	615	676
3244	II	Y814	Y844	814	859	816	863
3245		F	F	913	959	913	959
3245		F	F	913	959	913	959
3247	II	Y508	Y544	508	558	511	562
3248	II	Y305	Y341	305	352	307	364
3248	III	Y305	Y344	305	355	307	366
3249	II	Y613	Y644	613	669	615	676
3249	III	Y613	Y645	613	670	615	677
3253	III	Y822	Y845	822	860	823	864
3259	I	F	F	810	858	811	862

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
3259	II	Y814	Y844	814	859	816	863
3259	III	Y822	Y845	822	860	823	864
3259	I	F	F	810	858	811	862
3259	II	Y814	Y844	814	859	816	863
3259	III	Y822	Y845	822	860	823	864
3260	I	F	F	810	858	811	862
3260	II	Y814	Y844	814	859	816	863
3260	III	Y822	Y845	822	860	823	864
3261	I	F	F	810	858	811	862
3261	II	Y814	Y844	814	859	816	863
3261	III	Y822	Y845	822	860	823	864
3262	I	F	F	810	858	811	862
3262	II	Y814	Y844	814	859	816	863
3262	III	Y822	Y845	822	860	823	864
3263	I	F	F	810	858	811	862
3263	II	Y814	Y844	814	859	816	863
3263	III	Y822	Y845	822	860	823	864
3264	I	F	F	807	850	809	854
3264	II	Y808	Y840	808	851	812	855
3264	III	Y818	Y841	818	852	820	856
3265	I	F	F	807	850	809	854
3265	II	Y808	Y840	808	851	812	855
3265	III	Y818	Y841	818	852	820	856
3266	I	F	F	807	850	809	854
3266	II	Y808	Y840	808	851	812	855
3266	III	Y818	Y841	818	852	820	856
3267	I	F	F	807	850	809	854
3267	II	Y808	Y840	808	851	812	855
3267	III	Y818	Y841	818	852	820	856
3268	III	F	F	917	961	917	961
3268	III	F	F	917	961	917	961
3268	III	F	F	917	961	917	961
3269	II	Y312	Y370	312	370	312	370
3269	III	Y312	Y370	312	370	312	370
3270	II	Y401	Y458	401	458	401	458
3271	II	Y305	Y341	305	353	307	364
3271	III	Y309	Y344	309	355	310	366
3272	II	Y305	Y341	305	353	307	364
3272	III	Y309	Y344	309	355	310	366
3273	I	F	F	F	F	303	361
3273	II	Y305	Y341	305	352	307	364
3274	II	Y305	Y340	305	352	307	363
3275	I	F	F	603	652	604	658
3275	II	Y609	Y641	609	654	611	662
3276	I	F	F	603	652	604	658
3276	II	Y609	Y641	609	654	611	662
3276	III	Y611	Y642	611	655	618	663
3277	II	Y609	Y640	609	653	611	660
3278	I	F	F	603	652	604	658
3278	II	Y609	Y641	609	654	611	662
3278	III	Y611	Y642	611	655	618	663
3279	I	F	F	603	652	604	658
3279	II	Y609	Y641	609	654	611	662
3280	I	F	F	603	652	604	658
3280	II	Y609	Y641	609	654	611	662
3280	III	Y611	Y642	611	655	618	663
3281	I	F	F	603	652	604	658
3281	II	Y609	Y641	609	654	611	662
3281	III	Y611	Y642	611	655	618	663
3282	I	F	F	603	652	604	658
3282	II	Y609	Y641	609	654	611	662
3282	III	Y611	Y642	611	655	618	663
3283	I	F	F	606	666	607	673
3283	II	Y613	Y644	613	669	615	676
3283	III	Y619	Y645	619	670	619	677
3284	I	F	F	606	666	607	673

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
3284	II	Y613	Y644	613	669	615	676
3284	III	Y619	Y645	619	670	619	677
3285	I	F	F	606	666	607	673
3285	II	Y613	Y644	613	669	615	676
3285	III	Y619	Y645	619	670	619	677
3286	I	F	F	F	F	303	360
3286	II	Y305	Y340	305	352	307	363
3287	I	F	F	603	652	604	658
3287	II	Y609	Y641	609	654	611	662
3287	III	Y611	Y642	611	655	618	663
3288	I	F	F	606	666	607	673
3288	II	Y613	Y644	613	669	615	676
3288	III	Y619	Y645	619	670	619	677
3289	I	F	F	603	651	604	657
3289	II	Y609	Y640	609	653	611	660
3290	I	F	F	606	665	607	672
3290	II	Y613	Y644	613	668	615	675
3292	II	F	F	F	F	433	492
3292	II	F	F	433	492	433	492
3293	III	Y611	Y642	611	655	618	663
3295	I	F	F	302	351	303	361
3295	II	Y305	Y341	305	353	307	364
3295	III	Y309	Y344	309	355	310	366
3301	I	F	F	807	850	809	854
3301	II	F	F	808	851	812	855
3302	II	Y609	Y641	609	654	611	662
3313	II	F	F	415	467	417	470
3313	III	F	F	419	469	420	471
3314	III	F	F	908	957	908	957
3316		Y915	Y960	915	960	915	960
3316		Y915	Y960	915	960	915	960
3317	I	F	F	416	451	412	451
3319	II	F	F	F	F	435	499
3320	II	Y809	Y840	809	851	813	855
3320	III	Y819	Y841	819	852	821	856
3334	III	F	F	906	964	906	964
3335	III	F	F	906	956	906	956
3336	I	F	F	302	F	303	360
3336	II	Y305	Y341	305	352	307	363
3336	III	Y309	Y344	309	355	310	365
3336	I	F	F	302	F	303	360
3336	II	Y305	Y341	305	352	307	363
3336	III	Y309	Y344	309	355	310	365
3341	II	F	F	415	467	417	470
3341	III	F	F	419	469	420	471
3342	II	F	F	415	467	417	470
3342	III	F	F	419	469	420	471
3345	I	F	F	606	666	607	673
3345	II	Y613	Y644	613	669	615	676
3345	III	Y619	Y645	619	670	619	677
3346	I	F	F	F	F	303	361
3346	II	Y305	Y341	305	352	307	364
3347	I	F	F	603	652	604	658
3347	II	Y609	Y641	609	654	611	662
3347	III	Y611	Y642	611	655	618	663
3348	I	F	F	603	652	604	658
3348	II	Y609	Y641	609	654	611	662
3348	III	Y611	Y642	611	655	618	663
3349	I	F	F	606	666	607	673
3349	II	Y613	Y644	613	669	615	676
3349	III	Y619	Y645	619	670	619	677
3350	I	F	F	F	F	303	361
3350	II	Y305	Y341	305	352	307	364
3351	I	F	F	603	652	604	658
3351	II	Y609	Y641	609	654	611	662
3351	III	Y611	Y642	611	655	618	663

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
3352	I	F	F	603	652	604	658
3352	II	Y609	Y641	609	654	611	662
3352	III	Y611	Y642	611	655	618	663
3356	II	F	F	F	F	523	565
3361	II	F	F	609	653	611	660
3362	II	F	F	609	653	611	660
3363		F	F	916	962	916	962
3363		F	F	916	962	916	962
3364	I	F	F	416	451	416	451
3364	I	F	F	416	451	416	451
3365	I	F	F	416	451	416	451
3365	I	F	F	416	451	416	451
3366	I	F	F	416	451	416	451
3366	I	F	F	416	451	416	451
3367	I	F	F	416	451	416	451
3368	I	F	F	416	451	416	451
3369	I	F	F	416	451	416	451
3370	I	F	F	416	451	416	451
3371	II	Y305	Y341	305	353	307	364
3377	III	Y516	Y546	516	559	518	563
3378	II	Y508	Y544	508	558	512	562
3378	III	Y516	Y546	516	559	518	563
3395	I	F	F	F	F	415	487
3395	II	F	F	415	483	417	489
3395	III	F	F	419	486	420	491
3396	I	F	F	F	F	411	488
3396	II	F	F	415	483	417	489
3396	III	F	F	419	486	420	491
3397	I	F	F	F	F	411	488
3397	II	F	F	415	483	417	489
3397	III	F	F	419	486	420	491
3398	I	F	F	F	F	409	480
3398	II	F	F	413	478	414	481
3398	III	F	F	414	479	425	482
3399	I	F	F	F	493	409	494
3399	II	F	F	409	493	431	494
3399	III	F	F	431	493	432	494
3400	II	F	F	415	467	417	470
3400	III	F	F	419	469	420	471
3401	I	F	F	F	F	412	487
3402	I	F	F	F	F	412	487
3403	I	F	F	F	F	412	487
3404	I	F	F	F	F	412	487
3405	II	Y501	Y540	501	550	506	554
3405	III	Y514	Y541	514	551	515	555
3406	II	Y501	Y540	501	550	506	554
3406	III	Y514	Y541	514	551	515	555
3407	II	Y501	Y540	501	550	506	554
3407	III	Y514	Y541	514	551	515	555
3408	II	Y501	Y540	501	550	506	554
3408	III	Y514	Y541	514	551	515	555
3409	II	Y609	Y641	609	654	611	662
3410	III	Y611	Y642	611	655	618	663
3411	II	Y609	Y641	609	654	611	662
3411	III	Y611	Y642	611	655	618	663
3412	II	Y808	Y840	808	851	812	855
3412	III	Y818	Y841	818	852	820	856
3413	I	F	F	603	652	604	658
3413	II	Y609	Y641	609	654	611	662
3413	III	Y611	Y642	611	655	618	663
3414	I	F	F	603	652	604	658
3414	II	Y609	Y641	609	654	611	662
3414	III	Y611	Y642	611	655	618	663
3415	III	Y611	Y642	611	655	618	663
3416	II	F	F	F	F	612	661
3417	II	Y613	Y644	613	669	615	676

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
3418	III	Y611	Y642	611	655	618	663
3419	II	Y814	Y844	814	859	816	863
3420	II	Y814	Y844	814	859	816	863
3421	II	Y809	Y840	809	851	813	855
3421	III	Y819	Y841	819	852	821	856
3422	III	Y611	Y642	611	655	618	663
3423	II	Y814	Y844	814	859	816	863
3424	II	Y609	Y641	609	654	611	662
3424	III	Y611	Y642	611	655	618	663
3425	II	Y814	Y844	814	859	822	863
3426	III	Y611	Y642	611	655	618	663
3427	III	Y619	Y645	619	670	619	677
3428	II	Y613	Y644	613	669	615	676
3429	III	Y611	Y642	611	655	618	663
3430	II	Y609	Y641	609	654	611	662
3431	II	Y613	Y644	613	669	615	676
3432	II	F	F	911	956	911	956
3434	III	Y611	Y642	611	655	618	663
3436	II	Y613	Y644	613	669	615	676
3437	II	Y613	Y644	613	669	615	676
3438	III	Y619	Y645	619	670	619	677
3439	I	F	F	606	666	607	673
3439	II	Y613	Y644	613	669	615	676
3439	III	Y619	Y645	619	670	619	677
3440	I	F	F	603	652	604	658
3440	II	Y609	Y641	609	654	611	662
3440	III	Y611	Y642	611	655	618	663
3441	II	Y613	Y644	613	669	615	676
3442	II	Y613	Y644	613	669	615	676
3443	II	Y613	Y644	613	669	615	676
3444	II	Y613	Y644	613	669	615	676
3445	II	Y613	Y644	613	669	615	676
3445	III	Y619	Y645	619	670	619	677
3446	II	Y613	Y644	613	669	615	676
3447	II	Y613	Y644	613	669	615	676
3448	I	F	F	F	F	607	672
3448	II	F	F	F	F	615	674
3449	I	F	F	F	F	607	673
3450	I	F	F	F	F	608	673
3451	II	Y613	Y644	613	669	615	676
3452	II	Y613	Y644	613	669	615	676
3453	III	Y825	Y845	825	860	826	864
3454	II	Y613	Y644	613	669	615	676
3455	II	Y613	Y644	613	668	615	675
3456	II	Y814	Y844	814	859	816	863
3457	III	Y619	Y645	619	670	619	677
3458	III	Y616	Y645	616	670	616	677
3459	III	Y619	Y645	619	670	619	677
3460	III	Y619	Y645	619	670	619	677
3462	I	F	F	606	666	607	673
3462	II	Y613	Y644	613	669	615	676
3462	III	Y619	Y645	619	670	619	677
3463	II	Y808	Y840	808	851	812	855
3464	I	F	F	606	666	607	673
3464	II	Y613	Y644	613	669	615	676
3464	III	Y619	Y645	619	670	619	677
3465	I	F	F	606	666	607	673
3465	II	Y613	Y644	613	669	615	676
3465	III	Y619	Y645	619	670	619	677
3466	I	F	F	606	666	607	673
3466	II	Y613	Y644	613	669	615	676
3466	III	Y619	Y645	619	670	619	677
3467	I	F	F	606	666	607	673
3467	II	Y613	Y644	613	669	615	676
3467	III	Y619	Y645	619	670	619	677
3469	I	F	F	302	350	303	360

UN No.	PG	Limited quantity		Passenger		Cargo	
		Current	New	Current	New	Current	New
3469	II	Y305	Y340	305	352	307	363
3469	III	Y309	Y342	309	354	310	365
3469	I	F	F	302	350	303	360
3469	II	Y305	Y340	305	352	307	363
3469	III	Y309	Y342	309	354	310	365
3470	II	Y808	Y840	808	851	812	855
3470	II	Y808	Y840	808	851	812	855
3471	II	Y809	Y840	809	851	813	855
3471	III	Y818	Y841	818	852	820	856
3472	III	Y818	Y841	818	852	820	856
3473		F	F	313	374	313	374
3473		F	F	313	375	313	375
3473		F	F	313	376	313	376
3474	I	F	F	416	451	416	451
3475	II	Y305	Y341	305	353	307	364
3475	II	Y305	Y341	305	353	307	364
3475	II	Y305	Y341	305	353	307	364
3476		F	F	495	495	495	495
3476		F	F	496	496	496	496
3476		F	F	497	497	497	497
3477		F	F	873	873	873	873
3477		F	F	874	874	874	874
3477		F	F	875	875	875	875
3480				965	965	965	965
3481				967	967	967	967
3481				966	966	966	966
8000		F	F	910	963	910	963

CLASS 3 — FLAMMABLE LIQUIDS

Packing Instructions Y340 – Y344

Limited quantities
Passenger and cargo aircraft

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met, including:

— the capability of the package to pass a 1.2 m drop test;
— a 24-hour stacking test; and
— inner packagings for liquids must be capable of passing a pressure differential test (4;1.1.6).

COMBINATION PACKAGINGS						SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	*Total gross mass per package*	
Y340	II	Glass	0.5 L	0.5 L		No
		Plastic	0.5 L			
		Metal	0.5 L			
Y341	II	Glass	0.5 L	1.0 L		No
		Plastic	0.5 L			
		Metal	0.5 L			
Y342	III	Glass	1.0 L	1.0 L	30 kg	No
		Plastic	1.0 L			
		Metal	1.0 L			
Y343	III	Glass	1.0 L	2.0 L		No
		Plastic	1.0 L			
		Metal	1.0 L			
Y344	III	Glass	2.5 L	10.0 L		No
		Plastic	5.0 L			
		Metal	5.0 L			

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Plastic	Plastics	
Plywood	Plywood	
Reconstituted wood	Steel	
Steel		

Packing Instructions 350 – 355

Passenger aircraft

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					**SINGLE PACKAGINGS**
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
350	I	Glass	0.5 L	0.5 L	No
		Plastic	Forbidden		
		Metal	0.5 L		
351	I	Glass	0.5 L	1 L	No
		Plastic	Forbidden		
		Metal	1.0 L		
352	II	Glass	1.0 L	1 L	No
		Plastic	1.0 L		
		Metal	1.0 L		
353	II	Glass	1.0 L	5 L	No
		Plastic	5.0 L		
		Metal	5.0 L		
354	III	Glass	2.5 L	5 L	5 L
		Plastic	5.0 L		
		Metal	5.0 L		
355	III	Glass	2.5 L	60 L	60 L
		Plastic	10.0 L		
		Metal	10.0 L		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

— Inner packagings must be packed with absorbent material and placed in a rigid leakproof receptacle before packing in outer packagings.

Packing Group III

— Packagings must meet the Packing Group II performance requirements if the substance has a Class 8 subsidiary risk.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastic (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastic (4H1, 4H2)	Plastic (1H2)	
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

Packing Group III

— Packagings must meet the Packing Group II performance requirements if the substance has a Class 8 subsidiary risk.

SINGLE PACKAGINGS FOR PACKING GROUP III (PI 354 OR PI 355)

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Other metal (1N1, 1N2) Plastic (1H1, 1H2) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastic (3H1, 3H2) Steel (3A1, 3A2)

Packing Instructions 360 – 366

Cargo aircraft only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
360	I	Glass	1.0 L	2.5 L	2.5 L
		Plastic	Forbidden		
		Metal	2.5 L		
361	I	Glass	1.0 L	30 L	30 L
		Plastic	Forbidden		
		Metal	5.0 L		
362	II	Glass	1.0 L	5 L	5 L
		Plastic	1.0 L		
		Metal	1.0 L		
363	II	Glass	2.5 L	5 L	5 L
		Plastic	2.5 L		
		Metal	5.0 L		
364	II	Glass	2.5 L	60 L	60 L
		Plastic	5.0 L		
		Metal	10.0 L		
365	III	Glass	5.0 L	60 L	60 L
		Plastic	10.0 L		
		Metal	25.0 L		
366	III	Glass	5.0 L	220 L	220 L
		Plastic	10.0 L		
		Metal	25.0 L		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

— Inner packagings must be packed with absorbent material and placed in a rigid leakproof receptacle before packing in outer packagings.

Packing Group III

— Packagings must meet the Packing Group II performance requirements if the substance has a Class 8 subsidiary risk.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Other metal (3N2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Plastics (3H2)
Plastic (4H1, 4H2)	Plywood (1D)	Steel (3A2)
Plywood (4D)	Plastic (1H2)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

Packing Group III

— Packagings must meet the Packing Group II performance requirements if the substance has a Class 8 subsidiary risk.

SINGLE PACKAGINGS FOR PACKING GROUP I

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1) Other metal (1N1) Steel (1A1)	Aluminium (3B1) Steel (3A1)

SINGLE PACKAGINGS FOR PACKING GROUP II

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1) Other metal (1N1) Plastic (1H1) Steel (1A1)	Aluminium (3B1) Plastic (3H1) Steel (3A1)

SINGLE PACKAGINGS FOR PACKING GROUP III ONLY

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Other metal (1N1, 1N2) Plastic (1H1, 1H2) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastic (3H1, 3H2) Steel (3A1, 3A2)

Packing Instruction 370

Passenger and cargo aircraft for UN 3269 (Packing Group II or III) only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					**SINGLE PACKAGINGS**
Packing conditions	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle) — for liquid activator*	*Inner packaging quantity (per receptacle) — for solid activator*	*Total quantity per package*	
Activator (Organic peroxide)	Plastic*	125 mL	500 g	5 kg	No
	Metal*	125 mL	500 g		
Base material Class 3 Packing Group II or III	Glass	1.0 L	1.0 L		
	Plastic	5.0 L	5.0 L		
	Metal	5.0 L	5.0 L		
*Including tubes					

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

The components may be placed in the same outer packaging provided that they will not interact dangerously in the event of leakage (see 4;1.1.7).

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

Packing Instruction Y370

Limited quantities
Passenger and cargo aircraft for UN 3269 (Packing Group II or III) only

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met, including:

— the capability of the package to pass a 1.2 m drop test;
— a 24-hour stacking test; and
— inner packagings for liquids must be capable of passing a pressure differential test (4;1.1.6).

COMBINATION PACKAGINGS						**SINGLE PACKAGINGS**
Packing conditions	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle) — for liquid activator*	*Inner packaging quantity (per receptacle) — for solid activator*	*Total quantity per package*	*Total gross mass per package*	
Activator (Organic peroxide)	Plastic*	30 mL	100 g	1 kg	30 kg	No
	Metal*	30 mL	100 g			
Base material Class 3 Packing Group II or III	Glass	1.0 L	1.0 L			
	Plastic	1.0 L	1.0 L			
	Metal	1.0 L	1.0 L			
*Including tubes						

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

The components may be placed in the same outer packaging provided that they will not interact dangerously in the event of leakage (see 4;1.1.7).

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Plastics	Plasticsl	
Plywood	Steel	
Reconstituted wood		
Steel		

Packing Instruction 371

Passenger and cargo aircraft for UN 1204 and UN 3064 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					**SINGLE PACKAGINGS**
UN number and proper shipping name	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	
UN 1204 **Nitroglycerin solution in alcohol** with not more than 1% nitroglycerin (Packing Group II)	Glass	1.0 L	5 L	60 L	No
	Plastic	1.0 L			
	Metal	1.0 L			
UN 3064 **Nitroglycerin solution in alcohol** with more than 1% but not more than 5% nitroglycerin (Packing Group II)	Metal	1.0 L	Forbidden	5 L	No

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

For UN 1204 and UN 3064

Inner packagings must be completely surrounded with absorbent cushioning material of sufficient quantity to absorb the entire liquid content.

For UN 3064

Wooden boxes (4C1, 4C2, 4D or 4F) must be used as the outer packaging and must be completely lined with a suitable material impervious to water, alcohol and nitroglycerin.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

Packing Instruction 372

Cargo aircraft only for UN 3165 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

ADDITIONAL PACKING REQUIREMENTS

UN 3165 **Aircraft hydraulic power unit fuel tank** (containing a mixture of anhydrous hydrazine and methyl hydrazine) (M86 fuel) and designed for installation as complete units in aircraft are acceptable, subject to either of the following conditions:

a) the unit must consist of an aluminium pressure vessel made from tubing and having welded heads. Primary containment of the fuel within this vessel must consist of a welded aluminium bladder having a maximum internal volume of 46 L. The outer vessel must have a minimum design gauge pressure of 1 275 kPa and a minimum burst gauge pressure of 2 755 kPa. Each vessel must be leak-checked during manufacture and before shipment and must be found leakproof. The complete inner unit must be securely packed in non-combustible cushioning material, such as vermiculite, in a strong outer tightly closed metal packaging which will adequately protect all fittings. Maximum quantity of fuel per unit and package is 42 L; or

b) the unit must consist of an aluminium pressure vessel. Primary containment of the fuel within this vessel must consist of a welded hermetically sealed fuel compartment with an elastomeric bladder having a maximum internal volume of 46 L. The pressure vessel must have a minimum design gauge pressure of 2 860 kPa and a minimum burst gauge pressure of 5 170 kPa. Each vessel must be leak-checked during manufacture and before shipment and must be found leakproof. The complete inner unit must be securely packed in non-combustible cushioning material, such as vermiculite, in a strong outer tightly closed metal packaging which will adequately protect all fittings. Maximum quantity of fuel per unit and package is 42 L.

Note.— This packing instruction is the same as UN packing instruction P301.

Packing Instruction 373

Passenger and cargo aircraft for UN 1228 (Packing Group II or III) only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS							SINGLE PACKAGINGS	
UN number and proper shipping name	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle) — passenger*	*Inner packaging quantity (per receptacle) — cargo*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	*Passenger*	*Cargo*
UN 1228 **Mercaptans, liquid, flammable, toxic, n.o.s.***	II	Glass	Forbidden	5.0 L	Forbidden	60 L	No	60 L
		Plastic		5.0 L				
		Metal		5.0 L				
	III	Glass	1.0 L	5.0 L	5 L	220 L	No	220 L
		Plastic	1.0 L	5.0 L				
		Metal	1.0 L	5.0 L				

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Glass inner packagings must be packed with absorbent material and placed in a rigid leakproof receptacle before packing in outer packagings.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

SINGLE PACKAGINGS FOR CARGO AIRCRAFT ONLY

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Other metal (1N1, 1N2) Plastic (1H1, 1H2) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastic (3H1, 3H2) Steel (3A1, 3A2)

Packing Instruction Y373

Limited quantities
Passenger and cargo aircraft for UN 1228 (Packing Group III) only

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met, including:

— the capability of the package to pass a 1.2 m drop test;
— a 24-hour stacking test; and
— inner packagings for liquids must be capable of passing a pressure differential test (4;1.1.6).

COMBINATION PACKAGINGS						**SINGLE PACKAGINGS**
UN number and proper shipping name	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	*Total gross mass per package*	
UN 1228 **Mercaptans, liquid, flammable, toxic, n.o.s.***	III	Glass	0.5 L	1 L	30 kg	No
		Plastic	0.5 L			
		Metal	0.5 L			

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Plastics	Plasticsl	
Plywood	Steel	
Reconstituted wood		
Steel		

Packing Instruction 374

Passenger and cargo aircraft for UN 3473 only

General requirements

Part 4;1.1.1, 1.1.2 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3473 **Fuel cell cartridges**	5 kg of fuel cell cartridges	50 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— Fuel cell cartridges must be securely cushioned in the outer packagings.
— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Steel (3A2)
Fibreboard (4G)	Fibreboard (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Plastic (1H2)	Aluminium (3B2)
Plastic (4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

Packing Instruction 375

Passenger and cargo aircraft for UN 3473 (contained in equipment) only

General requirements

Part 4;1.1.1 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3473 **Fuel cell cartridges contained in equipment**	5 kg of fuel cell cartridges	50 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— Fuel cell cartridges that are contained in equipment must be protected against short circuit and the equipment must be protected against inadvertent operation.
— Equipment must be securely cushioned in the outer packagings.
— Fuel cell systems must not charge batteries during transport.
— On passenger aircraft, each fuel cell system and each fuel cell cartridge must conform to IEC PAS 62282-6-1 Ed. 1 or a standard approved by the appropriate authority of the State of Origin.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
	Strong outer packagings	

Packing Instruction 376

Passenger and cargo aircraft for UN 3473 (packed with equipment) only

General requirements

Part 4;1.1.1 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3473 **Fuel cell cartridges packed with equipment**	5 kg of fuel cell cartridges	50 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— When fuel cell cartridges are packed with equipment, they must be packed in intermediate packagings together with the equipment they are capable of powering.
— The maximum number of fuel cell cartridges in the intermediate packaging must be the minimum number required to power the equipment, plus 2 spares.
— The fuel cell cartridges and the equipment must be packed with cushioning material or divider(s) or inner packaging so that the fuel cell cartridges are protected against damage that may be caused by the movement or placement of the equipment and the cartridges within the packaging.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
	Strong outer packagings	

CLASS 4 — FLAMMABLE SOLIDS; SUBSTANCES LIABLE TO SPONTANEOUS COMBUSTION; SUBSTANCES WHICH, IN CONTACT WITH WATER, EMIT FLAMMABLE GASES

Packing Instructions Y440 – Y443

Limited quantities
Passenger and cargo aircraft

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met, including:

— the capability of the package to pass a 1.2 m drop test; and
— a 24-hour stacking test.

COMBINATION PACKAGINGS						SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	*Total gross mass per package*	
Y440	II	Glass	0.5 kg	1 kg	30 kg	No
		Plastic	0.5 kg			
		Metal	0.5 kg			
		Plastic bag	0.5 kg			
Y441	II	Glass	0.5 kg	5 kg		No
		Plastic	0.5 kg			
		Metal	0.5 kg			
		Plastic bag	0.5 kg			
Y442	III	Glass	1.0 kg	5 kg		No
		Plastic	1.0 kg			
		Metal	1.0 kg			
		Plastic bag	1.0 kg			
Y443	III	Glass	1.0 kg	10 kg		No
		Plastic	1.0 kg			
		Metal	1.0 kg			
		Plastic bag	1.0 kg			

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastic
Natural wood	Plastic	Steel
Plastic	Plywood	
Plywood	Other metal	
Reconstituted wood	Steel	
Steel		

Packing Instructions 445 – 446

Passenger aircraft

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

- Substances must be compatible with their packagings as required by 4;1.1.3.
- Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

- Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					**SINGLE PACKAGINGS**
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
—	I	Forbidden *(only permitted for wetted explosives, see Packing Instruction 451)*			
445	II	Glass	1.0 kg	15 kg	No
		Plastic	2.5 kg		
		Metal	2.5 kg		
		Plastic bag	1.0 kg		
446	III	Glass	5.0 kg	25 kg	No
		Plastic	10.0 kg		
		Metal	10.0 kg		
		Plastic bag	5.0 kg		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group III

- Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastic (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastic (4H1, 4H2)	Plastic (1H2)	
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

Packing Instructions 448 – 449

Cargo aircraft only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

- Substances must be compatible with their packagings as required by 4;1.1.3.
- Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

- Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					**SINGLE PACKAGINGS**
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
—	I	Forbidden *(only permitted for wetted explosives, see Packing Instruction 451)*			
448	II	Glass	2.5 kg	50 kg	50 kg
		Plastic	5.0 kg		
		Metal	5.0 kg		
		Plastic bag	2.5 kg		
449	III	Glass	5.0 kg	100 kg	100 kg
		Plastic	10.0 kg		
		Metal	10.0 kg		
		Plastic bag	5.0 kg		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group III

- Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastic (1H2)	
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

Packing Group III

— Packagings must meet the Packing Group II performance requirements.
— Fibre, wood and plywood single packagings must be fitted with a suitable liner.

SINGLE PACKAGINGS

Boxes	*Composites*	*Cylinders*	*Drums*	*Jerricans*
Steel (4A)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Aluminium (4B)			Fibre (1G)	Plastic (3H1, 3H2)
Natural wood (4C2)			Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Plywood (4D)			Plastic (1H1, 1H2)	
Reconstituted wood (4F)			Plywood (1D)	
Fibreboard (4G)			Steel (1A1, 1A2)	
Plastics (4H2)				

Packing Instruction 451

Passenger and cargo aircraft — wetted explosives (Packing Group I)

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
UN number and proper shipping name	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	
UN 1354 **Trinitrobenzene, wetted** UN 1355 **Trinitrobenzoic acid, wetted** UN 1356 **Trinitrotoluene, wetted** or **TNT, wetted** UN 3364 **Picric acid, wetted** or **Trinitrophenol, wetted**, with not less than 10% water, by mass UN 3365 **Picryl chloride, wetted** or **Trinitrochlorobenzene, wetted** UN 3366 **Trinitrotoluene, wetted** or **TNT, wetted** UN 3367 **Trinitrobenzene, wetted** UN 3368 **Trinitrobenzoic acid, wetted** UN 3369 **Sodium dinitro-o-cresolate, wetted** UN 3370 **Urea nitrate, wetted**	Glass Plastic Metal Plastic bag	0.5 kg	0.5 kg	0.5 kg	No
UN 1336 **Nitroguanidine, wetted** or **Picrite, wetted** UN 1337 **Nitrostarch, wetted** UN 1357 **Urea nitrate, wetted**	Glass Plastic Metal Plastic bag	0.5 kg	1 kg	15 kg	No
UN 1310 **Ammonium picrate, wetted** *See Note 1 below.*	Glass Plastic Metal Plastic bag	0.5 kg	0.5 kg	0.5 kg	No
UN 1349 **Sodium picramate, wetted** *See Note 1 below.*	Glass Plastic Metal Plastic bag	0.5 kg	Forbidden	15 kg	No
UN 1320 **Dinitrophenol, wetted** UN 1321 **Dinitrophenolates, wetted** UN 1322 **Dinitroresorcinol, wetted** UN 1344 **Picric acid, wetted** or **Trinitrophenol, wetted**, with not less than 30% water, by mass UN 1348 **Sodium dinitro-o-cresolate, wetted** UN 1517 **Zirconium picramate, wetted** UN 3317 **2-Amino-4,6-dinitrophenol, wetted** *See Note 1 below.*	Glass Plastic Metal Plastic bag	0.5 kg	1 kg	15 kg	No
UN 1571 **Barium azide, wetted** UN 2852 **Dipicryl sulphide, wetted**	Glass Plastic	0.25 kg	Forbidden	0.5 kg	No
UN 3474 **1-Hydroxybenzotriazole, anhydrous, wetted**	Glass Plastic	0.5 kg	0.5 kg	0.5 kg	No

Note 1.— These substances must be in lead free packagings.

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Packagings must be designed and constructed to prevent the loss of water or alcohol content or the content of the phlegmatizer.
— Packagings must be so constructed and closed so as to avoid an explosive over pressure or pressure build-up of more than 300 kPa (3 bar).
— The type of packaging and maximum permitted quantity per packaging are limited by the provisions of Part 2;1.5.2 and may be less than the limits shown above.
— Plastic or glass inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings. Inner packagings must be packed with absorbent material in sufficient quantity to absorb the contents in the event of leakage.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Other metal (3N2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Plastics (3H2)
Plastics (4H1, 4H2)	Plastics (1H2)	Steel (3A2)
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

Packing Instruction 452

Passenger aircraft for UN 2555, 2556 and 2557 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
UN number and proper shipping name		*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
UN 2555	**Nitrocellulose with water**	Glass	1.0 kg	15 kg	No
		Plastic	1.0 kg		
		Metal	1.0 kg		
		Plastic bag	1.0 kg		
UN 2556	**Nitrocellulose with alcohol**	Glass	1.0 kg	1 kg	No
		Plastic	1.0 kg		
		Metal	1.0 kg		
		Plastic bag	1.0 kg		
UN 2557	**Nitrocellulose, mixture without plasticizer, without pigment** or **Nitrocellulose, mixture without plasticizer, with pigment** or **Nitrocellulose, mixture with plasticizer, without pigment** or **Nitrocellulose, mixture with plasticizer, with pigment**	Glass	1.0 kg	1 kg	No
		Plastic	1.0 kg		
		Metal	1.0 kg		
		Plastic bag	1.0 kg		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Packagings must be designed and constructed to prevent the loss of water or alcohol content or the content of the phlegmatizer.
— Packagings must be so constructed and closed so as to avoid an explosive over pressure or pressure build-up of more than 300 kPa (3 bar).

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Other metal (3N2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Plastics (3H2)
Plastics (4H1, 4H2)	Plastics (1H2)	Steel (3A2)
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)		
Steel (4A)		

Packing Instruction 453

Cargo aircraft only for UN 2555, 2556 and 2557 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
UN number and proper shipping name		*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
UN 2555	**Nitrocellulose with water**	Glass	1.0 kg	50 kg	50 kg
		Plastic	1.0 kg		
		Metal	1.0 kg		
		Plastic bag	1.0 kg		
UN 2556	**Nitrocellulose with alcohol**	Glass	1.0 kg	15 kg	15 kg
		Plastic	1.0 kg		
		Metal	1.0 kg		
		Plastic bag	1.0 kg		
UN 2557	**Nitrocellulose mixture without plasticizer, without pigment** or **Nitrocellulose mixture without plasticizer, with pigment** or **Nitrocellulose mixture with plasticizer, without pigment** or **Nitrocellulose mixture with plasticizer, with pigment**	Glass	1.0 kg	15 kg	15 kg
		Plastic	1.0 kg		
		Metal	1.0 kg		
		Plastic bag	1.0 kg		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Packagings must be designed and constructed to prevent the loss of water or alcohol content or the content of the phlegmatizer.
— Packagings must be so constructed and closed so as to avoid an explosive over pressure or pressure build-up of more than 300 kPa (3 bar).

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Other metal (3N2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Plastics (3H2)
Plastics (4H1, 4H2)	Plastics (1H2)	Steel (3A2)
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)		
Steel (4A)		

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

— Packagings must be designed and constructed to prevent the loss of water or alcohol content or the content of the phlegmatizer.
— Packagings must be so constructed and closed so as to avoid an explosive over pressure or pressure build-up of more than 300 kPa (3 bar).
— Fibre, wood and plywood single packagings must be fitted with a suitable liner.

SINGLE PACKAGINGS

Boxes	*Composites*	*Cylinders*	*Drums*	*Jerricans*
Steel (4A) Aluminium (4B) Natural wood (4C1, 4C2) Plywood (4D) Reconstituted wood (4F) Fibreboard (4G) Plastics (4H2)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Fibre (1G) Other metal (1N1, 1N2) Plastic (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastic (3H1, 3H2) Steel (3A1, 3A2)

Packing Instruction 454

Passenger and cargo aircraft for UN 1324 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS			
UN number and proper shipping name	*Total quantity per package — passenger*	*Total quantity per package — cargo*	**SINGLE PACKAGINGS**
UN 1324 **Films, nitrocellulose base**	25 kg	100 kg	No

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium (1B2) Fibre* (1G) Other metal (1N2) Plastics (1H2) Plywood (1D) Steel (1A2)	Aluminium (3B2) Plastics (3H2) Steel (3A2)

* These packagings are permitted only for a maximum of 600 m of film.

Packing Instruction Y454

Limited quantities
Passenger and cargo aircraft for UN 1324 only

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met, including:

— the capability of the package to pass a 1.2 m drop test; and
— a 24-hour stacking test.

COMBINATION PACKAGINGS			
UN number and proper shipping name	*Total quantity per package*	*Total gross mass per package*	**SINGLE PACKAGINGS**
UN 1324 **Films, nitrocellulose base**	10 kg	30 kg	No

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Each reel must be placed in a tightly closed metal can or strong cardboard or fibreboard inner packaging with cover held in place by adhesive tape or paper.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Plastics	Plasticsl	
Plywood	Steel	
Reconstituted wood		
Steel		

Packing Instruction 455

Passenger and cargo aircraft for UN 1944 and 1945 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS				
UN number and proper shipping name	*Packing conditions*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	**SINGLE PACKAGINGS**
UN 1944 **Matches, safety** UN 1945 **Matches, wax 'vesta'**	Packaging as set out in the list of outer packagings below may be used. **For a maximum of 50 books** The following packaging is permitted: Strong fibreboard carton, which is made of straw board covered with kraft paper, having a securely glued inside lining consisting of aluminium foil, at least 0.01 mm thick, the carton to have a full depth lid with all joints secured with gummed paper tape.	25 kg	100 kg	No

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Matches, safety (book card or strike on box) must be of a type that will not ignite spontaneously under normal conditions of air transport and can be readily ignited by friction only by striking on the manufacturer's box, book or card.
— Matches must be tightly packed to prevent movement within the package and ignition by rubbing against an adjoining box, book or card.
— Matches must be securely wrapped in paper or foil or packed in tightly closed inner packagings.
— No more than 50 books of matches may be packed in one inner packaging.
— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

Packing Instruction Y455

Limited quantities
Passenger and cargo aircraft for UN 1944 and 1945 only

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met, including:

— the capability of the package to pass a 1.2 m drop test; and
— a 24-hour stacking test.

COMBINATION PACKAGINGS				SINGLE PACKAGINGS
UN number and proper shipping name	*Packing conditions*	*Total quantity per package*	*Total gross mass per package*	
UN 1944 **Matches, safety** UN 1945 **Matches, wax 'vesta'**	Packaging as set out in the list of outer packagings below may be used. **For a maximum of 50 books** The following packaging is permitted: Strong fibreboard carton, which is made of straw board covered with kraft paper, having a securely glued inside lining consisting of aluminium foil, at least 0.01 mm thick, the carton to have a full depth lid with all joints secured with gummed paper tape.	10 kg	30 kg	No

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Matches, safety (book card or strike on box) must be of a type that will not ignite spontaneously under normal conditions of air transport and can be readily ignited by friction only by striking on the manufacturer's box, book or card.
— Matches must be tightly packed to prevent movement within the package and ignition by rubbing against an adjoining box, book or card.
— Matches must be securely wrapped in paper or foil or packed in tightly closed inner packagings.
— No more than 50 books of matches may be packed in one inner packaging.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium Fibreboard Natural wood Plastics Plywood Reconstituted wood Steel	Aluminium Fibre Other metal Plasticsl Steel	Aluminium Plastics Steel

Packing Instruction 456

Passenger and cargo aircraft for UN 2000 only

General requirements

Part 4, Chapter 1 requirements must be met.

UN number and proper shipping name	*Total quantity per package — passenger*	*Total quantity per package — cargo*
UN 2000 **Celluloid**	25 kg	100 kg

Packing Instruction 457

Passenger and cargo aircraft for UN 3241 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					**SINGLE PACKAGINGS**	
UN number and proper shipping name	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	*Passenger*	*Cargo*
UN 3241 **2-Bromo-2-nitropropane-1,3-diol**	Glass	0.5 kg	25 kg	50 kg	25 kg	50 kg
	Plastic	1.0 kg				
	Plastic bag	1.0 kg				

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastic (1H2)	
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

— Packagings must meet the Packing Group II performance requirements.

SINGLE PACKAGINGS

Composites	*Drums*	*Jerricans*
All (see 6;3.1.18)	Aluminium (1B1, 1B2) Other metal (1N1, 1N2) Plastic (1H1, 1H2) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastic (3H1, 3H2) Steel (3A1, 3A2)

Packing Instruction Y457

Limited quantities
Passenger and cargo aircraft for UN 3241 only

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met, including:

— the capability of the package to pass a 1.2 m drop test; and
— a 24-hour stacking test.

COMBINATION PACKAGINGS					**SINGLE PACKAGINGS**
UN number and proper shipping name	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	*Total gross mass per package*	
UN 3241 **2-Bromo-2-nitropropane-1, 3-diol**	Glass	0.5 kg	5 kg	30 kg	No
	Plastic	0.5 kg			
	Plastic bag	0.5 kg			

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium Fibreboard Natural wood Plastics Plywood Reconstituted wood Steel	Aluminium Fibre Other metal Plastics Steel	Aluminium Plastics Steel

Packing Instruction 458

Passenger and cargo aircraft for UN 3270 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS				
UN number and proper shipping name	*Packing conditions*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	**SINGLE PACKAGINGS**
UN 3270 **Nitrocellulose membrane filters**	Any packaging from the list of outer packagings below provided that explosion is not possible by reason of increased internal pressure.	1 kg	15 kg	No

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

Packing Instruction Y458

Limited quantities
Passenger and cargo aircraft for UN 3270 only

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met, including:

— the capability of the package to pass a 1.2 m drop test; and
— a 24-hour stacking test.

COMBINATION PACKAGINGS				SINGLE PACKAGINGS
UN number and proper shipping name	*Packing conditions*	*Total quantity per package*	*Total gross mass per package*	
UN 3270 **Nitrocellulose membrane filters**	Any packaging from the list of outer packagings below provided that explosion is not possible by reason of increased internal pressure.	1 kg	30 kg	No

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Plastics	Plastics	
Plywood	Steel	
Reconstituted wood		
Steel		

Packing Instruction 459

Passenger and cargo aircraft — self-reactive substances

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS						SINGLE PACKAGINGS
UN number and proper shipping name	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle) — passenger*	*Total quantity per package — passenger*	*Inner packaging quantity (per receptacle) — cargo*	*Total quantity per package — cargo*	
Liquids						
UN 3223 **Self-reactive liquid type C**	Plastic	0.5 L	5 L	1.0 L	10 L	No
UN 3225 **Self-reactive liquid type D**	Plastic	0.5 L	5 L	1.0 L	10 L	
UN 3227 **Self-reactive liquid type E**	Plastic	1.0 L	10 L	2.5 L	25 L	
UN 3229 **Self-reactive liquid type F**	Plastic	1.0 L	10 L	2.5 L	25 L	
Solids						
UN 3224 **Self-reactive solid type C**	Plastic	0.5 kg	5 kg	1.0 kg	10 kg	No
UN 3226 **Self-reactive solid type D**	Plastic	0.5 kg	5 kg	1.0 kg	10 kg	
UN 3228 **Self-reactive solid type E**	Plastic	1.0 kg	10 kg	2.5 kg	25 kg	
UN 3230 **Self-reactive solid type F**	Plastic	1.0 kg	10 kg	2.5 kg	25 kg	

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Cushioning materials must not be readily combustible.
— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Plastics (1H2)	Steel (3A2)
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

Packing Instruction 462 – 463

Passenger aircraft

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
—	I	Forbidden			
462	II	Glass	1.0 L	1 L	No
		Plastic	1.0 L		
		Metal	1.0 L		
463	III	Glass	2.5 L	5 L	5 L
		Plastic	2.5 L		
		Metal	5.0 L		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

SINGLE PACKAGINGS FOR PACKING GROUP III ONLY (PI 463)

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1)	Aluminium (3B1)
		Other metal (1N1)	Plastic (3H1)
		Plastic (1H1)	Steel (3A1)
		Steel (1A1)	

Packing Instruction 464 – 465

Cargo aircraft only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
—	I	Forbidden			
464	II	Glass	2.5 L	5 L	No
		Plastic	2.5 L		
		Metal	5.0 L		
465	III	Glass	5.0 L	60 L	60 L
		Plastic	5.0 L		
		Metal	10.0 L		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

SINGLE PACKAGINGS FOR PACKING GROUP III ONLY (PI 465)

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1)	Aluminium (3B1)
		Other metal (1N1)	Plastic (3H1)
		Plastic (1H1)	Steel (3A1)
		Steel (1A1)	

Packing Instruction 466 – 469

Passenger aircraft

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
—	I	Forbidden			
466	II	Glass	1.0 kg	15 kg	No
		Plastic	1.0 kg		
		Metal	1.0 kg		
467	II	Glass	1.0 kg	15 kg	No
		Plastic	2.5 kg		
		Metal	2.5 kg		
		Plastic bag	1.0 kg		
468	III	Glass	2.5 kg	25 kg	No
		Plastic	2.5 kg		
		Metal	5.0 kg		
469	III	Glass	5.0 kg	25 kg	No
		Plastic	10.0 kg		
		Metal	10.0 kg		
		Plastic bag	5.0 kg		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

Packing Instruction 470 – 471

Cargo aircraft only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
—	I	Forbidden			
470	II	Glass	2.5 kg	50 kg	50 kg
		Plastic	5.0 kg		
		Metal	5.0 kg		
		Plastic bag	2.5 kg		
471	III	Glass	5.0 kg	100 kg	100 kg
		Plastic	10.0 kg		
		Metal	10.0 kg		
		Plastic bag	5.0 kg		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastic (1H2)	
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

Packing Group III

— Packagings must meet the Packing Group II performance requirements.
— Fibre, wood and plywood single packagings must be fitted with a suitable liner.

SINGLE PACKAGINGS

Boxes	*Composites*	*Cylinders*	*Drums*	*Jerricans*
Steel (4A)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Aluminium (4B)			Other metal (1N1, 1N2)	Plastic (3H1, 3H2)
Natural wood (4C2)			Plastic (1H1, 1H2)	Steel (3A1, 3A2)
Plywood (4D)			Steel (1A1, 1A2)	
Reconstituted wood (4F)				
Fibreboard (4G)				
Plastics (4H2)				

Packing Instruction 472

Passenger and cargo aircraft for UN 1362 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS				SINGLE PACKAGINGS
UN number and proper shipping name	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
UN 1362 **Carbon, activated**	Plastic	0.1 kg	0.5 kg	No

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B) Steel (4A)	Aluminium (1B2) Steel (1A2)	Aluminium (3B2) Steel (3A2)

Packing Instruction 473

Passenger and cargo aircraft — for UN 1378 and UN 2881 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS							SINGLE PACKAGINGS	
UN number and proper shipping name	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle) — passenger*	*Total quantity per package — passenger*	*Inner packaging quantity (per receptacle) — cargo*	*Total quantity per package — cargo*	*Passenger*	*Cargo*
UN 1378 **Metal catalyst, wetted**	II	Glass	Forbidden		1.0 kg	50 kg	No	No
		Metal			1.0 kg			
UN 2881 **Metal catalyst, dry**	I		Forbidden		Forbidden		No	No
	II	Glass	Forbidden		1.0 kg	50 kg	No	No
		Metal			1.0 kg			
	III	Glass	1.0 kg	25 kg	2.5 kg	100 kg	No	100 kg
		Metal	1.0 kg	25 kg	5.0 kg	100 kg		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

SINGLE PACKAGINGS FOR PACKING GROUP III ONLY

Drums	*Jerricans*
Steel (1A1, 1A2)	Steel (3A1, 3A2)

Packing Instructions Y474 – Y477

Limited quantities
Passenger and cargo aircraft

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met, including:

— the capability of the package to pass a 1.2 m drop test; and
— a 24-hour stacking test.

COMBINATION PACKAGINGS						**SINGLE PACKAGINGS**
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	*Total gross mass per package*	
Y474	II	Glass	0.5 kg	1 kg	30 kg	No
		Plastic	0.5 kg			
		Metal	0.5 kg			
		Plastic bag	0.5 kg			
Y475	II	Glass	0.5 kg	5 kg		No
		Plastic	0.5 kg			
		Metal	0.5 kg			
		Plastic bag	0.5 kg			
Y476	III	Glass	1.0 kg	5 kg		No
		Plastic	1.0 kg			
		Metal	1.0 kg			
		Plastic bag	1.0 kg			
Y477	III	Glass	1.0 kg	10 kg		No
		Plastic	1.0 kg			
		Metal	1.0 kg			
		Plastic bag	1.0 kg			

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Groups II and III

— For wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means of intermediate containment must be provided.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Plastics	Plasticsl	
Plywood	Steel	
Reconstituted wood		
Steel		

Packing Instructions 478 – 479

Passenger aircraft

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					**SINGLE PACKAGINGS**
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
	I	Forbidden			
478	II	Glass	1.0 L	1 L	No
		Plastic	1.0 L		
		Metal	1.0 L		
479	III	Glass	2.5 L	5 L	5 L
		Plastic	2.5 L		
		Metal	5.0 L		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group II

— Inner packagings must have threaded enclosures and must be surrounded in inert cushioning and absorbent material in a quantity sufficient to absorb the entire contents and enclosed in a leakproof liner, plastic bag or other equally effective means of intermediate leakproof containment.

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium (1B2) Fibre (1G) Other metal (1N2) Plastics (1H2) Plywood (1D) Steel (1A2)	Aluminium (3B2) Plastics (3H2) Steel (3A2)

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

SINGLE PACKAGINGS FOR PACKING GROUP III (PI 479 only)

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1) Other metal (1N1) Plastic (1H1) Steel (1A1)	Aluminium (3B1) Plastic (3H1) Steel (3A1)

Packing Instructions 480 – 482

Cargo aircraft only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					**SINGLE PACKAGINGS**
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
480	I	Glass	1.0 L	1 L	No
		Plastic	Forbidden		
		Metal	1.0 L		
481	II	Glass	2.5 L	5 L	No
		Plastic	2.5 L		
		Metal	5.0 L		
482	III	Glass	5.0 L	60 L	60 L
		Plastic	5.0 L		
		Metal	10.0 L		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

— Inner packagings must have threaded enclosures and must be surrounded in inert cushioning and absorbent material in a quantity sufficient to absorb the entire contents and enclosed in a leakproof liner, plastic bag or other equally effective means of intermediate leakproof containment.

Packing Group II

— Inner packagings must have threaded enclosures and must be surrounded in inert cushioning and absorbent material in a quantity sufficient to absorb the entire contents.

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

SINGLE PACKAGINGS FOR PACKING GROUPS I AND II

Cylinders, provided that the general provisions of 4;2.7 are met. Cylinders must be made of steel and subjected to an initial test and period tests every ten years at a pressure of not less than 0.6 Mpa (6 bar) (gauge pressure). During transport, the liquid must be under a layer of inert gas with a gauge pressure of not less than 20 kPa (0.2 bar).

SINGLE PACKAGINGS FOR PACKING GROUP III ONLY (PI 482)

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1) Other metal (1N1) Plastic (1H1) Steel (1A1)	Aluminium (3B1) Plastic (3H1) Steel (3A1)

Packing Instructions 483 – 486

Passenger aircraft

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
—	I	Forbidden			
483	II	Glass	1.0 kg	15 kg	No
		Plastic	1.0 kg		
		Metal	1.0 kg		
484	II	Glass	1.0 kg	15 kg	No
		Plastic	2.5 kg		
		Metal	2.5 kg		
		Plastic bag	1.0 kg		
485	III	Glass	2.5 kg	25 kg	No
		Plastic	2.5 kg		
		Metal	5.0 kg		
486	III	Glass	5.0 kg	25 kg	No
		Plastic	10.0 kg		
		Metal	10.0 kg		
		Plastic bag	5.0 kg		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group III

— Packagings must meet the Packing Group II performance requirements.
— For wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means of intermediate containment must be provided.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

Packing Instructions 487 – 491

Cargo aircraft only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
487	I	Glass	1.0 kg	15 kg	15 kg
		Plastic	1.0 kg		
		Metal	1.0 kg		
488	I	Glass	1.0 kg	15 kg	15 kg
		Plastic	2.5 kg		
		Metal	2.5 kg		
		Plastic bag	2.5 kg		
489	II	Glass	2.5 kg	50 kg	50 kg
		Plastic	2.5 kg		
		Metal	5.0 kg		
490	II	Glass	2.5 kg	50 kg	50 kg
		Plastic	5.0 kg		
		Metal	5.0 kg		
		Plastic bag	2.5 kg		
491	III	Glass	5.0 kg	100 kg	100 kg
		Plastic	10.0 kg		
		Metal	10.0 kg		
		Plastic bag	5.0 kg		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

— Inner packagings must be hermetically sealed, e.g. by taping or by threaded closures.

Packing Groups I and II

— For wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means of intermediate containment must be provided.

Packing Group III

— Packagings must meet the Packing Group II performance requirements.
— For wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means of intermediate containment must be provided.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium (1B2) Fibre (1G) Other metal (1N2) Plastic (1H2) Plywood (1D) Steel (1A2)	Aluminium (3B2) Plastics (3H2) Steel (3A2)

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

— Fibre, wood and plywood single packagings must be fitted with a suitable liner.

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

SINGLE PACKAGINGS FOR PACKING GROUP I

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1) Other metal (1N1) Plastic (1H1) Steel (1A1)	Aluminium (3B1) Plastic (3H1) Steel (3A1)

SINGLE PACKAGINGS FOR PACKING GROUPS II AND III ONLY

Boxes	*Composites*	*Cylinders*	*Drums*	*Jerricans*
Steel (4A) Aluminium (4B) Natural wood (4C2) Plywood (4D) Reconstituted wood (4F) Fibreboard (4G) Plastics (4H2)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Other metal (1N1, 1N2) Plastic (1H1, 1H2) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastic (3H1, 3H2) Steel (3A1, 3A2)

Packing Instruction 492

Passenger and cargo aircraft for UN 3292 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS				
UN number and proper shipping name	*Packing conditions*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	**SINGLE PACKAGINGS**
UN 3292 **Batteries, containing sodium**	Batteries may be offered for transport and transported unpacked or in protective enclosures such as fully enclosed or wooden slatted crates that are not subject to the requirements of Part 6 of these Instructions.	Forbidden	No limit	No limit
UN 3292 **Cells, containing sodium**		25 kg	25 kg	No

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Packagings must meet the Packing Group II performance requirements.
— Batteries must be protected against short circuit and must be isolated in such a manner as to prevent short circuits.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

Packing Instruction 493

Passenger aircraft for UN 3399 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
UN number and proper shipping name	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
UN 3399 **Organometallic substance, liquid, water reactive, flammable**	I	Forbidden			
	II	Glass (see 6;3.2)	1.0 L	1 L	No
		Appropriate cylinders or other pressure vessels (see 4;2.7)	1.0 L	1 L	No
	III	Glass (see 6;3.2)	5.0 L	5 L	No
		Appropriate cylinders or other pressure vessels (see 4;2.7)	5.0 L	5 L	No

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Glass containers must be packed with absorbent material and placed in a rigid leakproof receptacle before packing in outer packagings.
— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

Packing Instruction 494

Cargo aircraft only for UN 3399

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
UN number and proper shipping name	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
UN 3399 **Organometallic substance, liquid, water reactive, flammable**	I	Glass (see 6;3.2)	1.0 L	1.0 L	No
		Appropriate cylinders or other pressure vessels (see 4;2.7)	1.0 L	1.0 L	No
	II	Glass (see 6;3.2)	2.5 L	5 L	No
		Appropriate cylinders or other pressure vessels (see 4;2.7)	2.5 L	5 L	No
	III	Glass (see 6;3.2)	5.0 L	60 L	60 L
		Appropriate cylinders or other pressure vessels (see 4;2.7)	5.0 L	60 L	60 L

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

— Inner packagings must have threaded enclosures and must be surrounded in inert cushioning and absorbent material in a quantity sufficient to absorb the entire contents and enclosed in a leakproof liner, plastic bag or other equally effective means of intermediate leakproof containment.

Packing Group II

— Glass inner packagings must be packed with absorbent material and enclosed in a leakproof liner, plastic bag or other equally effective means of intermediate leakproof containment.

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium (1B2) Fibre (1G) Other metal (1N2) Plastics (1H2) Steel (1A2)	Aluminium (3B2) Plastics (3H2) Steel (3A2)

SINGLE PACKAGINGS FOR PACKING GROUP III ONLY

Appropriate cylinders or pressure vessels as permitted by 4;2.7.

Packing Instruction 495

Passenger and cargo aircraft for UN 3476 only

General requirements

Part 4;1.1.1, 1.1.2 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3476 **Fuel cell cartridges**	5 kg of fuel cell cartridges	50 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— Fuel cell cartridges must be securely cushioned in the outer packagings.

— The mass of each fuel cell cartridge must not exceed 1 kg.

— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium(4B) Fibreboard (4G) Natural wood (4C1, 4C2) Plastic (4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium(1B2) Fibreboard (1G) Plastic (1H2) Plywood (1D) Steel (1A2)	Steel (3A2) Plastics(3H2) Aluminium (3B2)

Packing Instruction 496

Passenger and cargo aircraft for UN 3476 (contained in equipment) only

General requirements

Part 4;1.1.1 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3476 **Fuel cell cartridges contained in equipment**	5 kg of fuel cell cartridges	50 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— Fuel cell cartridges that are contained in equipment must be protected against short circuit and the equipment must be protected against inadvertent operation.
— Equipment must be securely cushioned in the outer packagings.
— The mass of each fuel cell cartridge must not exceed 1 kg.
— Fuel cell systems must not charge batteries during transport.
— On passenger aircraft, each fuel cell system and each fuel cell cartridge must conform to IEC PAS 62282-6-1 Ed. 1 or a standard approved by the appropriate authority of the State of Origin.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes *Drums* *Jerricans*

Strong outer packagings

Packing Instruction 497

Passenger and cargo aircraft for UN 3476 (packed with equipment) only

General requirements

Part 4;1.1.1 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3476 **Fuel cell cartridges packed with equipment**	5 kg of fuel cell cartridges	50 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— When fuel cell cartridges are packed with equipment, they must be packed in intermediate packagings together with the equipment they are capable of powering.
— The maximum number of fuel cell cartridges in the intermediate packaging must be the minimum number required to power the equipment, plus two spares.
— The fuel cell cartridges and the equipment must be packed with cushioning material or divider(s) or inner packaging so that the fuel cell cartridges are protected against damage that may be caused by the movement or placement of the equipment and the cartridges within the packaging.
— The mass of each fuel cell cartridge must not exceed 1 kg.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes *Drums* *Jerricans*

Strong outer packagings

499 PACKING INSTRUCTION 499 499

Only packagings which are approved by the appropriate national authority for these substances may be used (see 4;2.8). A copy of this approval must accompany each consignment or an annotation that it has been granted must be included with the transport document.

CLASS 5 — OXIDIZING SUBSTANCES; ORGANIC PEROXIDES

Packing Instructions Y540 – Y541

Limited quantities
Passenger and cargo aircraft

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met including:

— the capability of the package to pass a 1.2 m drop test;
— a 24-hour stacking test; and
— inner packagings for liquids must be capable of passing a pressure differential test (4;1.1.6).

COMBINATION PACKAGINGS						SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	*Total gross mass per package*	
Y540	II	Glass	0.1 L	0.5 L	30 kg	No
		Plastic	0.1 L			
		Metal	0.1 L			
Y541	III	Glass	0.5 L	1.0 L		No
		Plastic	0.5 L			
		Metal	0.5 L			

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Plastics	Plastics	
Plywood	Steel	
Reconstituted wood		
Steel		

Packing Instructions Y543 – Y546

Limited quantities
Passenger and cargo aircraft

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met including:

— the capability of the package to pass a 1.2 m drop test; and
— a 24-hour stacking test.

COMBINATION PACKAGINGS						SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	*Total gross mass per package*	
Y543	II	Glass	0.5 kg	1.0 kg	30 kg	No
		Plastic	0.5 kg			
		Metal	0.5 kg			
		Paper bag	0.5 kg			
		Plastic bag	0.5 kg			
		Fibre	0.5 kg			
Y544	II	Glass	0.5 kg	2.5 kg	30 kg	No
		Plastic	0.5 kg			
		Metal	0.5 kg			
		Paper bag	0.5 kg			
		Plastic bag	0.5 kg			
		Fibre	0.5 kg			
Y545	III	Glass	1.0 kg	5 kg	30 kg	No
		Plastic	1.0 kg			
		Metal	1.0 kg			
		Paper bag	1.0 kg			
		Plastic bag	1.0 kg			
		Fibre	1.0 kg			
Y546	III	Glass	1.0 kg	10 kg	30 kg	No
		Plastic	1.0 kg			
		Metal	1.0 kg			
		Paper bag	1.0 kg			
		Plastic bag	1.0 kg			
		Fibre	1.0 kg			

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Plastics	Plastics	
Plywood	Steel	
Reconstituted wood		
Steel		

Packing Instructions 550 – 551

Passenger aircraft

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					**SINGLE PACKAGINGS**
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
	I	Forbidden			
550	II	Glass	1.0 L	1 L	No
		Plastic	1.0 L		
		Metal	1.0 L		
551	III	Glass	2.5 L	2.5 L	No
		Plastic	2.5 L		
		Metal	2.5 L		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*
Aluminium (4B)	Aluminium (1B2)
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Other metal (1N2)
Plastics (4H1, 4H2)	Plastics (1H2)
Plywood (4D)	Steel (1A2)
Reconstituted wood (4F)	
Steel (4A)	

Packing Instructions 553 – 554

Cargo aircraft only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
553	I	Glass	1.0 L	2.5 L	No
		Plastic	1.0 L		
		Metal	1.0 L		
554	II	Glass	2.5 L	5 L	No
		Plastic	2.5 L		
		Metal	2.5 L		
555	III	Glass	5.0 L	30 L	30 L
		Plastic	5.0 L		
		Metal	5.0 L		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

— UN 1873 only glass inner packagings are permitted.
— Inner packagings must be packed with absorbent material and placed in a rigid leakproof receptacle before packing in outer packagings.

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*
Aluminium (4B)	Aluminium (1B2)
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Other metal (1N2)
Plastics (4H1, 4H2)	Plastics (1H2)
Plywood (4D)	Steel (1A2)
Reconstituted wood (4F)	
Steel (4A)	

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

SINGLE PACKAGINGS FOR PACKING GROUP III (PI 555)

Composites	*Drums*	*Jerricans*
All (see 6;3.1.18)	Aluminium (1B1) Other metal (1N1) Plastic (1H1) Steel (1A1)	Aluminium (3B1) Plastic (3H1) Steel (3A1)

Packing Instructions 557 – 559

Passenger aircraft

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					**SINGLE PACKAGINGS**
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
557	I	Glass	1.0 kg	1 kg	No
		Plastic	1.0 kg		
		Metal	1.0 kg		
558	II	Glass	1.0 kg	5 kg	No
		Plastic	1.0 kg		
		Metal	1.0 kg		
		Paper bag	1.0 kg		
		Plastic bag	1.0 kg		
		Fibre	1.0 kg		
559	III	Glass	2.5 kg	25 kg	No
		Plastic	2.5 kg		
		Metal	2.5 kg		
		Paper bag	2.5 kg		
		Plastic bag	2.5 kg		
		Fibre	2.5 kg		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Groups I and II

— For wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means of intermediate containment must be provided.

Packing Group III

— Packagings must meet the Packing Group II performance requirements.
— For wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means of intermediate containment must be provided.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS FOR PACKING GROUP I

Boxes	*Drums*
Aluminium (4B)	Aluminium (1B2)
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Other metal (1N2)
Plastics (4H1, 4H2)	Plastics (1H2)
Plywood (4D)	Plywood (1D)
Reconstituted wood (4F)	Steel (1A2)
Steel (4A)	

OUTER PACKAGINGS OF COMBINATION PACKAGINGS FOR PACKING GROUPS II AND III

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastic (4H1, 4H2)	Plastic (1H2)	
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

Packing Instructions 561 – 563

Cargo aircraft only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
561	I	Glass	1.0 kg	15 kg	15 kg
		Plastic	1.0 kg		
		Metal	1.0 kg		
562	II	Glass	2.5 kg	25 kg	25 kg
		Plastic	2.5 kg		
		Metal	5.0 kg		
		Paper bag	2.5 kg		
		Plastic bag	2.5 kg		
		Fibre	2.5 kg		
563	III	Glass	5.0 kg	100 kg	100 kg
		Plastic	5.0 kg		
		Metal	5.0 kg		
		Paper bag	5.0 kg		
		Plastic bag	5.0 kg		
		Fibre	5.0 kg		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Groups I and II

— For wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means of intermediate containment must be provided.

Packing Group III

— Packagings must meet the Packing Group II performance requirements.
— For wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means of intermediate containment must be provided.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS FOR PACKING GROUP I

Boxes	*Drums*
Aluminium (4B)	Aluminium (1B2)
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Other metal (1N2)
Plastics (4H1, 4H2)	Plastics (1H2)
Plywood (4D)	Plywood (1D)
Reconstituted wood (4F)	Steel (1A2)
Steel (4A)	

OUTER PACKAGINGS OF COMBINATION PACKAGINGS FOR PACKING GROUPS II AND III ONLY

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

Fibre, wood and plywood single packagings must be fitted with a suitable liner.

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

SINGLE PACKAGINGS FOR PACKING GROUP I

Drums
Aluminium (1B1, 1B2)
Other metal (1N1, 1N2)
Steel (1A1, 1A2)

SINGLE PACKAGINGS FOR PACKING GROUPS II AND III

Boxes	*Composites*	*Cylinders*	*Drums*	*Jerricans*
Steel (4A)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Aluminium (4B)			Other metal (1N1, 1N2)	Plastic (3H1, 3H2)
Natural wood (4C2)			Fibre (1G)	Steel (3A1, 3A2)
Plywood (4D)			Plastic (1H1, 1H2)	
Reconstituted wood (4F)			Plywood (1D)	
Fibreboard (4G)			Steel (1A1, 1A2)	
Plastics (4H2)				

Packing Instruction 565

Passenger and cargo aircraft for UN 3356 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS				
UN number and proper shipping name	*Packing conditions*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	**SINGLE PACKAGINGS**
UN 3356 **Oxygen generator, chemical**	The generators must be tightly packed in the outer packagings listed below.	Forbidden	25 kg G	Unpackaged No

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— The generator, without its packaging, must be capable of withstanding a 1.8 m drop test onto a rigid, non-resilient, flat and horizontal surface, in the position most likely to cause actuation, without loss of its contents and without actuation. For portable breathing equipment (PBE), which are in a vacuum-sealed bag as part of their containment system, this test may be conducted on the PBE in the vacuum-sealed bag.
— When a generator is equipped with an actuating device, it must have at least two positive means of preventing unintentional actuation. For PBE, which are in a vacuum-sealed bag as part of their containment system, the vacuum-sealed bag may be considered the second positive means of preventing unintentional actuation.
— The generator(s) must be transported in a package which will meet the following requirements when one generator in the package is actuated:

1) other generators in the package will not be actuated;
2) packaging material will not ignite; and
3) the outside surface temperature of the completed package will not exceed 100°C.

Note.— To enable tests 1), 2) and 3) to be conducted on PBE, it is acceptable to break the vacuum-sealed bag to actuate the generator before placing it in the package.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

Packing Instruction 570

Passenger and cargo aircraft

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS							SINGLE PACKAGINGS
UN number and proper shipping name		*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)— passenger*	*Total quantity per package — passenger*	*Inner packaging quantity (per receptacle)— cargo*	*Total quantity per package — cargo*	
Liquids							
UN 3103	**Organic peroxide type C, liquid**	Plastic	0.5 L	5 L	1.0 L	10 L	No
UN 3105	**Organic peroxide type D, liquid**	Plastic	0.5 L	5 L	1.0 L	10 L	
UN 3107	**Organic peroxide type E, liquid**	Plastic	1.0 L	10 L	2.5 L	25 L	
UN 3109	**Organic peroxide type F, liquid**	Plastic	1.0 L	10 L	2.5 L	25 L	
Solids							
UN 3104	**Organic peroxide type C, solid**	Plastic and plastic bag	0.5 kg	5 kg	1.0 kg	10 kg	No
UN 3106	**Organic peroxide type D, solid**	Plastic and plastic bag	0.5 kg	5 kg	1.0 kg	10 kg	
UN 3108	**Organic peroxide type E, solid**	Plastic and plastic bag	1.0 kg	10 kg	2.5 kg	25 kg	
UN 3110	**Organic peroxide type F, solid**	Plastic and plastic bag	1.0 kg	10 kg	2.5 kg	25 kg	

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

CLASS 6 — TOXIC AND INFECTIOUS SUBSTANCES

Packing Instructions Y640 – Y642

Limited quantities
Passenger and cargo aircraft

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met including:

— the capability of the package to pass a 1.2 m drop test;
— a 24-hour stacking test; and
— inner packagings for liquids must be capable of passing a pressure differential test (4;1.1.6).

COMBINATION PACKAGINGS						SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	*Total gross mass per package*	
Y640	II	Glass	0.1 L	0.5 L	30 kg	No
		Plastic	0.1 L			
		Metal	0.1 L			
Y641	II	Glass	0.1 L	1.0 L		No
		Plastic	0.1 L			
		Metal	0.1 L			
Y642	III	Glass	0.5 L	2.0 L		No
		Plastic	0.5 L			
		Metal	0.5 L			

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Plastics	Steel
Plastics	Other metal	
Plywood	Steel	
Reconstituted wood		
Steel		

Packing Instructions Y644 – Y645

Limited quantities
Passenger and cargo aircraft

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met including:

— the capability of the package to pass a 1.2 m drop test; and
— a 24-hour stacking test.

COMBINATION PACKAGINGS						SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	*Total gross mass per package*	
Y644	II	Glass	0.5 kg	1 kg	30 kg	No
		Plastic	0.5 kg			
		Metal	0.5 kg			
		Paper bag	0.5 kg			
		Plastic bag	0.5 kg			
		Fibre	0.5 kg			
Y645	III	Glass	1.0 kg	10 kg		No
		Plastic	1.0 kg			
		Metal	1.0 kg			
		Paper bag	1.0 kg			
		Plastic bag	1.0 kg			
		Fibre	1.0 kg			

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Plastics	Steel
Plastics	Other metal	
Plywood	Steel	
Reconstituted wood		
Steel		

Packing Instructions 651 – 655

Passenger aircraft

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
651	I	Glass	0.5 L	0.5 L	No
		Plastic	0.5 L		
		Metal	0.5 L		
652	I	Glass	0.5 L	1 L	No
		Plastic	0.5 L		
		Metal	1.0 L		
653	II	Glass	1.0 L	1 L	No
		Plastic	1.0 L		
		Metal	1.0 L		
654	II	Glass	1.0 L	5 L	No
		Plastic	1.0 L		
		Metal	2.5 L		
655	III	Glass	2.5 L	60 L	60 L
		Plastic	2.5 L		
		Metal	5.0 L		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

— Inner packagings must be packed with absorbent material and placed in a rigid leakproof receptacle before packing in outer packagings.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

SINGLE PACKAGINGS FOR PACKING GROUP III (PI 655)

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Other metal (1N1, 1N2) Plastic (1H1, 1H2) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastic (3H1, 3H2) Steel (3A1, 3A2)

Packing Instructions 657 – 663

Cargo aircraft only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					**SINGLE PACKAGINGS**
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
657	I	Glass	1.0 L	2.5 L	2.5 L
		Plastic	1.0 L		
		Metal	2.5 L		
658	I	Glass	1.0 L	30 L	30 L
		Plastic	1.0 L		
		Metal	2.5 L		
659	II	Glass	1.0 L	5 L	5 L
		Plastic	1.0 L		
		Metal	2.5 L		
660	II	Glass	1.0 L	30 L	30 L
		Plastic	1.0 L		
		Metal	2.5 L		
661	II	Glass	1.0 L	60 L	60 L
		Plastic	1.0 L		
		Metal	2.5 L		
662	II	Glass	2.5 L	60 L	60 L
		Plastic	2.5 L		
		Metal	5.0 L		
663	III	Glass	5.0 L	220 L	220 L
		Plastic	5.0 L		
		Metal	10.0 L		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

— Inner packagings must be packed with absorbent material and placed in a rigid leakproof receptacle before packing in outer packagings.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastic (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastic (4H1, 4H2)	Plastic (1H2)	
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

SINGLE PACKAGINGS FOR PACKING GROUPS I AND II

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1) Other metal (1N1) Plastic (1H1) Steel (1A1)	Aluminium (3B1) Plastic (3H1) Steel (3A1)

SINGLE PACKAGINGS FOR PACKING GROUP III ONLY

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Other metal (1N1, 1N2) Plastic (1H1, 1H2) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastic (3H1, 3H2) Steel (3A1, 3A2)

Packing Instructions 665 – 670

Passenger aircraft

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
665	I	Glass	0.5 kg	1 kg	No
		Plastic	1.0 kg		
		Metal	1.0 kg		
666	I	Glass	0.5 kg	5 kg	No
		Plastic	1.0 kg		
		Metal	1.0 kg		
667	II	Glass	1.0 kg	5 kg	No
		Plastic	2.5 kg		
		Metal	2.5 kg		
		Paper bag	1.0 kg		
		Plastic bag	1.0 kg		
		Fibre	1.0 kg		
668	II	Glass	1.0 kg	15 kg	No
		Plastic	2.5 kg		
		Metal	2.5 kg		
		Paper bag	1.0 kg		
		Plastic bag	1.0 kg		
		Fibre	1.0 kg		
669	II	Glass	1.0 kg	25 kg	No
		Plastic	2.5 kg		
		Metal	2.5 kg		
		Paper bag	1.0 kg		
		Plastic bag	1.0 kg		
		Fibre	1.0 kg		
670	III	Glass	5.0 kg	100 kg	100 kg
		Plastic	10.0 kg		
		Metal	10.0 kg		
		Paper bag	5.0 kg		
		Plastic bag	5.0 kg		
		Fibre	5.0 kg		

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) Plastic (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium (1B2) Fibre (1G) Other metal (1N2) Plastic (1H2) Plywood (1D) Steel (1A2)	Aluminium (3B2) Plastics (3H2) Steel (3A2)

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

Fibre, wood and plywood single packagings must be fitted with a suitable liner.

SINGLE PACKAGINGS FOR PACKING GROUP III (PI 670)

Bags	*Boxes*	*Composites*	*Cylinders*	*Drums*	*Jerricans*
Paper (5M2) Plastic film (5H4) Textile (5L3) Woven plastic (5H3)	Aluminium (4B) Fibreboard (4G) Natural wood (4C2) Plastics (4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Fibre (1G) Other metal (1N1, 1N2) Plastic (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastic (3H1, 3H2) Steel (3A1, 3A2)

Packing Instructions 672 – 677

Cargo aircraft only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

- Substances must be compatible with their packagings as required by 4;1.1.3.
- Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.

2) **Closure requirements**

- Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
672	I	Glass	1.0 kg	15 kg	15 kg
		Plastic	2.5 kg		
		Metal	2.5 kg		
		Paper bag	1.0 kg		
		Plastic bag	1.0 kg		
		Fibre	1.0 kg		
673	I	Glass	1.0 kg	50 kg	50 kg
		Plastic	2.5 kg		
		Metal	2.5 kg		
		Paper bag	1.0 kg		
		Plastic bag	1.0 kg		
		Fibre	1.0 kg		
674	II	Glass	2.5 kg	25 kg	25 kg
		Plastic	5.0 kg		
		Metal	5.0 kg		
		Paper bag	2.5 kg		
		Plastic bag	2.5 kg		
		Fibre	2.5 kg		
675	II	Glass	2.5 kg	50 kg	50 kg
		Plastic	5.0 kg		
		Metal	5.0 kg		
		Paper bag	2.5 kg		
		Plastic bag	2.5 kg		
		Fibre	2.5 kg		
676	II	Glass	2.5 kg	100 kg	100 kg
		Plastic	5.0 kg		
		Metal	5.0 kg		
		Paper bag	2.5 kg		
		Plastic bag	2.5 kg		
		Fibre	2.5 kg		
677	III	Glass	5.0 kg	200 kg	200 kg
		Plastic	10.0 kg		
		Metal	10.0 kg		
		Paper bag	5.0 kg		
		Plastic bag	5.0 kg		
		Fibre	5.0 kg		

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium (1B2) Fibre (1G) Other metal (1N2) Plastics (1H2) Steel (1A2)	Aluminium (3B2) Plastics (3H2) Steel (3A2)

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

Fibre, wood and plywood single packagings must be fitted with a suitable liner.

SINGLE PACKAGINGS FOR PACKING GROUP I

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Fibre (1G) Other metal (1N1, 1N2) Plastic (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastic (3H1, 3H2) Steel (3A1, 3A2)

SINGLE PACKAGINGS FOR PACKING GROUPS II AND III ONLY

Boxes	*Composites*	*Cylinders*	*Drums*	*Jerricans*
Steel (4A) Aluminium (4B) Natural wood (4C2) Plywood (4D) Reconstituted wood (4F) Fibreboard (4G) Plastics (4H2)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Fibre (1G)) Other metal (1N1, 1N2) Plastic (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastic (3H1, 3H2) Steel (3A1, 3A2)

SINGLE PACKAGINGS FOR PACKING GROUP III (PI 677 only)

Bags	*Boxes*	*Composites*	*Cylinders*	*Drums*	*Jerricans*
Paper (5M2) Plastic film (5H4) Textile (5L3) Woven plastic (5H3)	Aluminium (4B) Fibreboard (4G) Natural wood (4C2) Plastics (4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Fibre (1G) Other metal (1N1, 1N2) Plastic (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastic (3H1, 3H2) Steel (3A1, 3A2)

Packing Instruction 679

Cargo aircraft only for UN 1700, 2016 and 2017 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS				SINGLE PACKAGINGS
UN number and proper shipping name		*Packing conditions*	*Maximum net quantity per package*	
UN 1700	**Tear gas candles**	Elements must not be assembled in grenades or devices, but must be packed in a separate wooden (4C1, 4C2) box and so cushioned that they cannot come into contact with each other or with the walls of the packaging during transport. Not more than 24 grenades and 24 functioning devices per package are permitted.	50 kg	No
UN 2016	**Ammunition, toxic, non-explosive**	Without ignition elements, bursting charges, detonating fuses or other explosive components.	75 kg	No
UN 2017	**Ammunition, tear-producing, non-explosive**	Without ignition elements, bursting charges, detonating fuses or other explosive components.	50 kg	No

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Packagings must meet the Packing Group II performance requirements.
— The articles must be individually packaged and separated from each other using partitions, dividers, inner packagings or cushioning material to prevent inadvertent discharge during normal conditions of transport.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*
Aluminium (4B)	Aluminium (1B2)
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Other metal (1N2)
Plastics (4H2)	Plastics (1H2)
Plywood (4D)	Plywood (1D)
Reconstituted wood (4F)	Steel (1A2)
Steel (4A)	

Packing Instruction 680

Passenger and cargo aircraft for UN 1888 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS						SINGLE PACKAGINGS	
UN number and proper shipping name	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle) — passenger*	*Inner packaging quantity (per receptacle) — cargo*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	*Passenger*	*Cargo*
UN 1888 **Chloroform**	Glass	1.0 L	2.5 L	60 L	220 L	No	220 L
	Plastic	1.0 L	2.5 L				
	Metal	2.5 L	5.0 L				

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Inner packagings must be packed with absorbent material and placed in a rigid leakproof receptacle before packing in outer packagings.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

SINGLE PACKAGINGS FOR CARGO AIRCRAFT ONLY

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Other metal (1N1, 1N2) Plastic (1H1, 1H2) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastic (3H1, 3H2) Steel (3A1, 3A2)

Packing Instruction Y680

Limited quantities
Passenger and cargo aircraft for UN 1888 only

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met including:

— the capability of the package to pass a 1.2 m drop test;
— a 24-hour stacking test; and
— inner packagings for liquids must be capable of passing a pressure differential test (4;1.1.6).

COMBINATION PACKAGINGS						SINGLE PACKAGINGS
UN number and proper shipping name	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	*Total gross mass per package*	
UN 1888 **Chloroform**	III	Glass	0.1 L	2 L	30 kg	No
		Plastic	0.1 L			
		Metal	0.1 L			

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Plastics	Plastics	
Plywood	Steel	
Reconstituted wood		
Steel		

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PACKING INSTRUCTION 699

Passenger and cargo aircraft for UN 3123 and UN 3125 only

Only packagings which are approved by the appropriate national authority for these substances may be used (see 4;2.8). A copy of this approval must accompany each consignment or an annotation that it has been granted must be included with the transport document.

CLASS 8 — CORROSIVES

Packing Instructions Y840 – Y841

Limited quantities
Passenger and cargo aircraft

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion.
— Substances of Class 8 are permitted in glass or earthenware inner packagings only if the substance is free from hydrofluoric acid.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met including:

— the capability of the package to pass a 1.2 m drop test;
— a 24-hour stacking test; and
— inner packagings for liquids must be capable of passing a pressure differential test (4;1.1.6).

COMBINATION PACKAGINGS						SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	*Total gross mass per package*	
Y840	II	Glass	0.1L	0.5 L	30 kg	No
		Plastic	0.1L			
		Metal	0.1L			
Y841	III	Glass	0.5 L	1.0 L		No
		Plastic	0.5 L			
		Metal	0.5 L			

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Plastics	Plastics	
Plywood	Steel	
Reconstituted wood		
Steel		

Packing Instructions Y843 – Y845

Limited quantities
Passenger and cargo aircraft

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion.
— Substances of Class 8 are permitted in glass or earthenware inner packagings only if the substance is free from hydrofluoric acid.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met including:

— the capability of the package to pass a 1.2 m drop test; and
— a 24-hour stacking test.

COMBINATION PACKAGINGS						**SINGLE PACKAGINGS**
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	*Total gross mass per package*	
Y843	II	Glass	0.5 kg	1 kg	30 kg	No
		Plastic	0.5 kg			
		Metal	0.5 kg			
		Plastic bag	0.5 kg			
Y844	II	Glass	0.5 kg	5 kg		No
		Plastic	0.5 kg			
		Metal	0.5 kg			
		Plastic bag	0.5 kg			
Y845	III	Glass	1.0 kg	5 kg		No
		Plastic	1.0 kg			
		Metal	1.0 kg			
		Plastic bag	1.0 kg			

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Plastics	Plastics	
Plywood	Steel	
Reconstituted wood		
Steel		

Packing Instructions 850 – 852

Passenger aircraft

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion.
— Substances of Class 8 are permitted in glass or earthenware inner packagings only if the substance is free from hydrofluoric acid.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
850	I	Glass	0.5 L	0.5 L	No
		Plastic	0.5 L		
		Metal	0.5 L		
851	II	Glass	1.0 L	1 L	No
		Plastic	1.0 L		
		Metal	1.0 L		
852	III	Glass	2.5 L	5 L	No
		Plastic	2.5 L		
		Metal	5.0 L		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

— Inner packagings must be packed with absorbent material and placed in a rigid leakproof receptacle before packing in outer packagings.

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

Packing Instructions 854 – 856

Cargo aircraft only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion.
— Substances of Class 8 are permitted in glass or earthenware inner packagings only if the substance is free from hydrofluoric acid.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
854	I	Glass	1.0 L	2.5 L	No
		Plastic	1.0 L		
		Metal	1.0 L		
855	II	Glass	2.5 L	30 L	30 L
		Plastic	2.5 L		
		Metal	2.5 L		
856	III	Glass	5.0 L	60 L	60 L
		Plastic	5.0 L		
		Metal	10.0 L		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

— Inner packagings must be packed with absorbent material and placed in a rigid leakproof receptacle before packing in outer packagings.

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

SINGLE PACKAGINGS FOR PACKING GROUP III

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1)	Aluminium (3B1)
		Other metal (1N1)	Plastic (3H1)
		Plastic (1H1)	Steel (3A1)
		Steel (1A1)	

SINGLE PACKAGINGS FOR PACKING GROUP II ONLY

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Other metal (1N1, 1N2) Plastic (1H1, 1H2) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastic (3H1, 3H2) Steel (3A1, 3A2)

Packing Instructions 858 – 860

Passenger aircraft

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

- Substances must be compatible with their packagings as required by 4;1.1.3.
- Metal packagings must be corrosion resistant or be protected against corrosion.
- Substances of Class 8 are permitted in glass or earthenware inner packagings only if the substance is free from hydrofluoric acid.

2) **Closure requirements**

- Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					**SINGLE PACKAGINGS**
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
858	I	Glass	0.5 kg	1 kg	No
		Plastic	0.5 kg		
		Metal	0.5 kg		
859	II	Glass	1.0 kg	15 kg	No
		Plastic	2.5 kg		
		Metal	2.5 kg		
		Plastic bag	1.0 kg		
860	III	Glass	2.5 kg	25 kg	No
		Plastic	2.5 kg		
		Metal	5.0 kg		
		Plastic bag	2.5 kg		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group III

- Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium (1B2) Fibre (1G) Other metal (1N2) Plastics (1H2) Plywood (1D) Steel (1A2)	Aluminium (3B2) Plastics (3H2) Steel (3A2)

Packing Instructions 862 – 864

Cargo aircraft only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

- Substances must be compatible with their packagings as required by 4;1.1.3.
- Metal packagings must be corrosion resistant or be protected against corrosion.
- Substances of Class 8 are permitted in glass or earthenware inner packagings only if the substance is free from hydrofluoric acid.

2) **Closure requirements**

- Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
Packing instruction	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	
862	I	Glass	1.0 kg	25 kg	25 kg
		Plastic	2.5 kg		
		Metal	2.5 kg		
863	II	Glass	2.5 kg	50 kg	50 kg
		Plastic	5.0 kg		
		Metal	5.0 kg		
		Plastic bag	2.5 kg		
864	III	Glass	5.0 kg	100 kg	100 kg
		Plastic	5.0 kg		
		Metal	10.0 kg		
		Plastic bag	5.0 kg		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group III

- Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

- Fibre, wood and plywood single packagings must be fitted with a suitable liner.

SINGLE PACKAGINGS FOR PACKING GROUP I

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Fibre (1G) Plastic (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastic (3H1, 3H2) Steel (3A1, 3A2)

SINGLE PACKAGINGS FOR PACKING GROUPS II AND III ONLY

Boxes	*Composites*	*Cylinders*	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C2) Plastics (4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Fibre (1G) Plastic (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastic (3H1, 3H2) Steel (3A1, 3A2)

Packing Instruction 866

Cargo aircraft only for UN 2028 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS				**SINGLE PACKAGINGS**
UN number and proper shipping name	*Packing conditions*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	
UN 2028 **Bombs, smoke, non-explosive** with corrosive liquid, without initiating device	Bombs, smoke may be carried provided they are without ignition elements, bursting charges, detonating fuses or other explosive components.	Forbidden	50 kg	No

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— The articles must be individually packaged and separated from each other using partitions, dividers, inner packagings or cushioning material.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium (1B2) Fibre (1G) Other metal (1N2) Plastics (1H2) Steel (1A2)

Packing Instruction 867

Passenger and cargo aircraft for UN 2803 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					
UN number and proper shipping name	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	**SINGLE PACKAGINGS**
UN 2803 **Gallium**	Plastic	3.5 kg	20 kg	20 kg	No

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Packagings must meet the Packing Group I performance requirements.
— Plastic inner packagings must be enclosed in liners or bags of strong leakproof and puncture resistant material impervious to the contents and completely surrounding the contents to prevent it from escaping from a package irrespective of its position or orientation.
— Plastic inner packagings must be packed with sufficient cushioning material to prevent breakage.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*
Aluminium (4B)	Aluminium (1B2)
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Other metal (1N2)
Plastics (4H1, 4H2)	Plastics (1H2)
Plywood (4D)	Steel (1A2)
Reconstituted wood (4F)	
Steel (4A)	

CARRIAGE AT LOW TEMPERATURES

When it is necessary to transport Gallium at low temperatures in order to maintain it in a completely solid state, packagings may be overpacked in strong water-resistant outer packagings which contain dry ice or other means of refrigeration. If a refrigerant is used, all of the above materials used in the packaging of gallium must be chemically and physically resistant at the low temperatures of the refrigerant employed. If dry ice is used, the outer packaging must permit the release of carbon dioxide gas.

Packing Instruction 868

Passenger and cargo aircraft for UN 2809 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					
UN number and proper shipping name	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	**SINGLE PACKAGINGS**
UN 2809 **Mercury**	Glass	2.5 kg	35 kg	35 kg	See below
	Plastic	2.5 kg			

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Packagings must meet the Packing Group I performance requirements.
— Inner packagings must be enclosed in liners or bags of strong leakproof and puncture resistant material impervious to the contents and completely surrounding the contents to prevent it from escaping from a package irrespective of its position or orientation.
— Inner packagings must be packed with sufficient cushioning material to prevent breakage.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*
Aluminium (4B)	Aluminium (1B2)
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Other metal (1N2)
Plastics (4H1, 4H2)	Plastics (1H2)
Plywood (4D)	Steel (1A2)
Reconstituted wood (4F)	
Steel (4A)	

SINGLE PACKAGINGS

Mercury may also be packed in a single packaging which may only be a welded steel bottle with an inner vaulted bottom, an opening not exceeding 20 mm and a closure which must be a bolt with a conical thread.

Packing Instruction 869

Passenger and cargo aircraft for UN 2809 contained in manufactured articles only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					
UN number and proper shipping name	*Packing conditions*		*Total quantity per package — passenger*	*Total quantity per package — cargo*	**SINGLE PACKAGINGS**
UN 2809 **Mercury** contained in manufactured articles	Manufactured articles or apparatuses of which metallic mercury is a component part, such as manometers, pumps, thermometers, and switches.	Must have sealed inner liners or bags of strong leakproof and puncture-resistant material impervious to mercury which will prevent the escape of mercury from the package irrespective of its position. *Note.— Mercury switches and relays are excepted from the requirement for a sealed inner liner or bag providing they are of the totally enclosed leakproof type in sealed metal or plastic units.*			

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
UN number and proper shipping name	*Packing conditions*		*Total quantity per package — passenger*	*Total quantity per package — cargo*	
	Electron tubes, mercury vapour tubes (tubes with less than a total net quantity of 450 g of mercury).	Tubes must be packed in strong outer packagings with all seams and joints sealed with self-adhesive, pressure-sensitive tape which will prevent the escape of mercury from the package. *Note.— Tubes with more than 450 g of mercury must be packaged according to the above Instructions for manufactured articles or apparatuses.*	No limit	No limit	No
	Electron tubes which do not contain more than 5 g of mercury each and which are packed in the manufacturer's original packagings, may be accepted up to a total net quantity of 30 g of mercury per package; or Tubes which are completely jacketed in sealed leakproof metal cases may be accepted in the manufacturer's original packagings.	May be excepted if packed in the manufacturer's original packagings.			

Thermometers, switches and relays, each containing a total quantity of not more than 15 g of mercury, are excepted from the requirements of these Instructions if they are installed as an integral part of a machine or apparatus and so fitted that shock or impact damage, leading to leakage of mercury, is unlikely to occur under conditions normally incident to transport.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes *Drums* *Jerricans*

Strong outer packagings

CONSIGNMENT PROCEDURES

For electron tubes, mercury vapour tubes and similar tubes, the shipper must indicate the quantity of mercury on the dangerous goods transport document.

Packing Instruction 870

Passenger and cargo aircraft for UN 2794 and 2795 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS				
UN number and proper shipping name	*Packing conditions*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	**SINGLE PACKAGINGS**
UN 2794 **Batteries, wet, filled with acid** UN 2795 **Batteries, wet, filled with alkali**	Batteries must be placed in an acid/alkali-proof liner of sufficient strength and adequately sealed to positively preclude leakage in the event of spillage. The batteries must be packed so that the fill openings and vents, if any, are upward; they must be incapable of short-circuiting and be securely cushioned in the packagings.	30 kg G	No limit	Unpackaged batteries No
	Batteries installed in equipment If batteries are shipped as an integral component of assembled equipment, they must be securely installed and fastened in an upright position and protected against contact with other articles so as to prevent short circuits. Batteries must be removed and packed according to this packing instruction if the assembled equipment is likely to be carried in other than an upright position.			

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Packagings must meet the Packing Group II performance requirements.
— For batteries, electric storage, packed with battery fluid in the same outer packaging, see UN 2796 and UN 2797.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
Plastics (4H1, 4H2)	Plastics (1H2)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

Packing Instruction 871

Passenger and cargo aircraft for UN 3028 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS				
UN number and proper shipping name	*Packing conditions*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	**SINGLE PACKAGINGS**
UN 3028 **Batteries, dry, containing potassium hydroxide solid**	The batteries must be securely cushioned in the packagings.	25 kg G	230 kg G	No

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes

Aluminium (4B))
Fibreboard (4G)
Natural wood (4C1, 4C2)
Plastics (4H2)
Plywood (4D)
Reconstituted wood (4F)
Steel (4A

Packing Instruction 872

Passenger and cargo aircraft for UN 2800

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.
— Metal packagings must be corrosion resistant or be protected against corrosion.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS				
UN number and proper shipping name	*Packing conditions*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	**SINGLE PACKAGINGS**
UN 2800 **Batteries, wet, non-spillable**	Batteries must be protected against short circuits and must be securely packed in strong outer packagings.	No limit	No limit	No

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes *Drums* *Jerricans*

Strong outer packagings

TESTING

Batteries can be considered as non-spillable provided that they are capable of withstanding the vibration and pressure differential tests given below, without leakage of battery fluid.

Vibration test: The battery is rigidly clamped to the platform of a vibration machine and a simple harmonic motion having an amplitude of 0.8 mm (1.6 mm maximum total excursion) is applied. The frequency is varied at the rate of 1 Hz/min between the limits of 10 Hz to 55 Hz. The entire range of frequencies and return is traversed in 95 ± 5 minutes for each mounting position (direction of vibration) of the battery. The battery must be tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for equal time periods.

Pressure differential test: Following the vibration test, the battery is stored for six hours at 24°C ±4°C while subjected to a pressure differential of at least 88 kPa. The battery must be tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for at least six hours in each position.

Note.— Non-spillable type batteries which are an integral part of, and necessary for the operation of, mechanical or electronic equipment must be securely fastened in the battery holder on the equipment and protected in such a manner so as to prevent damage and short circuits.

Packing Instruction 873

Passenger and cargo aircraft for UN 3477

General requirements

Part 4;1.1.1, 1.1.2 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3477 **Fuel cell cartridges**	5 kg of fuel cell cartridges	50 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— Fuel cell cartridges must be securely cushioned in the outer packagings.
— The mass of each fuel cell cartridge must not exceed 1 kg.
— Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium(4B)	Aluminium(1B2)	Steel (3A2)
Fibreboard (4G)	Fibreboard (1G)	Plastics(3H2)
Natural wood (4C1, 4C2)	Plastic (1H2)	Aluminium (3B2)
Plastic (4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

Packing Instruction 874

Passenger and cargo aircraft for UN 3477 (contained in equipment) only

General requirements

Part 4;1.1.1 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3477 **Fuel cell cartridges contained in equipment**	5 kg of fuel cell cartridges	50 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— Fuel cell cartridges that are contained in equipment must be protected against short circuit and the equipment must be protected against inadvertent operation.
— Equipment must be securely cushioned in the outer packagings.
— The mass of each fuel cell cartridge must not exceed 1 kg.
— Fuel cell systems must not charge batteries during transport.
— On passenger aircraft, each fuel cell system and each fuel cell cartridge must conform to IEC PAS 62282-6-1 Ed. 1 or a standard approved by the appropriate authority of the State of Origin.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes *Drums* *Jerricans*

Strong outer packagings

Packing Instruction 875

Passenger and cargo aircraft for UN 3477 (packed with equipment) only

General requirements

Part 4;1.1.1 and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3477 **Fuel cell cartridges packed with equipment**	5 kg of fuel cell cartridges	50 kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

— When fuel cell cartridges are packed with equipment, they must be packed in intermediate packagings together with the equipment they are capable of powering.
— The maximum number of fuel cell cartridges in the intermediate packaging must be the minimum number required to power the equipment, plus 2 spares.
— The fuel cell cartridges and the equipment must be packed with cushioning material or divider(s) or inner packaging so that the fuel cell cartridges are protected against damage that may be caused by the movement or placement of the equipment and the cartridges within the packaging.
— The mass of each fuel cell cartridge must not exceed 1 kg.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes *Drums* *Jerricans*

Strong outer packagings

CLASS 9 — MISCELLANEOUS DANGEROUS GOODS

Packing Instruction 950

Passenger and cargo aircraft for UN 3166 only
(See Packing Instruction 951 for flammable gas-powered vehicles and engines or Packing Instruction 952 for battery-powered equipment and vehicles)

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3166 **Engines, internal combustion, flammable liquid powered** or **Vehicle, flammable liquid powered**	No limit	No limit

ADDITIONAL PACKING REQUIREMENTS

Flammable liquid fuel tanks

Except as otherwise provided for in this packing instruction, fuel tanks must be drained of fuel and tank caps fitted securely. Special precautions are necessary to ensure complete drainage of the fuel system of vehicles, machines or equipment incorporating internal combustion engines, such as lawn mowers and outboard motors, where such machines or equipment could possibly be handled in other than an upright position. When it is not possible to handle in other than an upright position, vehicles, except those with diesel engines, must be drained of fuel as far as practicable, and if any fuel remains, it must not exceed one-quarter of the tank capacity.

Diesel engines

Vehicles equipped with diesel engines are excepted from the requirement to drain the fuel tanks, provided that a sufficient ullage space has been left inside the tank to allow fuel expansion without leakage, and the tank caps are tightly closed. A careful check must be made to ensure there are no fuel leakages.

Batteries

All batteries must be installed and securely fastened in the battery holder of the vehicle, machine or equipment and must be protected in such a manner so as to prevent damage and short circuits. In addition:

1) if spillable batteries are installed, and it is possible for the vehicle, machine or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 492 or 870 as applicable;

2) if lithium batteries are installed, they must be of a type that has successfully passed the tests specified in the UN *Manual of Tests and Criteria*, Part III, subsection 38.3, must be securely fastened in the vehicle, machinery or equipment and must be protected in such a manner so as to prevent damage and short circuits; and

3) if sodium batteries are installed they must conform to the requirements of Special Provision A94.

Other operational equipment

1) Dangerous goods required for the operation of the vehicle, machine or equipment, such as fire extinguishers, tire inflation canisters, safety devices, must be securely mounted in the vehicle, machine or equipment. Aircraft may also contain other articles and substances which would otherwise be classified as dangerous goods but which are installed in that aircraft in accordance with the pertinent airworthiness requirements and operating regulations. If fitted, life-rafts, emergency escape slides and other inflation devices must be protected such that they cannot be activated accidentally. Vehicles containing dangerous

goods identified in Table 3-1 as forbidden on passenger aircraft may only be transported on cargo aircraft. Replacements for the dangerous goods permitted must not be carried under this packing instruction.

2) Vehicles equipped with theft-protection devices, installed radio communications equipment or navigational systems must have such devices, equipment or systems disabled.

Internal combustion engine shipped separately (not installed)

1) When internal combustion engines are being shipped separately, all fuel, coolant or hydraulic systems remaining in or on the engine must be drained as far as practicable and all disconnected fluid pipes must be sealed with leakproof caps, which are positively retained.

2) This requirement also applies to vehicles, machines or equipment containing internal combustion engines which are being shipped in a dismantled state such that fuel lines have been disconnected.

Packing Instruction 951

Cargo aircraft only for UN 3166 only
(See Packing Instruction 950 for flammable liquid-powered vehicles and engines or
Packing Instruction 952 for battery-powered equipment and vehicles)

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3166 **Engines, internal combustion, flammable gas powered** or **Vehicle, flammable gas powered**	Forbidden	No limit

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Flammable gas vessels

1) for flammable gas-powered vehicles, machines or equipment, pressurized vessels containing the flammable gas must be completely emptied of flammable gas. Lines from vessels to gas regulators, and gas regulators themselves, must also be drained of all trace of flammable gas. To ensure that these conditions are met, gas shut-off valves must be left open and connections of lines to gas regulators must be left disconnected upon delivery of the vehicle to the operator. Shut-off valves must be closed and lines reconnected at gas regulators before loading the vehicle aboard the aircraft;

or alternatively,

2) flammable gas-powered vehicles, machines or equipment that have pressure receptacles (fuel tanks) equipped with electrically operated valves that close automatically in case the power is disconnected, or with manual shut-off valves, may be transported under the following conditions:

i) the valves must be in the closed position and in the case of electrically operated valves, power to those valves must be disconnected;

ii) after closing the valves, the vehicle, equipment or machinery must be operated until it stops from lack of fuel before being loaded aboard the aircraft;

iii) in no part of the closed system must the remaining pressure of compressed gases exceed 5 per cent of the maximum allowable working pressure of the system, or more than 2 000 kPa (20 bar), whichever is the lower.

Batteries

All batteries must be installed and securely fastened in the battery holder of the vehicle, machine or equipment and must be protected in such a manner so as to prevent damage and short circuits. In addition:

1) if spillable batteries are installed, and it is possible for the vehicle, machine or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 492 or 870 as applicable;

2) if lithium batteries are installed, they must be of a type that has successfully passed the tests specified in the UN *Manual of Tests and Criteria*, Part III, subsection 38.3, must be securely fastened in the vehicle, machinery or equipment and must be protected in such a manner so as to prevent damage and short circuits; and

3) if sodium batteries are installed they must conform to the requirements of Special Provision A94.

Other operational equipment

1) Dangerous goods required for the operation of the vehicle, machine or equipment, such as fire extinguishers, tire inflation canisters, safety devices, must be securely mounted in the vehicle, machine or equipment. Aircraft may also contain other articles and substances which would otherwise be classified as dangerous goods but which are installed in that aircraft in accordance with the pertinent airworthiness requirements and operating regulations. If fitted, life-rafts, emergency escape slides and other inflation devices must be protected such that they cannot be activated accidentally. Vehicles containing dangerous goods identified in Table 3-1 as forbidden on passenger aircraft may only be transported on cargo aircraft. Replacements for the dangerous goods permitted must not be carried under this packing instruction.

2) Vehicles equipped with theft-protection devices, installed radio communications equipment or navigational systems must have such devices, equipment or systems disabled.

Internal combustion engine shipped separately (not installed)

1) When internal combustion engines are being shipped separately, all fuel, coolant or hydraulic systems remaining in or on the engine must be drained as far as practicable and all disconnected fluid pipes must be sealed with leakproof caps, which are positively retained.

2) This requirement also applies to vehicles, machines or equipment containing internal combustion engines which are being shipped in a dismantled state such that fuel lines have been disconnected.

Packing Instruction 952

Passenger and cargo aircraft for UN 3171 only
(See Packing Instruction 950 for flammable liquid-powered vehicles and engines or
Packing Instruction 951 for flammable gas-powered vehicles and engines)

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3171 **Battery-powered equipment** or **Battery-powered vehicle**	No limit	No limit

ADDITIONAL PACKING REQUIREMENTS

This entry applies to vehicles and equipment which are powered by wet batteries, sodium batteries or lithium batteries and which are transported with these batteries installed. Examples of such vehicles and equipment are electrically-powered cars, lawn mowers, wheelchairs and other mobility aids. Vehicles that also contain an internal combustion engine must be consigned under the entry UN 3166 Vehicle (flammable gas powered) (See Packing Instruction 951) or Vehicle (flammable liquid powered) (See Packing Instruction 950), as appropriate.

Battery-powered vehicles, machines or equipment must meet the following requirements:

Batteries

All batteries must be installed and securely fastened in the battery holder of the vehicle, machine or equipment and must be protected in such a manner so as to prevent damage and short circuits. In addition:

1) if spillable batteries are installed, and it is possible for the vehicle, machine or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 492 or 870 as applicable;

2) if lithium batteries are installed, they must be of a type that has successfully passed the tests specified in the UN *Manual of Tests and Criteria*, Part III, subsection 38.3, must be securely fastened in the vehicle, machinery or equipment and must be protected in such a manner so as to prevent damage and short circuits; and

3) if sodium batteries are installed they must conform to the requirements of Special Provision A94.

Other operational equipment

1) Dangerous goods required for the operation of the vehicle, machine or equipment, such as fire extinguishers, tire inflation canisters, and safety devices, must be securely mounted in the vehicle, machine or equipment. Aircraft may also contain other articles and substances which would otherwise be classified as dangerous goods but which are installed in that aircraft in accordance with the pertinent airworthiness requirements and operating regulations. If fitted, life-rafts, emergency escape slides and other inflation devices must be protected such that they cannot be activated accidentally. Vehicles containing dangerous goods identified in Table 3-1 as forbidden on passenger aircraft may only be transported on cargo aircraft. Replacements for the dangerous goods permitted must not be carried under this packing instruction.

2) Vehicles equipped with theft-protection devices, installed radio communications equipment or navigational systems must have such devices, equipment or systems disabled.

Packing Instruction 953

Passenger and cargo aircraft for UN 2807 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 2807 **Magnetized material**	No limit	No limit

ADDITIONAL PACKING REQUIREMENTS

Magnetized material will be accepted only when:

a) devices such as magnetrons and light meters have been packed so that the polarities of the individual units oppose one another;

b) permanent magnets, where possible, have keeper bars installed;

c) the magnetic field strength at a distance of 4.6 m from any point on the surface of the assembled consignment:

1) does not exceed 0.418 A/m; or

2) produces a magnetic compass deflection of 2 degrees or less.

Magnetized material may be shipped in a unit load device or other type of pallet prepared by a single shipper provided that the shipper has made prior arrangements with the operator. The shipper must provide the operator with written documentation stating the number of packages of magnetized material contained in each unit load device or other type of pallet.

Note.— For loading restrictions, see 7;2.10.

Determination of shielding requirements

The magnetic field strength of magnetized materials must be measured using measuring devices having a sensitivity sufficient to measure magnetic fields greater than 0.0398 A/m within a tolerance of plus or minus 5 per cent, or with a magnetic compass sensitive enough to read a 2 degree variation, preferably in 1-degree increments or finer. If the maximum field strength observed at a distance of 2.1 m is less than 0.159 A/m or there is no significant compass deflection (less than 0.5 degree), the article is not restricted as a magnetized material. Methods of determining if a magnetized article meets the definition of a magnetized material include:

a) When an oersted meter is used, it is placed on one of two points positioned 4.6 m apart and located in an area that is free from magnetic interference other than the earth's magnetic field. The oersted meter is then aligned with the second point and "balanced" to a zero reading. The magnetic article is then placed on the other point and the magnetic field strength is measured by reading the meter while rotating the package 360 degrees in its horizontal plane. If the maximum field strength observed is 0.418 A/m or less, the article is acceptable for air transport. When the maximum field strength exceeds 0.418 A/m, shielding should be applied until a reading of 0.418 A/m or less has been attained.

b) When a magnetic compass is used as a sensing device, it should be placed on one of two points positioned 4.6 m apart which are aligned in an East/West direction and in an area that is free from any magnetic interference other than the earth's magnetic field. The packaged item to be tested is placed on the other point and rotated 360 degrees in its horizontal plane for indication of compass deflection. When the maximum compass deflection observed is 2 degrees or less, the article is acceptable for air transport. When the maximum compass deflection of an item exceeds 2 degrees, shielding must be applied until the maximum deflection is not more than 2 degrees.

Packing Instruction 954

Passenger and cargo aircraft for UN 1845 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 1845 **Carbon dioxide, solid** or **Dry ice**	200 kg	200 kg

ADDITIONAL PACKING REQUIREMENTS

In packages:

a) must be packed in accordance with the general packing requirements of 4;1 and be in packaging designed and constructed to permit the release of carbon dioxide gas to prevent a build-up of pressure that could rupture the packaging;

b) the shipper must make arrangements with the operator(s) for each shipment, to ensure that ventilation safety procedures are followed;

c) the dangerous goods transport document requirements of 5;4 are not applicable provided alternative written documentation is describing the contents. The information required is as follows and should be shown in the following order:

1) UN 1845 (**Carbon dioxide, solid** or **Dry ice**) the word “Class” may be included prior to the number “9”;

2) the number of packages and the net quantity of dry ice in each package;

d) the net mass of the **Carbon dioxide, solid** or **Dry ice** must be marked on the outside of the package; and

e) the information must be included with the description of the goods.

Dry ice used for other than dangerous goods may be shipped in a unit load device or other type of pallet prepared by a single shipper provided that:

a) the shipper has made prior arrangements with the operator;

b) the unit load device, or other type of pallet, must allow the venting of the carbon dioxide gas to prevent a dangerous build-up of pressure; and

c) the shipper must provide the operator with written documentation stating the total quantity of the dry ice contained in the unit load device or other type of pallet.

Packing Instruction 955

Passenger and cargo aircraft for UN 2990 and UN 3072 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 2990 **Life-saving appliances, self-inflating** UN 3072 **Life-saving appliances, not self-inflating** containing dangerous goods as equipment	No limit	No limit

ADDITIONAL PACKING REQUIREMENTS

The description “Life-saving appliances, self-inflating” (UN 2990) is intended to apply to life-saving appliances that present a hazard if the self-inflating device is activated accidentally.

Life-saving appliances, such as life rafts, life vests, aircraft survival kits or aircraft evacuation slides, may only contain the dangerous goods listed below:

a) Division 2.2 gases, must be contained in cylinders which conform to the requirements of the appropriate national authority of the country in which they are approved and filled. Such cylinders may be connected to the life-saving appliance. These cylinders may include installed actuating cartridges (cartridges, power device of Division 1.4C and 1.4S) provided the aggregate quantity of deflagrating (propellant) explosives does not exceed 3.2 grams per unit. When the cylinders are shipped separately, they shall be classified as appropriate for the Division 2.2 gas contained and need not be marked, labelled or described as explosive articles;

b) signal devices (Class 1), which may include smoke and illumination signal flares; signal devices must be packed in plastic or fibreboard inner packagings;

c) small quantities of flammable substances, corrosive solids and organic peroxides (Class 3, Class 8, Division 4.1 and 5.2), which may include a repair kit and not more than 30 strike-anywhere matches. The organic peroxide may only be a component of a repair kit and the kit must be packed in strong inner packaging. The strike-anywhere matches must be packed in a cylindrical metal or composition packaging with a screw-type closure and be cushioned to prevent movement;

d) electric storage batteries (Class 8) and lithium batteries (Class 9); and

e) first aid kits which may include flammable, corrosive and toxic articles or substances.

The appliances must be packed, so that they cannot be accidentally activated, in strong outer packagings and, except for life vests, the dangerous goods must be in inner packagings packed so as to prevent movement. The dangerous goods must be an integral part of the appliance without which it would not be operational and in quantities which do not exceed those appropriate for the actual appliance when in use.

Passenger restraint systems consisting of a cylinder charged with a non-liquefied, non-flammable compressed gas and no more than two actuating cartridges per passenger restraint system that meet the requirements of the State of Manufacture must be packed in strong outer packagings so they cannot be accidentally activated.

Life-saving appliances may also include articles and substances not subject to these Instructions which are an integral part of the appliance.

Packing Instruction 956

Passenger and cargo aircraft for UN 1841, UN 1931, UN 3432, UN 2969, UN 3077, UN 3152 and UN 3335 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS	
UN number and proper shipping name	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	Quantity — passenger	Quantity — cargo
UN 1841 **Acetaldehyde ammonia**	Glass	10.0 kg	200 kg	200 kg	200 kg	200 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastic	50.0 kg				
	Plastic bag	50.0 kg				
UN 1931 **Zinc dithionite** or **Zinc hydrosulphite**	Glass	10.0 kg	100 kg	200 kg	100 kg	200 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastic	50.0 kg				
	Plastic bag	50.0 kg				
UN 2969 **Castor beans** or **Castor flake** or **Castor meal** or **Castor pomace**	Glass	10.0 kg	No limit	No limit	No Limit	No Limit
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastic	50.0 kg				
	Plastic bag	50.0 kg				
UN 3077 **Environmentally hazardous substance, solid, n.o.s.**	Glass	10.0 kg	400 kg	400 kg	400 kg	400 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastic	50.0 kg				
	Plastic bag	50.0 kg				
UN 3152 **Polyhalogenated biphenyls, solid** or **Polyhalogenated terphenyls, solid**	Glass	10.0 kg	100 kg	200 kg	100 kg	200 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastic	50.0 kg				
	Plastic bag	50.0 kg				
UN 3335 **Aviation regulated solid, n.o.s.**	Glass	10.0 kg	100 kg	200 kg	100 kg	200 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastic	50.0 kg				
	Plastic bag	50.0 kg				
UN 3432 **Polychlorinated biphenyls, solid**	Glass	10.0 kg	100 kg	200 kg	100 kg	200 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastic	50.0 kg				
	Plastic bag	50.0 kg				

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium (1B2) Fibre (1G) Other metal (1N2) Plastics (1H2) Steel (1A2)	Aluminium (3B2) Plastics (3H2) Steel (3A2)

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

— Fibre, wood and plywood single packagings must be fitted with a suitable liner.

SINGLE PACKAGINGS

Bags	*Boxes*	*Composites*	*Cylinders*	*Drums*	*Jerricans*
Paper (5M2) Plastic film (5H4) Textile (5L3) Woven plastic (5H3)	Aluminium (4B) Fibreboard (4G) Natural wood (4C2) Plastic (4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Fibre (1G) Other metal (1N1, 1N2) Plastic (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastic (3H1, 3H2) Steel (3A1, 3A2)

Packing Instruction Y956

Limited quantities
Passenger and cargo aircraft for UN 3077 only

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met, including:

— the capability of the package to pass a 1.2 m drop test; and
— a 24-hour stacking test.

COMBINATION PACKAGINGS						SINGLE PACKAGINGS
UN number and proper shipping name	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	*Total gross mass per package*	
UN 3077 **Environmentally hazardous substance, solid, n.o.s.**	III	Glass	5.0 kg	30 kg	30 kg	No
		Plastic	5.0 kg			
		Metal	5.0 kg			
		Paper bag	5.0 kg			
		Plastic bag	5.0 kg			
		Fibre	5.0 kg			

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Plastics	Plastics	
Plywood	Steel	
Reconstituted wood		
Steel		

Packing Instruction 957

Passenger and cargo aircraft for UN 2211 and UN 3314 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*	SINGLE PACKAGINGS
UN 2211 **Polymeric beads, expandable**, evolving flammable vapour UN 3314 **Plastics moulding compound** in dough, sheet or extruded rope form evolving flammable vapour	100 kg	200 kg	Yes

ADDITIONAL PACKING REQUIREMENTS

For other than metal packagings, a sealed plastic liner must be used.

SINGLE PACKAGINGS

Boxes	*Drums*
Fibreboard (4G)	Aluminium (1A1, 1B2)
Plywood (4D)	Fibre (1G)
Reconstituted wood (4F)	Plywood (1D)
Wooden (4C1, 4C2)	Steel (1A1, 1A2)

Packing Instruction 958

Passenger and cargo aircraft for UN 2071 and UN 2590 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*	**SINGLE PACKAGINGS**
UN 2071 **Ammonium nitrate fertilizers** UN 2590 **White asbestos**	200 kg	200 kg	Yes

ADDITIONAL PACKING REQUIREMENTS

For UN 2071 and 2590

— All rigid packagings must be sift-proof.

For UN 2590

— Bags must be palletized and unitized by methods such as shrink wrapping in plastic film or wrapping in fibreboard secured by strapping.

SINGLE PACKAGINGS

Bags	*Boxes*	*Drums*	*Jerricans*
Plastic (5H4)	Fibreboard (4G)	Aluminium (1B2)	Plastic(3H2)
Textile(5L3)	Natural wood (4C2)	Fibreboard (1G)	Steel (3A2)
Woven plastic (5H3)	Plastic (4H1, 4H2)	Plastic (1H2)	
	Plywood (4D)	Plywood (1D)	
	Reconstituted wood (4F)	Steel (1A2)	

Packing Instruction Y958

Limited quantities
Passenger and cargo aircraft

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met, including:

— the capability of the package to pass a 1.2 m drop test; and
— a 24-hour stacking test.

COMBINATION PACKAGINGS						**SINGLE PACKAGINGS**
UN number and proper shipping name	*Packing group*	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	*Total gross mass per package*	
UN 2071 **Ammonium nitrate fertilizers**	III	Glass	5.0 kg	30 kg G	30 kg	No
		Plastic	5.0 kg			
		Metal	5.0 kg			
		Paper bag	5.0 kg			
		Plastic bag	5.0 kg			
		Fibre	5.0 kg			

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Plastics	Plastics	
Plywood	Steel	
Reconstituted wood		
Steel		

Packing Instruction 959

Passenger and cargo aircraft for UN 3245 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

UN number and proper shipping name	*State*	*Inner packaging (see 6;3.2)*	*Quantity — passenger*	*Quantity — cargo*	**SINGLE PACKAGINGS**
UN 3245 **Genetically modified organisms**	Liquid	100 mL	No limit	No limit	No
	Solid	100 g	No limit	No limit	

ADDITIONAL PACKING REQUIREMENTS

— The packaging must comply with all the requirements of Packing instruction 602.

Packing Instruction 960

Passenger and cargo aircraft for UN 3316 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

UN number and proper shipping name	*State*	*Inner packaging* (see 6;3.2)*	*Maximum quantity of dangerous goods per kit*	*Package quantity — passenger*	*Package quantity — cargo*	**SINGLE PACKAGINGS**
UN 3316 **Chemical kit** or **First aid kit**	Liquid	250 mL	1 L	10 kg	10 kg	No
	Solid	250 g	1 kg			
*Containing dangerous goods.						

ADDITIONAL PACKING REQUIREMENTS

— Kits may contain dangerous goods which require segregation according to Table 7-1. The packing group assigned to the kit as a whole must be the most stringent packing group assigned to any individual substance contained in the kit.
— Kits must not be packed with other dangerous goods in the same outer packaging, with the exception of dry ice. If dry ice is used, the requirements in Packing Instruction 954 must be met.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes

Aluminium (4B)
Fibreboard (4G)
Natural wood (4C1, 4C2)
Plastic (4H1, 4H2)
Plywood (4D)
Reconstituted wood (4F)
Steel (4A)

Packing Instruction Y960

Limited quantities
Passenger and cargo aircraft for UN 3316 only

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met except 3;4.3.3, including:

— the capability of the package to pass a 1.2 m drop test; and
— a 24-hour stacking test.

UN number and proper shipping name	*State*	*Inner packaging* (see 6;3.2)*	*Maximum quantity of dangerous goods per kit*	*Total gross mass per package*	**SINGLE PACKAGINGS**
UN 3316 **Chemical kit** or **First aid kit**	Liquid	30 mL	1 kg	30 kg	No
	Solid	100 g			
*Containing dangerous goods.					

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Kits may contain dangerous goods which require segregation according to Table 7-1. The packing group assigned to the kit as a whole must be the most stringent packing group assigned to any individual substance contained in the kit.
— Kits must not be packed with other dangerous goods in the same outer packaging, with the exception of dry ice. If dry ice is used, the requirements in Packing Instruction 954 must be met.
— The total quantity of dangerous goods in any one kit and in any one package must not exceed 1 kg.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes

Fibreboard
Natural wood
Plastic
Plywood
Reconstituted wood

Packing Instruction 961

Passenger and cargo aircraft for UN 3268 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*	**SINGLE PACKAGINGS**
UN 3268 **Air bag inflators** or **Air bag modules** or **Seat-belt pretensioners**	25 kg	100 kg	No

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Packagings must meet the Packing Group III performance requirements.
— The packagings must be designed and constructed to prevent movement of the articles and inadvertent operation during normal conditions of transport.
— Any pressure vessel must be in accordance with the requirements of the appropriate national authority for the substance(s) contained in the pressure vessel(s).

Cargo aircraft only

Air bag inflators, air bag modules and seat-belt pretensioners may also be transported unpackaged on cargo aircraft in dedicated handling devices when transported from where they are manufactured to vehicle assembly plants. When transported in handling devices, the following conditions must be met:

a) air bag inflators, air bag modules or seat-belt pretensioners as fitted in the handling device must be capable of meeting the test criteria prescribed in Special Provision A115;

b) the handling device must be completely enclosed;

c) each air bag inflator, air bag module or seat-belt pretensioner unit must be secured within the handling device to prevent movement in transport; and

d) irrespective of the limit specified in column 13 of Table 3-1, a handling device meeting these requirements may have a gross mass not exceeding 1 000 kg.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibreboard (1G)	Other metal (3N2)
Natural wood (4C2)	Other metal (4N)	Plastic (3H2)
Plastic (4H1, 4H2)	Plastic (1H2)	Steel (3A2)
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

Packing Instruction 962

Passenger and cargo aircraft for UN 3363 only

General requirements

Part 4, Chapter 1 requirements must be met (except that the requirements of 4;1.1.2, 4;1.1.8, 4;1.1.10, 4;1.1.13 and 4;1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

This entry only applies to apparatus or machinery containing dangerous goods as a residue or as an integral element of the machinery or apparatus. It must not be used for apparatus or machinery for which a proper shipping name exists in Table 3-1. For other than fuel system components, apparatus or machinery may only contain dangerous goods permitted under 3;4.1.2, UN 2807 and gases of Division 2.2 without subsidiary risk but excluding refrigerated liquefied gases.

UN number and proper shipping name	*State*	*Total net quantity of dangerous goods in one package (excluding magnetic material)*
UN 3363 **Dangerous goods in apparatus** or **Dangerous goods in machinery**	Liquid	0.5 L
	Solid	1 kg
	Gas (Division 2.2 only)	0.5 kg

ADDITIONAL PACKING REQUIREMENTS

— Receptacles containing dangerous goods must be so secured or cushioned so as to prevent their breakage or leakage and so as to control their movement within the machinery or apparatus during normal conditions of transport. Cushioning material must not react dangerously with the contents of the receptacles. Any leakage of the contents must not substantially impair the protective properties of the cushioning material.
— "Package orientation" labels (Figure 5-26), or preprinted orientation labels meeting the same specification as either Figure 5-26 or ISO Standard 780-1997 must be affixed on at least two opposite vertical sides with the arrows pointing in the correct direction only when required to ensure liquid dangerous goods remain in their intended orientation.
— Irrespective of 5;3.2.10, machinery or apparatus containing magnetized material meeting the requirements of Packing Instruction 953 must also bear the "Magnetized material" label (Figure 5-24).
— For Division 2.2 gases, cylinders for gases, their contents and filling ratios must conform to the requirements of Packing Instruction 200.

Fuel system components

— Fuel system components must be emptied of fuel as far as practicable and all openings must be sealed securely. They must be packed:

1) in sufficient absorbent material to absorb the maximum amount of liquid which may possibly remain after emptying. Where the outer packaging is not liquid tight, a means of containing the liquid in the event of leakage must be provided in the form of a leakproof liner, plastic bag or other equally efficient means of containment; and

2) in strong outer packagings.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Dangerous goods in apparatus or machinery must be packed in strong outer packagings unless the receptacles containing the dangerous goods are afforded adequate protection by the construction of the apparatus or machinery.

Packing Instruction 963

Passenger and cargo aircraft for ID 8000 only

Consumer commodities are materials that are packaged and distributed in a form intended or suitable for retail sale for the purposes of personal care or household use. These include items administered or sold to patients by doctors or medical administrations. Except as otherwise provided below, dangerous goods packed in accordance with this packing instruction do not need to comply with 4;1 or Part 6 of these Instructions; they must, however, comply with all other applicable requirements.

a) Each packaging must be designed and constructed to prevent leakage that may be caused by changes in altitude and temperature during air transport.

b) Inner packagings that are breakable (such as earthenware, glass or brittle plastic) must be packed to prevent breakage and leakage under conditions normally incident to transport. These completed packagings must be capable of withstanding a 1.2 m drop on solid concrete in the position most likely to cause damage.

c) When filling receptacles for liquids, sufficient ullage (outage) must be left to ensure that neither leakage nor permanent distortion of the receptacle will occur as a result of an expansion of the liquid caused by temperatures likely to prevail during transport. Unless specific requirements are prescribed in national rules or international agreements, liquids must not completely fill a receptacle at a temperature of 55°C. At this temperature a minimum ullage of 2 per cent should be left. The primary packaging (which may include composite packaging), for which retention of the liquid is a basic function, must be capable of withstanding, without leakage, an internal pressure which produces a pressure differential of not less than 75 kPa or a pressure related to the vapour pressure of the liquid to be conveyed, whichever is the greater. The pressure related to the vapour pressure must be determined by the method shown in 4;1.1.6.1. Tests on sample receptacles must be carried out to demonstrate the capability of the primary packaging to withstand the above pressure.

d) Stoppers, corks or other such friction-type closures must be held securely, tightly and effectively in place by positive means. The closure device must be so designed that it is extremely improbable that it can be incorrectly or incompletely closed and must be such that it may be easily checked to determine that it is completely closed.

e) Inner packagings must be tightly packed in strong outer packagings and must be so packed, secured or cushioned so as to prevent any breakage, puncture or leakage of contents into the outer packaging(s) during normal conditions of transport. Absorbent material must be provided for glass or earthenware inner packaging(s) containing consumer commodities in Class 2 or 3 or liquids of Division 6.1, in sufficient quantity to absorb the liquid contents of the largest of such inner packagings contained in the outer packaging. Absorbent and cushioning material must not react dangerously with the contents of the inner packagings. Notwithstanding the above, absorbent material may not be required if the inner packagings are so protected that breakage of the inner packagings and leakage of their contents from the outer packaging will not occur during normal conditions of transport.

f) Inner packagings containing liquids, excluding flammable liquids in inner packagings of 120 mL or less, must be packed with their closures upward and the upright position of the package must be indicated by “Package orientation” labels (Figure 5-26). These labels, or pre-printed package orientation labels meeting the same specification as either Figure 5-26 or ISO Standard 780-1997, must be affixed to, or printed on, at least two opposite vertical sides of the package with the arrows pointing in the correct direction.

g) Packagings (including closures) in direct contact with dangerous goods must be resistant to any chemical or other action of such goods; the materials of the receptacles must not contain substances which may react dangerously with the contents, form hazardous products or significantly weaken the receptacles.

h) Each completed package as prepared for shipment must not exceed a gross mass of 30 kg G.

i) Class 2 substances must be further limited to aerosol products containing non-toxic compressed or liquefied gas(es) that are necessary to expel liquids, powders or pastes, packed in inner non-refillable non-metal receptacles not exceeding 120 mL capacity each, or in inner non-refillable metal receptacles not exceeding 820 mL capacity each (except that flammable aerosols must not exceed 500 mL capacity each), subject in either case to the following provisions:

   1) the pressure in the aerosol must not exceed 1 500 kPa at 55°C and each receptacle must be capable of withstanding, without bursting, a pressure of at least 1.5 times the equilibrium pressure of the contents at 55°C;

   2) if the pressure in the aerosol exceeds 970 kPa at 55°C but does not exceed 1 105 kPa at 55°C, an inner IP.7, IP.7A or IP.7B metal receptacle must be used;

3) if the pressure in the aerosol exceeds 1 105 kPa at 55°C but does not exceed 1 245 kPa at 55°C, an IP.7A or IP.7B metal receptacle must be used;

4) if the pressure in the aerosol exceeds 1 245 kPa at 55°C, an IP.7B metal receptacle must be used;

5) IP.7B metal receptacles having a minimum burst pressure of 1 800 kPa may be equipped with an inner capsule charged with a non-flammable, non-toxic compressed gas to provide the propellant function. In this case, the pressures indicated in 1), 2), 3) or 4) do not apply to the pressure within the capsule. The quantity of gas contained in the capsule must be so limited such that the minimum burst pressure of the receptacle would not be exceeded if the entire gas content of the capsule were released into an aerosol;

6) the liquid contents must not completely fill the closed receptacle at 55°C;

7) each aerosol exceeding 120 mL capacity must have been heated until the pressure in the aerosol is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect; and

8) the valves must be protected by a cap or other suitable means during transport.

j) For aerosols containing a biological or medical preparation which will be deteriorated by a heat test and which are non-toxic and non-flammable, packed in inner non-refillable receptacles not exceeding 575 mL capacity each, the following provisions are applicable:

1) the pressure in the aerosol must not exceed 970 kPa at 55°C;

2) the liquid contents must not completely fill the closed receptacle at 55°C;

3) one aerosol out of each lot of 500 or less must be heated until the pressure in the aerosol is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect; and

4) the valves must be protected by a cap or other suitable means during transport.

k) Except for aerosols, inner packagings must not exceed:

1) 500 mL for liquids; and

2) 500 g for solids.

l) Consumer commodities shipped according to these provisions may be shipped in a unit load device or other type of pallet prepared by a single shipper provided they contain no other dangerous goods. The shipper must provide the operator with written documentation stating the number of packages of consumer commodities contained in each unit load device or other type of pallet.

m) The gross mass on the dangerous goods transport document must be shown as:

1) for one package, the actual gross mass of the package;

2) for more than one package, either the actual gross mass of each package or as the average mass of the packages. (For example, if there are 10 packages and the total gross mass of them is 100 kg, the dangerous goods transport document may show this as “average gross mass per package 10 kg”.)

Packing Instruction 964

Passenger and cargo aircraft for UN 1941, UN 1990, UN 2315, UN 3151, UN 3082 and UN 3334 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS	
UN number and proper shipping name	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	*Passenger*	*Cargo*
UN 1941 **Dibromodifluoromethane**	Glass	10.0 L	100 L	220 L	100 L	220 L
	Plastic	30.0 L				
	Metal	40.0 L				
UN 1990 **Benzaldehyde**	Glass	10.0 L	100 L	220 L	100 L	220 L
	Plastic	30.0 L				
	Metal	40.0 L				
UN 2315 **Polychlorinated biphenyls, liquid**	Glass	10.0 L	100 L	220 L	100 L	220 L
	Plastic	30.0 L				
	Metal	40.0 L				
UN 3082 **Environmentally hazardous substance, liquid, n.o.s.**	Glass	10.0 L	450 L	450 L	450 L	450 L
	Plastic	30.0 L				
	Metal	40.0 L				
UN 3151 **Polyhalogenated biphenyls, liquid** or **Polyhalogenated terphenyls, liquid**	Glass	10.0 L	100 L	220 L	100 L	220 L
	Plastic	30.0 L				
	Metal	40.0 L				
UN 3334 **Aviation regulated liquid, n.o.s.**	Glass	10.0 L	No Limit	No Limit	No Limit	No Limit
	Plastic	30.0 L				
	Metal	40.0 L				

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Other metal (3N2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Plastics (3H2)
Plastics (4H1, 4H2)	Plastics (1H2)	Steel (3A2)
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

SINGLE PACKAGINGS

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
		Other metal (1N1, 1N2)	Plastic (3H1, 3H2)
		Plastic (1H1, 1H2)	Steel (3A1, 3A2)
		Steel (1A1, 1A2)	

Packing Instruction Y964

Limited quantities
Passenger and cargo aircraft for UN 1941, UN 1990 and UN 3082 only

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.8 c), 1.1.8 e) and 1.1.16 do not apply), including:

1) **Compatibility requirements**

— Substances must be compatible with their packagings as required by 4;1.1.3.

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

— Part 3, Chapter 4 requirements must be met including:

— the capability of the package to pass a 1.2 m drop test;
— a 24-hour stacking test; and
— inner packagings for liquids must be capable of passing a pressure differential test (4;1.1.6).

COMBINATION PACKAGINGS					**SINGLE PACKAGINGS**
UN number and proper shipping name	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package*	*Total gross mass per package*	
UN 1941 **Dibromodifluoromethane** UN 1990 **Benzaldehyde** UN 3082 **Environmentally hazardous substance, liquid, n.o.s.**	Glass	5.0 L	30 kg	30 kg	No
	Plastic	5.0 L			
	Metal	5.0 L			

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Plastics	Plastics	
Plywood	Steel	
Reconstituted wood		
Steel		

Packing Instruction 965

Passenger and cargo aircraft for UN 3480

This entry applies to lithium ion or lithium polymer batteries in Class 9 (Section I) and lithium ion or lithium polymer batteries subject to specific requirements of these Instructions (Section II).

SECTION I

Section I requirements apply to each cell or battery type that has been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

1) be of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3; and

2) incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport and be equipped with an effective means of preventing external short circuits.

Each battery containing cells or a series of cells connected in parallel must be equipped with an effective means, as necessary, to prevent dangerous reverse current flow (e.g. diodes, fuses).

General requirements

Part 4;1 requirements must be met.

Contents	*Package quantity (Section I)*	
	Passenger	*Cargo*
Lithium ion cells and batteries	5 kg G	35 kg G

ADDITIONAL PACKING REQUIREMENTS

— Lithium ion cells and batteries must be protected against short circuits.
— Packagings must meet the Packing Group II performance requirements.
— Lithium ion batteries with a mass of 12 kg or greater and having a strong, impact-resistant outer casing, or assemblies of such batteries, may be transported when packed in strong outer packagings and protective enclosures not subject to the requirements of Part 6 of these Instructions, if approved by the appropriate authority of the State of Origin. A copy of the document of approval must accompany the consignment.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastic (3H2)
Natural wood (4C1, 4C2)	Plastic (1H2)	Steel (3A2)
Plastic (4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

SECTION II

Lithium ion cells and batteries offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section.

Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Lithium ion cells and batteries may be offered for transport if they meet the following:

1) for lithium ion cells, the Watt-hour rating (see Attachment 2) is not more than 20 Wh;

2) for lithium ion batteries, the Watt-hour rating is not more than 100 Wh;
   — the Watt-hour rating must be marked on the outside of the battery case except for those batteries manufactured before 1 January 2009, which may be transported in accordance with the provisions of this section and without the marking until 31 December 2010;
3) each cell or battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3.

General requirements

Batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.9 (except 1.1.9.1).

Contents	*Package quantity (Section II)*	
	Passenger	*Cargo*
Lithium ion cells and batteries	10 kg G	10 kg G

ADDITIONAL PACKING REQUIREMENTS

— Cells and batteries must be packed in inner packagings that completely enclose the cell or battery.
— Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
— Each package must be capable of withstanding a 1.2 m drop test in any orientation without:
   — damage to cells or batteries contained therein;
   — shifting of the contents so as to allow battery to battery (or cell to cell) contact;
   — release of contents.
— Each package must be labelled with a lithium battery handling label (Figure 5-31).
— Each consignment must be accompanied with a document such as an air waybill with an indication that:
   — the package contains lithium ion cells or batteries;
   — the package must be handled with care and that a flammability hazard exists if the package is damaged;
   — special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary; and
   — a telephone number for additional information.
— Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

OUTER PACKAGINGS

Boxes *Drums* *Jerricans*

Strong outer packagings

Packing Instruction 966

Passenger and cargo aircraft for UN 3481 (packed with equipment) only

This entry applies to lithium ion or lithium polymer batteries packed with equipment in Class 9 (Section I) and lithium ion or lithium polymer batteries packed with equipment subject to specific requirements of these Instructions (Section II).

SECTION I

Section I requirements apply to each cell or battery type that has been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

1) be of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3; and
2) incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport and be equipped with an effective means of preventing external short circuits.

Each battery containing cells or a series of cells connected in parallel must be equipped with an effective means, as necessary, to prevent dangerous reverse current flow (e.g. diodes, fuses).

General requirements

Part 4;1 requirements must be met.

Contents	*Package quantity (Section I)*	
	Passenger	*Cargo*
Quantity of lithium ion cells and batteries per overpack, excluding equipment	5 kg	35 kg

ADDITIONAL PACKING REQUIREMENTS

— Lithium ion cells and batteries must be protected against short circuits.
— The completed package for the cells or batteries must meet the Packing Group II performance requirements.
— The equipment and the packages of lithium cells or batteries must be placed in an overpack. The overpack must bear applicable marks and labels as set out in Part 5;1 and 5;2.4.10.
— For the purpose of this packing instruction, “equipment” means apparatus requiring the lithium ion batteries with which it is packed for its operation.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastic (3H2)
Natural wood (4C1, 4C2)	Plastic (1H2)	Steel (3A2)
Plastic (4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

SECTION II

Lithium ion cells and batteries (including lithium polymer) packed with equipment offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section.

Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Lithium ion cells and batteries may be offered for transport if they meet the following:

1) for lithium ion cells, the Watt-hour rating (see Attachment 2) is not more than 20 Wh;
2) for lithium ion batteries, the Watt-hour rating is not more than 100 Wh;
   — the Watt-hour rating must be marked on the outside of the battery case except for those batteries manufactured before 1 January 2009, which may be transported in accordance with the provisions of this section and without the marking until 31 December 2010;
3) each cell or battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3.

General requirements

Batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.9 (except 1.1.9.1).

ADDITIONAL PACKING REQUIREMENTS

— Cells and batteries must be packed in inner packagings that completely enclose the cell or battery.
— Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
— The maximum number of batteries in each package must be the minimum number required to power the equipment, plus two spares.
— Each package must be capable of withstanding a 1.2 m drop test in any orientation without:
   — damage to cells or batteries contained therein;
   — shifting of the contents so as to allow battery to battery (or cell to cell) contact;
   — release of contents.
— Each package must be labelled with a lithium battery handling label (Figure 5-31).
— Each consignment must be accompanied with a document such as an air waybill with an indication that:
   — the package contains lithium ion cells or batteries;

— the package must be handled with care and that a flammability hazard exists if the package is damaged;
— special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary; and
— a telephone number for additional information.

— Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Strong outer packagings		

Packing Instruction 967

Passenger and cargo aircraft for UN 3481 (contained in equipment) only

This entry applies to lithium ion or lithium polymer batteries contained in equipment in Class 9 (Section I) and lithium ion or lithium polymer batteries contained in equipment subject to specific requirements of these Instructions (Section II).

SECTION I

Section I requirements apply to each cell or battery type that has been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

1) be of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3; and
2) incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport and be equipped with an effective means of preventing external short circuits.

Each battery containing cells or a series of cells connected in parallel must be equipped with an effective means, as necessary, to prevent dangerous reverse current flow (e.g. diodes, fuses).

General requirements

Part 4;1 requirements must be met.

Contents	*Net quantity per piece of equipment (Section I)*	
	Passenger	*Cargo*
Lithium ion batteries contained in equipment	5 kg	35 kg

ADDITIONAL PACKING REQUIREMENTS

— Outer packaging must be waterproof or made waterproof through the use of a liner, such as a plastic bag unless the equipment is made waterproof by nature of its construction.
— The equipment must be secured against movement within the outer packaging and be packed so as to prevent accidental operation during air transport.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Strong outer packagings		

SECTION II

Lithium ion cells and batteries (including lithium polymer) contained in equipment offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section.
Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Lithium ion cells and batteries may be offered for transport if they meet the following:

1) for lithium ion cells ,the Watt-hour rating (see Attachment 2) is not more than 20 Wh;
2) for lithium ion batteries, the Watt-hour rating is not more than 100 Wh;
   — the Watt-hour rating must be marked on the outside of the battery case except for those batteries manufactured before 1 January 2009, which may be transported in accordance with the provisions of this section and without the marking until 31 December 2010;
3) each cell or battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3.

General requirements

Equipment must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.9 (except 1.1.9.1).

ADDITIONAL PACKING REQUIREMENTS

— The equipment must be equipped with an effective means of preventing accidental activation.
— Cells and batteries must be protected so as to prevent short circuits.
— The equipment must be packed in strong outer packagings constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the battery is afforded equivalent protection by the equipment in which it is contained.
— Each package containing more than four cells or more than two batteries installed in equipment must be labelled with a lithium battery handling label (Figure 5-31).
— Each consignment with packages bearing the lithium battery handling label must be accompanied with a document such as an air waybill with an indication that:
   — the package contains lithium ion cells or batteries;
   — the package must be handled with care and that a flammability hazard exists if the package is damaged;
   — special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary; and
   — a telephone number for additional information.
— Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Strong outer packagings		

Packing Instruction 968

Passenger and cargo aircraft for UN 3090

This entry applies to lithium metal or lithium alloy batteries in Class 9 (Section I) and lithium metal or lithium alloy batteries subject to specific requirements of these Instructions (Section II).

SECTION I

Section I requirements apply to each cell or battery type that has been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

1) be of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3; and

2) incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport and be equipped with an effective means of preventing external short circuits.

Each battery containing cells or a series of cells connected in parallel must be equipped with an effective means, as necessary, to prevent dangerous reverse current flow (e.g. diodes, fuses).

Cells, and batteries containing one or more cells, with a liquid cathode containing sulphur dioxide, sulphuryl chloride or thionyl chloride which have been discharged to the extent that the open circuit voltage is less than the lower of:

a) two volts; or
b) two-thirds of the voltage of the undischarged cell;

are forbidden from transport.

General requirements

Part 4;1 requirements must be met.

Contents	*Package quantity (Section I)*	
	Passenger	*Cargo*
Lithium metal cells and batteries	2.5 kg G	35 kg G

ADDITIONAL PACKING REQUIREMENTS

— Lithium metal cells and batteries must be protected against short circuits.
— Packagings must meet the Packing Group II performance requirements.
— Lithium batteries with a mass of 12 kg or greater and having a strong, impact-resistant outer casing, or assemblies of such batteries, may be transported when packed in strong outer packagings and protective enclosures not subject to the requirements of Part 6 of these Instructions, if approved by the appropriate authority of the State of Origin. A copy of the document of approval must accompany the consignment.
— For lithium metal cells and batteries prepared for transport on passenger aircraft as Class 9:
  — Cells and batteries offered for transport on passenger aircraft must be packed in intermediate or outer rigid metal packaging.
  — Cells and batteries must be surrounded by cushioning material that is non-combustible and non-conductive, and placed inside an outer packaging.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastic (3H2)
Natural wood (4C1, 4C2)	Plastic (1H2)	Steel (3A2)
Plastic (4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

SECTION II

Lithium metal or lithium alloy cells and batteries offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section.

Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Lithium metal or lithium alloy cells and batteries may be offered for transport if they meet the following:

1) for a lithium metal cell, the lithium content is not more than 1 g;
2) for a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2 g;
3) each cell or battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3.

General requirements

Batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.9 (except 1.1.9.1).

Contents	*Package quantity (Section II)*	
	Passenger	*Cargo*
Lithium metal cells and batteries	2.5 kg G	2.5 kg G

ADDITIONAL PACKING REQUIREMENTS

— Cells and batteries must be packed in inner packagings that completely enclose the cell or battery.
— Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
— Each package must be capable of withstanding a 1.2 m drop test in any orientation without:
  — damage to cells or batteries contained therein;
  — shifting of the contents so as to allow battery to battery (or cell to cell) contact;
  — release of contents.
— Each package must be labelled with a lithium battery handling label (Figure 5-31).
— Each consignment must be accompanied with a document such as an air waybill with an indication that:
  — the package contains lithium metal cells or batteries;
  — the package must be handled with care and that a flammability hazard exists if the package is damaged;
  — special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary; and
  — a telephone number for additional information.
— Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

OUTER PACKAGINGS

Boxes *Drums* *Jerricans*

Strong outer packagings

Packing Instruction 969

Passenger and cargo aircraft for UN 3091 (packed with equipment) only

This entry applies to lithium metal or lithium alloy batteries packed with equipment in Class 9 (Section I) and lithium metal or lithium alloy batteries packed with equipment subject to specific requirements of these Instructions (Section II).

SECTION I

Section I requirements apply to each cell or battery type that has been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

1) be of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3; and

2) incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport and be equipped with an effective means of preventing external short circuits.

Each battery containing cells or a series of cells connected in parallel must be equipped with an effective means, as necessary, to prevent dangerous reverse current flow (e.g. diodes, fuses).

Cells, and batteries containing one or more cells, with a liquid cathode containing sulphur dioxide, sulphuryl chloride or thionyl chloride which have been discharged to the extent that the open circuit voltage is less than the lower of:

a) two volts; or
b) two-thirds of the voltage of the undischarged cell;

are forbidden from transport.

General requirements

Part 4;1 requirements must be met.

Contents	*Package quantity (Section I)*	
	Passenger	*Cargo*
Quantity of lithium metal cells and batteries per overpack, excluding equipment	5 kg	35 kg

ADDITIONAL PACKING REQUIREMENTS

- Lithium metal cells and batteries must be protected against short circuits.
- The completed package for the cells or batteries must meet the Packing Group II performance requirements.
- Each completed package containing lithium cells or batteries must be marked and labelled in accordance with the applicable requirements of 5;1, 5;2 and 5;3.
- The equipment and the packages of lithium cells or batteries must be placed in an overpack. The overpack must bear applicable marks and labels as set out in 5;1 and 5;2.4.10.
- For the purpose of this packing instruction, “equipment” means apparatus requiring the lithium batteries with which it is packed for its operation.
- For lithium metal cells and batteries prepared for transport on passenger aircraft as Class 9:
  - Cells and batteries offered for transport on passenger aircraft must be packed in intermediate or outer rigid metal packaging surrounded by cushioning material that is non-combustible and non-conductive and placed inside an outer packaging.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastic (3H2)
Natural wood (4C1, 4C2)	Plastic (1H2)	Steel (3A2)
Plastic (4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

SECTION II

Lithium metal cells and batteries packed with equipment offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section.

Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Lithium metal cells and batteries may be offered for transport if they meet the following:

1) for a lithium metal cell, the lithium content is not more than 1 g;
2) for a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2 g;
3) each cell or battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3.

General requirements

Batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.9 (except 1.1.9.1).

ADDITIONAL PACKING REQUIREMENTS

- Cells and batteries must be packed in inner packagings that completely enclose the cell or battery.
- Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
- The maximum number of batteries in each package must be the minimum number required to power the equipment, plus two spares.
- Each package must be capable of withstanding a 1.2 m drop test in any orientation without:
  - damage to cells or batteries contained therein;
  - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
  - release of contents.
- Each package must be labelled with a lithium battery handling label (Figure 5-31).

— Each consignment must be accompanied with a document such as an air waybill with an indication that:
  — the package contains lithium metal cells or batteries;
  — the package must be handled with care and that a flammability hazard exists if the package is damaged;
  — special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary; and
  — a telephone number for additional information.
— Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

OUTER PACKAGINGS

Boxes *Drums* *Jerricans*

Strong outer packagings

Packing Instruction 970

Passenger and cargo aircraft for UN 3091 (contained in equipment) only

This entry applies to lithium metal or lithium alloy batteries contained in equipment in Class 9 (Section I) and lithium metal or lithium alloy batteries contained in equipment subject to specific requirements of these Instructions (Section II).

SECTION I

Section I requirements apply to each cell or battery type that has been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

1) be of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3; and
2) incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport and be equipped with an effective means of preventing external short circuits.

Each battery containing cells or a series of cells connected in parallel must be equipped with an effective means, as necessary, to prevent dangerous reverse current flow (e.g. diodes, fuses).

Cells, and batteries containing one or more cells, with a liquid cathode containing sulphur dioxide, sulphuryl chloride or thionyl chloride which have been discharged to the extent that the open circuit voltage is less than the lower of:

a) two volts; or
b) two-thirds of the voltage of the undischarged cell;

are forbidden from transport.

General requirements

Part 4;1 requirements must be met.

Package contents	*Net quantity per piece of equipment (Section I)*	
	Passenger	*Cargo*
Lithium metal batteries	5 kg	35 kg

ADDITIONAL PACKING REQUIREMENTS

— Outer packaging must be waterproof or made waterproof through the use of a liner, such as a plastic bag unless the equipment is made waterproof by nature of its construction.
— The equipment must be secured against movement within the outer packaging and be packed so as to prevent accidental operation during air transport.
— The quantity of lithium metal contained in any piece of equipment must not exceed 12 g per cell and 500 g per battery.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
	Strong outer packaging	

SECTION II

Lithium metal cells and batteries contained in equipment offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section.

Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Lithium metal cells and batteries may be offered for transport if they meet the following:

1) for a lithium metal cell, the lithium content is not more than 1 g;
2) for a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2 g.
3) each cell or battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3.

General requirements

Equipment containing batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.9 (except 1.1.9.1).

ADDITIONAL PACKING REQUIREMENTS

- The equipment must be equipped with an effective means of preventing accidental activation.
- Cells and batteries must be protected so as to prevent short circuits.
- The equipment must be packed in strong outer packagings constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the battery is afforded equivalent protection by the equipment in which it is contained.
- Each package containing more than four cells or more than two batteries installed in equipment must be labelled with a lithium battery handling label (Figure 5-31).
- Each consignment with packages bearing the lithium battery handling label must be accompanied with a document such as an air waybill with an indication that:
  - the package contains lithium metal cells or batteries;
  - the package must be handled with care and that a flammability hazard exists if the package is damaged;
  - special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary; and
  - a telephone number for additional information.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
	Strong outer packagings	

Attachment 5

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ISBN 978-92-9231-176-6