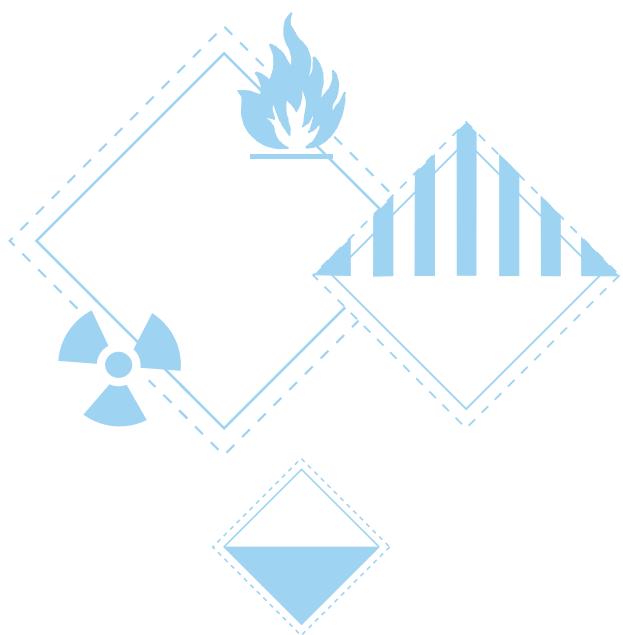




Dangerous Goods Regulations

Effective 1 January–31 December 2013
Produced in consultation with ICAO



THE GUIDE RECOGNIZED BY THE WORLD'S AIRLINES

54th Edition



Dangerous Goods Regulations

(IATA—Resolution 618 Attachment “A”)

Effective 1 January—31 December 2013
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PREFACE

This 54th Edition of the IATA *Dangerous Goods Regulations* becomes effective on 1 January 2013 and replaces the 53rd Edition, which must not be used after 31 December 2012 unless specifically permitted in these Regulations.

The IATA *Dangerous Goods Regulations* are published by the IATA Dangerous Goods Board pursuant to IATA Resolutions 618 and 619 and constitute a manual of industry carrier regulations to be followed by all IATA Member airlines. This edition of the IATA Regulations is based on the requirements of Annex 18 to the Convention on International Civil Aviation (Chicago, 1944) and the 2013–2014 Edition of the associated *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284—AN/905), including addenda to the 2013–2014 Technical Instructions, adopted by the Council of ICAO and published by ICAO.

Annex 18 to the Chicago Convention and the associated *Technical Instructions for the Safe Transport of Dangerous Goods by Air* are recognized as the sole authentic legal source material in the air transport of dangerous goods. Consequently, any additional or explanatory material added by IATA does not form part of the authentic text of the ICAO *Technical Instructions* and does not have the same legal force.

In developing its Regulations, IATA has drawn on its extensive experience to give special attention to the format and wording of these Regulations to make this a readily understandable and easy-to-use manual. There are certain differences between the IATA and ICAO regulations which stem from operational considerations and result in a regulatory regime which is necessarily more restrictive than the ICAO requirements. These differences are identified by the symbol  appearing in the margin. The IATA Regulations also incorporate additional material of practical assistance to users.

The IATA *Dangerous Goods Regulations* are also available in Chinese, French, German, Russian and Spanish language versions. A Japanese language edition is also produced under licence by the Japan Air Cargo Institute for Safety (JACIS).

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These IATA *Dangerous Goods Regulations* have been developed by the IATA Dangerous Goods Board pursuant to authority of the IATA Cargo Services Conference. The composition of this Board is:

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It should be noted that these IATA *Dangerous Goods Regulations* are subject to constant review in the light of new technical developments and changing requirements of industry and air transportation.

Record of Addendum

From time-to-time there is a need to issue an addendum to the *Dangerous Goods Regulations* (DGR) to incorporate changes issued by ICAO to the contents of the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* or to reflect changes to the content of the DGR. A record of addendum table is provided below to assist holders of the DGR to record that the addendum has been received and incorporated.

RECORD OF ADDENDUM

Addendum No.	Date	Name	Addendum No.	Date	Name



INTRODUCTION

PURPOSE OF THE DANGEROUS GOODS REGULATIONS

The IATA *Dangerous Goods Regulations* are published in order to provide procedures for the shipper and the operator by which articles and substances with hazardous properties can be safely transported by air on all commercial air transport.

In 1953, the Member airlines of IATA recognized the growing need to transport by air, articles and substances having hazardous properties which, if uncontrolled, could adversely affect the safety of the passengers, crew and/or aircraft on which they are carried. Experience in other modes of transport had demonstrated that most such articles and substances could be carried safely provided that the article or substance was properly packed and the quantities in each package were properly limited. Using this experience together with the industry's knowledge of the specialized characteristics of air transport, IATA developed the first regulations for the transport of dangerous goods by air. The first edition of the IATA *Dangerous Goods Regulations* was published in 1956 as the IATA Restricted Articles Regulations.

GENERAL PHILOSOPHY

Dangerous goods can be transported safely by air transport provided certain principles are strictly followed. The IATA *Dangerous Goods Regulations* is an easy-to-use manual based on the International Civil Aviation Organization (ICAO) *Technical Instructions for the Safe Transport of Dangerous Goods by Air*. It incorporates additional operational requirements, which provide a harmonized system for operators to accept and transport dangerous goods safely and efficiently.

The Regulations include a detailed list of individual articles and substances specifying the United Nations classification of each article or substance and their acceptability for air transport as well as the conditions for their transport. Since no listing can be complete, the list also includes many generic or "not otherwise specified" entries to assist in the classification of those articles or substances not listed by name.

Some dangerous goods have been identified as being too dangerous to be carried on any aircraft under any circumstances; others are forbidden under normal circumstances but may be carried with specific approvals from the States concerned; some are restricted to carriage on all cargo aircraft; most however, can be safely carried on passenger aircraft as well, provided certain requirements are met.

Packaging is the essential component in the safe transport of dangerous goods by air. The IATA *Dangerous Goods Regulations* provide packing instructions for all dangerous goods acceptable for air transport with a wide range of options for inner, outer and single packagings. The packing instructions normally require the use of UN performance-tested specification packagings, however these are not required when dangerous goods are shipped in Limited Quantities under the provisions of Limited Quantity "Y" Packing Instructions. The quantity of dangerous goods permitted within these packagings is strictly limited by the Regulations so as to minimize the risk should an incident occur.

Training is also an essential element in maintaining a safe regulatory regime. It is necessary for all individuals involved in the preparation or transport of dangerous goods to be properly trained to carry out their responsibilities. Depending on the job-function, this may entail only familiarization training or may also include more detailed training in the intricacies of the Regulations. It is important to remember that dangerous goods are very unlikely to cause a problem when they are prepared and handled in compliance with the IATA *Dangerous Goods Regulations*.

The proper declaration of dangerous goods by the shipper ensures that all in the transportation chain know what dangerous goods they are transporting, how to properly load and handle them and what to do if an incident or accident occurs either in-flight or on the ground. The pilot-in-command must know what is on board the aircraft in order to properly deal with any emergencies, which may occur. The pilot must also convey this information, if possible, to air traffic services to aid in the response to any aircraft incident or accident.



Dangerous Goods Regulations

Information regarding "Hidden Dangerous Goods" must also be conveyed to passengers to assist them in recognizing dangerous goods, which they are not permitted to carry on their person or in their baggage and which may not be readily recognizable as being dangerous.

Lastly, dangerous goods accidents or incidents must be reported, so that an investigation by the relevant authorities can establish the cause and take corrective action. Also, if as a result of these investigations changes are required in the Regulations, appropriate regulatory action can be taken without delay.

SIGNIFICANT CHANGES AND AMENDMENTS TO THE 54TH EDITION (2013)

The 54th edition of the IATA *Dangerous Goods Regulations* incorporates all amendments made by the Dangerous Goods Board and includes changes to the 2013–2014 edition of the ICAO *Technical Instructions*. The following list is intended to assist the user to identify the main changes introduced in this edition and must not be considered an exhaustive listing. The changes have been prefaced by the section or subsection in which the change occurs.

Dangerous Goods Transported by Helicopters—Provisions have been added to the Regulations, where applicable, to address specific requirements or differences for the transport of dangerous goods by helicopter.

Front Matter

A Record of Addendum table has been added to page xvii to provide a method for users of the printed manuals to record the receipt and incorporation of any addendum to the current edition.

1—Applicability

1.2—Application of these Regulations

The provisions applicable to Approvals and Exemptions have been revised.

1.2.9—Application of Standards. A new paragraph has been added to clarify that if there is a conflict, the provisions of the Regulations take precedence over that in any standards referred to.

1.5—Training Requirements

Specific provisions, including a new Table 1.5.C, have been added to address the dangerous goods training requirements applicable to staff of designated postal operators.

1.5.6—The provisions applicable to instructor qualifications have been enhanced.

1.6—Dangerous Goods Security

The recommendations on dangerous goods security have been revised to reflect changes to the determination of high consequence dangerous goods for radioactive materials.

1.7—Incident and Accident Reporting

A new paragraph has been added recommending that entities other than operators report dangerous goods incidents or accidents and undeclared or misdeclared dangerous goods identified while in their possession.

2—Limitations

2.3—Dangerous Goods Carried by Passengers or Crew

There have been extensive changes and additions to the provisions for dangerous goods permitted in passenger and crew member baggage. These include:

- revision to the provisions for battery-powered mobility aids to make provision for lightweight mobility aids that are designed to be collapsible and have the battery removed;
- clarification that small cartridges containing a Division 2.2 gas may be carried in checked or carry-on baggage;
- revision to allow all permitted types of fuel cell cartridges in checked baggage;
- allowance for non-spillable batteries in equipment in baggage, subject to limitations on the size of the battery.

2.4—Transport of Dangerous Goods by Post

The types of dangerous goods permitted in international air mail have been expanded to permit small lithium batteries when contained in equipment. The ability of a postal operator to accept lithium batteries in the mail is subject to specific approval by the civil aviation authority.

2.5—Dangerous Goods in Operator's Property

The allowances for consumer goods have been revised to delete safety matches and add in allowance for portable electronic devices containing lithium batteries.

2.6.10—De Minimis Quantities. New provisions have been added to address transport of very small quantities of certain dangerous goods.

3—Classification

3.1.7.4—New test criteria have been added to determine when articles may be excluded from Class 1.

3.3.3—The provisions applicable to viscous flammable liquids have been revised and clarified.

3.6.2.2.3—New provisions have been added to address the transport of unclean medical devices/equipment.

3.9.2.6—Provisions have been added to identify the requirements for lithium batteries, including requirements for manufacturers to have a quality management system.

4—Identification

4.2—List of Dangerous Goods

Amendments to the List of Dangerous Goods include:

- addition of a new entry for electric double-layer capacitors, UN 3499;
- an additional proper shipping name, Cartridges for tools, blank has been added to UN 0014;
- six new entries have been added for chemicals under pressure, UN 3500—UN 3505 in Division 2.1 and Division 2.2;
- all of the references to “G” indicating gross weight in columns J and L have been deleted. This is associated with the revision to the definition of net quantity, see Appendix A changes. A small number of limited quantity entries will still retain the 30 kg G limitation;
- all chlorosilanes with a Class 8 subsidiary risk are now restricted to Cargo Aircraft Only;
- UN 2809, Mercury has been assigned a toxic subsidiary risk. Associated with this change, Mercury in manufactured articles has been assigned to UN 3506.

4.4—Special Provisions

A number of special provisions that include provisions for certain substances and articles to be “not subject to these Regulations” have been revised to limit the application to when the substances or articles are carried as cargo, see A32, A41, A47, A67, A69, A70, A98 and A129.

A21—applicable to battery-powered equipment and battery-powered vehicles has been revised to better identify which items are considered as “vehicles” and to then specify that equipment powered by lithium batteries must be assigned to the applicable lithium battery entry.

A51—which permits aircraft batteries to be shipped on a passenger aircraft above the normal net quantity permitted on passenger aircraft has been revised to include provision for lithium ion aircraft batteries under UN 3480.

A69—has been revised to reflect changes to mercury in manufactured articles.

A70—has been revised to more clearly identify under what conditions engines may be considered as “not restricted”.

A146—applicable to fuel cell cartridges, including when contained in, or packed with equipment has been revised to then specify that when lithium batteries are contained in the fuel cell system then the article must be assigned to the applicable lithium battery entry.

A184—is a new special provision applicable to fuel cell cartridges, including when contained in, or packed with equipment to then specify that when lithium batteries are contained in the fuel cell system then the article must be assigned to the applicable lithium battery entry.

A185—which is assigned against the entries for lithium batteries contained in equipment (UN 3901 and UN 3481) specifies that vehicles powered only by lithium ion or lithium metal batteries must be assigned to UN 3171, Battery-powered vehicle.

A186—is a new special provision to address the requirements for electric double layer capacitors.

A187—identifies the classification requirements for the new entries for chemical under pressure, UN 3500 to UN 3505.

A188—is intended to clarify the correct assignment of UN number/proper shipping name for nitroglycerin solution in alcohol.

A189—clarifies the requirements for formaldehyde solutions with less than 25% formaldehyde.

A190—provides an allowance for neutron radiation detectors which contain boron trifluoride, normally forbidden/forbidden, to be shipped on a cargo aircraft provided the provisions of A190 are met. A190 provides for the transport of these radiation detectors containing no more than 1 g of boron trifluoride to be shipped as cargo as not restricted.

A191—provides for an exception to the requirement for manufactured articles containing mercury to have to show the Division 6.1 subsidiary risk on the Shipper's Declaration and for the packages to have to bear a Toxic hazard label.

5—Packing

Packing Instructions

Almost all of the packing instructions have been revised to include closed head drums (1A1, 1B1, 1H1 and 1N1) and/or other metal boxes (4N) as outer packagings.

218—is the new packing instruction to address the new chemical under pressure entries (UN 3500 to UN 3505).

The absorbent material requirements in Packing Instructions 350, 351, 360, 361, 373, Y373, 493, 494, 553, 651, 652, 657, 658, 680, 850 and 854 have been revised to require sufficient absorbent material to absorb the entire contents of the inner packagings.

370 and **Y370**—have been revised to include provisions for a base material in Packing Group III, which has a higher net quantity. There is no change to the permitted quantity of organic peroxide.

Y373, Y680 and **Y840**—have been revised to add in additional packing requirements for glass inner packagings to be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before being packed in the outer packaging.

377 and **681**—have been revised to reflect that the chlorosilanes assigned to these packing instructions are now not permitted on passenger aircraft.

869—which applies to mercury contained in manufactured articles has been completely revised.

955—a provision has been added to permit packages containing life-saving appliances, which contain no dangerous goods other than a Division 2.2 gas for inflation purposes, to be shipped in strong outer packagings up to a maximum weight of 40 kg gross as cargo and to be considered as not restricted.

965 and **968**—the packing instructions applicable to lithium ion and lithium metal batteries have been revised to limit the quantity of lithium batteries that may be placed in a package under the provisions of Section II. A new Section IB has been added to these packing instructions that permit small lithium batteries meeting the general requirements of Section II to continue to be shipped in non-UN specification packagings up to a total package weight of 10 kg. Shipments prepared according to Section IB are subject to all of the applicable requirements of these Regulations, including that for dangerous goods training. Section IB shipments do not require the full Shipper's Declaration but do require an abbreviated document or information on the air waybill as indicated in the packing instructions. Section I of these packing instructions has been revised to become Section IA. The package limits specified in Section IA have been revised to become net quantity per package rather than gross weight.

966 and **969**—the packing instructions applicable to lithium ion and lithium metal batteries packed with equipment have been revised to clearly apply a limit on the net quantity (weight) of lithium batteries that may be placed in a package under the provisions of both Section I and Section II. The limit for Section I is 5 kg net on a passenger aircraft and 35 kg net on a cargo aircraft. For Section II the limit is 5 kg net per package for both passenger and cargo aircraft.

967 and **970**—the packing instructions applicable to lithium ion and lithium metal batteries contained in equipment have been revised to clearly apply a limit on the net quantity (weight) of lithium batteries that may be placed in a package under the provisions of both Section I and Section II. The limit for Section I is 5 kg net on a passenger aircraft and 35 kg net on a cargo aircraft. For Section II the limit is 5 kg net per package for both passenger and cargo aircraft.

971—is a new packing instruction that has been added for UN 3499, Capacitor.

7—Marking & Labelling

7.1.5.1—Reference has been included in 7.1.5.1(a) to identify the minimum size of the marking of the UN number on packages as specified in 7.1.5.5.

7.1.5.5—Has been revised to identify that from 2013 the marking of the UN number on packages should be of a minimum size. This minimum size will become mandatory with effect 1 January 2014.

7.2.4.7—Has been revised to include reference that packages containing lithium batteries shipped in accordance with Section IB of Packing Instruction 965 or 968 must bear both the lithium battery handling label and the Class 9 hazard label.

8—Documentation

8.0.1—A new paragraph has been added to clearly identify dangerous goods that can be described on documentation, such as an air waybill, rather than on a Shipper's Declaration.

8.1.6.9.2, Step 6—Has been revised to remove reference to the use of “G” except for certain dangerous goods shipped in limited quantities.

8.1.6.11—A new paragraph has been added to identify the requirements that now apply for additional information to be provided on the Shipper's Declaration for fireworks.

9—Handling

9.2.3—New text has been added to reinforce that marks and labels on packagings required by these Regulations must not be covered or obscured by any other label or marking.

9.3.4—Additional text has been added to address the carriage of Cargo Aircraft Only dangerous goods by helicopters. The exceptions for certain classes/divisions of dangerous goods to have be accessible or loaded in a Class C compartment have been revised to clarify the application for goods with a subsidiary risk.

9.5.1.1—The provisions applicable to notification to the pilot-in-command have been revised, as follows:

- the NOTOC must be provided prior to aircraft push-back or taxi;
- new requirements have been included to specify that the information on the NOTOC must be provided to the personnel responsible for operational control, e.g. the airline operations control centre. This requirement becomes mandatory as from 1 January 2014;
- provision for an alternative means of compliance for the NOTOC for helicopter operations are permitted with approval of the State of the operator;
- provision has been made for information on the NOTOC applicable to lithium batteries (UN 3090 and UN 3480) to be consolidated and abbreviated;
- a table has been added to clearly identify those dangerous goods that are not required to be shown on the NOTOC.

9.6.4—New reporting requirements have been added for dangerous goods occurrences.

9.8.2—A recommendation has been added that operators should retain documentation, including the acceptance checklist for dangerous goods consignments that were not accepted due to packaging, documentation or other errors.

9.9—Additional specific text has been added for helicopter operations.

Appendix A—Glossary

There are a number of changes and additions to the defined terms in the glossary. These include:

- addition of “external carriage” for helicopter operations;
- revision to the definitions of “lithium battery” and “lithium cell”;
- revision to the definition of “net quantity”. This was done to address articles such as wet cell and lithium batteries where previously gross weight applied;
- addition of a definition for “State of destination” and modification to “State of origin”.

Appendix C—There are additions and amendments to the list of organic peroxides.

Appendix D—Contact details for competent authorities have been updated.

Appendix E—Changes have been made to the list of UN Specification Packaging Suppliers (E.1) and the Package Testing Facilities (E.2).

Appendix F—The list of Sales Agents (F.2), IATA Accredited Training Schools (F.3—F.5) and IATA Authorised Training Centres (F.6) have been revised.

REFERENCE MARKS

The following symbols placed against an item indicate changes from the previous edition:

Symbol—Meaning

- Addition of a new item.
- △—Change to an item.
- ⊗—Cancellation of an item.
- ☒—Additional IATA requirements.
- ☢—Indicates that the item relates entirely to Radioactive shipments.

ACCEPTANCE CHECKLIST

Paragraph 9.1.3 requires that operators use a checklist when accepting dangerous goods. The content of the checklist is the responsibility of each operator.

As a guide, dangerous goods acceptance checklists for radioactive and for non-radioactive shipments have been included at the end of these Regulations. In addition simplified checklists for dry ice and for lithium battery consignments meeting Section IB have been included.

RELATIONSHIP OF THE SIX (6) LANGUAGE EDITIONS

The IATA *Dangerous Goods Regulations* are published in six languages: English, Chinese, French, German, Russian and Spanish. A Japanese language edition is also produced under licence by the Japan Air Cargo Institute for Safety (JACIS). The electronic version of the IATA *Dangerous Goods Regulations* on CD-ROM is also available in English, French, German and Spanish.

The English text is used for the translations, therefore, if there is a difference between the English text and any of the other language texts, the English text prevails.



HOW TO USE THE REGULATIONS

The detailed content of these Regulations gives all the necessary provisions to enable a shipper to correctly prepare a consignment of dangerous goods for air transport and for a freight forwarder and airline/ground handling agent dangerous goods acceptance personnel to be able to verify, to the extent possible, that the consignment of dangerous goods complies with the requirements of these Regulations. To assist shippers the following step-by-step procedure is given for guidance to ensure all the applicable requirements for classifying, packing, marking, labelling and documenting are met.

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 and check if substance is forbidden on aircraft (see Subsections 2.1 and 4.2).
2. Ascertain whether the name or composition of the article or substance appears in the List of Dangerous Goods in Subsection 4.2 and if so, its proper shipping name. That proper shipping name must then be used on the Shipper's Declaration and be marked on the package(s).
3. If only the UN number of the substance or article is known, Subsection 4.3 provides a cross-reference from the UN/ID number to the proper shipping name, and is arranged in numerical order. For the language editions, Subsection 4.3 shows the proper shipping name applicable to the UN number, the proper shipping name in English, which must be used on the Shipper's Declaration for Dangerous Goods and the page number on which the entry appears in Table 4.2.
4. If the substance or article does not appear in the list, 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 Section 3.
5. If the properties are not known, tests should be carried out to determine the appropriate class and division. If the article or substance is not listed by name in the list, and does not meet the definition of any of the classes, it is not subject to these Regulations.
6. For articles or substances with multiple hazards, the provisions of Subsection 3.10 should be followed. Once all the properties of the article or substance are known, determine whether it is forbidden for transport according to the provisions of Subsections 2.1 and 4.2.
7. If the article or substance does not come within the provisions of Subsection 2.1, determine the proper shipping name from the most appropriate of the generic or n.o.s. entries in Table 4.1.A, in accordance with the hierarchy shown in Subsection 4.1. If the substance or article does not appear in the list, refer to Appendix C.1 and C.2 for further possible identification.
8. If the quantity of material to be transported is very small, it may be possible to utilise the provisions for Dangerous Goods in Excepted Quantities provided that all of the requirements of Subsection 2.6 are met.
9. Determine whether it is desired to transport the article or substance on passenger or cargo aircraft.
10. From the information given in Columns G to L of the List of Dangerous Goods, ascertain whether or not the article or substance is forbidden for transport on passenger aircraft or on both passenger and cargo aircraft.
11. For classification of Radioactive Material (Class 7) and the packaging, marking, labelling, certification and documentary requirements for radioactive shipments, consult Section 10.
12. If the article or substance is forbidden for transport on passenger aircraft, determine whether it can be transported on cargo aircraft.
13. For shipments intended for carriage on PASSENGER AIRCRAFT:
Having determined that the article or substance is not forbidden for carriage on passenger aircraft, determine the following:
 - Packing Instruction number (see Subsection 4.2, Column G and I);
 - Quantity limitation (see Subsection 4.2, Column H and J for package limits and the Packing Instruction for inner packaging limits);
 - Applicable State or operator Variations (see Subsection 2.8).
14. For shipments intended for carriage on CARGO AIRCRAFT (or which can only be carried on such aircraft):
Having determined that the article or substance is not forbidden for carriage on cargo aircraft, determine the following:
 - Packing Instruction number (see Subsection 4.2, Column K);
 - Quantity limitation (see Subsection 4.2, Column L for package limits and the Packing Instruction for inner packaging limits);
 - Applicable State or operator Variations (see Subsection 2.8).

15. Determine the other packing details from the relevant information or packing instruction in Section 5 and any special requirements from Sections 1 and 4.

It should be noted that the Limited Quantity provisions may be used as an acceptable alternative to UN packagings, subject to State and Operator Variations. (See Subsection 2.7, 5.0.2, Subsections 6.1, 6.2 and 6.6.)

16. 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 Subsection 5.0 and Section 6.

17. Note that State and operator Variations listed in the packing instructions do not necessarily constitute a complete list of applicable variations. Subsection 2.8 must always be checked to determine all applicable State and operator Variations.

18. Ensure all the appropriate markings and labels are affixed to or printed on the packages according to Section 7.

19. Complete and sign the Shipper's Declaration for Dangerous Goods in accordance with Section 8, and prepare the Air Waybill.

20. Offer the complete consignment for transport by air.



Dangerous Goods Regulations



SECTION 1—APPLICABILITY

1.0 Definition of Dangerous Goods

Dangerous goods are 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 Regulations or which are classified according to these Regulations.

Note:

Terms, which have special meaning within these Regulations, are defined in Appendix A.

1.1 Basis of these Regulations

- △ 1.1.1 The UN Subcommittee of Experts on the Transport of Dangerous Goods (SCoETDG) develops recommended procedures for the transport of all types of dangerous goods except radioactive materials. These procedures, applicable to all modes of transport, are published in the *Recommendations on the Transport of Dangerous Goods—Model Regulations* (17th revised edition).

Note:

Recommendations on Tests and Criteria, which are incorporated into certain provisions of these Regulations are published as a separate manual (“*Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria*”) (ST/SG/AC.10/11/Rev.5 and Amendment 1) available from the United Nations. This Manual includes:

- 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.
- Part III: Classification procedures, test methods and criteria relating to articles or substances of Class 2, Class 3, Class 4, Division 5.1, Class 8 and Class 9.
- Appendices: Information common to a number of different types of tests and national contacts for test details.

- 1.1.2 The International Atomic Energy Agency (IAEA) develops recommended procedures for the safe transport of radioactive materials. These procedures are published in the *Regulations for the Safe Transport of Radioactive Material* (IAEA TS-R-1). The requirements of these regulations as they pertain to air transport are reflected in Section 10.

- △ 1.1.3 The International Civil Aviation Organization (ICAO) has used these recommendations as the basis for developing the regulations for the safe transport of dangerous goods by air by any aircraft (including both internal and external carriage). The ICAO regulations are codified in Annex 18 to the *Convention on International Civil Aviation* and in its *Technical Instructions for the Safe*

Transport of Dangerous Goods by Air (Doc 9284-AN/905 as amended) (Technical Instructions).

Note:

The term “aircraft” includes both aeroplanes and helicopters.

1.1.4 The IATA *Dangerous Goods Regulations* (the Regulations) contain all of the requirements of the Technical Instructions. IATA has included additional requirements, which are more restrictive than the Technical Instructions and reflect industry standard practices or operational considerations. These are identified by the symbol “☞” in the margin.

1.2 Application of these Regulations

STATE VARIATIONS: BHG-01, BRG-01/02, CAG-06, JMG-04, USG-01, VCG-02, ZAG-02

Editorial Note:

State and operator variations applicable to a subsection are indicated by the appropriate alpha-numeric code, as described in 2.8.2 and 2.8.4 respectively.

1.2.1 Applicability

The IATA Dangerous Goods Regulations are applicable to:

- all airlines which are Members or Associate Members of IATA;
- all airlines which are party to the IATA Multilateral Interline Traffic Agreement—Cargo; and
- all shippers and agents that offer consignments of dangerous goods to these operators.

1.2.2 Relationship to ICAO

1.2.2.1 The ICAO Annex 18 and the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* are applicable for the transport of dangerous goods by air from, to or through the Member States of ICAO.

1.2.2.2 There are certain differences between the IATA and ICAO regulations which stem from operational considerations and result in a regulatory regime which is necessarily more restrictive than the ICAO requirements. Differences which are more restrictive than the ICAO *Technical Instructions* are identified in the Regulations by the symbol “☞” appearing in the margin. The IATA *Dangerous Goods Regulations* also incorporates additional material of practical assistance to users.

1.2.3 General

These Dangerous Goods Regulations, referred to as the “Regulations”, prescribe the detailed requirements applicable to the international transport of dangerous goods by

air under normal circumstances. Any addendum to this edition of the Dangerous Goods Regulations issued by IATA constitutes part of the Regulations.

1.2.4 Scope

Nothing contained in these Regulations should be interpreted as:

- (a) requiring an operator to transport a particular article or substance;
- (b) preventing an operator from imposing special requirements on the transport of a particular article or substance over and above the requirements contained herein; or
- (c) preventing an operator from requiring a shipper to seek confirmation or endorsement of the "Shipper's Declaration for Dangerous Goods" from an authority named by the operator.

1.2.5 Approvals

△ STATE VARIATIONS: AUG-01, BEG-02/04/05, BHG-02/03, BRG-04, CAG-07/08/10/11, FRG-01, HRG-03, IRG-03/04, JMG-01, KPG-02, NLG-01, OMG-01, ROG-01/02/04, USG-03, ZAG-01

△ OPERATOR VARIATIONS: 4C-01, 4M-01, 7H-01, AF-03, AY-03, BZ-09, D5-04, FX-16, KL-01/03, L7-01, LA-01, LP-01, LU-01, M3-01, M7-01, TG-07, TN-02, UC-01, UL-02, XL-01

△ **1.2.5.1** Where specifically provided for in these Regulations, the States concerned may grant an approval to permit the transport of dangerous goods, provided that in such instances an overall level of safety in transport which is equivalent to the level of safety provided for in these Regulations is achieved.

Note:

For the purposes of approvals, "States concerned" are the States of origin and the operator, unless otherwise specified in these Regulations.

1.2.5.2 Acceptance of dangerous goods offered for transport under the provisions of an approval is at the discretion of the operator(s) concerned. Shippers are encouraged to make advance arrangements with the operator(s) as part of the planning process associated with any approval application.

1.2.6 Exemptions

△ STATE VARIATIONS: BRG-04, DEG-04, ROG-03

△ OPERATOR VARIATIONS: 4C-01, 4M-01, AF-03, AY-03, BZ-08, KL-03, L7-01, LA-01, LP-01, LU-01, M3-01, M7-01, UC-01, XL-01

△ **1.2.6.1** In instances of extreme urgency or when other forms of transport are inappropriate or when full compliance with the prescribed requirements is contrary to the public interest, the States concerned may grant exemption from the provisions of the Regulations provided that in such instances every effort is made to achieve an overall level of safety in transport which is equivalent to the level of safety provided for in these Regulations.

Note:

Refer to 2.1.1 for dangerous goods forbidden for transport by air under any circumstances.

△ **1.2.6.2** 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.

Notes:

1. For the purposes of exemptions, the "States concerned" are the States of origin, operator, transit, overflight and destination.
2. Guidance for the processing of exemptions, including examples of extreme urgency, may be found in the ICAO Supplement to the Technical Instructions (Part S-1; 1.2 and 1.3).
3. Due to differences in the type of operations carried out by helicopters compared with aeroplanes, some additional considerations need to be made when dangerous goods are carried by helicopter, as described in Subsection 9.9.

1.2.6.3 The exemption should include, as a minimum, the following:

- (a) the UN/ID number, proper shipping name and classification;
- (b) packaging and quantity applicable;
- (c) any special handling required and any special emergency response information;
- (d) name and address of shipper and consignee;
- (e) airports of departure, transit and destination and the proposed dates of transport; and
- (f) duration of validity of the exemption.

1.2.6.4 A copy of the exemption issued by all States concerned must be provided to the operator and must accompany the consignment. If the exemption documents are not in English, an accurate translation in English must accompany the consignment.

1.2.6.5 Acceptance of dangerous goods offered for transport under the provisions of an exemption is at the discretion of the operator(s) concerned. Shippers are encouraged to make advance arrangements with the operator(s) as part of the planning process associated with any exemption application.

1.2.7 Exceptions

1.2.7.1 Except for information provided to operator employees, as shown in 1.4.2, the provisions of these Regulations do not apply to dangerous goods carried by an aircraft where the dangerous goods are:

- (a) to provide medical aid to a patient during flight 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:
 - (i) gas cylinders have been manufactured specifically for the purpose of containing and transporting that particular gas;

- (ii) equipment containing wet cell batteries is kept and, when necessary secured, in an upright position to prevent spillage of the electrolyte.

Note:

For the dangerous goods passengers are permitted to carry as medical aid see 2.3.2 to 2.3.5.

- (b) to provide veterinary aid or a humane killer for an animal during flight;
- △ (c) for dropping during flight in connection with agricultural, horticultural, forestry, avalanche control or pollution control activities;
- (d) to provide aid in connection with search and rescue operations during flight;
- (e) vehicles carried in aircraft designed or modified for vehicle ferry operations if 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 vehicles are carried.
- (f) dangerous goods that are 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 Subsection 2.5).
- (g) contained within items of excess baggage (see definition of "excess baggage" in Appendix A—Glossary) being sent as cargo provided that:
 1. the excess baggage has been consigned as cargo by or on behalf of a passenger;
 2. the dangerous goods may only be those that are permitted by and in accordance with 2.3 to be carried in checked baggage;
 3. the excess baggage is marked with the words "Excess baggage consigned as cargo".

1.2.7.2 Provision must be made to stow and secure dangerous goods transported under 1.2.7.1 (a), (b), (c) and (d) during take-off and landing and at all other times when deemed necessary by the pilot-in-command.

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

1.2.7.4 Dangerous goods transported under 1.2.7.1 (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 onboard 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 1.4.2 and 9.6.1 apply.

1.2.8 General Transport Requirements

STATE VARIATIONS: CNG-01, HKG-01, ING-01, MYG-01, NLG-06, SGG-01/02, VCG-01/03

Except as otherwise provided for in these Regulations, no person may offer or accept dangerous goods for air transport unless those goods are properly classified, documented, certificated, described, packaged, marked, labelled and in the condition for shipment required by these Regulations. If a person performs a function required by these Regulations 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 Regulations. No person may transport dangerous goods by air unless those goods are accepted, handled and transported in accordance with these Regulations. No person may label, mark, certify or offer a packaging as meeting the requirements of these Regulations unless that packaging is manufactured, fabricated, marked, maintained, reconditioned or repaired as required by these Regulations. 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 person, unless permitted by Subsection 2.3.

Note:

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

□ 1.2.9 Application of Standards

Where the application of a standard is required and there is any conflict between the standard and these Regulations, the Regulations take precedence.

1.2.10 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, which complies with these Regulations.

1.3 Shipper's Responsibilities

1.3.1 Compliance

1.3.1.1 A shipper must comply fully with these Regulations when offering a consignment of dangerous goods to IATA Member and associate Member airlines, and to airlines participating in IATA interline agreements for cargo. In addition, shippers must comply with any applicable regulations set forth by the States of origin, transit and destination.

1.3.1.2 These Regulations are fully compliant with the ICAO *Technical Instructions*. A shipper, offering articles or substances in violation of these Regulations, may be in breach of national law and may be subject to legal penalties.

1.3.1.3 In these Regulations, the words "shall" and "must" are used to indicate a mandatory requirement. The words "should" and "may" indicate a preferred requirement and are not binding.

1.3.1.4 It is the shipper's responsibility to ensure that all of the applicable air transport requirements are met. The items indicated in 1.3.2 are provided as examples and do not include the complete list of all the applicable requirements for air transport.

1.3.2 Specific Responsibilities

STATE VARIATIONS: BEG-04, BHG-01, BRG-02, CAG-06, NLG-03, SAG-02, USG-04

OPERATOR VARIATIONS: 5X-02/03/04, AF-03, AY-01, D0-01, D5-04, EY-02, GA-01, GH-01, IY-01, JP-01, KE-02, KL-03, KZ-01, LA-01/07/12, ME-03, MH-01, MK-03/06, MS-02, NG-01, NH-01, OM-01, OS-01, OU-01, OZ-01, QT-04, QY-01, RJ-01, S7-01, TK-04, US-01, UU-04/07, VN-01, VO-01, ZW-01

Before any package or overpack of dangerous goods is offered for air transport, the shipper must comply with the following specific responsibilities:

- (a) a shipper must provide such information to his employees as will enable them to carry out their responsibilities with regard to the transport of dangerous goods by air;
- (b) the shipper must ensure that the articles or substances are not prohibited for transport by air (see Subsection 2.1 and Subsection 4.2);
- (c) the articles or substances must be properly identified, classified, packed, marked, labelled, documented and be in the condition for transport in accordance with these Regulations;
- (d) 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 Subsection 1.5. 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 undertake the shipper's responsibilities in the preparation of the consignment. However, such persons must be trained as required by Subsection 1.5;

- (e) the dangerous goods are packaged in compliance with all 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 5.0.2.7);
- the compatibility requirements as specified in the applicable packing instructions and in 5.0.2;
- the absorbent materials requirements in the packing instructions when applicable; and
- the pressure differential requirement of 5.0.2.9.

1.3.3 Dangerous Goods in Consolidations

△ OPERATOR VARIATIONS: 9W-09, AI-04, AZ-01, BR-06, CA-01, CI-03, CZ-02, GA-02, IJ-11, IP-02, IR-02, KE-01, KQ-01, KZ-05, LH-02, ME-02, MH-05, MU-02, OM-06, OU-14, OZ-02, PX-03, RJ-02, SK-07, SV-03, SW-03, TK-03, UX-03, VN-12

Dangerous Goods are accepted in consolidations under the conditions specified in 1.3.3.1 to 1.3.3.6.

1.3.3.1 Dangerous goods may be consolidated with goods not subject to these Regulations. Dangerous goods in consolidations are subject to the acceptance check described in 9.1.4. Any delays caused by discrepancies found during the check may result in delay to the complete consolidation.

1.3.3.2 Dangerous goods in consolidations must be identified, classified, packed, marked, labelled and documented in accordance with these Regulations and be free from any indication of damage or leakage.

1.3.3.3 Packages and overpacks containing dangerous goods must be offered to the operator separately from the goods in the consolidation that are not subject to these Regulations. Dangerous goods in consolidations are not acceptable in unit load devices, unless specifically permitted by these Regulations (see 9.1.4.1).

1.3.3.4 A Shipper's Declaration for Dangerous Goods is required for each component consignment.

1.3.3.5 Consolidations containing any "Cargo Aircraft Only" dangerous goods must be shipped on Cargo Aircraft.

1.3.3.6 Before a consignment is offered to an operator for transport, the shipper, the freight forwarder and the cargo agent must:

- ensure that the dangerous goods are in full compliance with the Regulations;
- segregate dangerous goods contained in a consolidation from goods which are not subject to the Regulations, and offer them separately;
- ensure that the dangerous goods are not loaded in a unit load device other than those permitted under 9.1.4.1;
- for all consignments, check documents and the exterior of packages for indication of hidden hazards.

1.3.4 Retention of Documents

STATE VARIATION: USG-01

1.3.4.1 The shipper must ensure that at least one copy of the documents, appropriate to the transport by air of a dangerous goods consignment, is retained for a minimum period of three months. As a minimum, the documents which must be retained are the Shipper's Declaration for Dangerous Goods and any other transport documents applicable to the consignment as specified in these Regulations.

1.3.4.2 Where the documents are kept electronically or in a computer system, the shipper must be able to reproduce them in a printed form.

△ 1.4 Operator's Responsibilities

STATE VARIATIONS: NLG-06, USG-13

1.4.1 General

In transporting dangerous goods, an operator must comply with the requirements of Section 9 for:

- Acceptance;
- Storage;
- Loading;
- Inspection;
- Provision of Information, including emergency response information;
- Reporting;
- Retention of Records;
- Training.

Note:

When an operator, its subsidiary or an agent of the operator offers a consignment of dangerous goods for air transport then the operator, its subsidiary or the agent is a shipper and must comply with shipper's responsibilities (see Subsection 1.3). This is applicable even if the consignment is to be transported on its own or on other operator's services.

1.4.2 Information to Operator Employees

1.4.2.1 An operator must provide, in the operator's operations and/or other appropriate manuals, information to employees so as to enable flight crews and other employees to carry out their responsibilities with regard to dangerous goods. Where applicable, this information must also be provided to ground handling agents. This information must include:

- (a) for passenger handling staff and cabin crew the procedures to be followed to alert passengers that certain items of dangerous goods are specifically prohibited from being in checked baggage, e.g. spare lithium batteries (see Subsection 2.3) and must be removed from baggage where items of carry-on baggage cannot be accommodated in the cabin;
- (b) the action to be taken in the event of emergencies involving dangerous goods;
- (c) details of the location and identification of cargo holds;
- (d) the maximum quantity of dry ice permitted in each compartment; and
- (e) if radioactive material is to be carried, instructions on the loading of such dangerous goods, based on the requirements of 9.3.10.

1.4.2.2 In addition to the above, it is recommended that the operator's operations and/or other appropriate manuals should contain information specific to dangerous goods permitted in passenger and crew baggage as permitted by Subsection 2.3. The information in the operator's manuals should address:

- (a) **approval process.** It is recommended that a single company policy be set out that identifies the items that have been approved and the person(s) or department(s) responsible for determining how dangerous goods in passenger baggage may be approved;
- (b) **communication.** It is recommended that the operator define how approvals for dangerous goods requiring operator approval are communicated to the airport(s) of departure. It is recommended that operators consider a process where such approval is included in the passenger(s) electronic record;
- (c) **limitations.** The operator manuals should specify any limitations or procedural requirements that may apply to particular commodities, e.g. inspection at check-in by passenger service agents and/or security;
- (d) **interlining.** Where the operator has interline agreements with code share and/or alliance partners the operator should identify what the procedure is for obtaining the approval of the other airline(s) involved, e.g. by advising the passenger that they must obtain approval from the other operator;
- (e) **awareness.** The operator should ensure that all staff who have an interaction with passengers, (i.e. reservations agents, passenger service agents, cabin crew and flight crew) are made aware of the process employed to ensure that the operator approval process remains effective.

1.4.3 Provision of Information to Passengers

1.4.3.1 An operator must ensure that information as to the types of dangerous goods which a passenger is forbidden from transporting aboard an aircraft is provided at the point of ticket purchase. Information provided via the Internet may be in text or pictorial form but must be such that ticket purchase cannot be completed until the passenger, or a person acting on their behalf, has indicated that they have understood the restrictions on dangerous goods in baggage.

1.4.3.2 An operator or the operator's handling agent and the airport operator must ensure that notices warning passengers as to the type of dangerous goods which are forbidden for transport aboard an aircraft are available and:

- (a) must be prominently displayed in sufficient number at each of the places at an airport:
 - where tickets are issued,
 - where passengers check-in,
 - in aircraft boarding areas,
- (b) prominently displayed at any other location where passengers are checked in; and
- (c) should be prominently displayed in sufficient numbers in baggage claim areas.

1.4.3.2.1 These notices must include visual examples of dangerous goods forbidden from transport aboard an aircraft.

1.4.3.3 An operator, of passenger aircraft, should have information on those dangerous goods which may be carried by passengers in accordance with 2.3.2 to 2.3.5 available prior to the check-in process on their web sites or other sources of information.

1.4.3.4 When provision is made for the check-in process to be completed remotely (e.g. via the Internet), the operator must ensure that information on the types of dangerous goods which a passenger is forbidden to transport aboard an aircraft is provided to passengers. Information may be in text or pictorial form but must be such that the check-in process cannot be completed until the passenger, or a person acting on their behalf, has indicated that they have understood the restrictions on dangerous goods in baggage.

1.4.3.5 When provision is made for the check-in process to be completed at an airport by a passenger without the involvement of any other person (e.g. automated check-in facility), the operator or the airport operator must ensure that information on the types of dangerous goods which a passenger is forbidden to transport aboard an aircraft is provided to passengers. Information should be in pictorial form and must be such that the check-in process cannot be completed until the passenger has indicated that they have understood the restrictions on dangerous goods in baggage.

1.4.3.6 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 from transporting aboard an aircraft.

This information should consist as a minimum of notices at those locations where there is an interface with the passengers.

1.4.4 Passenger Check-in Procedures

1.4.4.1 Operators' check-in staff must be adequately trained to assist them to identify and detect dangerous goods carried by passengers other than as permitted in Subsection 2.3.

1.4.4.2 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 Subsection 2.2. Check-in staff should therefore seek confirmation from any passenger where there are suspicions that an item of baggage may contain dangerous goods that are not permitted.

1.4.5 Provision of Information at Cargo Acceptance Areas

An operator or the operator's handling agent must ensure that sufficient notices, prominently displayed, are provided at visible location(s) at cargo acceptance points, giving information about the transport of dangerous goods to alert shippers/agents about any dangerous goods that may be contained in their cargo consignment(s). These notices must include visual examples of dangerous goods, including batteries.

1.5 Training Requirements

STATE VARIATIONS: AEG-02, BRG-07, CAG-18, HKG-01, NLG-06

1.5.0 General

1.5.0.1 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 for all persons concerned in the transport of dangerous goods.

△ **1.5.0.2** Personnel identified in the categories specified in Tables 1.5.A, 1.5.B or 1.5.C must be trained or training must be verified prior to the person performing any duty specified in Tables 1.5.A, 1.5.B or 1.5.C.

△ **1.5.0.3** Recurrent training must be provided within 24 months of previous training to ensure knowledge is current. However, if recurrent training is completed within the final 3 months of validity of previous training, the period of validity extends from the month on which the recurrent training was completed until 24 months from the expiry month of that previous training.

1.5.0.4 A test must be provided following dangerous goods training to verify understanding of the regulations. Confirmation is required of successful completion of the test.

1.5.1 Training Programmes

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

- operators;
- ground handling agencies which perform, on behalf of the operator, the act of accepting, handling, loading, unloading, transfer or other processing of cargo, mail or stores;
- ground handling agencies located at an airport which perform, on behalf of the operator, the act of processing passengers;
- agencies, not located at an airport, which perform, on behalf of the operator, the act of checking in passengers;
- freight forwarders;
- shippers of dangerous goods, including packers and persons' or organisations' undertaking the responsibilities of the shipper;
- agencies engaged in the security screening of passengers and their baggage and/or cargo, mail or stores; and

- designated postal operators.

1.5.2 Training Curricula

1.5.2.1 Personnel must be trained in the requirements commensurate with their responsibilities.

1.5.2.2 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.

1.5.2.3 In planning training courses, the various categories of personnel must be familiar with minimum subject matter as indicated in Table 1.5.A.

1.5.3 Training Curricula—“No Carry” Operators

1.5.3.1 Operators that do not carry dangerous goods as cargo, mail or stores must ensure that personnel must receive training in the requirements commensurate with their responsibilities.

1.5.3.2 The subject matter to which their various categories of personnel must be familiar is indicated in Table 1.5.B.

Note:

Security staff are required to be trained irrespective of whether the operator on which passenger or cargo is to be transported carries dangerous goods as cargo.

1.5.4 Training Curricula—Designated Postal Operators

Staff of designated postal operators 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.C.

1.5.5 Approvals

Dangerous goods training programmes for operators' personnel must be subjected to review and approval by the appropriate authority of the State of the operator. Dangerous goods training programmes of designated postal operators must be subjected to review and approval by the civil aviation authority of the State where the mail was accepted by the designated postal operator. Dangerous goods training programmes for all categories of staff shown in 1.5.1, other than operators and designated postal operators, should be reviewed and approved as determined by the appropriate national authority.

1.5.6 Record of Training

1.5.6.1 A record of training must be maintained, which must include:

- the individual's name;
- the most recent training completion month;
- a description, copy or reference to training materials used to meet the training requirement;
- the name and address of the organization providing the training; and
- evidence, which shows that a test has been completed satisfactorily.

1.5.6.2 The training records must be retained by the employer for a minimum period of thirty-six months from the most recent training completion month and must be made available upon request to the employee or appropriate national authority.

1.5.7 Instructor Qualifications

1.5.7.1 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 of Table 1.5.A or another training programme that additionally covers all aspects of Table 1.5.A, prior to delivering such a dangerous goods training programme.

Note:

“Adequate instructional skills” can come from a variety of methods. A list of instructional techniques is found in the Guidelines for Instructors of Dangerous Goods Courses.

- 1.5.7.2** Instructors delivering initial and recurrent dangerous goods training programmes must at least every 24 months deliver such a course, or in the absence of this attend recurrent training. Instructors must receive and understand updates to dangerous goods information and be made familiar with those changes by training or other means on an annual basis or as the Regulations are modified.
- 1.5.7.3** Organisations must ensure that the instructor receives updates to the Regulations and training material

on an annual basis with the issuance of each edition of the DGR.

1.5.8 Competency-Based Training and Assessment

Competency-based training and assessment should be used in accordance with the general provisions contained in Chapter 2 of the ICAO *Procedures for Air Navigation Services—Training* (PANS-TRG, Doc 9868).

**TABLE 1.5.A
Minimum Requirements for Training Curricula (1.5.2)**

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 screeners
	1	2	3	4	5	6	7	8	9	10	11	
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		
General packing requirements	X	X	X			X						
Packing instructions	X	X	X			X						
Labelling and marking	X	X	X	X	X	X	X	X	X	X	X	X
Shipper's Declaration 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', including operator's staff acting as shippers, operator's staff preparing dangerous goods as Company Materials (COMAT)*
2. *Packers*
3. *Staff of freight forwarders involved in processing dangerous goods*
4. *Staff of freight forwarders involved in processing cargo or mail (other than dangerous goods)*
5. *Staff of freight forwarders involved in the handling, storage and loading of cargo or mail*
6. *Operator's and ground handling agent's staff accepting dangerous goods*
7. *Operator's and ground handling agent's staff accepting cargo or mail (other than dangerous goods)*
8. *Operator's and ground handling agent's staff involved in the handling, storage and loading of cargo or mail and baggage*
9. *Passenger handling staff*
10. *Flight crew members, loadmasters and load planners*
11. *Crew members (other than flight crew members)*
12. *Security staff who deal with the screening of passengers and their baggage and cargo or mail, e.g. security screeners, their supervisors and staff involved in implementing security procedures.*

TABLE 1.5.B
Minimum Requirements for Training Curricula for “No Carry” Operators (1.5.3)

Aspects of transport of dangerous goods by air with which they should be familiar, as a minimum	Operators and ground handling agents				
	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
Shipper's Declaration 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 or mail (other than dangerous goods)
8. Operator's and ground handling agent's staff involved in the handling, storage and loading of cargo or mail and baggage
9. Passenger handling staff
10. Flight crew members, loadmasters and load planners
11. Crew members (other than flight crew members).

Notes:

1. Depending on the responsibilities of the person, the aspects of training to be covered may vary from those shown in Table 1.5.A and Table 1.5.B. 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.
2. A set of detailed dangerous goods training programmes for the various categories of personnel, prepared jointly with ICAO, is available from IATA. These training programmes correspond to the categories of the personnel shown in Table 1.5.A. Also available is a set of guidelines for instructors of dangerous goods courses.
3. The categories of personnel identified in Table 1.5.A and Table 1.5.B are not all encompassing. Personnel employed by or interacting with the aviation industry in areas such as passenger reservation centres, and engineering and maintenance, except when acting in a capacity identified in Table 1.5.A or Table 1.5.B, should be provided with dangerous goods training in accordance with 1.5.2.

IATA Dangerous Goods Training Workbooks	Book 1	Book 2	Book 3	Book 4	Book 5
Category of Personnel	1, 2, 3, 6	10	9, 11, 12	5, 8	4, 7

Workbook 1—Shippers; Packers; Dangerous Goods Acceptance Personnel

Workbook 2—Flight Crew; Load Planners

Workbook 3—Cabin Crew; Passenger Handling Personnel; Security Screening Personnel

Workbook 4—Ramp and Warehouse Personnel

Workbook 5—General Cargo Acceptance Personnel

TABLE 1.5.C
Minimum Requirements for Training Curricula for Designated Postal Operators (1.5.4)

Aspects of transport of dangerous goods by air with which they should be familiar, as a minimum	Designated Postal Operators		
	a	b	c
General philosophy	X	X	X
Limitations	X	X	X
General requirements for shippers	X		
Classification	X		
List of dangerous goods	X		
General packing requirements	X		
Packing instructions	X		
Labelling and marking	X	X	X
Shipper's Declaration and other relevant documentation	X	X	
Acceptance of the dangerous goods listed in 2.4	X		
Recognition of undeclared dangerous goods	X	X	X
Storage and loading procedures			X
Provisions for passengers and crew	X	X	X
Emergency procedures	X	X	X

KEY

- (a) Staff of designated postal operators involved in accepting mail containing dangerous goods
- (b) Staff of designated postal operators involved in processing mail (other than dangerous goods)
- (c) Staff of designated postal operators involved in the handling, storage and loading of mail

1.6 Dangerous Goods Security

STATE VARIATION: USG-17

1.6.0 General

This subsection addresses the security responsibilities of operators, shippers and others involved in the transport of dangerous goods aboard aircraft. It should be noted that ICAO 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 ICAO *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 current edition of the IATA Security Manual contains guidance material directed at industry entities such as operators and airports. The requirements in this subsection 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 subsection do not supersede the requirements of Annex 17 and mandatory elements of the associated documents.

1.6.1 General Security Provisions

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

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

1.6.1.3 The provisions of this subsection do not apply to:

- (a) UN 2908 and UN 2909 excepted packages;
- (b) UN 2910 and UN 2911 excepted packages with an activity level not exceeding the A₂ value; and
- (c) UN 2912 LSA-I and UN 2913 SCO-I.

1.6.2 Dangerous Goods Security Training

1.6.2.1 The training specified in Subsection 1.5 should include elements of security awareness.

1.6.2.2 Security awareness training should address the nature of security risks, recognition of 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 role 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 fulfill the elements of 1.6.2.2 need not receive additional training.

1.6.2.3 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.

1.6.2.4 Records of all dangerous goods security training undertaken should be kept by the employer and made available to the employee or appropriate national authority if requested. Records should be kept by the employer for a period of time established by the appropriate national authority.

1.6.3 Provisions for High Consequence Dangerous Goods

OPERATOR VARIATION: BZ-07

1.6.3.1 Definition of High Consequence Dangerous Goods

1.6.3.1.1 High consequence dangerous goods are those which have the potential for misuse in a terrorist event and which may, as a result, produce serious consequences such as mass casualties, mass destruction or, particularly for Class 7, mass socio-economic disruption.

1.6.3.1.2 An indicative list of high consequence dangerous goods in classes and divisions other than Class 7 is given in Table 1.6.A.

**TABLE 1.6.A
Indicative List of High Consequence Dangerous Goods (1.6.3.1.2)**

Class 1	Division 1.1
Class 1	Division 1.2
Class 1	Division 1.3 compatibility group C
Class 1	Division 1.4, UN 0104, UN 0237, UN 0255, UN 0267, UN 0289, UN 0361, UN 0365, UN 0366, UN 0440, UN 0441, UN 0455, UN 0456, UN 0500
Class 1	Division 1.5
Class 2	Division 2.3 toxic gases (excluding aerosols)
Class 3	desensitized explosives
Class 4	Division 4.1 desensitized explosives
Class 6	Division 6.1 substances of Packing Group I; except when transported under the excepted quantity provisions (see 2.6)
Class 6	Division 6.2 infectious substances of Category A (UN 2814 and UN 2900)

1.6.3.1.3 For dangerous goods of Class 7, high consequence radioactive material is that with an activity equal to or greater than a transport security threshold of 3,000 A_2 per single package (see also 10.3.2.1) except for the following radionuclides where the transport security threshold is given in Table 1.6.B.

1.6.3.1.4 For mixtures of radionuclides, determination of whether or not the transport security threshold has been met or exceeded can be calculated by summing the ratios of activity present for each radionuclide divided by the transport security threshold for that radionuclide. If the sum of the fractions is less than 1, then the radioactivity threshold for the mixture has not been met nor exceeded.

This calculation can be made with the formula:

$$\sum_i \frac{A_i}{T_i} < 1$$

Where:

A_i = activity of radionuclide i that is present in a package (TBq)

T_i = transport security threshold for radionuclide i (TBq).

1.6.3.1.5 When radioactive material possess subsidiary risks of other classes or divisions, the criteria of Table 1.6.A should also be taken into account (see also 10.0.5).

**TABLE 1.6.B
Transport Security Thresholds for Specific Radionuclides (1.6.3.1.3)**

Radionuclide	Element	Transport Security Threshold (TBq)
Am-241	Americium	0.6
Au-198	Gold	2
Cd-109	Cadmium	200
Cf-252	Californium	0.2
Cm-244	Curium	0.5
Co-57	Cobalt	7
Co-60		0.3
Cs-137	Caesium	1
Fe-55	Iron	8,000
Gd-153	Gadolinium	10
Ge-68	Germanium	7
Ir-192	Iridium	0.8
Ni-63	Nickel	600
Pd-103	Palladium	900
Pm-147	Promethium	400
Po-210	Polonium	0.6
Pu-238	Plutonium	0.6
Pu-239		0.6
Ra-226	Radium	0.4
Ru-106	Ruthenium	3
Se-75	Selenium	2
Sr-90	Strontium	10
Tl-204	Thallium	200
Tm-170	Thulium	200
Yb-169	Ytterbium	3

1.6.4 Security Plans

1.6.4.1 Applicability

Operators, shippers and others (including infrastructure managers) engaged in the transport of high consequence dangerous goods (see 1.6.3) should adopt, implement and comply with a security plan that addresses at least the elements specified in 1.6.4.2.

Note:

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

1.6.4.2 Elements of a Security Plan

At the minimum, the security plan should comprise of 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 Section 8 of these Regulations).

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.

⊗

1.6.5 Radioactive Material

For radioactive material, the provisions of this Subsection are deemed to be complied with when the provisions of the Convention on Physical Protection of Nuclear Material¹ and of IAEA circular on "The Physical Protection of Nuclear Material and Nuclear Facilities"² are applied.

□ 1.7 Incident and Accident Reporting

Entities other than operators who are in possession of dangerous goods at the time a dangerous goods accident or incident occurs or at the time a dangerous goods incident is discovered to have occurred should follow the reporting requirements of 9.6.1. Entities other than operators who discover undeclared or misdeclared dangerous goods should follow the reporting requirements of 9.6.2. These entities may include, but are not limited to, freight forwarders, customs authorities and security screening providers.

¹ INF/CIRC/274/Rev.1, IAEA, Vienna (1980).

² INF/CIRC/225/Rev.4 (Corrected), IAEA, Vienna (1999).





Dangerous Goods Regulations

SECTION 2—LIMITATIONS

2.0 General

Some dangerous goods are too dangerous to be carried by aircraft, others may be carried on cargo aircraft only and some are acceptable on both cargo and passenger aircraft. A number of limitations are placed on dangerous goods which are permitted to be transported by air. These limitations are established by these Regulations. Both States and operators may impose further restrictions called *variations* (see Subsection 2.8).

2.1 Forbidden Dangerous Goods

STATE VARIATION: USG-02

2.1.1 Dangerous Goods Forbidden in Aircraft Under Any Circumstances

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.

Notes:

1. Certain dangerous goods known to meet the description above have been included in light type and without a UN number in the List of Dangerous Goods (Subsection 4.2) with the word "Forbidden" shown in Columns G/H, I/J and K/L. It must be noted that it is impossible to list all dangerous goods which are forbidden in aircraft under any circumstances. It is therefore essential that appropriate care be exercised to ensure that no such goods are offered for transport.
2. 2.1.1 is intended to include articles being returned to the manufacturer for safety reasons, e.g. defective lithium batteries, see Special Provision A154.

2.1.2 Dangerous Goods Forbidden Unless Exempted

The dangerous goods described in subparagraphs (a) through (f) must not be carried on aircraft unless exempted by States under the provisions of 1.2.6.1.

(a) radioactive material which is:

- in vented type B(M) packages;
- in packages which require external cooling by an ancillary cooling system;
- in packages subject to operational controls during transport;
- explosive;
- a pyrophoric liquid.

- (b) unless otherwise provided, articles and substances (including those described as "not otherwise specified") with a UN number, which are identified in the List of Dangerous Goods as being forbidden;
- (c) infected live animals;
- (d) liquids having a vapour inhalation toxicity which requires Packing Group I packaging;
- (e) substances that are offered for transport in a liquid state at temperatures equal to or exceeding 100°C (212°F), or in a solid state at temperatures equal to or exceeding 240°C (464°F);
- (f) any other articles or substance as specified by the appropriate national authority.

2.2 Hidden Dangerous Goods

2.2.1 Operators' acceptance staff must be adequately trained to assist them to identify and detect dangerous goods presented as general cargo.

2.2.2 Cargo declared under a general description may contain hazardous articles that are not apparent. Such articles may also be found in baggage. With the aim of preventing undeclared dangerous goods from being loaded on an aircraft and passengers from taking on board those dangerous goods which they are not permitted to have in their baggage, cargo and passenger acceptance staff should seek confirmation from shippers and passengers about the contents of any item of cargo or baggage where there are suspicions that it may contain dangerous goods.

2.2.3 In addition to dangerous goods training for cargo acceptance and passenger check-in staff as shown in Table 1.5.A or Table 1.5.B, as applicable, those staff and cargo reservations and sales staff and passenger reservations and sales staff must be provided with information. This information, as appropriate, must be readily available to such staff on:

- (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 2.3.

2.2.4 Experience has shown that when shippers offer packages containing the following commodities, they must be asked to check their consignments against the class definitions and Special Provisions in the Regulations and confirm by endorsement of the "Air Waybill" that no part of the package contents is dangerous. e.g. "Not restricted". Typical examples are listed below:

AIRCRAFT ON GROUND (AOG) SPARES—see AIRCRAFT SPARE PARTS/AIRCRAFT EQUIPMENT.

AIRCRAFT SPARE PARTS/AIRCRAFT EQUIPMENT—may contain explosives (flares or other pyrotechnics), chemical oxygen generators, unserviceable tyre assemblies, cylinders of compressed gas (oxygen, carbon dioxide, nitrogen or fire extinguishers), paint, adhesives, aerosols, life-saving appliances, first aid kits, fuel in equipment, wet or lithium batteries, matches, etc.

AUTOMOBILES, AUTOMOBILE PARTS—(car, motor, motorcycle) may contain ferro-magnetic material which may not meet the definition for magnetized material but which may be subject to special stowage requirements due to the possibility of affecting aircraft instruments (see 3.9.2.2). May also contain engines, carburettors or fuel tanks which contain or have contained fuel, wet batteries, compressed gases in tyre inflation devices, fire extinguishers, shocks/struts with nitrogen, air bag inflators/air bag modules, 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.), flammable solids (hexamine, matches, etc.) or other dangerous goods.

CARS, CAR PARTS—see AUTOMOBILES, 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.

COMAT (COMPANY MATERIALS)—such as aircraft parts, may contain dangerous goods as an integral part, e.g. chemical oxygen generators in a passenger service unit (PSU), various compressed gases such as oxygen, carbon dioxide and nitrogen, gas lighters, aerosols, fire extinguishers, flammable liquids such as fuels, paints and adhesives, and corrosive material such as batteries. Other items such as flares, first aid kits, life-saving appliances, matches, magnetized material, etc.

CONSOLIDATED CONSIGNMENTS (GROUPAGES)—may contain any of the defined classes of dangerous goods.

CRYOGENIC (LIQUID)—indicates refrigerated liquefied gases such as argon, helium, neon and nitrogen.

CYLINDERS—may indicate 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 (such as scuba tanks, vest bottles, etc.) of compressed gas (air, oxygen, etc), high intensity diving lamps which can generate extremely high heat when operated in air. In order to be carried safely, the bulb or battery must 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 subject to these Regulations when they permit the release of any free liquid nitrogen irrespective of the orientation of the packaging.

ELECTRICAL EQUIPMENT—may contain magnetized materials or mercury in switch gear and electron tubes or wet batteries.

ELECTRICALLY POWERED APPARATUS—(wheel chairs, lawn mowers, golf carts, etc.) may contain wet batteries.

EXPEDITIONARY EQUIPMENT—may contain explosives (flares), flammable liquids (gasoline), flammable gas (propane, camping gas) or other dangerous goods.

FILM CREW OR MEDIA EQUIPMENT—may contain explosive pyrotechnic devices, generators incorporating internal combustion engines, wet batteries, fuel, heat producing items, etc.

FROZEN EMBRYOS—may contain refrigerated liquefied gas or Carbon dioxide, solid (dry ice).

FROZEN FRUIT, VEGETABLES, ETC.—may be packed in Carbon dioxide, solid (dry ice).

FUELS—may contain flammable liquids, flammable solids or flammable gases.

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 including flammable liquids such as solvent based paint, adhesives, polishes, aerosols (for passengers, those not permitted under Subsection 2.3), 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 adhesives, paints, sealants, 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 3.9.2.2).

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, METAL FENCING, METAL PIPING—may contain ferro-magnetic material, which may be subject to special stowage requirements due to the possibility of affecting aircraft instruments (see 3.9.2.2).

PARTS OF AUTOMOBILE (CAR, MOTOR, MOTORCYCLE)—may contain wet batteries, etc.

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 (those not permitted under Subsection 2.3), 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.

PROMOTIONAL MATERIAL—see PASSENGER BAGGAGE.

RACING CAR OR MOTORCYCLE TEAM EQUIPMENT—may contain engines, carburetors or fuel tanks which contain fuel or residual fuel, flammable aerosols, cylinders of compressed gases, nitromethane, other fuel additives or wet batteries, 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 Carbon dioxide, solid (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.

SHOW, MOTION PICTURE, STAGE AND SPECIAL EFFECTS EQUIPMENT—may contain flammable substances, explosives or other dangerous goods.

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, such as 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 Carbon dioxide, solid (dry ice).

Note:

Articles and substances which do not fall within the definitions of dangerous goods as shown in these Regulations and which in the event of leakage may cause a serious clean-up problem or corrosion to aluminium on a long term basis must be checked by the shipper to at least ensure that the packaging is adequate to prevent leakage during transportation. These may include brine, powdered or liquid dyes, pickled foodstuffs, etc.

2.3 Dangerous Goods Carried by Passengers or Crew

STATE VARIATIONS: CHG-01, USG-15

OPERATOR VARIATIONS: AR-02, MN-01, P2-01, PG-01, PX-08

2.3.0 General

2.3.0.1 Dangerous goods, including excepted packages of radioactive material, must not be carried by passengers or crew:

- as or in checked baggage;
- as or in carry-on baggage; or
- on their person;

except as noted in 2.3.2 to 2.3.5.

2.3.0.2 Notwithstanding any additional restrictions that may be implemented by States in the interests of aviation security, except for the incident reporting requirements of 9.6.1 and 9.6.2, the provisions of these Regulations do not apply to 2.3.2 to 2.3.5 when carried by passengers or crew members or in baggage transported by the operator which has been separated from its owner during transit (e.g. lost baggage or improperly routed baggage) or in excess baggage carried as cargo as permitted by 1.2.7.1(g).

Notes:

1. See Subsection 2.2 for a listing of Hidden Dangerous Goods which may not be obvious to passengers and crew and which may be inadvertently contained in baggage.

2. The following provisions are tabulated in Table 2.3.A.

2.3.0.3 Paragraphs 2.3.2 to 2.3.4 address dangerous goods that are permitted in passenger and crew baggage only when the operator(s) concerned approve such carriage. It is recommended that operators have documented procedures that identify the approval process and any company specific requirements that may apply to items that are approved for carriage. More detail on the recommended practice is set out in 1.4.2.2.

2.3.1 Forbidden Goods

2.3.1.1 Attaché Cases, Cash Boxes/Bags

Except as permitted in 2.3.2.6 below security-type equipment such as attaché cases, cash boxes, cash bags, etc. incorporating dangerous goods, such as lithium batteries and/or pyrotechnic material, are totally forbidden. See entry in Subsection 4.2, List of Dangerous Goods.

2.3.1.2 Disabling Devices

Disabling devices such as mace, pepper spray, etc. containing an irritant or incapacitating substance are forbidden on the person, in checked and carry-on baggage.

2.3.1.3 Liquid Oxygen Devices

Personal medical oxygen devices that utilize liquid oxygen are forbidden on the person, in checked and carry-on baggage.

2.3.1.4 Electro Shock Weapons

Electro shock weapons (e.g. Tasers) containing dangerous goods such as explosives, compressed gases, lithium batteries, etc. are forbidden in carry-on baggage or checked baggage or on the person.

2.3.2 Goods Acceptable with Operator Approval, as Checked Baggage Only

The following dangerous goods, as listed in 2.3.2.1 through 2.3.2.6, are permitted on aircraft as checked baggage only and with the approval of the operator(s).

2.3.2.1 Ammunition

STATE VARIATIONS: AEG-09, SGG-02

OPERATOR VARIATIONS: FJ-02, KL-01

Securely packaged ammunition (cartridges for weapons, small arms) in Division 1.4S (UN 0012 or UN 0014 only), in quantities not exceeding 5 kg (11 lb) gross weight 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.

△ 2.3.2.2 Wheelchairs/Mobility Aids with Non-spillable Wet Batteries or with Batteries which Comply with Special Provision A123

Battery-powered wheelchairs or other similar mobility aids for use by passengers whose mobility is restricted by either a disability, their health or age, or a temporary mobility problem (e.g. broken leg), with non-spillable wet batteries or with Batteries which Comply with Special Provision A123:

- (a) non-spillable batteries must comply with Special Provision A67 or the vibration and pressure differential tests of Packing Instruction 872;

- (b) the operator must verify:

1. the battery terminals are protected from short circuits, e.g. by being enclosed within a battery container;
2. the battery is securely attached to the wheelchair or mobility aid (see 9.3.16.5 and Figure 9.3.H);
3. electrical circuits have been inhibited.

- (c) the wheelchair/battery-powered mobility aid must be secured against movement in the cargo hold and must be carried such that it is protected from being damaged by the movement of baggage, mail, or cargo;

- (d) where a battery-powered or other similar mobility aid is specifically designed to allow its battery(ies) to be removed by the user (e.g. collapsible):

1. the battery(ies) must be removed. The wheelchair/mobility aid may then be carried as checked baggage without restriction;
2. the removed battery(ies) must be carried in strong, rigid packagings which must be carried in the cargo compartment (see 9.3.16.5 and Figure 9.3.H);
3. the battery(ies) must be protected from short circuit; and
4. the pilot-in-command must be informed of the location of the packed battery.

- (e) it is recommended that passengers make advance arrangements with each operator.

△ 2.3.2.3 Wheelchairs/Mobility Aids with Spillable Batteries

OPERATOR VARIATIONS: AR-04, AV-05, E8-05, IP-05, IT-01, OS-02, OU-03, PR-02, SV-10, VO-02

2.3.2.3.1 Battery-powered wheelchairs or other similar mobility aids for use by passengers whose mobility is restricted by either a disability, their health or age, or a temporary mobility problem (e.g. broken leg), with spillable batteries:

- (a) provided that the wheelchair or mobility aid can be loaded, stowed, secured and unloaded always in an upright position then the battery may remain installed in the wheelchair. The operator must verify that:

1. the battery terminals are protected from short circuits, e.g. by being enclosed within a battery container;
2. the battery is securely attached to the wheelchair or mobility aid (see 9.3.16.5 and Figure 9.3.H);
3. electrical circuits have been inhibited;
4. the wheelchair/battery-powered mobility aid must be carried such that it is protected from being damaged by the movement of baggage, mail, or cargo.

- (b) if the wheelchair or mobility aid cannot be loaded, stowed, secured and unloaded always in an upright position, the battery must be removed. The wheelchair or mobility aid may then be carried as checked baggage without restriction;

- (c) the removed battery must be carried in strong, rigid packagings as follows:
1. packagings must be leak-tight, impervious to battery fluid and be protected against upset by securing 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 the "Corrosive" label (see Figure 7.3.U) and with the "Package Orientation" label (see Figures 7.4.D and 7.4.E).

2.3.2.3.2 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 that batteries which are spillable should be fitted with spill-resistant vent caps when feasible (see 9.3.16.5 and Figure 9.3.H).

△ 2.3.2.4 Wheelchairs/Mobility Aids with Lithium Batteries

Lithium-ion battery powered wheelchairs or other similar mobility aids for use by passengers whose mobility is restricted by either a disability, their health or age, or a temporary mobility problem (e.g. broken leg), subject to the following conditions:

- (a) the batteries must be of a type which meets the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, subsection 38.3;
- (b) the operator must verify:
 1. the battery terminals are protected from short circuits, e.g. by being enclosed within a battery container;
 2. the battery is securely attached to the wheelchair or mobility aid (see 9.3.16.5 and Figure 9.3.H);
 3. electrical circuits have been inhibited.
- (c) mobility aids must be secured against movement in the cargo hold and must be carried in a manner so that they are protected from being damaged by the movement of baggage, mail or other cargo;
- (d) where a battery-powered wheelchair or other similar mobility aid is specifically designed to allow its battery(ies) to be removed by the user (e.g. collapsible):
 1. the battery(ies) must be removed. The wheelchair/mobility aid may then be carried as checked baggage without restriction;
 2. the battery(ies) must be protected from short circuit by insulating the terminals (e.g. by taping over exposed terminals);
 3. the removed battery(ies) must be protected from damage (e.g.) by placing each battery in a

- protective pouch. The battery(ies) must be carried in the passenger cabin;
- 4. removal of the battery from the device must be performed by following the instructions of the manufacturer or device owner;
- 5. the battery must not exceed 300 Wh;
- 6. a maximum of one spare battery not exceeding 300 Wh or two spares each not exceeding 160 Wh may be carried.
- (e) the pilot-in-command must be informed of the location of the mobility aid with an installed battery or the location of the lithium battery when removed and carried in the cabin;
- (f) it is recommended that passengers make advance arrangements with each operator.

☞ 2.3.2.5 Camping Stoves and Fuel Containers that have Contained a Flammable Liquid Fuel

△ OPERATOR VARIATIONS: 9W-01, IT-02, LX-04, PR-03, SN-01, SV-11

With the approval of the operator, as checked baggage only, camping stoves and fuel containers for camping stoves that have contained a flammable liquid fuel may be carried provided the fuel tank of the camping stove, and/or fuel container has been completely drained of all liquid fuel and action has been taken to nullify the danger. To nullify the danger, the empty fuel tank and/or container must be allowed to drain for at least 1 hour, the fuel tank and/or container must then be left uncapped for a minimum of 6 hours to allow any residual fuel to evaporate. Alternative methods, such as adding cooking oil to the fuel tank and/or container to elevate the flash point of any residual liquid above the flash point of flammable liquid and then emptying the fuel tank and/or container, are equally acceptable. The fuel tank, and/or container must then have the cap securely fastened and be wrapped in an absorbent material such as paper towel and placed in a polyethylene or equivalent bag. The top of the bag must then be sealed or gathered and closed with an elastic band or twine.

Note:

Provided the above cleaning method is followed in accordance with these Regulations, the fuel stove or container can be classified as non hazardous. However to control the carriage of these items, they are listed in Table 2.3.A Provisions for Dangerous Goods Carried by Passengers or Crew.

2.3.2.6 Security-Type Equipment

Security type equipment such as attaché cases, cash boxes, cash bags, etc. incorporating dangerous goods as part of this equipment, for example lithium batteries or pyrotechnic material, may be carried as checked baggage only if the equipment complies with the following:

- (a) the equipment must be equipped with an effective means of preventing accidental activation;
- (b) if the equipment contains an explosive or pyrotechnic substance or an explosive article, this article or substance must be excluded from Class 1 by the

- appropriate national authority of the State of Manufacture in compliance with 3.1.7.1;
- (c) if the equipment contains lithium cells or batteries, these cells or batteries must comply with the following restrictions:
1. for a lithium metal cell, the lithium content is not more than 1 g;
 2. for a lithium metal battery, the aggregate lithium content is not more than 2 g;
 3. for lithium ion cells, the Watt-hour rating is not more than 20 Wh;
 4. for lithium ion batteries, the Watt-hour rating is not more than 100 Wh;
 5. 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, subsection 38.3.
- (d) if the equipment contains gases to expel dye or ink, only gas cartridges and receptacles, small, containing gas with a capacity not exceeding 50 mL, containing no constituents subject to these Regulations other than a Division 2.2 gas, are allowed. The release of gas must not cause extreme annoyance or discomfort to crew members so as to prevent the correct performance of assigned duties. In case of accidental activation all hazardous effects must be confined within the equipment and must not produce extreme noise;
- (e) security type equipment that is defective or that has been damaged is forbidden for transport.

2.3.3 Goods Acceptable with Operator Approval as Carry-on Baggage Only

The following dangerous goods, as listed in 2.3.3.1 and 2.3.3.2, are permitted on aircraft as carry-on baggage only and with the approval of the operator(s).

2.3.3.1 Mercury Barometer or Thermometer

△ OPERATOR VARIATIONS: 9W-01, AA-03, LX-03

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 leak-proof 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 location of the barometer or thermometer.

△ 2.3.3.2 Lithium Ion Batteries

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. Batteries must be of a type that meet the requirements of the UN *Manual of Tests and Criteria*, Part III, subsection 38.3. No more than two individually protected spare batteries per person may be carried.

2.3.4 Goods Acceptable with Operator Approval as Baggage

The following dangerous goods, as listed in 2.3.4.1 through 2.3.4.7, are permitted on aircraft as checked or carry-on baggage with the approval of the operator(s).

2.3.4.1 Medical Oxygen

OPERATOR VARIATIONS: AR-06, AV-06, CA-12, IT-03, MN-02, MU-05, OK-05, OU-02, SN-02, TN-03, UL-07

Gaseous oxygen or air cylinders required for medical use. Each cylinder must not exceed 5 kg gross weight. Cylinders, valves and regulators, where fitted, must be protected from damage that could cause inadvertent release of the contents. This provision also applies where the cylinders are being carried by medically trained persons. The pilot-in-command must be informed of the number of oxygen or air cylinders loaded on board the aircraft and their loading location(s).

Note:

Personal medical oxygen devices that utilise liquid oxygen are forbidden on the person, in checked and carry-on baggage.

△ 2.3.4.2 Small Gas Cylinders Containing a Division 2.2

2.3.4.2.1 Not more than two small cylinders, containing carbon dioxide or other suitable gas in Division 2.2, per person fitted into a self-inflating life jacket for inflation purposes plus not more than two spare cylinders.

2.3.4.2.2 Not more than four small cylinders of carbon dioxide or other suitable gas in Division 2.2 without a subsidiary risk, per person for other devices. The water capacity of each cylinder must not exceed 50 mL.

Note:

For carbon dioxide a gas cylinder with a water capacity of 50 mL is equivalent to a 28 g cartridge.

Editorial Note:

The provisions for dry shippers have been moved to paragraph 2.3.5.12.

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△ 2.3.4.3 Avalanche Rescue Backpack

STATE VARIATION: USG-02

One avalanche rescue backpack per person containing a cylinder of compressed gas in Division 2.2. The avalanche rescue backpack may also be equipped with a pyrotechnic trigger mechanism containing not more than 200 mg net of explosives in Division 1.4S. The backpack must be packed in such a manner that it cannot be accidentally activated. The air bags within the backpacks must be fitted with pressure relief valves.

2.3.4.4 Chemical Agent Monitoring Equipment

□ OPERATOR VARIATION: 9W-04

Instruments containing radioactive material not exceeding the activity limits specified in Table 10.3.D, 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.

2.3.4.5 Carbon Dioxide, Solid (Dry Ice)

Carbon dioxide, solid (dry ice) in quantities not exceeding 2.5 kg per person when used to pack perishables that are not subject to these Regulations in checked or carry-on baggage, provided the baggage (package) permits the release of carbon dioxide gas. Each item of checked baggage containing dry ice must be marked:

- “Carbon dioxide, solid” or “Dry ice”; and
- with the net weight of dry ice or an indication that the net weight is 2.5 kg or less.

Note:

See 9.3.12.3 and Figure 9.3.G for an example of a baggage tag.

△ 2.3.4.6 Heat Producing Articles

OPERATOR VARIATION: DE-08

Battery-powered equipment capable of generating extreme heat, which would cause a fire if activated, e.g. underwater high-intensity lamps. The heat producing component and the battery are isolated from each other by the removal of the heat producing component, the battery or another component, e.g. fuse. Any battery that has been removed must be protected against short circuit (by placement in the 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).

2.3.4.7 Portable Medical Electronic Devices

Portable medical electronic devices (Automated External Defibrillators (AED), Nebulizer, Continuous Positive Airway Pressure (CPAP), etc.) containing lithium metal or lithium ion cells or batteries may be carried by passengers for medical use as follows:

- (a) no more than two spare batteries may be carried in carry-on baggage only. 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);
- (b) each installed or spare battery must be of a type which meets the requirements of each test in the UN Manual of Tests and Criteria, Part III,

subsection 38.3; In addition, each installed or spare battery must not exceed the following:

1. for lithium metal batteries, a lithium content of not more than 8 g; or
2. for lithium ion batteries, a watt-hour rating of not more than 160 Wh.

2.3.5 Goods Acceptable without the Operator's Approval

Dangerous goods, as listed in 2.3.5.1 through 2.3.5.11, are permitted on aircraft as baggage without the approval of the operator(s).

2.3.5.1 Medicinal or Toiletry Articles

Non-radioactive medicinal or toiletry articles (including aerosols). The term “medicinal or toiletry articles” is intended to include such items as hair sprays, perfumes, colognes and medicines containing alcohols.

2.3.5.2 Aerosols in Division 2.2

Aerosols in Division 2.2, with no subsidiary risk, for sporting or home use, are permitted in checked baggage only.

Note:

The total net quantity of all such articles carried by each passenger or crew member under the provisions of 2.3.5.1 and 2.3.5.2 must not exceed 2 kg or 2 L, and the 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.

2.3.5.3 Cylinders for Mechanical Limbs

Small 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.

2.3.5.4 Cardiac Pacemakers/ Radio-pharmaceuticals

Radioisotopic cardiac pacemakers or other devices, including those powered by lithium batteries, implanted into a person, or radiopharmaceuticals contained within the body of a person as the result of medical treatment.

2.3.5.5 Medical/Clinical Thermometer

One small medical or clinical thermometer which contains mercury, for personal use, when in its protective case.

TABLE 2.3.A
Provisions for Dangerous Goods Carried by Passengers or Crew
(Subsection 2.3)

Dangerous goods must not be carried in or as passengers or crew, checked or carry-on baggage, except as otherwise provided below.

Permitted in or as carry-on baggage						
Permitted in or as checked baggage						
Permitted on one's person						
The approval of the operator(s) is required						
The pilot-in-command must be informed of the location						
NO	NO	NO	n/a	n/a	Disabling devices such as mace, pepper spray, etc. containing an irritant or incapacitating substance are forbidden on the person, in checked and carry-on baggage.	
NO	NO	NO	n/a	n/a	Electro shock weapons (e.g. Tasers) containing dangerous goods such as explosives, compressed gases, lithium batteries, etc. are forbidden in carry-on baggage or checked baggage or on the person.	
NO	NO	NO	n/a	n/a	Security-type attaché cases, cash boxes, cash bags , etc. incorporating dangerous goods, such as lithium batteries and/or pyrotechnic material, except as provided in 2.3.2.6 are totally forbidden. See entry in 4.2 - List of Dangerous Goods.	
NO	YES	NO	YES	NO	Ammunition (cartridges for weapons), securely packaged (in Div. 1.4S, UN 0012 or UN 0014 only), in quantities not exceeding 5 kg gross weight per person for that person's own use. Allowances for more than one person must not be combined into one or more packages.	
NO	YES	NO	YES	NO	Battery-powered wheelchairs or other similar mobility devices with non-spillable wet batteries or with batteries which comply with Special Provision A123 , (see 2.3.2.2).	
NO	YES	NO	YES	YES	Battery-powered wheelchairs or other similar mobility devices with spillable batteries or with lithium batteries (see 2.3.2.3 and 2.3.2.4 for details).	
YES	NO	NO	YES	YES	Battery-powered mobility aids with lithium ion batteries (collapsible) , lithium-ion battery must be removed and carried in the cabin (see 2.3.2.4(d) for details).	
NO	YES	NO	YES	NO	Camping stoves and fuel containers that have contained a flammable liquid fuel , with empty fuel tank and/or fuel container (see 2.3.2.5 for details).	
NO	YES	NO	YES	NO	Security-type equipment containing lithium batteries (see 2.3.2.6 for details).	
YES	YES	YES	YES	NO	Lithium ion battery powered equipment containing batteries over 100 Wh but not exceeding 160 Wh.	
YES	NO	YES	YES	NO	Spare lithium ion batteries with a Watt-hour rating exceeding 100 Wh but not exceeding 160 Wh for consumer electronic devices. Maximum of two spare batteries may be carried in carry-on baggage only. These batteries must be individually protected to prevent short circuits.	
YES	NO	NO	YES	YES	Mercury barometer or thermometer carried by a representative of a government weather bureau or similar official agency (see 2.3.3.1 for details.)	
YES	YES	NO	YES	NO	Avalanche rescue backpack , one (1) per person, containing a cylinder of compressed gas in Div. 2.2. May also be equipped with a pyrotechnic trigger mechanism containing less than 200 mg net of Div. 1.4S. The backpack must be packed in such a manner that it cannot be accidentally activated. The airbags within the backpacks must be fitted with pressure relief valves.	
YES	YES	NO	YES	NO	Carbon dioxide, solid (dry ice) , in quantities not exceeding 2.5 kg per person when used to pack perishables not subject to these Regulations in checked or carry-on baggage, provided the baggage (package) permits the release of carbon dioxide gas. Checked baggage must be marked "dry ice" or "carbon dioxide, solid" and with the net weight of dry ice or an indication that there is 2.5 kg or less dry ice.	
YES	YES	NO	YES	NO	Chemical Agent Monitoring Equipment , when carried by staff members of the Organization for the Prohibition of Chemical Weapons on official travel (see 2.3.4.4).	
YES	YES	NO	YES	NO	Heat producing articles such as underwater torches (diving lamps) and soldering irons. (See 2.3.4.6 for details.)	
YES	YES	NO	YES	YES	Oxygen or air, gaseous, cylinders required for medical use. The cylinder must not exceed 5 kg gross weight. Note: Liquid oxygen systems are forbidden for transport.	
YES	YES	YES	YES	NO	Portable medical electronic devices (Automated External Defibrillators (AED), Nebulizer, Continuous Positive Airway Pressure (CPAP), etc.) containing lithium metal or lithium ion cells or batteries may be carried (see 2.3.4.7 for details).	

TABLE 2.3.A
Provisions for Dangerous Goods Carried by Passengers or Crew
(Subsection 2.3) (continued)

Permitted in or as carry-on baggage						
Permitted in or as checked baggage						
Permitted on one's person						
The approval of the operator(s) is required						
The pilot-in-command must be informed of the location						
YES	YES	YES	YES	NO	Small non-flammable gas cylinders , containing carbon dioxide or other suitable gas in Division 2.2. Up to two (2) small cylinders fitted into a life jacket, and up to two (2) spare cartridges per person, not more than four (4) cylinders up to 50 mL water capacity for other devices.	
YES	YES	YES	NO	NO	Alcoholic beverages , when in retail packagings, containing more than 24% but not more than 70% alcohol by volume, in receptacles not exceeding 5 L, with a total net quantity per person of 5 L.	
NO	YES	NO	NO	NO	Aerosols in Division 2.2 , with no subsidiary risk, for sporting or home use.	
YES	YES	YES	NO	NO	Non-radioactive medicinal or toilet articles (including aerosols) such as hair sprays, perfumes, colognes and medicines containing alcohol. The <u>total</u> net quantity of all above mentioned articles must not exceed 2 kg or 2 L, and the 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.	
YES	YES	YES	NO	NO	Energy efficient light bulbs when in retail packaging intended for personal or home use.	
YES	YES	YES	NO	NO	Fuel cells, and spare fuel cartridges powering portable electronic devices (e.g. cameras, cellular phones, laptop computers, and camcorders), see 2.3.5.10 for details.	
YES	YES	NO	NO	NO	Hair curlers containing hydrocarbon gas , up to one (1) per passenger or crew-member, provided that the safety cover is securely fitted over the heating element. These hair curlers must not be used on board the aircraft at any time. Gas refills for such curlers are not permitted in checked or carry-on baggage.	
YES	YES	NO	NO	NO	Insulated packagings containing refrigerated liquid nitrogen (dry shipper), fully absorbed in a porous material containing only non-dangerous goods.	
NO	YES	YES	NO	NO	Internal combustion or fuel cell engines , must meet A70 (see 2.3.5.15 for details).	
YES	YES	YES	NO	NO	Medical or clinical thermometer , which contains mercury, one (1) per person for personal use, when in its protective case.	
YES	YES	YES	NO	NO	Non-flammable, non-toxic gas cylinders 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.	
YES	YES	YES	NO	NO	Non-infectious specimens packed with small quantities of flammable liquid, must meet A180 (see 2.3.5.14 for details).	
YES	YES	YES	NO	NO	Portable electronic devices containing lithium metal or lithium ion cells or batteries , such as watches, calculating machines, cameras, cellular phones, lap-top computers, camcorders, etc., when carried by passengers or crew for personal use.	
YES	NO	YES	NO	NO	All spare batteries, including lithium metal or lithium ion cells or batteries , for such portable electronic devices must be carried in carry-on baggage only. These batteries must be individually protected to prevent short circuits.	
YES	YES	YES	NO	NO	Portable electronic devices containing non-spillable batteries , batteries must meet A67 and must be 12 V or less and 100 Wh or less. A maximum of 2 spare batteries may be carried (see 2.3.5.13 for details).	
NO	NO	YES	NO	NO	Radioisotopic cardiac pacemakers or other devices, including those powered by lithium batteries, implanted into a person, or radiopharmaceuticals contained within the body of a person as the result of medical treatment.	
NO	NO	YES	NO	NO	Safety matches (one small packet) 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. Lighter fuel and lighter refills are not permitted on one's person or in checked or carry-on baggage.	
Note: "Strike anywhere" matches, "Blue flame" or "Cigar" lighters are forbidden.						

Note:

n/a means not applicable

△ 2.3.5.6 Safety Matches or Cigarette Lighter

OPERATOR VARIATIONS: JW-02, NZ-01, PX-06

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 nor in checked or carry-on baggage.

Notes:

1. "Strike anywhere" matches are forbidden for air transport.
2. "Blue Flame" or "Cigar" lighters are not permitted on one's person, carry-on or checked baggage.
3. Cigarette lighters should have two independent actions by the user to activate ignition.

2.3.5.7 Alcoholic Beverages

STATE VARIATION: SAG-01

Alcoholic beverages, when in retail packagings, containing more than 24% but not more than 70% 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 24% or less alcohol by volume are not subject to any restrictions.

2.3.5.8 Hair Curlers

Hair curlers containing hydrocarbon gas, no more than one per passenger or crew member, provided that the safety cover is securely fitted over the heating element. These hair curlers must not be used on board the aircraft at any time. Gas refills for such curlers are not permitted in checked or carry-on baggage.

△ 2.3.5.9 Portable Electronic Devices containing Batteries

2.3.5.9.1 Portable electronic devices (such as watches, calculating machines, cameras, cellular phones, lap-top computers, camcorders) containing batteries when carried by passengers or crew for personal use, which should be carried in carry-on baggage. Spare batteries must be individually protected to prevent short circuits by placement in the 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, lithium batteries are subject to the following conditions:

- (a) each installed or spare battery must not exceed:
 1. for lithium metal or lithium alloy batteries, a lithium content of not more than 2 g; or
 2. for lithium ion batteries, a watt-hour rating of not more than 100 Wh.
- (b) batteries and cells must be of a type that meets the requirements of the UN Manual of Tests and Criteria, Part III, subsection 38.3;

- (c) if devices are carried in checked baggage the passenger/crew member must take measures to prevent unintentional activation.

△ 2.3.5.10 Fuel Cells Contained in Portable Electronic Devices

2.3.5.10.1 Fuel cells used to power portable electronic devices (for example cameras, cellular phones, laptop computers, and camcorders), and spare fuel cell cartridges, under the following conditions:

- (a) fuel cells and fuel cell cartridges may only contain flammable liquids, corrosive substances, liquefied flammable gas, water-reactive substances or hydrogen in metal hydride;
- (b) refuelling of fuel cells on board an aircraft is not permitted except that the installation of a spare cartridge is allowed;
- (c) the maximum quantity of fuel in any fuel cell or fuel cell cartridge must not exceed:
 1. for liquids, 200 mL;
 2. for solids 200 g;
 3. for liquefied gases, 120 mL for non metallic fuel cells or fuel cell cartridges or 200 mL for metal fuel cells or fuel cell cartridges;
 4. for hydrogen in metal hydride the fuel cell cartridges must have a water capacity of 120 mL or less.
- (d) each fuel cell and each fuel cell cartridge must conform to IEC 62282-6-100 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;
- (e) no more than two spare fuel cell cartridges may be carried in checked baggage, carry-on baggage, or on the person;
- (f) fuel cells containing fuel are permitted in carry-on baggage only;
- (g) interaction between fuel cells and integrated batteries in a device must conform to IEC 62282-6-100 Ed. 1. Fuel cells whose sole function is to charge a battery in the device are not permitted;
- (h) fuel cells 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
- (i) in addition to the languages which may be required by the State of Origin for the markings specified above, English should be used.

2.3.5.11 Energy Efficient Light Bulbs

Energy efficient light bulbs when in retail packaging intended for personal or home use.

△ 2.3.5.12 Insulated Packages Containing Refrigerated Liquid Nitrogen (Dry Shipper)

In checked or carry-on baggage, insulated packagings containing refrigerated liquid nitrogen fully absorbed in a

porous material (dry shipper). The dry shipper must meet the requirements of Special Provision A152.

2.3.5.13 Portable Electronic Equipment Containing Non-Spillable Batteries

In checked or carry-on baggage, portable electronic equipment containing a non-spillable battery meeting the requirements of Special Provision A67. A maximum of two spare non-spillable batteries meeting Special Provision A67 may also be carried. The following requirements apply:

- (a) the voltage of each battery must not exceed 12 V and the watt-hour rating must not exceed 100 Wh;
- (b) the equipment must either be protected from inadvertent activation, or the battery must be disconnected and the battery terminals insulated;
- (c) each spare battery must be protected from short circuit by insulation of the battery terminals.

2.3.5.14 Non-Infectious Specimens Packed with Small Quantities of Flammable Liquids

In checked or carry-on baggage non-infectious specimens, such as specimens of mammals, birds, amphibians, reptiles, fish, insects and other invertebrates containing small quantities of flammable liquids provided that the requirements of Special Provision A180 are complied with.

2.3.5.15 Internal Combustion or Fuel Cell Engines

In checked baggage only, internal combustion or fuel cell engines being carried separately or incorporated into a machine or other apparatus. The engine must comply with the requirements of Special Provision A70.

2.3.5.16 Permeation Devices

In checked baggage only permeation devices for calibrating air quality monitoring equipment. These devices must comply with the requirements of Special Provision A41.

2.4 Transport of Dangerous Goods by Post

STATE VARIATIONS: CAG-05/09, DQG-03, FRG-06, GBG-05, VCG-04, ZAG-04

OPERATOR VARIATIONS: 9W-08, AR-03, AV-07, AY-02, BA-03, BR-05, BZ-02, C8-03, CA-06, CV-03, D5-03, EY-07, IJ-04, KQ-03, KZ-10, LH-03, MH-02, MK-07, MS-03, MU-03, OK-01, OM-03, OS-04, OU-06, QR-02, TK-06, UL-04, UU-01, VN-03, VO-04

2.4.1 The Universal Postal Union Convention forbids the carriage of dangerous goods in mail except as permitted in 2.4.2. Appropriate national authorities should ensure that the provisions of the UPU Convention are complied with in relation to the transport of dangerous goods by air.

2.4.2 The dangerous goods listed in this subsection may be accepted in mail for air carriage subject to the

provisions of the appropriate national authorities concerned and the parts of these Regulations which relate to such materials:

- (a) **Infectious substances**, assigned to **Biological substance, Category B** (UN 3373) only, when packed in accordance with the requirements of Packing Instruction 650, and carbon dioxide, solid (dry ice) when used as a refrigerant for infectious substances (UN 3373);
- (b) **Patient specimens** as defined in 3.6.2.1.4 provided that they are classified, packed and marked as required by 3.6.2.2.3.6; and
- (c) **Radioactive material**, provided the activity does not exceed one tenth of that permitted in Table 10.3.D. The provisions relating to documentation (Subsection 10.8) do not apply to such radioactive material;
- (d) **Lithium ion batteries contained in equipment** (UN 3481) meeting the provisions of Section II of Packing Instruction 967. No more than four cells or two batteries may be mailed in any single package;
- (e) **Lithium metal batteries contained in equipment** (UN 3091) meeting the provisions of Section II of Packing Instruction 970. No more than four cells or two batteries may be mailed in any single package.

2.4.3 The procedures of designated postal operators for controlling the introduction of dangerous goods in mail into air transport are subject to review and approval by the civil aviation authority of the State where the mail is accepted.

2.4.4 Before a designated postal operator can introduce the acceptance of lithium batteries as identified in 2.4.2(d) and (e) they must have received specific approval from the civil aviation authority.

Notes:

1. Designated postal authorities may accept the dangerous goods identified in 2.4.2(a), (b) and (c) without receiving specific approval from the civil aviation authority.
2. Guidelines for appropriate national authorities and civil aviation authorities are contained in the Supplement to the ICAO Technical Instructions (S-1;3).

2.5 Dangerous Goods in Operator's Property

2.5.1 Exceptions

The provisions contained in these Regulations do not apply to the articles and substances of 2.5.1.1 through 2.5.1.4.

2.5.1.1 Aircraft Equipment

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

△ 2.5.1.2 Consumer Goods

Aerosols, alcoholic beverages, perfumes, colognes, liquefied gas lighters and portable electronic devices containing lithium ion or lithium metal cells or batteries provided that the lithium batteries meet the provisions of 2.3.5.9 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.

2.5.1.3 Carbon Dioxide, Solid (Dry Ice)

Carbon dioxide solid, (dry ice) for use in food and beverage service aboard the aircraft.

2.5.1.4 Battery-Powered Electronic Equipment

Electronic devices such as electronic flight bags, personal entertainment devices, credit card readers, containing lithium metal or lithium ion cells or batteries and spare lithium batteries for such devices carried aboard an aircraft by the operator for use on the aircraft during the flight or series of flights, provided that the batteries meet the provisions of 2.3.5.9.1. Spare lithium batteries must be individually protected so as to prevent short circuits when not in use. Conditions for the carriage and use of these electronic devices and for the carriage of spare batteries must be provided in the operations manual and/or other appropriate manuals as will enable flight crew, cabin crew and other employees to carry out their responsibilities.

2.5.2 Aircraft Spares

2.5.2.1 Unless otherwise authorized by the State of the operator, articles and substances intended as replacements for those referred to in 2.5.1.1 or articles and substances referred to in 2.5.1.1 which have been removed for replacement, must be transported in accordance with the provisions of these Regulations, 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 packaging specified in these Regulations for the items packed in the containers.

2.5.2.2 Unless otherwise authorized by the State of the operator, articles and substances intended as replacements for those referred to in 2.5.1.2 and 2.5.1.3 must be transported in accordance with the provisions of these Regulations.

2.5.2.3 Unless otherwise authorized by the State of the operator, battery-powered devices and spare batteries intended as replacements for those referred to in 2.5.1.4 must be transported in accordance with the provisions of these Regulations.

Editorial Note:

The provisions for approvals and exemptions previously set out in 2.6 are now found in 1.2.1 to 1.2.6.

2.6 Dangerous Goods in Excepted Quantities

STATE VARIATION: JPG-23

OPERATOR VARIATIONS: 9W-13, AM-11, AR-01, BG-01, BR-04, CA-07, CI-02, CX-06, CZ-01, D0-02, EY-05, GF-03, IJ-07, IP-01, JX-03, KA-06, KE-06, KQ-02, LA-12, LD-05, ME-01, MH-06, MK-04, MP-01, MS-05, OM-05, PX-05, QY-02, SV-01, TG-01, UX-01, UY-01, VN-02

2.6.1 Applicability

Small quantities of dangerous goods meeting the provisions of this subsection are not subject to the other provisions of these Regulations except for:

- training requirements (Subsection 1.5);
- dangerous goods in air mail (Subsection 2.4);
- classification and packing group criteria (Section 3);
- packaging requirements (5.0.2.4, 5.0.2.6.1, 5.0.2.8, 5.0.2.9 and 5.0.2.11(a)) (5.0.2.9 does not apply to UN 3082);
- loading restrictions (9.3.1);
- reporting of dangerous goods accidents, incidents and other occurrences (9.6.1 and 9.6.2);
- in the case of radioactive material, the requirements for radioactive material in excepted packages (10.5.8); and
- definitions (Appendix A).

2.6.2 Limitations

2.6.2.1 Baggage and Post

Dangerous goods in excepted quantities are not permitted in or as checked or carry-on baggage nor in the mail.

2.6.2.2 Dangerous Goods Permitted in Excepted Quantities

Only the following may be carried under the provisions for dangerous goods in excepted quantities:

- (a) Substances of Division 2.2, without a subsidiary risk but excluding UN 1950, UN 2037, UN 2073, UN 2857 and UN 3164;
- (b) Substances of Class 3, all packing groups, excluding those in Packing Group I with a subsidiary risk and UN 1204, UN 2059 and UN 3473;
- (c) Substances of Class 4, Packing Groups II and III but excluding all self-reactive substances and UN 2555, UN 2556, UN 2557, UN 2907, UN 3292 and UN 3476;
- (d) Substances of Division 5.1, Packing Groups II and III;
- (e) Substances of Division 5.2, only when contained in a chemical kit, first aid kit or polyester resin kit;
- (f) Substances of Division 6.1, all substances in this division, except those having an inhalation toxicity of Packing Group I;

- △ (g) Substances of Class 8, Packing Groups II and III but excluding UN 1774, UN 2794, UN 2795, UN 2800, UN 2803, UN 2809, UN 3028, UN 3477 and UN 3506; and
- (h) Only substances of Class 9, other than carbon dioxide, solid, genetically modified organisms and genetically modified microorganisms. All articles are excluded.

Note:

Articles and substances in the above classes, divisions and packing groups may also be radioactive materials in excepted packages.

2.6.3 Classification

Dangerous goods shipped under the provisions of Sub-section 2.6 must be classified according to Section 3 of these Regulations.

2.6.4 Identification

2.6.4.1 Dangerous goods, which may be carried as excepted quantities in accordance with the provisions of this Subsection are shown in Column F of the List of Dangerous Goods by means of an alphanumeric code as follows:

TABLE 2.6.A
Excepted Quantity Codes for Table 4.2 (2.6.4.1)

EQ Code	Maximum net quantity per inner packaging	Maximum net 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

2.6.4.2 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 packaging.

2.6.4.3 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.

2.6.5 Packing

2.6.5.1 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 5.0.2.6.1) 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 (wood, fibreboard or other equally strong material);
- (d) the complete package must be in compliance with the provisions in 2.6.6;
- (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 Regulations.

2.6.5.2 A package containing dangerous goods in excepted quantities must not contain other dangerous goods that require a Shipper's Declaration.

Note:

When a package containing dangerous goods in excepted quantities is packed with UN 1845 Carbon dioxide, solid (dry ice), the requirements in Packing Instruction 954 must be met.

2.6.6 Package Tests

2.6.6.1 The complete package as prepared for transport, with inner packagings filled to not less than 95% of their capacity for solids or 98% 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 attitudes:
 - 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 attitudes:
 - 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 mass of identical packages if stacked to a height of 3 m (including the drop sample).

2.6.6.2 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 should be similar to those of the substance to be transported.

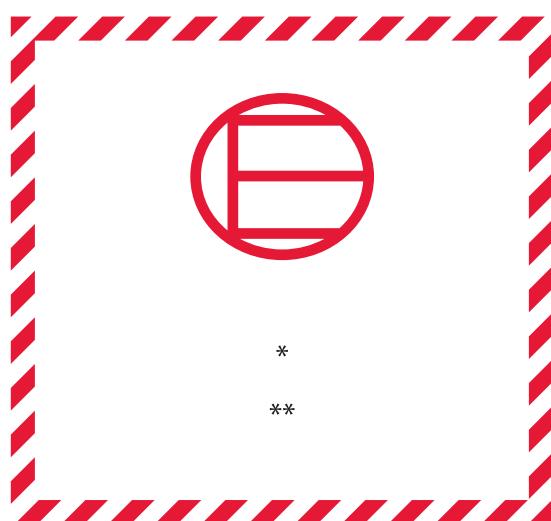
2.6.7 Marking of Packages

2.6.7.1 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 2.6.B. 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.

2.6.7.2 The dimensions of the mark must be a minimum of 100 mm × 100 mm.

2.6.7.3 An overpack containing dangerous goods in excepted quantities must display the markings required by 2.6.7.1 and must be marked with the word "overpack", unless such markings on packages within the overpack are clearly visible.

FIGURE 2.6.B
Excepted Quantity Package Mark (2.6.7.1)



Minimum dimensions: 100 × 100 mm

Hatching and symbol of the same colour, black or red, on white or suitable contrasting background.

*—The primary class or, when assigned, the division number(s) must be shown in this location.

**—The name of the shipper or of the consignee must be shown in this location if not shown elsewhere on the package.

2.6.8 Documentation

OPERATOR VARIATIONS: CX-06, KA-06, LD-05

2.6.8.1 The Shipper's Declaration for Dangerous Goods is not required.

2.6.8.2 If a document (such as a bill of lading or air waybill) accompanies dangerous goods in excepted quantities, it must include the statement "Dangerous Goods in Excepted Quantities" and indicate the number of packages.

2.6.9 Handling

Dangerous goods shipped under the provisions of Subsection 2.6 are subject to the following provisions of Section 9:

- loading restrictions (9.3.1);
- reporting of dangerous goods accidents, incidents and other occurrences (9.6.1 and 9.6.2).

Notes:

1. A checklist is not required for dangerous goods in excepted quantities.
2. Information relating to Dangerous Goods in Excepted Quantities is not required to appear on the written information to the pilot in command.

2.6.10 De Minimis Quantities

2.6.10.1 Dangerous goods that are assigned codes E1, E2, E4 or E5 in Column F of Table 4.2 are not subject to these Regulations when carried as cargo provided that:

- (a) the maximum net quantity of material per inner packaging is limited to 1 mL for liquids and gases and 1 g for solids;
- (b) the provisions of 2.6.5 are met, except that an intermediate packaging is not required if the inner packagings are securely packed in an outer packaging with cushioning material in such a way that, under normal conditions of transport, they cannot break, be punctured, or leak their contents; and for liquid dangerous goods, the outer packaging contains sufficient absorbent material to absorb the entire contents of the inner packagings;
- (c) the provisions of 2.6.6 are complied with; and
- (d) the maximum net quantity of dangerous goods per outer packaging does not exceed 100 mL for liquids and gases or 100 g for solids.

2.7 Dangerous Goods in Limited Quantities

 OPERATOR VARIATIONS: GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, MH-14, MK-06, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

2.7.0 General

2.7.0.1 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 Section 6 of these Regulations, do meet the construction requirements of that section.

2.7.0.2 The UN Recommendations require packages containing limited quantities of dangerous goods to be marked with a diamond shaped mark as specified in Chapter 3.4 of the UN Model Regulations. The mark required by these Regulations includes all of the elements of this mark with the addition of a "Y" which indicates compliance with the provisions of these Regulations, some of which are more stringent than those of the UN Model Regulations and of other modes of transport. For example, packages transported in accordance with these Regulations require hazard labels, and inner package and per-package quantities are in some cases lower than those authorized by the UN Model Regulations. The UN Model Regulations recognize the mark required by these Regulations in order to ensure that packages containing limited quantities of dangerous goods prepared in accordance with these Regulations are acceptable for transport by other modes.

2.7.1 Applicability

2.7.1.1 It is recognized that many dangerous goods can be safely carried in good quality combination packagings which meet the construction requirements of Subsections 6.1 and 6.2 but which have not been marked and tested in accordance with the requirements of 6.0.4 and Subsection 6.3. Dangerous goods may be carried as "Limited Quantity" only if they comply with the restrictions provided in this paragraph, in the List of Dangerous Goods and in Section 5. All requirements of these Regulations must be met unless otherwise provided for.

2.7.1.2 The limitations and provisions of Subsection 2.7 for the transport of dangerous goods in Limited Quantities apply identically for passenger and cargo aircraft.

2.7.2 Limitations

2.7.2.1 Dangerous Goods Permitted in Limited Quantities

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 the provisions for dangerous goods in limited quantities:

- (a) **Class 2:** UN 1950 in Divisions 2.1 and 2.2, UN 2037 in Divisions 2.1 and 2.2 without a subsidiary risk, UN 3478 and UN 3479 cartridges only;
- (b) **Class 3:** Flammable liquids in Packing Groups II and III;
- (c) **Class 4:** Flammable solids of Division 4.1 in Packing Groups II and III but excluding self-reactive

- substances irrespective of packing group; Substances of Division 4.3 in Packing Groups II and III, solids only;
- (d) **Class 5:** Oxidizers of Division 5.1 in Packing Groups II and III; Organic peroxides of Division 5.2 only when contained in a chemical kit, or a first aid kit;
 - (e) **Class 6:** Toxic substances of Division 6.1 in Packing Groups II and III;
 - △ (f) **Class 8:** Corrosives of Class 8 in Packing Groups II and III but excluding UN 2794, UN 2795, UN 2803, UN 2809, UN 3028 and UN 3506;
 - (g) **Class 9:** Only Dibromodifluoromethane (UN 1941), Benzaldehyde (UN 1990), Ammonium nitrate fertilizers (UN 2071), Environmentally hazardous substance, solid, n.o.s. (UN 3077), Environmentally hazardous substance, liquid, n.o.s. (UN 3082), Chemical kit or First aid kit (UN 3316), Aviation regulated liquid, n.o.s. (UN 3334), Aviation regulated solid, n.o.s. (UN 3335) and Consumer commodity (ID 8000) of Class 9 substances.

⊗

2.7.3 Classification

Dangerous goods shipped under the provisions of Sub-section 2.7 must be classified according to Section 3 of these Regulations.

2.7.4 Quantity Limitations

2.7.4.1 The net quantity per package must not exceed the quantity specified in Column H of the List of Dangerous Goods against the packing instruction number identified in Column G.

2.7.4.2 The gross weight of a "Limited Quantity" package must not exceed 30 kg.

2.7.5 Packing

OPERATOR VARIATION: DL-04

2.7.5.1 The general packing requirements of 5.0.2 through 5.0.4 applicable to passenger aircraft must be met except that the requirements of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2 do not apply.

2.7.5.2 Packagings, including closures, which have been used more than once, i.e. they have been refilled and are being re-shipped 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.

2.7.5.3 Single packagings, including composite packagings, are not permitted.

2.7.5.4 Limited Quantities of dangerous goods must be packaged in accordance with the applicable Limited Quantity packing instruction indicated in Column G of the List of Dangerous Goods and which is identified by the prefix letter "Y".

2.7.5.5 Inner packagings must meet the requirements of Subsection 6.1. Outer packagings must be so

designed that they meet the construction requirements in Subsection 6.2 which apply to the type of outer packaging to be used for the article or substance.

2.7.5.6 An outer packaging may contain more than one item of dangerous goods or other goods provided that:

- (a) the dangerous goods do not react dangerously with each other or with the other goods and cause:
 - combustion and/or evolution of considerable heat,
 - evolution of flammable, toxic or asphyxiant gases,
 - the formation of corrosive substances, or
 - the formation of unstable substances;
- (b) the dangerous goods do not require segregation according to Table 9.3.A, except as otherwise provided for in these Regulations;
- (c) 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;
- (d) the outer packagings used are permitted by all the packing instructions applicable to each item of dangerous goods;
- (e) for classes other than Classes 2 (except UN 2037, UN 3478 and UN 3479) and 9, the total net quantity per package does not exceed the value of 1, where "Q" is calculated using the formula:

$$Q = \frac{n_1}{M_1} + \frac{n_2}{M_2} + \frac{n_3}{M_3} \dots$$

where n_1 , n_2 etc. are the net quantities per package of the different dangerous goods and M_1 , M_2 etc. are the maximum net quantities per package for these different dangerous goods according to Subsection 4.2—List of Dangerous Goods, for the relevant "Y" Packing Instructions; and

- (f) for Classes 2 (except UN 2037, UN 3478 and UN 3479) and 9:
 - when packed together without goods of other classes, the gross weight of the package must not exceed 30 kg; or
 - when packed together with goods of other classes, the gross weight of the package must not exceed 30 kg and the total net quantity in the package of goods other than in Classes 2 (except UN 2037, UN 3478 and UN 3479) or 9 does not exceed the value of 1 when calculated according to the "Q" formula above;
- (g) 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;
- (h) for different dangerous goods in one outer packaging consisting only those with the same UN number, packing group and physical state (i.e. solid or liquid), the calculation of the "Q" value is not required.

However, the total net quantity in the package must not exceed the maximum net quantity according to Column H of Subsection 4.2–List of Dangerous Goods.

Notes:

1. *The calculated "Q" value must be rounded up to the first decimal place and entered on the Shipper's Declaration (see 8.1.6.9.2(g)).*
2. *UN 3316 is not permitted in the same outer packaging with other dangerous goods (see PI Y960).*

2.7.6 Package Performance Test

2.7.6.1 Drop Test: The package as prepared for transport, must be capable of withstanding a 1.2 m drop test onto a rigid, non-resilient, flat, horizontal surface, in a position most likely to cause the most damage. After the test, the outer package must not show any damage, which is likely to affect safety during transport and there must be no leakage from the inner packaging(s).

2.7.6.2 Stacking Test: 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).

2.7.7 Marking and Labelling

2.7.7.1 All packages shipped under the provisions of Subsection 2.7 must meet the relevant marking and labelling requirements of Section 7.

2.7.7.2 Packages of dangerous goods shipped under the limited quantity provisions must bear the marking shown in Figure 7.1.A (see 7.1.5.3).

2.7.8 Documentation

2.7.8.1 All packages shipped under the provisions of Subsection 2.7 must meet the relevant documentation requirements of Section 8.

2.7.9 Handling

All packages shipped under the provisions of Subsection 2.7 must meet the relevant handling requirements of Section 9.

2.8 State and Operator Variations

2.8.0 General

2.8.0.1 States and operators may submit variations to these Regulations. These variations are listed in 2.8.2 and 2.8.4 respectively.

2.8.0.2 Variations against commodities in the List of Dangerous Goods are referenced in the appropriate packing instruction. Variations related to the text of these Regulations are referenced under the subsection heading.

2.8.0.3 Although every effort is made to keep these references current, the shipper is advised to check for applicable variations under the appropriate State(s) listing in 2.8.2 and operator(s) listing in 2.8.4.

2.8.1 State Variations

2.8.1.1 Status

2.8.1.1.1 State variations that have been notified to ICAO or IATA as of the time of printing are given in 2.8.2.

2.8.1.1.2 Where such variations are more restrictive than the provisions contained in these Regulations, they apply to the transport of dangerous goods by air:

- to, from or through all territory subject to the sovereignty of the notifying State by all operators; and
- outside the territory of the notifying State to all operators for whom the notifying State is the State of the operator.

2.8.1.1.3 Where such variations are less restrictive than the provisions contained in these Regulations, 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.

2.8.1.1.4 Where appropriate, IATA has included variations for States which have filed variations against Annex 18 but have not filed equivalent variations against the *ICAO Technical Instructions*.

2.8.1.2 Format

State variations are identified by a three-letter group, the last letter of which is always "G" (Government), followed by a two-digit group in strict numerical sequence, starting with "01", e.g. "AUG-01".

2.8.1.3 List

The following States have variations on file:

State	Code
Australia	AUG
Bahrain	BHG
Belgium	BEG
Brazil	BRG
Brunei Darussalam	BNG
Canada	CAG
China	CNG
Croatia	HRG
Democratic People's Republic of Korea	KPG
Denmark	DKG
Egypt	EGG
Fiji	DQG
France	FRG
Germany	DEG
Hong Kong	HKG

State	Code		
India	ING	Class 7 - Radioactive material requiring prior approval (10.8.3.9.4, 10.10.2)	AEG-07, AUG-02, BEG-04, BHG-02, BRG-08, CAG-01/03/04, CHG-03, DEG-01/02/03, DKG-01, DQG-01, EGG-02, FRG-04, GBG-06, HRG-04, ING-02, IRG-01/04, ITG-02, JPG-08, KGG-01, LUG-01, MYG-02, NLG-03, RUG-03, SAG-04, TRG-02, UKG-01, USG-10
Iran	IRG		
Italy	ITG		
Jamaica	JMG		
Japan	JPG		
Kyrgyz Republic	KGG		
Luxembourg	LUG		
Macao	MOG	Dangerous goods requiring approval under Special provision(s) (1.2.5, 8.1.6.9.4 and 8.3)	AUG-01, BRG-04, CAG-07/08, GBG-03, HRG-03, IRG-03, JMG-01, KPG-02, NLG-01/04, MYG-01, USG-03, ZAG-01
Malaysia	MYG		
Netherlands	NLG		
Oman	OMG		
Pakistan	PKG	Emergency telephone number (24 hrs) required on Shipper's Declaration Form (8.1.6.11, 9.5.1, and 10.8.3.11)	AEG-05, CAG-15, JMG-03, USG-12, VCG-07, ZAG-03
Poland	PLG		
Romania	ROG		
Russian Federation	RUG		
Saudi Arabia	SAG	Operators must obtain prior approval to transport dangerous goods (9.1.2)	BEG-05, CNG-01, GBG-02, HKG-01, HRG-02, MOG-01, MYG-01, NLG-06, OMG-01, ROG-01/02, SGG-01/02, VCG-01
Singapore	SGG		
South Africa	ZAG		
Spain	ESG		
Sri Lanka	VCG		
Switzerland	CHG		
Turkey	TRG		
Ukraine	UKG		
United Arab Emirates	AEG		
United Kingdom	GBG		
United States	USG		
Vanuatu	VUG		

2.8.1.4 Summary

The table below identifies a number of common state restrictions and the specific state variations to which they apply.

State Restrictions	State Variations
Accident and incident reporting requirements (9.6)	AUG-04, CAG-19, FRG-05, GBG-04, MYG-05, USG-13, VUG-04
Class 1 - Explosives (arms and ammunitions) requiring prior approval (3.1, 8.1.6.9.4 and 8.3)	AEG-09, BEG-02/03, BHG-03, DKG-02, DQG-02, EGG-01, GBG-01 (<i>imports must be classified by authorities</i>), HRG-05, ING-03, ITG-05, KGG-02, MYG-03, SAG-04, TRG-02, USG-05

2.8.2 List of State Variations

The variations are listed in alpha-numeric order according to the code assigned.

AEG (United Arab Emirates)

AEG-01 Transportation of dangerous goods to, from or within the UAE must be subject to compliance with the provisions of these Regulations and the UAE Civil Aviation Regulations. Request for obtaining a copy of the UAE Civil Aviation Regulations can be applied online using the GCAA official website, i.e. www.gcaa.ae.

AEG-02 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 pre-requisite for GCAA to approve the dangerous goods freight forwarder application or to renew their certificate. Ground handling agents shall only accept dangerous goods from GCAA certified cargo agents or freight forwarders by trained and qualified dangerous goods acceptance staff, according to Table 1.5.A of these Regulations.

AEG-03 The request to carry dangerous goods under Special Provisions A1, A2, or other State exemptions or approvals by the competent authority shall be submitted to the Safety & Security Section, Department of Security

& Infrastructure GCAA, at least five working days before planned flight. The address and contact details as follow:

Safety & Security Section
 Department of Security & Infrastructure
 PO Box 6558
 Abu Dhabi
 United Arab Emirates
 Fax: +971 2 405 4461
 Fax: +971 4 211 1502
 E-mail: dangerous.goods@gcaa.ae

AEG-04 The operator must be responsible to coordinate with the shipper and consignee to return any remaining unclaimed, damaged and/or leaking dangerous goods to the State of Origin whenever instructed to do so by GCAA.

AEG-05 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 for Dangerous Goods) required by these Regulations 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:

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.

(see 8.1.6.11, 9.5.1, and 10.8.3.11).

AEG-06 The dangerous goods acceptance checklist must reflect applicable requirements contained in the latest ICAO Technical Instructions and IATA Dangerous Goods Regulations.

Editorial Note:

The IATA Dangerous Goods Regulations are fully in compliance with ICAO Annex 18 and its associated Technical Instructions.

⚠ AEG-07 An import export and/or transit permit(s) must be obtained from the Radiation Safety Department of the UAE Federal Authority for Nuclear Regulation (FANR) before forwarding radioactive material to, from and via the UAE. The contact details of the Department of Radiation Protection & Control within the UAE is as follows:

Federal Authority for Nuclear Regulation (FANR)
 PO Box 112021
 Abu Dhabi
 United Arab Emirates
 Tel: +971 2 651 6644
 Fax: +971 2 651 6661
 Website: www.fanr.gov.ae

AEG-08 Air operator(s) may carry dangerous goods to, from and via UAE provided the operator(s) is approved to transport dangerous goods by the Civil Aviation Authority of its State of Origin.

AEG-09 The UAE destined and transshipment of arms and ammunitions and explosives and all other Class 1 dangerous goods require permission from the Ministry of Interior (minimum 48 hours pre-alert notification required, before forwarding the shipment). Arms and ammunition may not be imported except with a license obtained from the UAE Ministry of Defence, before forwarding the shipment.

AUG (Australia)

The Australian national authority for Annex 18 and competent authority for these Regulations is the:

Civil Aviation Safety Authority (CASA)
 GPO Box 2005
 Canberra
 ACT 2601
 AUSTRALIA
 Tel: +61 131757
 Fax: +61 2 6217 1300
 E-mail: dg@casa.gov.au
 Website: www.casa.gov.au/dg/index.htm

AUG-01 Dangerous goods requiring approval under Special Provisions A1 or A2 (see Subsection 4.2, Column M) may only be carried on a passenger or cargo aircraft in Australian territory with the approval of the Civil Aviation Safety Authority (CASA). Applications for approval should be lodged with CASA at least ten days prior to the proposed flight (**see 1.2.5, 8.1.6.9.4 and 8.3**).

AUG-02 Import and/or export of radioactive material to Australia

A permit is required to import or export radioactive materials and can be obtained on application to the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA). There are two categories of import permit available; one applies to medical radioisotopes, the other to non-medical radioisotopes. It is prohibited to import radioactive waste to Australia.

Further information and applications forms are available on the ARPANSA web site at: <http://www.arpansa.gov.au>

Applications and inquiries can be made to:

Import/Export Permits Officer - ARPANSA
 PO Box 655
 Miranda
 NSW 1490
 AUSTRALIA
 Tel: +61 2 9541 8333
 Fax: +61 2 9541 8314
 E-mail: info@arpansa.gov.au

AUG-03 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
Tel: +61 2 6272 3933
Fax: +61 (2) 6272 3933
Website: <http://www.aqis.gov.au>

(see 1.2.8, 3.6.2, 8.1.6.9.4, 8.3 and 9.1.2).

AUG-04 For the purposes of compliance with 9.6.3, 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.

AUG-05 Where a package(s) of dangerous goods is permitted by these Regulations for carriage on both a passenger and cargo aircraft and the package(s) has affixed the "Cargo Aircraft Only" label in accordance with a State Variation(s) (e.g. USG-02, USG-10, USG-13, etc.) then the package(s) may be transported on both passenger and cargo aircraft within Australia beyond the first port of unloading of the package(s) in Australia, but in these circumstances the "Cargo Aircraft Only" label must be removed. The "Cargo Aircraft Only" label may be removed by the operator, the shipper or an agent of the operator or shipper. The shipper must provide the appropriate dangerous goods transport document with the package(s) and, where applicable, an air waybill (or consignment note), prepared in accordance with these Regulations for transport of the package on both a passenger and cargo aircraft within Australia. When following the provisions of AUG-05, the operator must complete a dangerous goods acceptance check in accordance with 9.1.3 prior to further transport of the package(s) aboard an aircraft within Australia.

BEG (Belgium)

BEG-01 According to the Belgian regulations any substance likely to be used for its explosive, deflagrating or pyrotechnic properties is considered as an explosive substance (see Subsection 3.1 and Appendix A).

BEG-02 No transport by air of any explosives 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:

Ministère des Affaires Economiques
Service des Explosifs
Koning Albert II-laan 16
1000 Brussels
BELGIUM
Tel: +32 (2) 206 4111
Fax: +32 (2) 206 5752

The authorization for transport to which reference is made above is furthermore subject to the agreement of:

Belgian Civil Aviation Administration
Ministry of Communications and Infrastructure
CNN
Rue du Progrès 80
1030 Brussels
BELGIUM
Tel: +32 (2) 206 3211
Fax: +32 (2) 206 3290

These various provisions are issued by the Belgian authority for regulation of explosives (*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 overland, any transport that is authorized only case-by-case is subject to prior application specifying the complete itinerary, including the land portion (see 1.2.8, 3.1, 8.1.6.9.4 and 8.3).

BEG-03 The following substances are defined as "Explosive Substances" and are subject to the conditions of Variation BEG-02 (see Packing Instructions [-] listed after each substance):

UN Number—Description

UN 1204—**Nitroglycerin solution in alcohol** with 1% or less nitroglycerin [Y341, 371]

UN 1310—**Ammonium picrate, wetted** with not less than 10% water, by weight [451]

UN 1320—**Dinitrophenol, wetted** with not less than 15% water, by weight [451]

UN 1321—**Dinitrophenolates, wetted** with not less than 15% water, by weight [451]

UN 1322—**Dinitroresorcinol, wetted** with not less than 15% water, by weight [451]

UN 1336—**Nitroguanidine, wetted** with 20% or more water, by weight [451]

UN 1336—**Picrite, wetted** with 20% or more water, by weight [451]

UN 1337—**Nitrostarch, wetted** with 20% or more water, by weight [451]

UN 1344—**Picric acid, wetted** with 30% or more water, by weight [451]

- UN 1344—**Trinitrophenol, wetted** with 30% or more water, by weight [451]
- UN 1347—**Silver picrate, wetted** with 30% or more water, by weight [—]
- UN 1348—**Sodium dinitro-o-cresolate, wetted** with 15% or more water, by weight [451]
- UN 1349—**Sodium picramate, wetted** with 20% or more water, by weight [451]
- UN 1354—**Trinitrobenzene, wetted** with 30% or more water, by weight [451]
- UN 1355—**Trinitrobenzoic acid, wetted** with 30% or more water, by weight [451]
- UN 1356—**Trinitrotoluene, wetted** with 30% or more water, by weight [451]
- UN 1357—**Urea nitrate, wetted** with 20% or more water, by weight [451]
- UN 1517—**Zirconium picramate, wetted** with 20% or more water, by weight [451]
- UN 1571—**Barium azide, wetted** with not less than 50% water, by weight [451]
- UN 2059—**Nitrocellulose solution, flammable** with 12.6% or less nitrogen, by dry weight, and 55% or less nitrocellulose [351, 361, Y341, 353, 364, Y344, 355, 366]
- UN 2555—**Nitrocellulose with water** 25% or more water, by weight [452, 453]
- UN 2556—**Nitrocellulose with alcohol** 25% or more alcohol by weight and 12.6% or less nitrogen, by dry weight [452, 453]
- UN 2557—**Nitrocellulose mixture without plasticizer, without pigment** with 12.6% or less nitrogen, by dry weight [452, 453]
- UN 2557—**Nitrocellulose mixture without plasticizer, with pigment** with 12.6% or less nitrogen, by dry weight [452, 453]
- UN 2557—**Nitrocellulose mixture with plasticizer, without pigment** with 12.6% or less nitrogen, by dry weight [452, 453]
- UN 2557—**Nitrocellulose mixture with plasticizer, with pigment** with 12.6% or less nitrogen, by dry weight [452, 453]
- UN 2852—**Dipicryl sulphide, wetted** with not less than 10% water, by weight [451]
- UN 2907—**Isosorlide dinitrate mixture** with 60% or more lactose, mannose, starch or calcium hydrogen phosphate [Y441, 445, 448]
- UN 3064—**Nitroglycerin solution in alcohol** with 5% or less but more than 1% nitroglycerin [371]
- UN 3268—**Air bag inflators, Air bag modules or Seat belt pretensioners** [961]
- UN 3317—**2-Amino-4,6-dinitrophenol, wetted** with 20% or more water by mass [451]
- UN 3319—**Nitroglycerin mixture, desensitized, solid, n.o.s.★** with more than 2% but not more than 10% nitroglycerin by weight [499]
- UN 3343—**Nitroglycerin mixture, desensitized, liquid, flammable, n.o.s.★** with not more than 30% nitroglycerin, by weight [—]
- UN 3344—**Pentaerythrite tetranitrate mixture, desensitized, solid, n.o.s.★** with more than 10% but not more than 20% PETN by weight [—]
- UN 3357—**Nitroglycerin mixture, desensitized, liquid, n.o.s.★** with not more than 30% nitroglycerin, by weight [—]
- UN 3364—**Picric acid, wetted** with 10% or more water, by weight [451]
- UN 3364—**Trinitrophenol, wetted** with 10% or more water, by weight [451]
- UN 3365—**Picryl chloride, wetted** with 10% or more water, by weight [451]
- UN 3365—**Trinitrochlorobenzene, wetted** with 10% or more water, by weight [451]
- UN 3366—**TNT, wetted** with 10% or more but less than 30% water, by weight [451]
- UN 3366—**Trinitrotoluene, wetted** with 10% or more but less than 30% water, by weight [451]
- UN 3367—**Trinitrobenzene, wetted** with 10% or more but less than 30% water, by weight [451]
- UN 3368—**Trinitrobenzoic acid, wetted** with 10% or more but less than 30% water, by weight [451]
- UN 3369—**Sodium dinitro-o-cresolate, wetted** with 10% or more but less than 15% water, by weight [451]
- UN 3370—**Urea nitrate, wetted** with 10% or more but less than 20% water, by weight [451]
- UN 3379—**Desensitized explosive, liquid, n.o.s.★** [—]
- UN 3380—**Desensitized explosive, solid, n.o.s.★** [—]
- UN 3474—**1-Hydroxybenzotriazole anhydrous** [451]

BEG-04 Prior authorization is required from:

Federal Agency for Nuclear Control
Ravensteinstraat 36
1000 Brussels
BELGIUM
Tel: +32 (2) 289 2111
Fax: +32 (2) 289 2112
E-mail: info@fanc.fgov.be

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 Dangers of Ionizing Radiations (Royal Decree of 20 July 2001)*. Authorization is furthermore subject to the agreement of the:

Belgian Civil Aviation Administration
Ministry of Communications and Infrastructure
CNN
Rue du Progrès 80
1030 Brussels
BELGIUM

The carriage by aircraft over the territory of the Kingdom of Belgium of:

1. Fissile radioactive material as defined in 10.3.7.1 in quantities exceeding the limits set out in 10.3.7.2; and
2. Radioactive material
 - in a Type B(U) package containing more than 3,000 A₁ or 3,000 A₂ or 1,000 TBq, whichever is the lower; or
 - in a Type B(M) package; or
 - in a Type C package containing more than 3,000 A₁ or 3,000 A₂ or 1,000 TBq, whichever is the lower; or
 - transported under special arrangement;

Shall not be accepted without prior permission by the Belgian Civil Aviation Administration.

(see 10.8.3.9.4, 10.10.2.1 through 10.10.2.3).

BEG-05 The following requirements apply to aircraft registered:

- (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 these Regulations. Application for a general or special authorisation must be submitted to:

Belgian Civil Aviation Administration
Operations Department—Dangerous Goods
CNN—2nd Floor
Rue du Progrès 80
B-1030 Brussels
BELGIUM
Tel: +32 (2) 277 43 58
Fax: +32 (2) 277 42 57
E-mail: koenraad.clerbout@mobilis.fgov.be

This variation does not apply to:

- (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 these Regulations, to dangerous goods in the case of overflight of the Belgian territory by foreign operators, provided the operator has a permission from its State of Registry to carry dangerous goods in accordance with the provisions of these Regulations;

- (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 Regulations. All other requirements of these Regulations concerning the transport of Dry Ice remain applicable.

(see 1.2.8 and 8.1.6.9.4).

BHG (Bahrain)

△ **BHG-01** The Kingdom of Bahrain legislation requires that the transportation of all classes of dangerous goods is done in accordance with instructions contained in these regulations and CAA Publication CAP 01 (Aeronautical Information Publication, Bahrain Flight Information Region also refers) (see Subsections 1.2 and 1.3).

BHG-02 The Kingdom of Bahrain legislation expressly forbids the transport of the following items by aircraft, except with the prior permission from Civil Aviation Affairs and in accordance with the conditions mentioned in this permission:

- (a) weapons and munitions;
- (b) explosives, unless required on board the aircraft for its operation, or for signalling;
- (c) poisonous gases;
- (d) germs;
- (e) radioactive material, radioisotopes and similar substances;
- (f) any other prohibited item as determined by the competent authority.

BHG-03 The transportation of arms, ammunition and all classes of explosives from/to/through Bahrain requires prior permission to be obtained from the Ministry of the Interior (MOI) and Civil Aviation Affairs (CAA) of the Kingdom of Bahrain.

△ Application forms can be obtained from:

Aeronautical Licensing Directorate
Civil Aviation Affairs
PO Box 586
KINGDOM OF BAHRAIN
Tel: +973 1732 1091
Fax: +973 1732 9968
E-mail: Aerolicensing@caa.gov.bh
Telex: 9186 AIRCIV BN

BNG (Brunei Darussalam)

BNG-01 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 (see 7.1.3, 8.1, 8.2 and 10.8.8).

BRG (Brazil)

BRG-01 The Brazilian National Authority for Annex 18 and competent authority for these Regulations is the:

Agência Nacional de Aviação Civil (ANAC)
 Superintendência de Segurança Operacional—SSO
 Gerência Técnica de Artigos Perigosos—GTAP
 Av. Presidente Vargas 850–12º andar
 Cep.: 20.071-001 Centro
 Rio de Janeiro
 BRAZIL
 Tel: +55 21 3501 5526
 E-mail: artigo.perigoso@anac.gov.br

BRG-02 Transportation of dangerous goods to, from or within Brazil must be subject to compliance with the provisions of these Regulations and the Brazilian Civil Aviation Regulations. A copy of all National Regulations can be obtained on the website: www.anac.gov.br/cargaarea.

BRG-03 Air operators transporting dangerous goods must submit a monthly report of all dangerous goods transported from or within Brazil by the tenth working day of the following month. Further information and a report template are available on the website: www.anac.gov.br/cargaarea.

BRG-04 Dangerous goods requiring exemption or approval under these Regulations may only be carried on a passenger or cargo aircraft to, from or within Brazil with the approval of the National Civil Aviation Agency (ANAC). The request must be submitted at least fifteen days before the proposed flight for approvals and sixty days for exemptions. Further information and a request form may be obtained on the website: www.anac.gov.br/cargaarea or by e-mail: artigo.perigoso@anac.gov.br

BRG-05 For the carriage of dangerous goods originated in Brazil the template of the Shipper's Declaration for Dangerous Goods provided in IS-175-001 must be used. An open form instead of the column form may be used provided all the information is given on the Shipper's Declaration for Dangerous Goods. In addition, electronic data is allowed provided it can be reproduced in a printed format if requested by the Brazilian Authority.

Note:

The format of the Shipper's Declaration for Dangerous goods shown in Figure 8.1.A and Figure 8.1.B comply with these requirements.

BRG-06 For all domestic transport in Brazilian territory, the Portuguese or English languages are allowed for dangerous goods markings and transport documents, except the proper shipping name must be in English. For international transport involving Brazilian territory, English must be used for all dangerous goods markings and transport documents in addition to the languages required by the States concerned. The information on the transport document may be shown in Portuguese in addition to the information shown in English.

BRG-07 National legislation in Brazil specifies that training requirements are described in Supplementary Instruction IS-175-002. All employees working in Brazilian territory must be trained according to this instruction. A

copy can be obtained on the website: www.anac.gov.br/cargaarea.

▲ **BRG-08** Transportation of radioactive material from or within Brazil must be subjected to approval by the National Commission for Nuclear Energy (CNEN):

CNEN - Transport Safety Service
 Rua General Severiano, 90/401
 Postal Code: 22.290-900
 BRAZIL
 Tel: +55 21 2173 2308
 E-mail: nbruno@cnen.gov.br
 Website: www.cnen.gov.br

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2.8

CAG (Canada)

Any request concerning the applicability of variations CAG-01, CAG-02, CAG-03 or CAG-04 must be addressed to:

Canadian Nuclear Safety Commission
 Transport Licensing and Strategic Support Division
 Directorate of Nuclear Substance Regulation
 PO Box 1046—Station B
 280 Slater Street
 Ottawa
 Ontario
 CANADA
 K1P 5S9
 Tel: Toll free, Canada only: 1 800 668 5284
 +1 613 995 5894
 Fax: +1 (613) 995 5086
 E-mail: transport@cnsc-ccsn.gc.ca

▲ **CAG-01** Fissile radioactive material in any quantity may not be transported by aircraft to, from or over Canada without prior permission (**see 10.5.13, 10.8.3.9.4 and 10.10.2**).

▲ **CAG-02** "Type IP-1" and "Type IP-2" as prescribed in 10.5.9.9 for LSA material and SCO "not under exclusive use" shall be replaced with "Type IP-3".

▲ **CAG-03** Type B(U) radioactive material package designs must be approved by the Canadian Nuclear Safety Commission (**see 10.5.11, 10.8.3.9.4 and 10.10.2**).

▲ **CAG-04** 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.

CAG-05 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 **Subsection 2.4** of these Regulations.

CAG-06 The transportation by air of dangerous goods to, from or within Canada is subject to the provisions of the *Canadian 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*: www.tc.gc.ca/eng/tdg/clear-tofc-211.htm

Editorial Note:

The IATA Dangerous Goods Regulations are fully in compliance with ICAO Annex 18 and its associated Technical Instructions.

CAG-07 Dangerous goods requiring approval under Special Provisions A1 or A2 of the Technical Instructions (see Subsection 4.2, Column M) 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 (**see 1.2.5, 8.1.6.9.4 and 8.3**).

The Canadian authority for the air transport of dangerous goods for CAG-07:

Chief, Airspace Standards and Procedures
Transport Canada
Civil Aviation Directorate
Ottawa
Ontario
CANADA
K1A 0N8
Tel: +1 (613) 998 9855
Fax: +1 (613) 954 1602
E-mail: services@tc.gc.ca

CAG-08 Not used.

▲ CAG-09 Radioactive materials as defined in 10.3.1 are not accepted in the mail by Canada Post (**see 2.4 and 10.2.2**).

CAG-10 The entry of infectious substances affecting animals, UN 2900, into Canada 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:

Office of Biohazard Containment and Safety Science
Branch
Canadian Food Inspection Agency (CFIA)
59 Camelot Drive
Ottawa
Ontario
CANADA
K1A 0Y9
Tel: +1 (613) 221 7068
Fax: +1 (613) 228 6129
E-mail: importzoopath@inspection.gc.ca
Website: www.inspection.gc.ca/english/animal-health.shtml

CAG-11 The entry of infectious substances affecting humans, UN 2814, into Canada is subject to the requirements of the Human Pathogens Importation Regulations (SOR/94-558) and prior approval from 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
Tel: +1 (613) 957 1779
Fax: +1 (613) 941 0596
Website: www.phac-aspc.gc.ca/ols-bsl/index.html

CAG-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 materials.

(A “large means of containment” is defined in the Canadian *Transportation of Dangerous Goods Regulations* as a means of containment with a capacity greater than 450 L (450 L is equivalent to 0.45 m³ or 15.9 ft³)).

CAG-13 Section 2.43 of the Canadian Transportation of Dangerous Goods Regulations establish the Canadian classification criteria for miscellaneous products, substances or organisms that may not be listed as dangerous goods in these Regulations but are a marine pollutant and an environmentally hazardous substance.

CAG-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.)

Editorial Note:

For international transport, the Shipper's Declaration must be in English.

CAG-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.) (**see 8.1.6.11, 9.5.1, and 10.8.3.11**).

Notes:

1. The terms “24-Hour Number” and “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 when the dangerous goods are in transport.
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.

CAG-16 The consignor or his/her representative must include on the transport document the:

- Reference Number preceded by ERP or ERAP or PIU where the dangerous goods being transported require an Emergency Response Assistance Plan; and a
- Telephone number, including the area code, to immediately activate 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 ERAP 3-2021: 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.

CAG-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 was:

- (a) manufactured in accordance with CSA B339;
- (b) in use in Canada before January 1, 1993, was authorized for continued use under sections 7.32 and 8.4.2 of the "Transportation of Dangerous Goods Regulations" in effect on January 1, 2001, and the conditions in those sections are complied with;
- (c) manufactured before January 1, 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
5060 Spectrum Way, Suite 100
Mississauga
Ontario
CANADA
L4W 5N6

Tel: Phone, toll free, Canada and United States:
 +1 800 463 6727
 +1 416 747 4044
 Fax: +1 (416) 747 2510
 E-mail: sales@csa.ca

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2.8

CAG-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 that 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 the Member State. This document must be shown to an inspector upon request.

CAG-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 in 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*.

CAG-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.

Note:

The Shipper's Declaration for Dangerous Goods as shown in Figure 8.1.A and Figure 8.1.B meets the requirement of CAG-20.

CHG (Switzerland)

CHG-01 Not used.

△ **CHG-02** Not used.

▲ **CHG-03** 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, Fax: +41 (31) 322 83 83. For further information please contact the surveillance authority (SUVA, 6002 Lucerne, Switzerland, Telephone: +41 (41) 419 61 33, Fax: +41 (41) 419 62 13 (**10.8.3.9.4, 10.10.2**)).

▲ **CHG-04** Nuclear materials containing plutonium in any quantity must not be transported in the Swiss airspace.

Not considered as nuclear materials are any special fissile materials with a weight of up to 15 g.

CNG (China)

CNG-01 Operators wishing to carry dangerous goods in aircraft to, from or over China must obtain prior written permission from the Civil Aviation Administration of China. Further information may be obtained from:

Department of Air Transport
Civil Aviation Administration of China
155 Dongsi St. West
PO Box 644
Beijing
CHINA
Tel: +86 10 6409 1929
+86 10 6409 1918
Fax: +86 10 6409 1968

DEG (Germany)

DEG-01 Fissile materials 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 (Tel: +49 (5341) 886 0; Fax: +49 (5341) 885 705).

1. For the purpose of this variation fissile materials (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
 - (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 decree.

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 1,000 TBq.

DEG-02 Applications for approval of Type B packages, packages containing fissile materials, shipments, special arrangements and notifications should be addressed to:

Bundesamt für Strahlenschutz
Postfach 10 01 49
D-38201 Salzgitter
GERMANY
Tel: +49 (5341) 885 701
Fax: +49 (5341) 885 705

DEG-03 Applications for approval of Special Form radioactive material should be addressed to:

Bundesanstalt Für Materialforschung und Prüfung
Fachgruppe III.3
D-12200 Berlin
GERMANY
Tel: +49 (30) 8104 1330
Fax: +49 (30) 8104 1237

DEG-04 For exemptions to the Regulations, the following authority should be contacted for all classes:

Luftfahrt-Bundesamt, Gruppe Luftverkehrssicherheit
Sachgebiet Gefahrgut
Kelsterbacher Str. 23
D-65479 Rauhheim
GERMANY
Tel: +49 (6142) 94 610
Fax: +49 (6142) 946 159

DEG-05 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.

DKG (Denmark)

DKG-01 The carriage by aircraft to, from, through or over the Kingdom of Denmark including Greenland and the Faeroe Islands of:

- (a) Fissile radioactive material, as defined in **Appendix A** in quantities exceeding the limits set out in **10.5.13**; and
- (b) Radioactive material:
 - in a Type B(U) package containing more than 3,000 A₁ or 3,000 A₂ or 1,000 TBq, whichever is lower; or
 - in a Type B(M) package; or
 - in a Type C package containing more than 3,000 A₁ or 3,000 A₂, as appropriate, or 1,000 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
DENMARK
Tel: +45 4454 3454 (Monday–Friday 10:00–15:00)
Fax: +45 4454 3450
E-mail: sis@sis.dk

(see **10.3.7.2, 10.5.11, 10.5.12, 10.5.13, 10.10.2 and Appendix A**).

DKG-02 National legislation in Denmark specifies that aircraft in the territory over Denmark and Greenland must not, without prior permission from the Danish Transport Authority carry weapons, explosives, war equipment or munitions.

Explosives classified as Class 1.4S according to these Regulations can be carried without prior approval if they are packed and labeled in accordance with the current edition of these Regulations. Explosives must be transported in the cargo hold of the aircraft.

Written applications must be forwarded to:

Danish Transport Authority
Trafikstyrelsen
Edvard Thomsens Vej 14
2300 KBH S

Applications must be received by the Danish Transport Authority five working days before the actual flight.

DQG (Fiji)

▲ DQG-01 Radioactive material in any quantity must not be transported by aircraft to, from, within or over Fiji without prior permission of the Civil Aviation Authority of the Fiji Islands (CAAFI) (**see 10.8.3.9.4, 10.10.2**).

DQG-02 A person must not handle or offer for transport explosives classified as Class 1 according to these Regulations to, from, within or over Fiji without prior permission of CAAFI. This includes ammunition for sporting purposes, Division 1.4S.

DQG-03 Infectious substances, including diagnostic specimens or biological products are not permitted in air mail to, from, within or over Fiji (**see 2.4**).

DQG-04 English language must be used for marking, labelling and any form of dangerous goods documentation.

All questions and request for permission or approval must be lodged with CAAFI 10 days prior to the proposed flight. The correspondence should be addressed to:

The Civil Aviation Authority of the Fiji Islands
Private Mail Bag NAP 0354
Nadi Airport
Fiji Islands
Tel: +679 672 1555
Fax: +679 672 1500/672 5125

EGG (Arab Republic of Egypt)

EGG-01 The Transport of Dangerous Goods to, from, or through the ARE must comply with the following:

- (a)** The transport must be in accordance with these regulations.
- (b)** Prior approval is required for the transport of munitions of war, all explosives and radioactive Materials, except that intended for medical purposes, to the Arab Republic of Egypt.

▲ EGG-02 The importation of radioactive materials to the Arab Republic of Egypt is subject to prior permission from:

National Centre for Nuclear Safety and Radiation Control (NCNSRC)
3 Ahmed El-Zomor St.
PO Box 7551, 8th Sector
Nasr City
11762 Cairo
EGYPT
Tel: +20 (2) 2740 236 or 237 or 239

Atomic Energy Authority
3 Ahmad El-Zomor Street
PO Box 7551, 8th Sector
Nasr City
11762 Cairo
EGYPT
Tel: +20 (2) 2876 033; 2875 924
Fax: +20 (2) 2876 031

(**see 1.2.8, 10.8.3.9.4, 10.10.2**).

ESG (Spain)

ESG-01 In domestic transport and in international transport originating in Spain, Spanish shall be used in all the markings and on the Shippers Declaration for Dangerous Goods, in addition to the languages required by the States of transit and destination.

FRG (France)

△ FRG-01 The Competent Authority for France for the air carriage of dangerous goods is:

Direction Générale de l'Aviation Civile (DGAC)
Direction de la Sécurité de l'Aviation Civile
(DSAC)—Direction de la Navigabilité et des Opérations
(DSAC/NO)
50, rue Henri Farman
75720 PARIS CEDEX 15
FRANCE
Tel: +33 (0)1 58 09 44 80
Fax: +33 (0)1 58 09 45 52

For shipment and package design approval or approval of radioactive materials for civilian use, the competent authority is the Autorité de Sécurité Nucléaire (ASN), the address of which is listed in FRG-02.

▲ FRG-02 All questions relating to the transport by air of radioactive and fissile materials for civilian use should be directed, in accordance with the instructions contained in the variation concerned, to DGAC, ASN and DSC/COGIC:

Direction Générale de l'Aviation Civile (DGAC)
Direction de la Sécurité de l'Aviation Civile
(DSAC)—Direction de la Navigabilité et des Opérations
(DSAC/NO)
Mission Marchandises Dangereuses (DSAC/NO-MD)
50, rue Henri Farman
75720 PARIS CEDEX 15
FRANCE
Tel: +33 (0)1 58 09 49 70
Fax: +33 (0)1 58 09 45 52

Autorité de Sécurité Nucléaire (ASN)
Direction des activités Industrielles et du Transport
10, Route du panorama Robert Schuman
92266 FONTENAY AUX ROSES CEDEX
FRANCE
Tel: +33 (0)1 43 19 70 02
Fax: +33 (0)1 43 19 70 27

Direction de la Sécurité Civiles (DSC)
Centre Opérationnel de Gestion Interministérielle des
Crises (COGIC)
87-95 Quai du Docteur Dervaux
92600 ASNIERES
FRANCE
Tel: +33 (0)1 56 04 72 40
Fax: +33 (0)1 41 11 52 52

⚠ **FRG-03** The transport of the following radioactive materials by air to, from, through or over French territory is not permitted unless an approval has been obtained from the ASN:

1. For Special Form radioactive material, substances having an activity exceeding: 3,000 A₁ or 100,000 A₂ if this value is lower than 3,000 A₁.
2. For all other radioactive materials, substances having an activity exceeding 3,000 A₂.

Once the approval has been obtained, the shipment must be notified to the DGAC and to the DSC/COGIC at least 48 hours before the shipment (**see 1.2.5, 10.8.3.9.4, 10.10.2**).

⚠ **FRG-04** An aircraft whose internal surfaces have been contaminated by radioactive materials may be reused on French territory only after approval by an authorized expert. ASN 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.

⚠ **FRG-05** A written report on any incident/accident involving a package of Class 7 and occurring in the territory of France must be sent by the operator (or his representative) within 48 hours to the Autorité de Sécurité Nucléaire (ASN) (ASN, see FRG-02, with copy to the DGAC, and in full conformity with the guide on procedures for reporting events of radioactive material available on its website (www.asn.fr)).

These requirements also apply to French territories:

- at the airport ground handling agent acting on behalf of the operator;
- any entity responsible for the loading/unloading of dangerous goods;
- any entity responsible for the handling and storage of dangerous goods at the airport.

(**see Subsection 9.6**).

⚠ **FRG-06** Dangerous goods as described in these Regulations are not permitted for transport in air mail to, from or transiting through French territory.

This provision also applies to the items referred to in 2.4.2.

The transport of radioactive material appearing in 2.4.2(c) by national air mail, is conditional to the shipper obtaining an approval from the competent authority ASN (see FRG-03).

△ **FRG-07** Not used.

△ **FRG-08** Not used.

△ **FRG-09** Not used.

GBG (United Kingdom)

GBG-01 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.

GBG-02 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 the Technical Instructions. Application for permission should be made at least 10 working days before the date of the first flight on which dangerous goods are to be carried and should be submitted to:

Civil Aviation Authority
Dangerous Goods Office
1W, Aviation House
Gatwick Airport, South Area
Gatwick
West Sussex
UNITED KINGDOM
RH6 0YR
Tel: +44 (1293) 573 800
Fax: +44 (1293) 573 991
E-mail: dgo@caa.co.uk

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.

(**see Subsection 1.4 and 9.1.2**).

GBG-03 Not used

GBG-04 For the purposes of compliance with 9.6.3, 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
 UNITED KINGDOM
 RH6 0YR

Tel: +44 1293 573 800, for notifications Monday to Friday between the hours of 0900 and 1700 UK time, or +44 1293 567171, at all other times

This notification is in addition to and not instead of that required under Annex 13.

GBG-05 Biological substances, Category B (UN 3373) are not permitted in international mail either to or from the UK. 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 (**see 2.4**).

❖ **GBG-06** When any operator intends to overfly the United Kingdom carrying any package containing radioactive material with an activity greater than:

- (a) for special form 3,000 A₁ or 100,000 A₂, whichever is the lower; or
- (b) for all other radioactive material 3,000 A₂, it must notify the Dangerous Goods Office (contact details as in GBG-02) at least 2 working days before the expected date of the flight, providing the information required by 10.10.2.3.4, 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.

GBG-07 In accordance with 1.5.4, national regulations require the following dangerous goods training programmes to be subject to review and approval by the Civil Aviation Authority:

- operators of aircraft registered in the United Kingdom;
- non-United Kingdom operators that provide dangerous goods training to their own staff in order for them to carry out dangerous goods acceptance checks on behalf of other operators;
- handling agents that provide dangerous goods training to their own staff in order for them to carry out dangerous goods acceptance checks on behalf of operators; and
- companies that provide dangerous goods training to other companies employing categories of personnel identified in Table 1.5.A, columns 1, 2, 3 or 6.

Details of the approval requirements can be found in CAP 483, available free of charge from the following website: www.caa.co.uk/publications.

HKG (Hong Kong Special Administrative Region, China)

HKG-01 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 (**see Subsection 1.5**). Further information may be obtained from:

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
 Tel: +852 (2) 182 1233/1221
 Fax: +852 (2) 795 8469/2362 4257

HKG-02 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 (**see 6.0.4, 7.1.2, 7.1.3, 10.7.1.1, 10.7.2**).

HKG-03 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 (**see 3.1.5 and Subsection 5.1**).

□ HRG (Croatia)

HRG-01 The competent national authority in the Republic of Croatia for these Regulations is:

Croatian Civil Aviation Agency (CCAA)
 Ulica grada Vukovara 284
 10 000 Zagreb
 CROATIA
 Tel: +385 1 2369 300
 Fax: +385 1 2369 310
 E-mail: ccaa@ccaa.hr
 Website: www.ccaa.hr

HRG-02 The following requirements apply to aircraft registered:

- (a) in the Republic of Croatia no matter where they are operating;
- (b) in a State other than the Republic of Croatia 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 Republic of Croatia.

Aircraft may only carry dangerous goods with prior approval of the Croatian Civil Aviation Agency (CCAA). Carriage of such goods must be in compliance with the latest effective edition of these Regulations, including any addenda.

Operators, AOC holders, whose head office is located in the European Union and who are required to operate under and in accordance with Annex III to Regulation (EC) No. 3922/1991 (EU-OPS) do not require the approval of the Croatian Civil Aviation Agency, providing an approval granted by such a State is held.

HRG-03 Dangerous goods requiring approval under Special Provisions A1 or A2 of these Regulations or other State exemptions or approvals may only be carried on a passenger or cargo aircraft in Croatian territory with the approval of the Croatian Civil Aviation Agency (CCAA). Applications for approval should be lodged with the CCAA at least ten days prior to the proposed flight.

⚠ **HRG-04** According to the Act on Radiological and Nuclear Safety (Official Gazette No. 28/10), for transportation of radioactive materials to and from the Republic of Croatia, the operator must ensure that the consignor/consignee is in possession of a prior approval. Application for prior approval may be addressed to:

State Office for Radiological and Nuclear Safety (SORNS)
Frankopanska 11
10 000 Zagreb
CROATIA
Tel: +385 1 4881 770
Fax: +385 1 4881 780
E-mail: dznrs@dznrs.hr
Website: www.dznrs.hr

HRG-05 According to the Explosive Substances Act (Official Gazette No. 178/04, 109/07, 67/08 and 144/10), for transportation of explosives to and from the Republic of Croatia the operator must ensure that the consignor/consignee is in possession of a prior approval. Application for prior approval may be addressed to:

Ministry of Interior
Administrative and Inspection Authority
Ilica 335
10 000 Zagreb
CROATIA
Tel: +385 1 3788 646
Fax: +385 1 3788 187
E-mail: pitanja@mup.hr
Website: www.mup.hr

ING (India)

ING-01 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.

⚠ **ING-02** 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 made at the following address:

Atomic Energy Regulatory Board
Niyamak Bhavan, Anushakti Nagar
Radiological Safety Division,
Mumbai 400 094
INDIA

ING-03 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, is required. Application for such permission may be addressed to:

The Director General of Civil Aviation
Opposite Safdarjung Airport
Technical Centre
New Delhi 110003
INDIA
Tel: +91 (11) 2462 2495
Fax: +91 (11) 2462 9221

IRG (Islamic Republic of Iran)

⚠ **IRG-01** The importation of radioactive materials 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 sent to the following address:

Atomic Energy Organization of the Islamic Republic of Iran
Nuclear Safety and Radiation Protection Management
PO Box 14155-4494
Tehran
ISLAMIC REPUBLIC OF IRAN
Tel: +98 (21) 88221124
+98 (21) 82063574
Fax: +98 (21) 88221125
Telex: 213383 AEOI.IR

(see 1.2.5, 10.8.3.9.4, 10.10.2).

IRG-02 In addition to the application of the regulations described in Table 9.3.A, packages containing Divisions 6.1 from Class 8 and Divisions 4.1 from Divisions 4.3 must be segregated from each other (see 5.0.2.11 and 9.3.2.1.1).

IRG-03 Dangerous Goods which are principally forbidden for air transport and are subject to Special Provisions of A1 or A2 (see Subsection 4.2, Column M), may be imported to the IR of Iran subject to prior permission from Civil Aviation Organization of Iran (see 1.2.5, 8.1.6.9.4 and 8.3).

Application for permission should be made at least 15 days prior to the proposed flight date and must be addressed to:

Vice President, C.A.O of I.R. of Iran
Civil Aviation Organization
Deputy of Flight Standard
Mehrabad International Airport
PO Box 13445-1798
Tehran
ISLAMIC REPUBLIC OF IRAN
Fax: +98 (21) 66036552

▲ IRG-04 Fissile material in quantities exceeding quantities for fissile excepted shall not be transported by aircraft to, from, through I.R. of Iran without prior permission from:

Iran Nuclear Regulatory Authority (INRA)
End of North Kargar St.
Tehran
ISLAMIC REPUBLIC OF IRAN
PO Box 14155-1339
Tel: +98 (21) 88221073
Fax: +98 (21) 88221072
E-mail: INRA@aeoi.org.ir

(see 1.2.5, 10.5.13, 10.8.3.9.4, 10.10.2).

ITG (Italy)

▲ ITG-01 The transport by air of radioactive and fissile materials to/from/through Italian territory can be performed by authorized carriers only. Application for authorization can be made at the following address:

Ministero dello Sviluppo Economico
Dipartimento per l'Energia
Direzione Generale per l'Energia Nucleare, le Energie Rinnovabili e l'Efficienza Energetica
Divisione V—Attività afferenti la fonte primaria nucleare
Via Molise, 2
I-00187 Roma
ITALY
Tel: +39 06 4705 2705/2103
Fax: +39 064788 7976
E-mail:
dgerm.ufficio6trasporti@sviluppoeconomico.gov.it

(see Subsection 9.1).

▲ ITG-02 Prior approval is requested for shipments of:

- Type B(M) packages;
- Fissile packages; and
- Type B(U) packages containing radioactive materials with an activity greater than 3,000 A₁ or 3,000 A₂ as appropriate, or 1,000 TBq, whichever is the lower.

Beyond the approval, such shipments must be notified at least 48 hours in advance to ISPRA. Application for shipment approval and notification can be made at the following address:

Institute for Environmental Protection and Research (ISPRA)
Department of Nuclear, Technological and Industrial Risk
Radioactive Material Transport Division
Via Vitaliano Brancati 48
I-00144 Roma
ITALY
Tel: +39 06 5007 2978
Fax: +39 06 5007 2941
E-mail: trasporti@isprambiente.it

▲ ITG-03 Application for approval of special form radioactive material, Type B and Type C packages, packages containing fissile material should be addressed to ISPRA at the address shown in ITG-02.

▲ ITG-04 Further utilization of an aircraft having undergone radioactive contamination must be certified by a qualified expert and registered on the efficiency technical book (see 9.4.3.4).

ITG-05 The transport of arms, ammunitions and explosives to/from/through Italian territory must previously be authorized by:

Ente Nazionale per l'Aviazione Civile (ENAC)
Direzione Sviluppo Trasporto Aereo
Viale Castro Pretorio, 118
00185 Roma
ITALY
Tel: +39 06 4459 6226
Fax: +39 06 4459 6591
E-mail: sviluppo.trasportoaereo@enac.gov.it

(see 1.2.5, 5.1, 8.1.6.9.4 and 8.3).

ITG-06 Not used.

ITG-07 The transport of dangerous goods in portable tanks is subjected to a prior approval of the shipment by the Italian Competent Authority. Application for the approval, together with a safety analysis, must be made at the address shown in ITG-05.

JMG (Jamaica)

JMG-01 Applications for approval to transport dangerous goods under Special Provisions A1or A2 and exemption applications must be directed to:

The Director General
Jamaica Civil Aviation Authority
4 Winchester Road
Kingston 10
JAMAICA, WEST INDIES

JMG-02 On shipments to, from, within or transiting through Jamaica, emergency response information, as described in JMG-03, must be provided for all dangerous goods other than magnetized material and dangerous goods for which no Shipper's Declaration is required.

JMG-03 Emergency Response Information. The Shipper's Declaration for Dangerous Goods 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:

1. speaks English fluently;
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
4. has immediate access to a person who possesses such knowledge and information.

JMG-04 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.

Editorial Note:

The IATA Dangerous Goods Regulations are fully in compliance with ICAO Annex 18 and its associated Technical Instructions.

JPG (Japan)

JPG-01 Not used.

⚠ **JPG-02** 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 (see 10.5.14 and 10.5.17).

⚠ **JPG-03** "Excepted radioactive material" must not contain pyrophoric or explosive radioactive material (see 10.5.8).

JPG-04 Not used.

JPG-05 Not used.

JPG-06 Not used.

JPG-07 Not used.

⚠ **JPG-08** All the Type B(U) and Type B(M) packages and packages containing 0.1 kg or more of uranium hexafluoride require both package design approvals and shipment approvals of the appropriate authorities of Japan (see 10.5.11.2 and 10.5.11.3).

⚠ **JPG-09** The labels shall be affixed to two opposite sides of the outside of a unit load device (ULD) containing radioactive material (see 10.7.2).

⚠ **JPG-10** "Excepted radioactive material" must not be carried in the cabin or cockpit of an aircraft (see Subsection 9.3).

⚠ **JPG-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 (see 9.3.10).

⚠ **JPG-12** Handling and loading of radioactive material must be made in such manner that no person other than ground handling and loading staff can have access to the area (see 9.3.4).

JPG-13 Not used.

JPG-14 Not used.

JPG-15 Not used.

JPG-16 Not used.

⚠ **JPG-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 metre from the external surface (see 10.5.14 and 10.5.15).

JPG-18 Not used.

JPG-19 Not used.

JPG-20 The requirement set out in 5.0.2.13.3 must be applied also for combination packagings containing flammable liquids in inner packagings of 120 mL or less.

JPG-21 "Toxic" subsidiary risk label must be applied for all the substances with a subsidiary risk of Division 6.1 (see 7.2.3.7).

JPG-22 Not used.

⚠ **JPG-23** Radioactive material of Class 7 in excepted packages with an associated risk of another class specified in Subsection 2.6 must be subject to the provisions of 10.5.8 and to the Variations JPG-03 and JPG-09.

JPG-24 Any substance bearing the "Toxic (Poisonous)" 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.

JPG-25 Not used.

⚠ **JPG-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—3,000 A₁ or 100,000 A₂, whichever is the lower; or
2. for all other radioactive material—3,000 A₂.

KGG (Kyrgyz Republic)

⚠ **KGG-01** Radioactive material in any quantity may not be transported by aircraft to, from, within or over Kyrgyz Republic without prior permission of the Civil Aviation Authority of the Kyrgyz Republic (CAAKR).

KGG-02 A person must not handle or offer for transport explosives classified as Class 1 in these Regulations to, from, within or over Kyrgyz Republic without prior permission of the CAAKR.

KGG-03 All requests for permission or approval shall be lodged with CAAKR eight (8) days prior to the proposed flight, addressed to:

Civil Aviation Authority
Ministry of Transport and Communications
1, Ajibek Batyra St.
Bishkek, 720044
KYRGYZ REPUBLIC
Tel: +996 (312) 542 140, 542 141, 542 135
Fax: +996 (312) 542 140, 542 141, 542 135

KPG (Democratic People's Republic of Korea)

KPG-01 The Flight Safety Standard Department of General Administration of Civil Aviation of the Democratic People's Republic of Korea will be responsible for ensuring compliance with Annex 18 and the Technical Instructions in the Democratic People's Republic of Korea.

Fax: +850 2 381 4625
E-mail: gaca@sillibank.com

KPG-02 Dangerous goods requiring exemption or approval under Special Provisions A1 or A2 may be carried on a passenger aircraft or cargo aircraft

to/from/over the Democratic People's Republic of Korea only with the permission of the Flight Safety Standard Department. Applications for permission for this purpose should be submitted at least ten working days prior to the intended flight.

KPG-03 A dangerous goods incident or accident is to be notified to the Flight Safety Standard Department of General Administration of Civil Aviation as soon as practically available, but within five working days.

LUG (Luxembourg)

LUG-01 Under the Grand-ducal regulation of 14 December 2000 concerning the protection of the population against the dangers arising from ionizing radiation, as modified on 21 July 2006, each airline carrying radioactive material above exemption level (excepted packages, Type A, Type B, etc.) to and from the airport of Luxembourg shall be authorized to this effect by the Minister of Health. Information on the licensing procedure can be obtained at:

Division de la Radioprotection
 Villa Louvigny - Allée Marconi
 L-2120 Luxembourg
 Tel: +352 247 85 670
 E-mail: Radioprotection@ms.etat.lu
 Website: www.radioprotection.lu

MOG (Macao Special Administrative Region, China)

MOG-01 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, 18° andar
 Macao
 MACAO SAR CHINA
 Tel: +853 2833 8089
 Fax: +853 2851 1213

MYG (Malaysia)

MYG-01 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 (**see 1.2.8, 8.1.6.9.4 and 8.3**). Requests 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
 Tel: +60 3 8871 4000
 Fax: +60 3 8889 5691
 AFTN: WMKKYAYX

▲ MYG-02 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 (**see 10.8.3.9.4, 10.10.2**). 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
 MALAYSIA
 Tel: +60 3 8928 4100
 +60 3 8926 7699
 Fax: +60 3 8922 3685

MYG-03 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 (**see 1.2.5, 5.1, 8.1.6.9.4 and 8.3**).

MYG-04 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 (**see 9.5.1.3**).

MYG-05 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 (**see 9.6.1**).

MYG-06 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 (**see 7.1.3.3**).

NLG (Netherlands)

NLG-01 Dangerous goods requiring approval under Special Provisions A1 or A2 of these Regulations, 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 (**see 1.2.5, 8.1.6.9.4 and 8.3**).

- △ Application for all approvals should be made at least 10 days prior to the proposed flight date and must be submitted to:

Human Environment and Transport Inspectorate
(CAA—NL)
Ministry of Infrastructure and the Environment
Certification and Approvals Department
Postbus 575
2130 AN Hoofddorp
THE NETHERLANDS
Tel: +31 (70) 456 3003
+31 88 489 0000 (outside office hours)
Fax: +31 (70) 456 3030
E-mail: dgmelding@ilent.nl

- △ **NLG-02** Not used.

- ▲ **NLG-03** 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 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 concentration of 0.1%, 0.1% and 3% by mass respectively and exceeding the exemption limits of Table 10.3.D 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 10.3.D, 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 10.3.D 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:

Senter Novem
Team stralingsbescherming
PO Box 93144
2509 AC The Hague
THE NETHERLANDS
Tel: +31 (70) 373 5000
Fax: +31 (70) 373 5100

(see 10.8.3.9.4, 10.10.2).

NLG-04 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.

NLG-05 Not used.

- △ **NLG-06** 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 license to the operator and it will only be provided if the operator is in the possession of staff, which received training in accordance with the provisions in the Technical Instructions. Operators registered in the Netherlands and in a State other than the Netherlands which are required to operate under and in accordance with EU-OPS do not require permission of the Civil Aviation Authority of the Netherlands providing the permission granted by such a State is held.

Application for a dangerous goods license 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:

Human Environment and Transport Inspectorate
(CAA—NL)
Ministry of Infrastructure and the Environment
Certification and Approvals Department
Postbus 575
2130 AN Hoofddorp
THE NETHERLANDS
Tel: +31 (70) 456 3003
+31 88 489 0000 (outside office hours)
Fax: +31 (70) 456 3030
E-mail: dgmelding@ilent.nl

(see 1.4, 1.5, 1.2.8 and 8.1.6.9.4).

Editorial Note:

The IATA Dangerous Goods Regulations are fully in compliance with ICAO Annex 18 and its associated Technical Instructions.

OMG (Oman)

OMG-01 It is prohibited to transport dangerous goods to/from/over Oman except with the prior permission of the civil aviation authority after coordination with the competent authorities in accordance with the applicable rules and, in particular:

- (a) explosives, weapons and war ammunition;
(b) nuclear goods, radioactive isotopes, poisonous gases and related objects;

- (c) goods of dual use, like drugs;
- (d) germs and dangerous goods; and
- (e) any other goods requiring approval under Special Provision A1 or A2.

Application for approval should be made at least five days prior to the proposed flight date and must be submitted to:

Director Flight Safety
 Directorate General of Safety and Aviation Services
 Post Box 1 PC 111
 Muscat International Airport
 SULTANATE OF OMAN

PKG (Pakistan)

PKG-01 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 (see 7.1.3.3 and 10.7.1).

PKG-02 A brief text indicating the nature of the risk involved must appear in English on all hazard labels (see 7.2.2.3, 7.2.2.4 and 10.7.2).

PKG-03 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 (see 8.1.2.1 and 10.8.1.2).

PLG (Poland)

PLG-01 Transport of spent nuclear fuel or radioactive waste to, from, through or over the territory of Poland will 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 sent to:

President of Civil Aviation Office
 2 Flisa Street
 02-247 Warsaw
 POLAND

ROG (Romania)

ROG-01 In accordance with Romanian legislation, all flights within the Bucharest FIR of civil aircraft carrying cargo consisting of weapons, ammunition, explosives, radioactive materials and other materials classified and regulated as dangerous goods can be performed only after obtaining a permit from the Ministry of Transport and Infrastructure.

The application for the above-mentioned permit has to be registered with the Romanian Civil Aviation Authority at the following address:

Romanian Civil Aeronautical Authority (RCAA)
 Overflight Department
 Sos. Bucuresti-Ploiesti, Nr. 38-40
 Sector 1, Cod 013695
 Bucuresti
 ROMANIA
 Tel: +40 (21) 208 15 00
 Fax: +40 (21) 208 15 83
 AFTN: LRBBYRYR
 SITA: BUHTOYA
 E-mail: overflight@caa.ro

2

2.8

Romanian AIP section GEN 1.2 contains all details regarding the application form and other required specific documents.

In case the consignment contains radioactive materials, the air operator must provide to the Romanian Civil Aeronautical Authority a copy of the authorization issued by the National Commission for the Control of Nuclear Activities (CNCAN).

The contact information of the National Commission for the Control of the Nuclear Activity is as follows:

National Commission for the Control of the Nuclear Activity
 B-dul. Libertatii, Nr. 14, Sector 5
 Bucuresti
 ROMANIA
 Tel: +40 (21) 316 05 72
 Fax: +40 (21) 317 38 87

ROG-02 ROG-01 does not apply in cases of air carriers performing medical emergency flights and in cases of flights by air carriers detaining an operator license in accordance with EU Regulation No. 1008/2008 and which do not carry dangerous goods classified as:

- Class 1—all items;
- Class 3—only desensitized explosives UN 1204, UN 2059, UN 3064, UN 3343, UN 3357 and UN 3379;
- Class 6—only Division 6.2, Category A, UN 2814 and UN 2900;
- Class 7—all items.

Such carriers shall only notify the Romanian Civil Aviation Authority before starting the flight with the following information: proper shipping name, UN number, class or division, and quantity.

ROG-03 Civil aircraft involved in the carriage of dangerous goods that are forbidden for air transport under normal circumstances, in accordance with these Regulations, are not allowed to perform flights within the Romanian air space.

Waivers from the provisions may be granted by the Romanian Civil Aeronautical Authority only if the respective transport is justified by a major public interest. Such a waiver must be granted with the approval of the Minister of Transport and Infrastructure.

ROG-04 Not used.

RUG (Russian Federation)

RUG-01 For all domestic transports in the Russian Federation, the Russian language must be used for all dangerous goods markings and transport documents. For international transports originating in the Russian Federation, Russian and English must be used for dangerous goods markings and transport documents in addition to the languages required by the States of transit and destination.

RUG-02 An operator planning to transport high consequence dangerous goods indicated in 1.6.3.1 to, from, within or through the territory of the Russian Federation shall not accept such goods for transport without receiving confirmation from the airport (or from the ground handling agent) that such goods can be handled in the territory of the Russian Federation, as well as confirmation of the consignee's preparedness to accept such goods (if the goods are transported to the territory of the Russian Federation).

RUG-03 Fissile radioactive materials in any quantity shall not be accepted in the Russian Federation for carriage on passenger aircraft, and shall not be transported into the Russian Federation, from its territory or through its territory without prior permission from:

Federal Environmental, Technological and Atomic Supervisory Body (ROSTECHNADZOR)
Ul. Taganskaya, 34
109147 Moscow
RUSSIAN FEDERATION
Tel: +7 (495) 411 60 22
Fax: +7 (495) 261 60 43

This variation covers fissile radioactive materials and articles thereof, containing Uranium-233, Uranium-235, plutonium and other isotopes of transuranic elements (see 1.2.5, 3.7, 10.3, 10.8.3.9.4, 10.10.2).

SAG (Saudi Arabia)

SAG-01 The transport of alcoholic beverages for delivery to or through any destination in Saudi Arabia is forbidden (see 2.3.5.7).

SAG-02 The shipper of any dangerous goods by air shall 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 to any destination in Saudi Arabia.

SAG-03 Name, address and telephone number of consignee must be written in full on the Air Waybill for dangerous goods to any destination in Saudi Arabia.

SAG-04 Prior permit is required from the concerned government departments for the importation of the following:

(a) Munitions of war and explosives, furthermore require approval from:

General Authority of Civil Aviation
Safety & Economic Regulation
PO Box 887
Jeddah 21165
SAUDI ARABIA
Tel: (9662) 685 5522
Fax: (9662) 685 5224
E-mail: majamjoon@gaca.gov.sa

(b) Chemical products except for perfumery products, cosmetics and Dry Ice.

SAG-05 Radioactive materials final destination must be Jeddah, Riyadh or Dammam only except those intended for medical purposes may be imported to any point in Saudi Arabia unless purpose is reflected in the Shipper's declaration.

SAG-06 Name, address, and telephone number of consignee must be written in full on each package of dangerous goods shipments to any destination in Saudi Arabia.

SGG (Singapore)

SGG-01 In accordance with paragraph 50D of the Singapore Air Navigation Order, air operators wishing to carry dangerous goods into, transiting or out of Singapore must obtain a dangerous goods permit from the Civil Aviation Authority of Singapore (CAAS). Information and application forms for dangerous goods permits may be obtained from the CAAS website (www.caas.gov.sg). All applications are to be made on prescribed forms and addressed to:

Dangerous Goods Unit
Airworthiness/Flight Operations Division
Civil Aviation Authority of Singapore
PO Box 1
Singapore Changi Airport
SINGAPORE
918141
Tel: +65 6541 3487
Fax: +65 6545 6519
E-mail: caas_dangerousgoods@caas.gov.sg

SGG-02 Singapore Air Navigation Order (ANO) defines munitions of war (MOW) as "weapons and ammunition designed for use in warfare or against any person, including any part designed for such weapons and ammunition". MOW includes weapons (for sporting and non-sporting purposes) such as rifles, pistols and guns, and weapon components and parts. MOWs may themselves contain or are loaded with explosives, cartridges, charges, primers and ammunitions which are classified as dangerous goods in accordance with these Regulations.

Operators wishing to carry munitions of war by air into, transiting or out of Singapore must obtain a MOW permit and a dangerous goods permit in accordance with paragraphs 50C and 50D of the Air Navigation Order.

Information and application forms for MOW permits may be obtained from the CAAS website (www.caas.gov.sg). All applications are to be made on prescribed forms and addressed to:

Dangerous Goods Unit
 Airworthiness/Flight Operations Division
 Civil Aviation Authority of Singapore
 PO Box 1
 Singapore Changi Airport
 SINGAPORE
 918141
 Tel: +65 6541 3487
 Fax: +65 6545 6519
 E-mail: caas_dangerousgoods@caas.gov.sg

TRG (Turkey)

TRG-01 The Authority responsible for dangerous goods in Turkey is the Directorate General of Civil Aviation, one of the departments of the Ministry of Transportation:

Direktorate General of Civil Aviation
 Bosna Hersek Cad. (90.Sok) No: 5 6510 Emek
 Ankara
 TURKEY
 Tel: +90 312 212 7340
 Fax: +90 312 215 0962
 E-mail: dgr@shgm.gov.tr
 E-mail: hyalcin@shgm.gov.tr
 AFTN: LTAAYAAN
 Website: www.shgm.gov.tr

TRG-02 In the following cases applications for diplomatic transit and landing flights authorization must be made 10 working days before the planned flight:

- aircraft carrying explosives, weapons and ammunition;
- aircraft carrying army personnel and staff;
- aircraft carrying radioactive materials to/from Turkey.

UKG (Ukraine)

UKG-01 Any radioactive material shall not be accepted for carriage to, from or through Ukraine without prior permission by the State Nuclear Regulatory Committee of Ukraine and the State Service of Export Control of Ukraine. Any questions regarding this variation should be addressed to:

State Nuclear Regulatory Committee of Ukraine
 9/11 Arsenalna
 Kiev, 01011
 UKRAINE
 Tel: +380 (44) 254 34 51
 Fax: +380 (44) 254 33 11
 E-mail: sakalo@hq.ssrc.gov.ua

or

State Service of Export Control of Ukraine
 19/21 Frunze
 Kyiv, 04080
 UKRAINE
 Tel: +380 (44) 462 59 43
 Fax: +380 (44) 462 49 70
 E-mail: general@dsecu.gov.ua

(see 1.2.5, 3.7, 10.3, 10.8.3.9.4, 10.10.2).

USG (United States)

Editorial Note:

For the reader's information, the following explanation of terms found in USG Variations are offered:

"HAZARDOUS MATERIAL". *The U.S. Department of Transportation term for dangerous goods.*

"HAZARDOUS SUBSTANCE". *Any substance which, if spilled, would adversely affect the environment.*

"HAZARDOUS WASTE". *Any substance being disposed of which could adversely affect the environment.*

"OVERPACK". *An enclosure that is used by a single consignor to provide protection or convenience in handling of a package or to consolidate two or more packages.* (Ref. 49 CFR 171.8).

"REPORTABLE QUANTITY". *For a given substance, the minimum quantity that would adversely affect the environment significantly enough to warrant reporting. The requirement to report a spillage is indicated on the documentation and the package.*

USG-01 Transport of dangerous goods by air must be in accordance with *United States Regulations* (49 CFR Parts 171–180) or the *ICAO Technical Instructions* as limited by 49 CFR Part 171 Subpart C. The requirements of 49 CFR 175 apply to the offering, acceptance, and transportation of dangerous goods in commerce by aircraft to, from, or within the United States, and to any aircraft of United States' registry anywhere in air commerce. 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.

When the *ICAO Technical Instructions* are used for consignments of dangerous goods, failure to comply with the *ICAO Technical Instructions* and all relevant US variations is a violation of the United States Regulations.

Editorial Note:

The IATA Dangerous Goods Regulations are fully in compliance with ICAO Annex 18 and its associated Technical Instructions.

The appropriate national authority for the United States is:

Associate Administrator for Hazardous Materials Safety
 US Department of Transportation
 Pipeline and Hazardous Materials Safety Administration
 Washington
 DC
 USA
 20590-0001

English must be used for all required package markings and for the Shipper's Declaration for Dangerous Goods. Abbreviations may not be used unless they are specifically authorized by these Regulations or by Subpart D of 49 CFR 172 (see 7.1 and 8.1).

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 hazardous waste, the transport document must be retained for three years after the waste material is accepted by the initial operator.

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 +1 (800) 467 4922, +1 (202) 366 4488, or by e-mail to infocntr@dot.gov.

USG-02 In addition to the dangerous goods included in Subsection 4.2 (List of Dangerous Goods) with the word "Forbidden" shown in columns G/H, I/J and K/L and with no A1 or A2 Special Provision indicated, 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. Such batteries transported in accordance with Section I of Packing Instruction 968 must be labelled with the CARGO AIRCRAFT ONLY label. Such batteries transported in accordance with Section II of Packing Instruction 968 must be marked "PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" or "LITHIUM METAL BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT".

Primary (non-rechargeable) lithium metal batteries and cells contained in or packed with equipment (UN 3091) are forbidden for transportation aboard passenger-carrying aircraft unless:

1. the equipment and the batteries and cells are transported in accordance with Packing Instruction 969 or 970, as appropriate;
2. the package contains no more than the number of lithium metal batteries or cells necessary to power the intended piece of equipment;

3. the lithium content of each cell, when fully charged, is not more than 5 grams;
4. the aggregate lithium content of the anode of each battery, when fully charged, is not more than 25 grams; and
5. the net weight of lithium batteries does not exceed 5 kg (11 lb).

Primary (non-rechargeable) lithium metal batteries and cells contained in or packed with equipment (UN 3091) and transported in accordance with Section I of Packing Instruction 969 or 970 that do not conform to the above provisions are forbidden for transportation aboard passenger-carrying aircraft and must be labelled with the CARGO AIRCRAFT ONLY label.

Primary (non-rechargeable) lithium metal batteries and cells contained in or packed with equipment (UN 3091) and transported in accordance with Section II of Packing Instruction 969 or 970 that do not conform to the above provisions are forbidden for transportation aboard passenger-carrying aircraft and must be marked "PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" or "LITHIUM METAL BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT".

Notes:

1. Dangerous goods that are forbidden on passenger aircraft by 49 CFR 172.101 (Column 9A) are also forbidden on passenger aircraft even when these Regulations 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 these Regulations permit such carriage.
2. Dangerous goods not permitted for carriage by passengers or crew in checked or carry-on baggage by 49 CFR 175.10 are not permitted for such carriage even when authorized by 2.3 of these Regulations. For example, the carriage of avalanche rescue backpacks by passenger or crew (see 2.3.4.4) is not authorized.

USG-03 The following provisions apply to substances listed in Subsection 4.2—List of Dangerous Goods:

- (a) where A1 appears in Column M, 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 US (see USG-01);
- (b) where A2 appears in Column M, the substance may not be transported to, from, or within the United States aboard a cargo aircraft without the prior approval of the appropriate authority of the US (see USG-01);
- (c) prototype lithium batteries and cells transported in accordance with special provision A88 and organic peroxides and self-reactive substances that are not identified by 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 US (see USG-01);

USG-04 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 US carriers operating outside the US (see 1.3.1):

- (I) **Hazardous substances:** When a substance, including its mixtures and solutions, listed in the 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 the 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:

RQ Kilograms	Concentration by Weight	
	Percent	PPM
45.4	0.2	2,000.0
4.54	0.02	200.0
0.45	0.002	20.0

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 Regulations 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 materials in Class 7, the name of the hazardous substance shall be shown in parentheses, in association with the dangerous goods description on the Shipper's Declaration and in association with the proper shipping name on package marking; and
 2. the letters “RQ” shall be entered on the Shipper's Declaration 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 Regulations:
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 Regulations applying to the shipment of goods under this description;

2. the package must meet all applicable General Packing Requirements of Subsection 5.0 of these Regulations that would apply to dangerous goods of Packing Group III;
3. the letters “RQ” shall be entered on the Shipper's Declaration 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 Shipper's Declaration 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 Regulations 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 Shipper's Declaration and package markings; and
 2. the requirements of 49 CFR 172.205, with respect to the hazardous waste manifest apply.
- (b) For hazardous wastes that do not meet any other definition of dangerous goods according to these Regulations:
1. the hazardous waste 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 Regulations applying to the shipment of goods under this description;
 2. the package must meet all applicable General Packing Requirements of Subsection 5.0 of these Regulations 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 the Shipper's Declarations and package markings.

Notes:

1. Hazardous waste can only be transported within the United States by carriers who have obtained a Waste Transporter Identification Number from the Environmental Protection Agency (EPA).
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 Regulations.
3. A list of Hazardous Wastes 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 Regulations but meet the definition of a hazard class in 49 CFR Parts 171–180, must be transported in accordance with those regulations.

USG-05 An explosive article or substance may not be transported to, from, through or within the United States without prior approval by the appropriate authority of the US (see USG-01 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 US regulations 49 CFR 172.320, each package containing an explosive article or substance must be marked with the EX number assigned in the approval for each article, substance 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 (Shipper's Declaration) 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.

USG-06 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) (see **Packing Instruction 200**).

Portable tanks other than UN portable tanks manufactured outside of 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 178.277.

Except as provided in 49 CFR 173.306, aerosol containers larger than 120 mL capacity (4 fl oz) 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 non-toxic (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.

USG-07 Lighters (cigarettes) 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 an approved testing agency and approved by the appropriate authority of the US (see USG-01). For design samples being submitted for examination and testing see 49 CFR 173.308.

Until 1 January 2012, approval numbers issued by the appropriate authority of the United States (see USG-01) 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.

USG-08 Not used.

USG-09 Not used.

USG-10 The following additional requirements or limitations apply to the transport of radioactive material to, from or within the United States (see 9.1, 10.3.4, 10.5 and 10.8.1.2):

- (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 Shipper's Declaration 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. Regardless of its intended use, no person may carry a Type B(M) package aboard a passenger-carrying aircraft, a vented Type B(M) package aboard any aircraft, or a liquid pyrophoric Class 7 material aboard any aircraft;
- (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 for transport plutonium aboard an aircraft, unless:
 1. the plutonium is contained in a medical device designed for individual human applications,
 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 Regulations for Class 7 radioactive material, or
 4. the plutonium is specifically authorized for air shipment by the appropriate authority of the US.

- (d) For a package containing radioactive material with an activity greater than:
 - 1. $3,000 \times A_1$; or
 - 2. $3,000 \times A_2$; or
 - 3. 1,000 TBq (27,000 Ci), whichever is least, the notation "Highway Route Controlled Quantity" must appear on the Shipper's Declaration;
- (e) Packages containing:
 - 1. $3,000 \times A_1$; or
 - 2. $3,000 \times A_2$; or
 - 3. 1,000 TBq (27,000 Ci), whichever is least, must bear the "Radioactive material, Class 7, Category III—Yellow label" (see 10.5.15 and Table 10.5.C).
- (f) All Type B(U), Type B(M), Type H(U), Type H(M) and Fissile package designs must be certified by the US 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 USG-01). Requests for package design certification and for approvals should be directed to the appropriate authority of the US:

US Department of Transportation
 Attn: Radioactive Materials Branch (PHH-23)
 Office of Hazardous Materials Technology
 Pipeline and Hazardous Materials Safety
 Administration
 Washington
 DC
 USA
 20590-0001

- (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.

USG-11 A nonspillable wet electric storage battery may only be regarded as not subject to these Regulations 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 Regulations contained in Special Provision A67.

USG-12 On shipments to, from, within or transiting through the US, emergency response information as described below must be provided for all dangerous goods other than magnetized material (UN 2807), dangerous goods for which no Shipper's Declaration for Dangerous Goods is required and Other Regulated Material as defined in 49 CFR 173.144.

Telephone Number: The Shipper's Declaration for Dangerous Goods required by these Regulations must include an emergency response telephone number (including area codes and for international numbers for locations outside the US, country and city codes needed to complete the call from within the US) 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.

An emergency response telephone number is not required for dangerous goods in Limited Quantities as described in 2.7 and materials properly described under the proper shipping names **Battery powered equipment**, **Battery powered vehicle**, **Carbon dioxide, solid**, **Consumer commodity**, **Castor beans, flakes, meal or pomace**, **Dry ice**, **Engine, internal combustion**, **flammable gas powered**, **Engine, internal combustion**, **flammable liquid powered**, **Refrigerating Machines**, **Vehicle, flammable gas powered** and **Vehicle, flammable liquid powered**.

Means of Compliance: 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.

Documentation Requirements: The telephone number must be entered on the Shipper's Declaration for Dangerous Goods and its purpose clearly identified, e.g. "EMERGENCY CONTACT: . . . ", either:

- 1. immediately following the description of the dangerous goods listed on the Shipper's Declaration; or
- 2. if only one number applies to each dangerous good listed on the Shipper's Declaration, the information may be entered in a single prominent location, provided that the number is identified as the emergency response telephone number.

Emergency Response Information: Emergency response information relative to the dangerous goods 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 and must include as a minimum:

- 1. the description of the dangerous goods listed in accordance with 8.1.6.9.1, **First sequence** of these Regulations;
- 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.

Language: 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 Shipper's Declaration for Dangerous Goods;
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
3. providing the information for use in conjunction with the Shipper's Declaration for Dangerous Goods (or aboard aircraft, in conjunction with the Information to Pilot-in-Command as required in **9.5** of these Regulations), in a separate document, such as the *ICAO Emergency Response Guidance for Aircraft Incidents involving Dangerous Goods* (Doc. 9481).

USG-13 Operators must comply with all requirements of 49 CFR, Part 175 (**see USG-01**). These requirements include, but are not limited to, the following:

- (a) A package prepared in accordance with these Regulations for transport to, from or within the United States must not be accepted unless the operator also ensures that the shipper has complied with all applicable United States variations indicated in these Regulations (**see 9.1.2**).
- (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 air waybill 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 must be retained for three years after the waste material is accepted by the initial operator (**see 9.8**).

(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 (**see 9.5.1.1**).

(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 Regulations but which are not subject to 49 CFR Parts 171–180, 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:

- (i) Division 6.1 (poisonous) materials (except those labelled FLAMMABLE);
- (ii) Materials in Division 6.2 (etiological or infectious substances);
- (iii) 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:

TABLE USG-13.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		
25 kg per compartment plus an additional 75 kg of Division 2.2 material		

TABLE USG-13.B
Cargo 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		
25 kg per compartment plus an additional 75 kg of Division 2.2 material		

TABLE USG-13.C
Cargo Aircraft—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			
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.

Note:

Copies of the incident reporting form and guidance for completing it may be downloaded at: <http://hazmat.dot.gov/enforce/spills/spills.htm>

USG-14 Not used.

USG-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.

Cylinders of compressed oxygen must be transported in accordance with the following:

- (a) No more than a total of six cylinders of compressed oxygen may be stowed on an aircraft in cargo compartments not equipped with a fire or smoke detection system and a fire suppression system (Class D).
- (b) Except for oxygen cylinders allowed to be transported in the passenger compartment under the conditions given below, oxygen cylinders transported on passenger-carrying aircraft or in an inaccessible cargo location on a cargo-only 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 Class 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 1000 L (34 cubic feet) or less of oxygen—may be carried in a Class B aircraft cargo compartment or its equivalent.
- (d) Each cylinder must conform to the requirements identified in US variation USG-06 and be packaged as required by USG-18.

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-carrying aircraft in accordance with the following provisions:

- (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 1000 L (34 cubic feet);
- (c) Each cylinder must conform to the requirements identified in US variation USG-06 and must be placed in an outer packaging or an overpack 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;
- (d) Oxygen cylinders transported under these provisions must be included in the information provided to the pilot in command in accordance with 9.5 of these Regulations.

USG-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 national authority of the US (see USG-01), 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. For domestic transport,

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 (Shipper's Declaration) must contain the EX number or product code for each approved inflator, module or pretensioner in association with the basic description required in 8.1.6.9.1. If product codes are used they must be traceable to the specific EX number assigned to the inflator, module or pretensioner, as applicable, the appropriate authority of the US. The EX number or product code is not required to be marked on the outside package.

USG-17 Shippers and operators must comply with the security requirements as prescribed in 49 CFR Part 172, subpart I, as applicable (see 1.6).

USG-18 Cylinders containing **Oxygen, compressed**, UN 1072, **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 must be packaged as required by 49 CFR 173.302(f) and 173.304(f) and be placed in a rigid outer packaging that meets specified flame penetration and thermal resistance requirements as prescribed in Appendix D and E of 49 CFR Part 178. This requirement does not apply to cylinders containing medical-use compressed oxygen transported in accordance with USG-15.

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 USG-01). 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 USG-01) 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 Regulations.

VCG (Sri Lanka)

VCG-01 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.

VCG-02 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.

△ **VCG-03** Application for permission shall be made at least ten days before the date of the first flight on which dangerous goods are to be carried to the:

Director General of Civil Aviation
Civil Aviation Authority of Sri Lanka
No: 4, Hunupitiya Road
Colombo 02
SRI LANKA

Fax: +94 11 230 4644 or +94 11 230 4649

VCG-04 Infectious substances, including diagnostic specimens and biological products, are not permitted in international mail either to or from Sri Lanka (**see 2.4**).

VCG-05 English language shall be used for marking packages and overpacks.

VCG-06 A brief text in the English language indicating the nature of the risk involved shall appear on all hazard labels.

VCG-07 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 (**see 8.1.6.11 and 10.8.3.11**).

VUG (Vanuatu)

VUG-01 The marking of packages and overpacks and the Shipper's Declaration accompanying dangerous goods consignments must be in English or French. If the State of origin requires another language each shall be given equal prominence (**see 7.1.3.3, 8.1.2.1 and 10.7.1.2.3**).

Editorial Note:

For international transport, the Shipper's Declaration must be in English.

VUG-02 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
PO Box 102
Port-Vila
VANUATU

(**see 3.6.2, 8.1.6.9.4, 8.3, 9.1.2 and Packing Instruction 620**).

VUG-03 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 (**see 9.5.1.3**).

VUG-04 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 (**see Subsection 9.6**).

VUG-05 All hazard 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 **7.2.2.4**.

ZAG (South Africa)

ZAG-01 Applications for approval to transport dangerous goods under Special Provision A1 or A2 and Exemption applications must be directed to (**see 1.2.5, 8.1.6.9.4 and 8.3**):

The Commissioner for Civil Aviation
South Africa Civil Aviation Authority
Private Bag X08
Waterkloof
REPUBLIC OF SOUTH AFRICA
0145

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:

Class 1—Explosives:

Chief Inspector of Explosives
Private Bag X624
Pretoria
REPUBLIC OF SOUTH AFRICA
0001

For military armaments and ammunition of war:

The Commissioner for Civil Aviation
South Africa Civil Aviation Authority
Private Bag X08
Waterkloof
REPUBLIC OF SOUTH AFRICA
0145

(**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.

ZAG-02 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 variation is a violation of the South African Civil Aviation Regulations, 1997 as amended (**see Subsection 1.2**).

Editorial Note:

The IATA dangerous Goods Regulations are fully in compliance with ICAO Annex 18 and its associated Technical Instructions (Doc 9284).

ZAG-03 On shipments to, from or transiting through the republic of South Africa, the shippers declaration 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. 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.

(**see 8.1.6.11, and 10.8.3.11**).

ZAG-04 Radioactive material and infectious substances (including diagnostic specimens and biological products), are not permitted in air mail either to, from or through the Republic of South Africa (**see 2.4 and 10.2.2**).

2.8.3 Operator Variations

2.8.3.0 Notification

In accordance with paragraph 6.6 of Cargo Services Conference Resolution 619 any airline wishing to except itself in a more restrictive manner than the requirements of these Regulations must advise the IATA Secretariat promptly of such exception for publication as an operator variation.

2.8.3.1 Status

Operator variations which have been filed with IATA as of the time of printing are given in 2.8.4 and apply as follows:

- Operator variations must not be less restrictive than the Regulations; and
- Operator variations are applicable to all transportation performed by the operators concerned.

2.8.3.2 Criteria

Variations submitted to IATA for inclusion into the DGR should comply with the following criteria:

- Items submitted for inclusion, as operator variations should be those that impact on the shipper's ability to have the particular dangerous goods accepted for transport. This may be a restriction on a specific UN number, class or division, restrictions on packaging types or specific packaging methods, e.g. limited quantity packaging;
- Operator variations should not repeat existing DGR provisions. Variations should only be submitted where an operator requires an addition to an existing provision;
- Restrictions which are purely operational in nature, should not be submitted as operator variations.

2.8.3.3 Format

Operator variations are identified by two alpha-numeric characters followed by a two-digit group in strict numerical sequence, starting with "01", e.g. "AC-01".

2.8.3.4 List

The following operators have filed variations:

Airline	Code
Air Algerie	AH
Air Astana	KC
Air Austral	UU
Air Berlin	AB
Air Canada	AC
<input type="checkbox"/> Air Caraibes	TX
<input type="checkbox"/> Air Caraibes Atlantique	8X
Air China	CA
Air Europa	UX
Air France	AF
Air Hong Kong	LD
<input type="checkbox"/> Air India	AI
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	VT
Air Tahiti Nui	TN
Air Vanuatu	NF
Air Wisconsin	ZW
Alaska Airlines	AS
Alitalia Airlines	AZ
All Nippon Airways	NH
American Airlines	AA
Asiana	OZ
Astral Aviation	8V
Austral Lineas Aereas	AU
Austrian Airlines	OS
Avianca Airlines	AV
Bangkok Airways	PG
Biman Bangladesh Airlines	BG
Blue Dart Aviation Ltd.	BZ
British Airways	BA
Brussels Airlines	SN
Cameroon Airlines	UY
Cargolux	CV
<input type="checkbox"/> Cargolux Italia	C8
Caribbean Airlines	BW
Carpatair SA	V3
Cathay Pacific Airways	CX
China Airlines	CI
China Eastern Airlines	MU

Airline	Code	Airline	Code
China Southern	CZ	□ LAN Ecuador	XL
Comair	MN	□ LAN Express	LU
Condor Flugdienst GmbH/Condor Berlin	DE	□ LAN Peru	LP
Copa Airlines—Cargo	CM	Lauda Air Luftfahrt AG	NG
Corsair	SS	Luxair	LG
Corse Méditerranée	XK	Lufthansa Cargo AG	LH
Croatia Airlines	OU	Malaysia Airlines	MH
Czech Airlines	OK	⊗	
Delta Air Lines	DL	Martinair Holland	MP
Deutsche Lufthansa A.G. (Lufthansa)	LH	□ MASAIR—Aerotransportes Mas de carga SA. De CV.	M7
DHL Aero Express S.A.	D5	Meridiana	IG
DHL Air Limited	D0	Miami Air International	GL
Egyptair	MS	Middle East Airlines	ME
EI Al Israel Airlines	LY	Mongolian Airlines	OM
Emirates	EK	Nippon Cargo Airlines	KZ
Era Aviation	7H	Philippine Airlines	PR
ETIHAD Airways	EY	Qantas Airways	QF
European Air Transport Leipzig GmbH—DHL	QY	Qatar Airways	QR
EVA Airways	BR	Royal Jordanian	RJ
Federal Express	FX	SAS—Scandinavian Airlines System	SK
Finnair	AY	SAUDI—Saudi Arabian Airlines	SV
Garuda Indonesia	GA	JSC Siberia Airlines	S7
Llc GloBus	GH	IJ	SQ
Great Wall Airlines	IJ	Singapore Airlines/Singapore Airlines Cargo	JW
Gulf Air	GF	Skippers Aviation	OO
Hawaiian Airlines	HA	SkyWest Airlines	SJ
Hong Kong Dragon Airlines (Dragonair)	KA	Southern Air Transport	UL
IBERIA, Líneas Aéreas de España	IB	⊗	LX
△ Iberworld Airlines	IP	Srilankan Airlines	JJ
⊗		Swiss International	RO
Iran Air	IR	TAM Airlines	TG
Japan Airlines	JL	Tampa Cargo	HF
JAT Airways	JU	TAROM	TU
□ Jet Airways	9W	Thai Airways International	TK
Jetstar	JQ	TUIfly	PZ
Jett8 Airlines Cargo	JX	Tunis Air	HV
Kenya Airways	KQ	Turkish Airlines	VO
Kingfisher Airlines	IT	Transportes del Mercosul—TAM	PS
KLM—Royal Dutch Airlines/KLM Cityhopper B.V.	KL	Transavia Airlines C.V.	UA
Korean Airlines	KE	□ Tyrolean Airways	5X
LAN Airlines	LA	Ukraine International Airlines	E8
□ LAN Argentina	4M	United Airlines	US
□ LAN Cargo	UC	United Parcel Service	
□ LANCO	L7	USAfrica Airways	
□ LAN Colombia	4C	US Airways	



Dangerous Goods Regulations

2

2.8

Airline	Code
Vietnam Airlines	VN
Virgin Atlantic	VS
Yemen Airways	IY

2.8.3.5 Summary

The table below identifies a number of common operator restrictions and the specific operator variations to which they apply.

Operator Restrictions	Operator Variations
Additional packaging provisions	AY-04, CA-04, CI-04, CX-02/03, EI-01, EY-03, JJ-03, JL-09, KA-02/03, KE-07, KZ-07, LD-02/03, NH-06, OK-04, OZ-08, SK-04, TG-02
Advance arrangements must be made (1.3.2 and 9.1.2)	5X-03, D0-01, EY-02, GA-01, GH-01, KE-02, KZ-01, ME-03, MH-01, MK-06 (<i>for limited quantities</i>), MS-02, NG-01, NH-01, OM-01, OS-01, OU-01, OZ-01, QY-01, RJ-01, S7-01, TK-04, UU-07, VN-01, VO-01
Airmail limitations (2.4, 10.2.2)	AR-03, AU-03, AV-07, AY-02, BA-03, BR-05, BZ-02, C8-03, CA-06, CV-03, D5-03, DE-03, EY-07, IJ-04, IT-09, KQ-03, KZ-10, LH-03, MH-02, MK-07, MS-03, MU-03, OK-01, OM-03, OS-04, OU-06, QR-02, TK-06, UL-04, UU-01, VN-03, VO-04
Class 7 - Radioactive material of any kind not accepted for carriage (10.10.2)	8X-01 (<i>except for Category I-White and excepted packages</i>), AB-01, BA-05, BZ-03 (<i>except for medical, treatment & research purposes & excepted package</i>) CM-04, FJ-01, HA-04, HV-01, IP-04, IT-13, KC-10, KL-02 (<i>except for excepted packages</i>), KZ-02, NF-01, OM-08, PS-01 (<i>except for excepted package</i>), RO-01, SS-01, TX-01 (<i>except for Category I-White and excepted packages</i>), UU-03, UX-10, VS-01 (<i>except for excepted packages</i>)
Dangerous Goods in Consolidations requirements (1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5)	9W-09, AI-04, AZ-01, BR-06, CA-01, CI-03, CZ-02, GA-02, IJ-11, IR-02, KE-01, KQ-01, KZ-05, LH-02, ME-02, MH-05, MU-02, NH-04, OM-06, OU-14, OZ-02, PX-03, RJ-02, SK-07, SV-03, SW-03, TK-03, TY-02, UX-03, VN-12

Operator Restrictions	Operator Variations
Dangerous Goods in Excepted Quantity not permitted (2.6)	AM-11, AR-01, AU-01, BG-01, BR-04, CA-07, CI-02, CZ-01, EY-05, IJ-07, IP-01, JX-03, KQ-02, ME-01, MH-06, MK-04, OM-05, OU-05, PX-05, SV-01, TG-01, UX-01, UY-01, VN-02 (<i>except for empty packages of radioactive material</i>)
Dangerous Goods in Limited Quantity not permitted (2.7 and all "Y" Packing Instructions)	DE-01, GA-03, GF-04, IJ-12, KC-11, KQ-08, LH-01 (<i>except for ID 8000, Consumer commodity Y963</i>), LX-02 (<i>except for ID 8000, Consumer commodity Y963</i>), MH-14, OM-04 (<i>except for ID 8000, Consumer commodity Y963</i>), OS-03 (<i>except for ID 8000, Consumer commodity Y963</i>), OU-04 (<i>except for ID 8000, Consumer commodity Y963</i>), PX-10, SW-02, TN-04, UX-02 (<i>except for ID 8000, Consumer commodity Y963</i>), VO-03 (<i>except for ID 8000, Consumer commodity Y963</i>), VT-01, XK-03
Emergency telephone number (24 hr) required on Shipper's Declaration Form (8.1.6.11 and 10.8.3.11)	4C-02, 4M-02, 8V-01 (<i>also on the outside of the package</i>), 9W-07, AC-02, AH-01, AI-06 (<i>also on the Air Waybill</i>), AM-14, AR-09, AU-09, BZ-05, CX-04, CZ-03, D0-09, D5-05, EK-01, EY-01, GF-06, GH-03, IJ-08, IT-08, JJ-02, JL-11, JX-02, KA-04, KC-01, KQ-05, KZ-09, L7-02, LA-02, LD-04, LP-02, LX-05, LU-02, M3-02, M7-02, MH-04, MK-08, MP-04, OU-10, PZ-03, QR-03, QY-09, S7-03, SK-06, SQ-08, SV-13, TG-06, TK-02 (<i>also on the outside of the package</i>), UC-02, UL-01, V3-02, XL-02
Hazardous waste not permitted (Packing Instruction 622 and 8.1.3.3)	7H-02, AA-02, AS-07, AV-03, BA-04, CV-02, DL-02, E8-04, FX-05, IT-07, JU-01, ME-06, UX-08, VT-08
Lithium batteries restricted Packing Instructions 965, 966, 967, 968, 969, 970	5X-02/07, BA-02, CI-01, CX-08, CZ-08, D0-03, EY-04, FX-07, KA-08, LD-07, QR-04, QY-03, SK-01
Specific Passenger Provisions (2.3)	AA-03, AV-05/06, E8-05, FJ-02, IT-01/02/03/04, JW-02, LX-03/04, MN-02, NZ-01, OS-02, PR-02/03, PX-06/08, SN-01/02, SV-11, VO-02
Specific UN entries not accepted	AF-01, AS-01/06, BR-08/09/12/13, FX-04/15, IR-05/06, KC-03, LX-01, ME-07, MH-08/09, OU-07, QR-05, SQ-06, TU-04/07/12, UU-02, UX-07

2.8.4 List of Operator Variations

The variations are listed in alpha-numeric order according to the code assigned.

4C (LAN Colombia)

4C-01 Dangerous Goods offered for transport under an approval or an exemption as provided by 1.2.5 and 1.2.6 and any other LAN conditioned by pre-approval, 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 with the Dangerous Goods Department, who will refer any decision to the LAN Dangerous Goods Technical Committee.

An application for approval must be undertaken at least 15 working days of the scheduled date for the flight attaching the MSDS or other documentation that covers the shipment. Applications should be addressed to:

LAN Colombia Dangerous Goods Department

Tel: +56-2-6947898

+56-2-6774571

+1 305-7722894

E-mail: DangerousGoodsBoard@lan.com

4C-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 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 declaration for dangerous goods in the "Handling Information" box (see 8.1.6.11 and 10.8.3.11).

An emergency response telephone number is not required for:

- Battery powered equipment
- Battery powered vehicle
- Flammable gas powered vehicle
- Flammable liquid powered vehicle
- Engine, internal combustion
- Dangerous goods in Limited Quantities as described in 2.7
- Carbon dioxide, solid (Dry Ice)
- Consumer commodity
- Refrigerating machines

4C-03 For Toxic substances of Division 6.1 or Division 2.3, the following requirements must be complied with:

- (a) 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).
- (b) Toxic gases of Division 2.3, will not be accepted for carriage unless a prior approval has been obtained (see LA-01).

- (c) 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 inhalation hazard", as appropriate.

Notes:

1. This requirement only applies to the primary risk.
2. Where the substance has more than one route of toxicity, the risk that determined the packing group must be used.

- (d) Solid toxic substances of any kind will not be accepted for carriage in bags 5H1, 5H2, 5H3, 5H4, 5L2, 5L3, 5M1 or 5M2 as single packagings unless contained in a strong hot sealed polyethylene bag at least 200 microns thick. If this type of packages are offered overpacked in a warehouse pallet, they will be accepted for carriage provided:

1. the warehouse pallet is rigid and strong enough to support the weight assembled on it, without bending when fork lifted;
2. the surface of the warehouse pallet is continuous, soft and free of sharp protruding points which could pierce the bags; and
3. the warehouse pallet is provided with separation bars from the floor for the use of a forklift.

4C-04 Infectious substances will be accepted under specific advance arrangements and the following requirements must be met:

- (a) 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 that all the requirements of the countries of origin and destination of the shipment have been complied with.

- (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 Biological Substance, Category B;
- Shipment of any Patient Specimens, prepared according 3.6.2.2.3.6.

- (c) **Prohibitions.** Infected animals, dead (whole bodies) or alive will not be accepted for carriage.

4C-05 Formaldehyde solutions containing less than 25% of formaldehyde must be shipped under UN 3334 "Aviation Regulated Liquid, n.o.s.★", Class 9, PG.III.

4C-06 The marking required by 7.1.5 and application of hazard and handling labels on packages containing dangerous goods must not be applied to the top or bottom of 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.

- ▲ **4C-07** Fissile material as defined in 10.3.7 will be accepted only with prior review and approval by the LAN Dangerous Goods Technical Committee (see LA-01).

4M (LAN Argentina)

4M-01 Dangerous Goods offered for transport under an approval or an exemption as provided by 1.2.5 and

1.2.6 and any other LAN conditioned by pre-approval, 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 with the Dangerous Goods Department, who will refer any decision to the LAN Dangerous Goods Technical Committee.

An application for approval must be undertaken at least 15 working days of the scheduled date for the flight attaching the MSDS or other documentation that covers the shipment. Applications should be addressed to:

LAN Argentina Dangerous Goods Department

Tel: +56-2-6947898

+56-2-6774571

+1 305-7722894

E-mail: DangerousGoodsBoard@lan.com

4M-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 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 declaration for dangerous goods in the "Handling Information" box (**see 8.1.6.11 and 10.8.3.11**).

An emergency response telephone number is not required for:

- Battery powered equipment
- Battery powered vehicle
- Flammable gas powered vehicle
- Flammable liquid powered vehicle
- Engine, internal combustion
- Dangerous goods in Limited Quantities as described in 2.7
- Carbon dioxide, solid (Dry Ice)
- Consumer commodity
- Refrigerating machines

4M-03 For Toxic substances of Division 6.1 or Division 2.3, the following requirements must be complied with:

- (a) 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**).
- (b) Toxic gases of Division 2.3, will not be accepted for carriage unless a prior approval has been obtained (**see LA-01**).
- (c) 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 inhalation hazard", as appropriate.

Notes:

1. This requirement only applies to the primary risk.
2. Where the substance has more than one route of toxicity, the risk that determined the packing group must be used.

(d) Solid toxic substances of any kind will not be accepted for carriage in bags 5H1, 5H2, 5H3, 5H4, 5L2, 5L3, 5M1 or 5M2 as single packagings unless contained in a strong hot sealed polyethylene bag at least 200 microns thick. If this type of packages are offered overpacked in a warehouse pallet, they will be accepted for carriage provided:

1. the warehouse pallet is rigid and strong enough to support the weight assembled on it, without bending when fork lifted;
2. the surface of the warehouse pallet is continuous, soft and free of sharp protruding points which could pierce the bags; and
3. the warehouse pallet is provided with separation bars from the floor for the use of a forklift.

4M-04 Infectious substances will be accepted under specific advance arrangements and the following requirements must be met:

- (a) 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 that all the requirements of the countries of origin and destination of the shipment have been complied with.
- (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 Biological Substance, Category B;
 - Shipment of any Patient Specimens, prepared according 3.6.2.2.3.6.
- (c) **Prohibitions.** Infected animals, dead (whole bodies) or alive will not be accepted for carriage.

4M-05 Formaldehyde solutions containing less than 25% of formaldehyde must be shipped under UN 3334 "Aviation Regulated Liquid, n.o.s.★", Class 9, PG.III.

4M-06 The marking required by 7.1.5 and application of hazard and handling labels on packages containing dangerous goods must not be applied to the top or bottom of 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.

❖ **4M-07** Fissile material as defined in 10.3.7 will be accepted only with prior review and approval by the LAN Dangerous Goods Technical Committee (**see LA-01**).

△ 5X (United Parcel Service)

Note:

The most current information about UPS services and restrictions may be found at the following web site: <http://ups.com/hazmat>

5X-01 Shipments of Dangerous Goods in the UPS Small Package service with an origin and destination within the USA 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 UPS Home Page www.ups.com, at the link for "Hazardous Materials." Users may also locate the UPS Guide for Shipping Hazardous Materials by using the SEARCH function on the website.

5X-02 Exports or imports 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. When applicable, not more than three compatible different dangerous goods may be contained in one outer packaging (5.0.2.11). 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 service:

- Class 1 (Explosives)
- Division 2.3 (Toxic Gas)
- Division 4.2 (Spontaneously Combustible)
- Division 4.3 (Dangerous When Wet)
- Division 5.1 (Oxidizer)
- Division 5.2 (Organic Peroxide)
- Division 6.1—Substances requiring a "Toxic" label
Shipments of UN 1230, Methanol and UN 3506, Mercury contained in manufactured articles will be accepted only when the packages do not require a "Toxic" sub-risk 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.
- Class 9—
— A contract is required for shipments of UN 3480, Lithium ion batteries, and UN 3090, Lithium metal batteries, prepared in accordance with Section IB of Packing Instructions 965 and 968, respectively. Such shipments must be tendered with a fully completed Shipper's Declaration for Dangerous Goods with "IB" indicated in the "Authorisations" area of the document following the packing instruction number.
— Shipments of UN 2807, Magnetized material which conform to Packing Instruction 953 can be shipped only to, from, and within the countries identified on the following link: <http://www.ups.com/content/us/en/resources/ship/ldg/information/acl.html>. Additionally, such shipments must be labelled in accordance with Packing Instruction 953 and documented in one of the following ways:
— Identified as "Magnetized material" in a Package Reference field on the UPS Shipping Label; or

- Accompanied by a written document, affixed to the outside of the package, identifying the contents as "Magnetized material".
- Accompanied by a document, affixed to the outside of the package in a resealable envelope, identifying the contents as "Magnetized material."
- Complete information about UPS small package International Dangerous Goods service, including specific limitations per package, may be found at the link for UPS GUIDE FOR SHIPPING INTERNATIONAL DANGEROUS GOODS at the site identified in variation 5X-01.

(see 1.3.2, 8.1.6.9.1 and 10.8.3.9.1).

5X-03 Dangerous Goods shipments will be accepted in 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). Hazard Classes accepted in Air Cargo Service are subject to approval, and shipments are subject to advance arrangement.

- A contract is required for shipments of UN 3480, Lithium ion batteries, prepared in accordance with Section IB of Packing Instructions 965. Such shipments must be tendered with either:
a completed Shipper's Declaration for Dangerous Goods; or
an Air Waybill presenting the information required by Section IB, paragraph (b)(1) through (b)(4) of Packing Instructions 965.
- UPS Air Cargo Service does not accept shipments of UN 3090, Section IA or IB lithium metal batteries.

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 Gases
- Materials having either a primary or subsidiary hazard of Division 6.1—with a Packing Group I inhalation toxicity
- Division 6.2—"Category A" materials
- Class 7 (outside of the U.S., 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 U.S., Canada and Mexico.

Shipments of UN 3480, Lithium ion batteries, and UN 3090, Lithium metal batteries, prepared in accordance with Section IB of Packing Instructions 965 and 968, respectively, must be tendered with either:

- a completed Shipper's Declaration for Dangerous Goods; or
- an Air Waybill presenting the information required by Section IB, paragraph (b)(1) through (b)(4) of Packing Instructions 965 or 968.

5X-05 When an IATA Shipper's Declaration for Dangerous Goods is required, the shipper must present three original copies.

5X-06 To maintain compliance with USG-18, for the following listed materials, UPS requires all packages to comply with U.S. DOT packaging requirements contained in 49 CFR 173.302(f) and 173.304(f). Such packagings must be marked with the text "DOT31FP" on the outer package. Affected entries are:

UN 1070—Nitrous oxide

UN 1072—Oxygen, compressed

UN 2451—Nitrogen trifluoride

UN 3156—Compressed gas, oxidizing, n.o.s.

UN 3157—Liquefied gas, oxidizing, n.o.s.

UN 3356—Oxygen generator, chemical

—Carbon dioxide and oxygen mixture, compressed

5X-07 The following limitations apply to the commodities identified here:

- Shipments of UN 3077, **Environmentally hazardous substance, solid, n.o.s.** will not be accepted when contained in Intermediate Bulk Containers (IBCs) in any UPS air services (including UPS Small Package, UPS Freight Air Services or UPS Air Cargo services);
- Shipments of UN 2807, **Magnetized materials**, for which the magnetic field strength exceeds 0.00525 gauss when measured at 4.6 m from any surface of the package are not accepted in UPS services (including UPS Small Package; UPS Freight Air Services; or UPS Air Cargo services);
- Shipments of refurbished lithium batteries, or refurbished lithium batteries packed with or contained in equipment are not accepted unless specifically approved by the UPS Air Dangerous Goods Department (SDF);
- Shipments of UN 3245, **Genetically modified organisms** or **Genetically modified micro-organisms** with an origin and/or destination outside the U.S. will be considered on a case-by-case basis, subject to the requirements of UPS International Special Commodity program.

7H (Era Aviation)

7H-01 Shipments under US DOT 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 **1.2.6.3** and **8.1.6.9.4**).

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**).

8V (Astral Aviation)

8V-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 the country and area code, preceded by the words "Emergency Contact" or "24-Hour Number" should be shown in the Additional Handling Information box of the DGD and on the package (see **8.1.6.11** and **10.8.3.11**).

8V-02 Interline transfer of dangerous goods will only be accepted if a copy of the acceptance checklist accompanies the consignment together with the DGD and the AWB.

8X (Air Caraibes Atlantique)

8X-01 Only radioactive material Category I-White (IMP code RRW, see **B.2.2.4**) where the maximum radiation level at any point on any external surface of a package or overpack does not exceed 0.005 mSv/h is accepted for transport.

9S (Southern Air)

9S-01 Not used.

9W (Jet Airways)

9W-01 Used camping stoves (fuel or gas) will not be accepted for carriage in baggage, even if thoroughly cleaned (see **2.3.2.5**).

9W-02 Small gaseous oxygen (oxygen compressed UN 1072) or air cylinders required for medical use are not permitted in passenger checked or carry-on baggage. Should a passenger require supplementary oxygen, a 48hrs prior request must be made to Jet Airways.

Jet Airways

Tel: International - 1800 22 55 22
UK Toll Free - 08 081 01 11 99
US Toll Free - 1-877-835-9538

9W-03 Mercury barometers will not be accepted for carriage as carry-on baggage (see **2.3.3.1**).

9W-04 Chemical Agent Monitoring Equipment containing radioactive material will not be accepted for carriage (see **2.3.4.4**).

9W-05 Salvage packagings will not be accepted for carriage (see **5.0.1.6, 6.0.6, 6.7, 7.1.5, 7.2.3.10**).

9W-06 Hazardous waste in any form, as defined by any regulation, will not be accepted for carriage (see **Packing Instruction 622** and **8.1.3.3**).

9W-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 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 (see **8.1.6.11** and **10.8.3.11**).

9W-08 Dangerous goods as defined by any regulation will not be accepted in AIR MAIL (see **2.4** and **10.2.2**).

9W-09 Dangerous Goods in consolidation will not be accepted for carriage (see **1.3.3, 8.1.2.4, 9.1.8** and **10.8.1.5**).

9W-10 Class 1 Explosives will not be accepted for carriage except substances and articles of Division 1.4S, UN 0012 or UN 0014 only (**see Packing Instruction 130**).

9W-11 Class 3 desensitized explosives will not be accepted for carriage.

9W-12 Class 4 Flammable Solids (Including Division 4.1, 4.2 and 4.3) will not be accepted for carriage.

9W-13 Division 6.1 Substance of Packing Group I will not be transported except when transported under the excepted quantity provisions (**see 2.6**).

AA (American Airlines)

AA-01 Substances with a primary or subsidiary risk of Division 6.1 will not be accepted for carriage.

AA-02 Hazardous waste in any form, as defined by any regulation, will not be accepted for carriage (**see Packing Instruction 622 and 8.1.3.3**).

AA-03 Mercurial barometers will not be accepted for carriage as carry-on or checked baggage (**see 2.3.3.1**).

AA-04 Salvage packagings will not be accepted for carriage (**see 5.0.1.6, 6.0.6, 6.7, 7.1.5, 7.2.3.11**).

AA-05 2.2 non-flammable gases with a subsidiary risk of 5.1 will not be accepted for carriage. (Exception: COMAT parts and supplies only when offered in DOT31FP compliant containers).

AA-06 Division 6.2 Category A, infectious substance affecting animals (UN 2900) and humans (UN 2814) will not be accepted for carriage (see Packing Instruction 620).

AB (Air Berlin)

AB-01 Class 7, Radioactive material, fissile material and excepted packages will Not be accepted on AB Flights (**see 10.5.8, 10.5.13**).

AB-02 Packages allowed on Cargo Aircraft Only or prepared according to packing instructions for Cargo Aircraft Only (CAO) are not allowed on AB Flights.

AC (Air Canada)

AC-01 When a Shipper's Declaration is required for interline shipments, three (3) original copies must be provided with each shipment at the origin location (**see 8.1.2.3, 10.8.1.4**).

AC-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 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, preferably in the "Handling Information" box, e.g. Emergency Contact +1 514-123-4567 (**see 8.1.6.11 and 10.8.3.11**).

A 24-hour emergency telephone number is not required for shipments that do not require a Shipper's Declaration for Dangerous Goods.

AC-03 Salvage packaging will not be accepted for carriage (**see 5.0.1.6, 6.0.6, 6.7, 7.1.5 and 7.2.3.10**).

AC-04 Aircraft engines shipped under special provision A70, must be tendered with an original copy of the purged certificate, and signed by the company that performed the maintenance or overhaul (**see Packing Instruction 950**).

AC-05 Internal combustion engines, being shipped either separately or incorporated into a machine or other apparatus, the fuel tank or fuel system of which contains or has contained fuel must be classified as **Engines, internal combustion, flammable liquid powered**, UN 3166, Class 9.

Including but not limited to chainsaws, lawnmowers, generators, outboard motors, etc. (**see Packing Instruction 950**).

AC-06 The number of packages of Section II Lithium Batteries in Packing Instructions 965–970 must be indicated on the Air Waybill.

AF (Air France)

AF-01 The following dangerous goods will not be accepted for carriage:

(a) All explosive articles classified in Division 1.1 and 1.2.

(b) Class 8, UN 1798—**Nitrohydrochloric acid**.

AF-02 Patient specimens will only be accepted if assigned to UN 2814 or UN 2900 or UN 3373, as appropriate. They are not permitted as baggage even if exempt from the Regulations. Biological substance, Category B—UN 3373 may only be accepted for carriage under specific requirements and after a prior Air France (DZ.CA/OA.NA) written approval has been granted.

AF-03 Prior Air France approval is required for transport of dangerous goods under appropriate National Authorities exemptions or approvals (**see 1.2.5 and 1.2.6**).

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 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**).

A 24-hour emergency telephone number is not required for shipments that do not require a Shipper's Declaration for Dangerous Goods.

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.

AI (Air India)

AI-01 Explosives shall not be carried with the exceptions of items covered under UN 0012 and UN 0014 subject to approval from Director General Civil Aviation.

AI-02 Class 3, Flammable liquids in Packing Group I are not acceptable for carriage.

AI-03 Division 4.3, Substances which on contact with water emit flammable gases are not accepted for carriage.

AI-04 Dangerous Goods must not be consolidated with non-dangerous goods.

AI-05 Carbon dioxide, solid (dry ice) is limited as follows:

(a) Not more than 200 kg per aircraft is permitted on A319/A320/A321/B737;

(b) Not more than 1,500 kg per aircraft is permitted in A310/B747/B777.

AI-06 A 24 hour emergency telephone number must be provided in the "Handling Information" box of the Shipper's Declaration and air waybill.

AI-07 Fissile material shall not be accepted for carriage.

 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**).

AM-02 Division 2.1 Flammable gases and Division 2.2 Non-flammable, non-toxic gases will be accepted for carriage subject to prior authorization. Division 2.3 gases will not be accepted for carriage (Exception: COMAT parts and supplies).

AM-03 Class 3, Flammable liquids in Packing Group I will not be accepted for carriage. Flammable liquids in Packing Groups II or III will be accepted for carriage subject to prior authorization (Exception: COMAT parts and supplies).

AM-04 Divisions 4.1, 4.2 and 4.3 substances in Packing Group I will not be accepted for carriage. Divisions 4.1, 4.2 and 4.3 substances in Packing Group II or III which have no subsidiary risk will be accepted for carriage subject to prior authorization (Exception: COMAT parts and supplies).

AM-05 Division 5.1 Oxidizing substances in Packing Group I will not be accepted for carriage. Division 5.1 Oxidizing substances in Packing Group II or III will be accepted for carriage subject to prior authorization. Division 5.2 Organic peroxides will not be accepted for carriage (Exception: COMAT parts and supplies).

AM-06 Division 6.1 Toxic substances in Packing Group I will not be accepted for carriage. Division 6.1 Toxic substances in Packing Group II or III will be accepted for carriage subject to prior authorization. Division 6.2 Infectious substances are forbidden for transport except when it is a matter of urgency, subject to prior authorization by the Secretary of Health of the Mexican Government.

AM-07 Class 7 Radioactive Materials of Categories I, II and III will be accepted for carriage, provided the following conditions are complied with:

- the Radioactive Materials (exception: COMAT parts and supplies) 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 or on the aircraft 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 in Packing Group I will not be accepted for carriage. Class 8 Corrosives in Packing Group I or II will be accepted for carriage subject to prior authorization (exception: COMAT parts and supplies).

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 2807—Magnetized material

UN 3072—Life-saving appliances, not self-inflating

UN 3077—Environmentally hazardous substance, solid, n.o.s.★

UN 3082—Environmentally hazardous substance, liquid, n.o.s.★

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

AM-10 Infected animals, dead or alive, will not be accepted for carriage.

AM-11 Dangerous Goods in Excepted Quantities will not be accepted for carriage (**see Subsection 2.6**).

AM-12 Genetically modified micro-organisms and organisms must not cause a risk to humans, animals or plants.

AM-13 Requests for authorization to transport dangerous goods which are not listed and those which require prior authorization must be made in advance via e-mail to the following addresses:

E-mail: chernandez@aeromexicocargo.com.mx

E-mail: fhernandezm@aeromexico.com.mx

AM-14 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", must be inserted on the shipper's declaration for dangerous goods (DGD) in the "Additional handling information" box, e.g. "Emergency contact +52 55 50 23 55 00".

AM-15 In case of shipments transported under State exemptions or approvals (e.g. required by Special Provision A1, A2, A88, A99 or A106), Strategic Partner of Aero Mexico Cargo 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 the Logistics Management Strategic Partner of Aeromexico Cargo (chernandez@aeromexicocargo.com.mx).

AR (Aerolineas Argentinas)

AR-01 Dangerous goods in excepted quantities will not be accepted (**see Subsection 2.6**).

AR-02 All blood products for transfusion and biological specimens from human or animal origin, must be transported as cargo. They are not permitted as baggage.

AR-03 Dangerous goods as defined in these Regulations will not be accepted in air mail (**see 2.4 and 10.2.2**).

AR-04 Wheelchairs or other battery-powered mobility devices with spillable batteries will be accepted only when the battery is removed from the wheelchair or mobility device. The spillable battery, classified as dangerous goods, can only be carried as cargo, in accordance with the requirements of these Regulations (**see 2.3.2.3 and 9.3.16**).

AR-05 Radioactive material will only be accepted for carriage on a passenger aircraft where the transport index of the package does not exceed 3.0.

AR-06 Small gaseous oxygen or air cylinders required for medical use will only be accepted empty as checked baggage. If the passenger requires supplementary oxygen, it will be provided by the operator (**see 2.3.4.1**).

AR-07 Gas cylinders in Division 2.2 (non-flammable, non-toxic) will not be permitted as baggage. Only empty cylinders will be permitted as checked baggage. Cylinders containing Division 2.1 and/or Division 2.3 will not be permitted as baggage.

AR-08 Interline transfer of dangerous goods will only be accepted, if a copy of the acceptance checklist accompanies the consignment together with the DGD and the AWB (**see 9.1.1**).

AR-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 the country and area code, preceded by the words "Emergency Contact" or "24-Hour number" must be shown in the Additional Handling Information box of the DGD (**see 8.1.6.11 and 10.8.3.11**).

AR-10 Material Safety Data Sheet (MSDS) must be provided for all dangerous goods classes, excepted for carbon dioxide, solid (dry ice), Vehicles and Engines (UN 3166), additionally for non-dangerous goods that have a chemical base. The MSDS may be written in Spanish or English. The MSDS must include the UN number, packing group if necessary, proper shipping name and all other relevant transport information.

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.

AS-02 Division 6.1—no substance required to bear a "Toxic" label will be accepted for carriage.

AS-03 Division 2.3—no substance required to bear a "Toxic Gas" label will be accepted for carriage (**see Packing Instructions 200 and 206**).

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) (**see 9.3.10.3**).

AS-05 Alaska Airlines requires that any vehicle shipped in accordance with Packing Instruction 950 must have the fuel tank drained of fuel as far as practicable. It is not acceptable to apply the provision that fuel up to one quarter of the tank capacity may remain.

AS-06 Class 9. The following Miscellaneous dangerous goods will not be accepted for carriage (**see Packing Instruction [-] listed after the substance**):

UN Number—Description

UN 2211—**Polymeric beads, expandable**, evolving flammable vapour [957]

AS-07 Hazardous waste as defined in USG-04 will not be accepted for carriage (**see Packing Instruction 622 and 8.1.3.3**).

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 US government license number of manufacture, and
- are intended for human or veterinary use.

(**see Packing Instructions 620, 622 and 650 and 9.1.5**).

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.

AS-10 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.

AS-11 The carriage of Carbon dioxide, solid (dry ice) UN 1845 will be limited to the following:

- Passenger-carrying aircraft: 82 kg (182 lb) per aircraft.
- All cargo aircraft: 499 kg (1,100 lb) per aircraft.

Advance arrangements with Alaska Air Cargo are essential.

AS-12 The following substances shall not be accepted for carriage:

- UN 1162, Dimethyldichlorosilane (see PI 377)

AU (Austral Lineas Aereas)

AU-01 Dangerous goods in excepted quantities will not be accepted (see Subsection 2.6).

AU-02 All blood products for transfusion and biological specimens from human or animal origin, must be transported as cargo. They are not permitted as baggage.

AU-03 Dangerous goods as defined in these Regulations will not be accepted in air mail (see 2.4 and 10.2.2).

AU-04 Wheelchairs or other battery-powered mobility devices with spillable batteries will be accepted only when the battery is removed from the wheelchair or mobility device. The spillable battery, classified as dangerous goods, can only be carried as cargo, in accordance with the requirements of these Regulations (see 2.3.2.3 and 9.3.16).

AU-05 Radioactive material will only be accepted for carriage on a passenger aircraft where the transport index of the package does not exceed 3.0.

AU-06 Small gaseous oxygen or air cylinders required for medical use will only be accepted empty as checked baggage. If the passenger requires supplementary oxygen, it will be provided by the operator (see 2.3.4.1).

AU-07 Gas cylinders in Division 2.2 (non-flammable, non-toxic) will not be permitted as baggage. Only empty cylinders will be permitted as checked baggage. Cylinders containing Division 2.1 and/or Division 2.3 will not be permitted as baggage.

AU-08 Interline transfer of dangerous goods will only be accepted, if a copy of the acceptance checklist accompanies the consignment together with the DGD and the AWB (see 9.1.1).

AU-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 the country and area code, preceded by the words "Emergency Contact" or "24-Hour number" must be shown in the Additional Handling Information box of the DGD (see 8.1.6.11 and 10.8.3.11).

AU-10 Material Safety Data Sheet (MSDS) must be provided for all dangerous goods classes, excepted for carbon dioxide, solid (dry ice), Vehicles and Engines (UN 3166), additionally for non-dangerous goods that have a chemical base. The MSDS may be written in Spanish or English. The MSDS must include the UN number, packing group if necessary, proper shipping name and all other relevant transport 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 (see Packing Instructions 101–143).

AV-02 Not used.

AV-03 Hazardous waste in any form, as defined by any regulations, will not be accepted for carriage (see Packing Instruction 622 and 8.1.3.3).

AV-04 Division 2.3, Toxic gases are not accepted for carriage (see Packing Instructions 200 and 206).

AV-05 Wheelchairs with spillable batteries will be accepted only when the battery is removed from the wheelchair, packaged as outlined in 2.3.2.3 and 9.3.16.

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.

AV-07 Dangerous goods including infectious substances, biological products and radioactive materials will not be accepted for carriage in mail (see 2.4 and 10.2.2).

AV-08 Class 7, fissile radioactive materials will not be accepted for carriage (see 10.5.13).

AV-09 Class 7 Radioactive Materials of Categories I, II and III will be accepted for carriage, provided the Radioactive Materials are intended for medical diagnosis or treatment or medical and/or industrial research.

AY (Finnair)

AY-01 For information concerning operational limitations on Finnair flights and embargoes on Finnair destinations, local Finnair Cargo office or GSA agency should be contacted in advance. Contact information can be found from www.finnaircargo.fi/en/cargo/contact-info.

AY-02 Dangerous Goods as defined in these Regulations including items exempted in Subsection 2.4 will not be accepted in air mail. The only exception to this is patient specimens provided they meet the requirements of Subsection 2.4.2(b).

AY-03 In case of shipments transported under state exemptions or approvals (e.g. required by Special Provision A1, A2, A88, A99 or A106), Finnair Cargo

Control Centre 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 Control Center:

Finnair Smart Cargo Hub (SCH) HEL-FL-AY
 Tel: +358-9-818 5450
 Fax: +358-9-818 3927
 E-mail: sch@finnair.com

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.

AZ (Alitalia Airlines)

AZ-01 Dangerous goods in consolidations will only be accepted for carriage where the consolidation contains only dangerous goods and must not include other non-regulated cargo (**see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5**).

AZ-02 Fissile radioactive material will only be accepted for carriage with the prior approval of the Alitalia Qualified Expert,

E-mail: carboni.caterina@alitalia.it

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, leak-proof 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 (**see Packing Instructions 364, 355, 366 and 964**).

BA-02 UN 3090 Lithium batteries. Primary (non-rechargeable) lithium (metal) batteries and cells are prohibited from carriage as cargo on BA passenger carrying 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).

BA-03 Infectious substances, (UN 2814, UN 2900 and UN 3373) and biological products are not acceptable for carriage in mail (**see Subsection 2.4**).

BA-04 Hazardous waste in any form, as defined by any Regulation, will not be accepted for carriage (**see Packing Instruction 622 and 8.1.3.3**).

BA-05 Class 7—radioactive material of any kind will not be accepted for carriage (**see 10.10.2**).

BA-06 UN 3164—Articles, pressurized, hydraulic or pneumatic (containing non-flammable gas). In addition to the gross weight the net weight of the gas must be annotated on the Shipper's Declaration.

BA-07 UN 3356 Oxygen generators, chemical are forbidden from carriage on BA aircraft.

BG (Biman Bangladesh Airlines)

BG-01 Dangerous goods in excepted quantities will not be accepted (**see Subsection 2.6**).

BR (EVA Airways)

BR-01 Dangerous goods requiring a Cargo Aircraft Only (CAO) label will not be accepted except for:

- (a) Division 2.2 Non-flammable, non-toxic gas without a subsidiary risk;
- (b) Class 3 Flammable liquid, Packing Group II or III and without a subsidiary risk;
- (c) Class 9 Miscellaneous dangerous goods.

(**see 9.3.4**).

BR-02 Dangerous goods in Packing Group I will not be accepted.

BR-03 Other than explosives of Division 1.4S, Class 1—Explosives will not be accepted for carriage (**see Packing Instructions 101–143**).

BR-04 Dangerous goods in excepted quantities will not be accepted for carriage (**see Subsection 2.6**).

BR-05 Dangerous goods as defined in these Regulations will not be accepted in air mail (**see 2.4 and 10.2.2**).

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; or
- consolidations having Multi House air waybill containing ID 8000 (Consumer commodity) and/or UN 1266 (Perfumery products) and/or UN 2807 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.

(**see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5**).

BR-07 Dangerous goods shipments transhipped to/from other operators are not 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.

BR-08 Oxygen generator, chemical—UN 3356 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 will be exempted from the applicability of BR-01, BR-02, BR-03, BR-08 and BR-15.

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 Number—Description

UN 1057—**Lighters**, disposable lighter with high tensile nylon or plastic body [201].

BR-10 Division 2.3, Toxic gases, will not be accepted (see Packing Instructions 200 and 206).

⚠ **BR-11** Class 7, Radioactive material, Category II-Yellow, III-Yellow, fissile material and excepted packages will not be accepted (see 10.5.8, 10.5.13 and 10.10.2).

BR-12 Class 8, Corrosives. The following corrosives will not be accepted for carriage (see Packing Instructions [-] listed after each substance):

UN Number—Description

UN 1787—**Hydriodic acid** [Y840, 851, 855, Y841, 852 and 856].

UN 2803—**Gallium** [867].

BR-13 Class 9, Miscellaneous dangerous goods. The following goods will not be accepted (see Packing Instructions [-] listed after the substance):

UN Number—Description

UN 2211—**Polymeric beads, expandable**, evolving flammable vapour [957].

BR-14 Division 6.2, Infectious substances in Category A, must be loaded on a Cargo Aircraft Only (see 9.1.5 and 9.3.4).

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 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 (see 9.3.1).

BR-17 If the shipper uses wooden skids for liquid substances contained in single packagings which are plastic drums/jerricans, the shipper must ensure that there are no sharp objects protruded on the wooden skids and the plastic drums/jerricans must be protected by other strong outer packaging.

BW (Caribbean Airlines)

⚠ **BW-01** Caribbean Airlines shall not accept for carriage on its aircraft, substances with a primary or subsidiary risk of 6.1 in any form, except if it is shipped for medical purposes.

BZ (Blue Dart Aviation Ltd.)

BZ-01 Class 1—Explosives including fire extinguishers containing cartridges (Cartridges power device of Division 1.4C or 1.4S) will not be accepted for carriage (see Packing Instructions 101–143 and Packing Instruction 213).

BZ-02 Dangerous goods in airmail will not be accepted (See Subsection 2.4).

⚠ **BZ-03** Class 7, only the following radioactive material will be accepted.

- Radioactive material in “excepted packages”;
- Radioactive material packaged in Type A packages;

Class 7 radioactive material in categories I, II or III will be accepted for carriage provided the radioactive material is intended for medical diagnosis or treatment or medical and/or industrial research.

⚠ **BZ-04** Radioactive material requiring a Fissile label, radioactive and fissile wastes will not be accepted for carriage.

BZ-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 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 word “Emergency Contact” or “24-Hour number” must be inserted in the Shipper’s Declaration for Dangerous Goods, in the “handling information” box (see 8.1.6.11 and 10.8.3.11).

A “24 hour” emergency telephone number is not required for shipments that do not require a Shipper’s Declaration for Dangerous Goods.

BZ-06 Prior clarification must be taken from the operator for sending shipments containing magnets under UN 2807. Refer to instructions under Packing Instruction 953.

BZ-07 Dangerous Goods listed in the List of High Consequence dangerous goods will not be accepted for carriage.

BZ-08 Dangerous goods forbidden unless exempted will not be accepted for carriage.

BZ-09 Dangerous Goods offered for transport under state exemptions or approvals (e.g. required by Special Provision A1, A2, and A106) will not be accepted for carriage.

C8 (Cargolux Italia)

⚠ **C8-01** Fissile materials, as defined in these Regulations, will not be accepted for carriage (see 10.5.13 and 10.10.2).

C8-02 Wastes, any kind, will not be accepted for carriage (see Packing Instruction 622 and 8.1.3.3).

C8-03 Dangerous goods in airmail will not be accepted for carriage (see 2.4 and 10.2.2).

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;
- consolidations with only one house air waybill.

(see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5).

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 liquids in Packing Groups I, II and III.

CA-05 The telephone or facsimile number of the consignee must be shown on the Air Waybill (see 8.2 and 10.8.8).

CA-06 Dangerous goods originating from China will not be accepted for carriage in air mail, except for radioactive materials in excepted packages which meet the requirement of 2.4.1 in these regulations (see 2.4 and 10.2.2).

CA-07 Dangerous goods in excepted quantities originating from China will not be accepted, except for radioactive materials in excepted packages (see 2.6 and 10.5.8).

CA-08 Cold storage for dangerous goods is not available, except when Carbon dioxide, solid (Dry ice) is used as a refrigerant for non dangerous goods (see Packing Instruction 954).

CA-09 Fireworks originating from China will not be accepted for carriage (see Packing Instruction 135).

CA-10 Single packagings including composite packagings containing liquid dangerous goods are not accepted for carriage unless overpacks are used. Such overpacks must be strong enough for carriage.

CA-11 The following dangerous goods are not accepted for carriage on Air China's international and domestic passenger flights:

- Class 1 explosives with exception of 1.4S.
- Division 2.3 toxic gas with exception of aerosols.
- Division 6.1 toxic substance of Packing Group I.
- Division 6.2 category A infectious substance, except when transported under the needs of the Ministry of Health of China, the CDC of China and the Ministry of Forest of China.
- Class 7 Radioactive Material in Type B or in Type C packaging with III-yellow category.

CA-12 Oxygen or air, gaseous cylinders required for medical use are not permitted in passengers' checked or carry-on baggage and on one's person. Should a passenger require supplementary oxygen, a prior request must be made to Air China Limited (see 2.3.4.1).

CI (China Airlines)

CI-01 The following dangerous goods as shown in Subsection 4.2 of these Regulations will not be accepted for carriage on China Airlines' passenger flights:

1. Class 1 to Class 8;
2. fully regulated lithium ion batteries as per Section I of PI 965–PI 967 (RLI);
3. fully regulated lithium metal batteries as per Section I of PI 968–PI 970 (RLM).

Note:

The above prohibitions do not apply to CI company material.

CI-02 Dangerous goods in excepted quantities will not be accepted (see Subsection 2.6).

CI-03 Dangerous goods in consolidations will not be accepted for carriage, except for:

1. consolidations having one master air waybill with one house air waybill; or
2. consolidations having one master air waybill with more than one house air waybill which have the same shipper and different consignees containing only dangerous goods; or
3. consolidations having multiple house air waybills with different shippers/consignees containing ID 8000 - Consumer commodity and/or UN 1266-Perfumery products; or
4. consolidations having multiple house air waybills with different shippers/consignees containing ID 8000 and/or UN 1266 mixed with general cargo.

(see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5).

CI-04 Any liquid dangerous goods having primary hazard or subsidiary hazard of Class 8 - Corrosives must be packed in combination packaging (see 5.0.2.14).

CI-05 Oxygen Generator Chemical UN 3356 will not be accepted for carriage except CI company material.

CI-06 Radioactive Materials other than "Radioactive material, excepted package" are prohibited when transferring/transiting Taiwan without prior approval by Taiwan authorities. A request for approval must be addressed to Atomic Energy Council/Taiwan by shipper 7 days prior to flight departs from the State of origin.

Atomic Energy Council
80, Section 1, Chenggong Road
Yonghe District
New Taipei City 23452
CHINESE TAIPEI
Tel: +886-2-8231 7919, Ext 2179/2187
Fax: +886-2-8231 7829

CI-07 Dangerous goods offered for transport under State exemptions or approvals (e.g. as required by Special Provision A1, A2, A106, etc.) will not be accepted for carriage.

CM (Copa Airlines–Cargo)

CM-01 Explosives will not be accepted for carriage (see Packing Instructions 101–143) (Excepted:

Explosives of Division 1.4S packed on passenger aircraft).

CM-02 Division 2.1, Flammable Gas will not be accepted for carriage (**see Packing Instructions 200–217**).

CM-03 Oxidizers and Organic Peroxides will not be accepted for a primary or subsidiary risk (**see Packing Instructions Y540–570**) (Excepted: UN 1072 Oxygen Compressed, with a subsidiary hazard).

⚠ **CM-04** Radioactive materials will not be accepted for carriage (**see 10.10.2**).

CV (Cargolux)

⚠ **CV-01** Fissile materials, as defined in these Regulations, will not be accepted for carriage (**see 10.5.13 and 10.10.2**).

CV-02 Wastes, any kind, will not be accepted for carriage (**see Packing Instruction 622 and 8.1.3.3**).

CV-03 Dangerous goods in airmail will not be accepted for carriage (**see 2.4 and 10.2.2**).

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.

⚠ **CX-03** Not used.

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 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 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**).

⚠ **CX-05** Liquid substances single packagings of drums and jerricans of any material must be prepared as follows:

1. the steel drums/plastic drums/plastic jerricans must be protected by other strong outer packaging, for example fibreboard box; or
2. if prepared as an open overpack, a suitably sized plastic or foam pallet must be used to protect at least the top and bottom of the packaging.

⚠ **CX-06** In addition to the requirements of 8.2.5, the UN number(s) of all shipments of dangerous goods in excepted quantities must be indicated on the air waybill.

⚠ **CX-07** Not used.

☐ **CX-08** All shipments of lithium batteries contained in equipment prepared in compliance with Section II of PI 967 or PI 970 must include the mandatory wording on the air waybill as shown in Section II ("Lithium ion batteries in compliance with Section II of PI 967" or "Lithium metal batteries in compliance with Section II of PI 970"). This applies even to shipments where no lithium

battery handling label is required to be affixed to the package(s).

CZ (China Southern)

CZ-01 Dangerous goods in excepted quantities originating from China will not be accepted (**see Subsection 2.6**).

CZ-02 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.

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 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 DGD preferably in the "Additional Handling Information" box (**see 8.1.6.11 and 10.8.3.11**).

A 24-hour emergency telephone number is not required for shipments that do not require a Shipper's Declaration for Dangerous Goods.

CZ-04 Cold storage for dangerous goods is not available, except for Carbon dioxide, solid (Dry ice) when used as a refrigerant (**see Packing Instruction 954**).

CZ-05 CSN will not appoint sales agents to accept or handle dangerous goods in China.

CZ-06 Division 2.3, Toxic gases, will not be accepted (**see Packing Instructions 200 and 206**).

⚠ **CZ-07** Only radioactive material of Categories I-White and II-Yellow will be accepted.

⚠ **CZ-08** Lithium metal or lithium alloy cells and batteries (UN 3090) are forbidden for transportation as cargo aboard passenger aircraft or cargo aircraft unless:

- Lithium metal or lithium alloy cells and batteries contained in or packed with equipment (UN 30911) are transported in accordance with Section II of Packing Instruction 969 or 970;
- Lithium metal or lithium alloy cells and batteries packed with or contained in equipment (UN 3091) that fall into the category of company materials (COMAT);

D0 (DHL Air Limited–DHL)

⚠ **D0-01** Dangerous goods shipments transported by DHL Air Limited (DHL) will only be accepted by advance arrangements and approval by the Regional Restricted Commodities Group–DHL Express Europe Headquarters before presenting for transport.

Regional Restricted Commodities Group–DHL Express Europe Headquarters

Tel: +49 (0) 341 4499 4949

Fax: +49 (0) 341 4499 88 4942

E-mail: rgcalert@dhl.com

△ **D0-02** The waybill for dangerous goods in "Excepted Quantities" must show the applicable UN Number in addition to the requirements of 2.6.8.2.

△ **D0-03** All lithium batteries, including refurbished, prepared under Section II of packing instructions 965-970 will only be accepted for carriage with the approval of Regional/Global Restricted Commodities Group-DHL Express Europe Headquarters.

D0-04 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 Regional Restricted Commodities Group-DHL Express Europe Headquarters.

D0-05 Not used.

☢ **D0-06** Radioactive and fissile wastes will not be accepted for carriage.

D0-07 Not used.

△ **D0-08** Hand written 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;
- packing instruction;
- authorization;
- emergency telephone number.

The technical name, when required, may be handwritten. 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 D0-08 are acceptable if each alteration/amendment is legible and signed with the same signature used to sign the Shipper's Declaration.

D0-09 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 (**See 8.1.6.11 and 10.8.3.11**).

A 24-hour emergency telephone number is not required for shipments that do not require a Shipper's Declaration for Dangerous Goods.

D5 (DHL Aero Express S.A.)

D5-01 Class 1, explosive articles will not be accepted for carriage or handling by DHL Aero Express 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 Express aircraft during normal operations, where a written authorization must be obtained from the Network Operations Dept (**See Packing Instructions 101-143**).

☢ **D5-02** With the exception of Excepted Quantities of Radioactive Material (RRE), DHL Aero Express will not accept for carriage any other article or substance belonging to Class 7.

D5-03 Dangerous Goods in Air Mail will not be accepted for carriage.

D5-04 Shipments under State approval in accordance with A2 will not be accepted.

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 DGD in the "Additional Handling Information" box (**See 8.1.6.11 and 10.8.3.11**).

A 24-hour emergency telephone number is not required for shipments that do not require a Shipper's Declaration for Dangerous Goods.

DE (Condor Flugdienst GmbH/Condor Berlin)

DE-01 Dangerous goods in Limited Quantities will not be accepted for carriage. Exception: Consumer commodity (ID 8000) will be accepted (**see Subsection 2.7 and all "Y" Packing Instructions**).

DE-02 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;
- consolidations with more than one house air waybill, in case of identical shipper.

DE-03 UN 3373 will not be accepted in air mail.

DE-04 Oxygen generators will not be accepted.

DE-05 Biological substance, Category B, UN 3373 will not be accepted.

☢ **DE-06** Fissile Material will not be accepted.

DE-07 The following Hazard Classes will not be accepted for carriage: RPG (2.3), ROP (5.2), RIS (6.2), RRW/RRY/RRE (RRW/RRE only with prior authorization from DE-HDQ).

DE-08 Heat producing articles such as underwater torches (diving lamps) and soldering irons are only allowed as carry-on baggage (**see 2.3.4.7 and Table 2.3.A**).

DL (Delta Air Lines)

⚠ DL-01 Class 7, Only the following radioactive materials will be accepted for carriage:

- Radioactive material in "excepted packages", and
- UN 2915—Radioactive material, Type A package and UN 3332—Radioactive material, Type A package, special form.

Radioactive material is limited to 3.0 TI per aircraft.

(see 10.5.8 and 10.5.10).

DL-02 Hazardous waste or any dangerous goods meeting the definition of hazardous waste will not be accepted for carriage (see Packing Instruction 622 and 8.1.3.3).

DL-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 (see 8.1.6.11).

DL-04 Dangerous Goods packaged as an All Packed in One (APIO) contained within an overpack will not be accepted.

DL-05 Division 6.1, Toxic Substances in Packing Group I will not be accepted for carriage.

E8 (USAfrica Airways)

E8-01 Division 6.1, Toxic substances (Packing Groups I and II) are not accepted for carriage.

E8-02 Class 8. The following corrosives are not accepted for carriage:

- Corrosives in Packing Groups I and II.

Exception:

Company Material, COMAT, in Packing Group II can be accepted.

⚠ E8-03 Class 7. Radioactive material will only be accepted under the following conditions (see 9.3.10.3 and 10.5.15):

- 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.

E8-04 Hazardous waste, as defined by any regulation, will not be accepted for carriage (see Packing Instruction 622 and 8.1.3.3).

E8-05 Wheelchairs with spillable batteries will be accepted only when the battery is removed from the wheelchair, packaged as outlined in 2.3.2.3 and 9.3.16.

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 (see 5.0.1.5).

EI-02 In addition to the requirement of 6.0.4.1, packages where UN Specification marking is printed on a label which is attached to the package, will not be accepted for transport (see also 7.1.3).

EI-03 Salvage packaging will not be accepted for transport (see 5.0.1.6, 6.0.6, 6.7, 7.1.5, 7.2.3.11).

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 (see 8.1.6.11 and 10.8.3.11).

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 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).

A 24-hour emergency telephone number is not required for shipments that do not require a Shipper's Declaration for Dangerous Goods.

⚠ EY-02 All Class 1 Explosives, Division 6.2 Infectious substances and Class 7 Radioactive materials and Salvage Packagings as defined in these Regulations, will not be accepted for carriage unless prior approval and booking arrangements are obtained from:

ETIHAD Airways Cargo Reservations
PO Box 35566
Cargo Village
Abu Dhabi International Airport
United Arab Emirates
Tel: +971 2 599 0099
E-mail: cargoreservations@ETIHAD.ae

⚠ EY-03 Dangerous goods in single packagings and cryogenic containers (Dewars), are not accepted for carriage unless overpacked.

⚠ EY-04 Fully Regulated Lithium Batteries (RLI/RLM) will not be accepted (see PI 965—PI 970).

EY-05 Dangerous Goods in Excepted Quantities will not be accepted.

⚠ EY-06 Not used

EY-07 Dangerous goods as defined in these Regulations will not be accepted in Air Mail.

FJ (Air Pacific)

⚠ FJ-01 Radioactive material, including all categories of excepted packages, will not be accepted for transport (see 10.10.2).

FJ-02 The carriage of ammunition in checked baggage is not permitted onboard Air Pacific aircraft (**see 2.3.2.1**).

FX (Federal Express)

FX-01 Class 1 articles and substances offered on a FedEx International Priority Freight (IPF), FedEx International Premium (IP1), or FedEx International Express Freight (IXF) may require a pre-alert or pre-approval. Call the FedEx Express Freight Customer Service at (800) 332-0807 for additional information (**see Packing Instructions 101-143**). Any Class 1 shipments originating in a non-U.S. location requires pre-approval. Call your local FedEx customer service number and ask for FedEx Express Freight customer service.

FedEx Express will not accept for transport any explosives assigned to Division 1.3.

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 USA including Puerto Rico, will only be accepted if in approved DOT 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 primary or subsidiary risk 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.

FX-03 Class 7 substances offered on FedEx International Priority Freight (IPF), FedEx International Premium (IP1), FedEx International Express Freight (IXF) or FedEx International Airport-to-Airport (ATA) may require a pre-alert or pre-approval. Call (800) 332-0807 for additional information. 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.

FedEx Express will not accept labelled radioactive material with a subsidiary risk of 1.4, 2.1, 3, 4.1, 4.2, 4.3, 5.1, 5.2, 8, or 2.2 with a Cargo Aircraft Only label unless the shipper has been pre-approved.

Class 7 shipments originating in a non-U.S. location require pre-approval. Call your local FedEx customer service number and ask for FedEx Express Freight customer service.

All fissile shipments worldwide require pre-approval. Call 1-901-434-3200 for assistance.

FX-04 The following Class 8 substances will not be accepted for carriage (**see Packing Instructions [-] listed after each substance**):

UN Number—Description

UN 1796—**Nitrating acid mixture**, over 40% concentration [854]

UN 1826—**Nitrating acid mixtures, spent**, over 40% in original solution [854]

UN 2031—**Nitric acid**, over 40% concentration [854, 855]

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 as follows—for liquids: IP3 or IP3A inner metal packaging 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 Number—Description

UN 2315—**Polychlorinated biphenyls, liquid** [964]

UN 3077—**Environmentally hazardous substances, solid, n.o.s.★** [956, Y956]

UN 3082—**Environmentally hazardous substances, liquid, n.o.s.★** [964, Y964]

UN 3432—**Polychlorinated biphenyls, solid** [956].

FX-07 Lithium batteries (Section I, Section IB and Section II) must not be shipped in the same package as the following dangerous goods classes/divisions: 1.4, 2.1, 3, 4.1, 4.2, 4.3, 5.1, 5.2 and 8 and 2.2 with a Cargo Aircraft Only label. This includes All Packed in One, Overpacks and combination All Packed in One/Overpacks.

Effective January 1, 2013, UN 3480 Lithium ion batteries and UN 3090 Lithium Metal Batteries prepared in accordance with Section IB will require a Shipper's Declaration for Dangerous Goods (DGD) with each shipment. "IB" must be indicated in the Authorization Column or the Additional Handling Information. Alternative documentation will not be allowed.

FX-08 Dry Shippers/Dry Dewars meeting the definition of the **Note** in Packing Instruction 202 must have the outer container marked "Dry Dewar" or "Dry Shipper". If the contents being kept cold are not dangerous goods or UN 3373 then also mark "Not Restricted" or "Non-Hazardous" on the outer container.

FX-09 Division 6.2, items classed as Risk Group 4 by the World Health Organization (WHO) will not be accepted for carriage.

FX-10 Not Used.

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. Exceptions: UN 3373, Biological Substance Category B may be shipped in the FedEx UN3373 Pak. FedEx Express white and brown boxes and tubes may be used for FedEx Express Section II lithium battery shipments.

FX-12 This variation applies only when FX-18 does not apply. Hand written 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, Packing Instruction, Authorization, Emergency telephone number.

Note:

The technical name, when required, may be handwritten.

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.

△ 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. In addition, FedEx Express will require the outer package to have the additional tested specification mark of DOT31FP (**see Packing Instruction 200 and USG-15(d)**).

The additional tested specification mark of DOT31FP will be required in addition to the specification container utilized and marked for all UN numbers listed in USG-18 which include UN 3156, UN 3157, UN 2451, UN 1070 and UN 3356.

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.

FX-15 The following substances will not be accepted for carriage (**see Packing Instructions [-] listed after each substance**):

UN Number—Description

UN 1001—**Acetylene, dissolved** [200]

UN 1162—**Dimethyldichlorosilane** [377]

UN 1308—**Zirconium suspended in a flammable liquid**, Packing Group I, [361]

UN 1873—**Perchloric acid**, over 50% concentration [553]

FX-16 FedEx Express will not accept for transport any item with an A2 or A183 Special Provision even with a Competent Authority approval.

FX-17 When using International Economy (IE) or International Economy Freight (IEF) to ship liquids in the primary hazard classes/divisions of 3, 4.2, 5.1, 5.2 and 8, customers must use "V rated" packaging. See www.fedex.com/us; keyword dangerous goods (search field); FedEx Services Available to Ship Dangerous Goods.

FX-18 Shipper's Declarations for dangerous goods for all FedEx Express® dangerous goods shipments originating in the U.S. must be prepared using software with dangerous goods compliance edit checks and by one of the following methods:

- (a) Certain FedEx electronic shipping solutions;
- (b) Recognized shipper proprietary software; or
- (c) FedEx recognized dangerous goods vendor software.

FX-18 currently does not apply to:

- Shipments originating in non-U.S. locations (including U.S. territories overseas, such as Puerto Rico);
- U.S. origin shipments on an IATA 023 air waybill including FedEx International Airport-to-Airport (ATA) SM, FedEx International Express Freight® (IXF) and FedEx International Premium® (IP1);
- Shipments containing Class 7 radioactive materials.

FX-19 Overpacks containing Dry Ice must be marked with the total net quantity (kg) of Dry Ice contained in the overpack.

GA (Garuda Indonesia)

GA-01 Advance arrangements must be made for all shipments of dangerous goods as defined in these Regulations (**see 1.3.2 and 9.1.2**).

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 (**see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5**).

GA-03 Except for ID 8000, **Consumer commodity**, dangerous goods in Limited Quantities ("Y" packing instructions) will not be accepted for carriage (**see Subsection 2.7 and all "Y" Packing Instructions**).

GA-04 Material Safety Data Sheet (MSDS) must be provided for dangerous goods except for dangerous goods in Class 7, vehicles, dangerous goods in apparatus or machinery and engines, ID8000, 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.

GF (Gulf Air)

GF-01 Only explosives of Division 1.4S are acceptable for carriage and only with prior approval from Gulf Air (**see Packing Instructions 101–143**).

GF-02 Prior approval is required for the carriage of Munitions of War, sporting weapons and ammunition (**see Packing Instructions 101–143**).

GF-03 The carriage of dangerous goods in excepted quantities is restricted. Apply to Gulf Air for details (**see Subsection 2.6**).

GF-04 The carriage of Limited Quantities of dangerous goods ("Y" packing instructions) is not permitted (**see Subsection 2.7 and all "Y" Packing Instructions**).

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 (**see 8.1.6.11 and 10.8.3.11**).

GF-07 Fissile radioactive materials in any quantity will not be accepted for carriage on GF services (**see 10.5.13 and 10.10.2**).

GH (Lic GloBus)

GH-01 Shipment of dangerous goods transported by Lic GloBus flights will only be acceptable after getting advance approval of Lic GloBus. Requests for dangerous goods shipments must be sent to the following email address:

email: cgo@s7.ru

Request for approval must be submitted and be made according to the special form of approval (form is provided by request). Form of approval to be attached to the set of accompanying documents and forwarded on board to the crew by the handling company at the airport of departure.

GH-02 Patient specimens will only be accepted if assigned to UN 2814 or UN 2900 or UN 3373 as appropriate. Biological substance, Category B - UN 3373 may only be accepted for carriage under necessary requirements and after a prior Lic GloBus written approval has been granted.

GH-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 case of an accident or incident concerning (any 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 DGD in the "Additional Handling Information" box, e.g. "Emergency Contact +7(495)-123-45-78".

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.

HA-02 Division 2.3, Toxic gases are not accepted for carriage (**see Packing Instructions 200 and 206**).

HA-03 Division 6.2, Infectious Substances are not accepted for carriage.

HA-04 Class 7—radioactive material of any kind will not be accepted for carriage (**see 10.10.2**).

HF (TUIfly)

HF-01 Class 7, Fissile Radioactive Material will not be accepted for carriage on HF-flights (**see 10.5.13 and 10.10.2**).

HV (Transavia Airlines C.V.)

HV-01 Class 7, Radioactive materials are not accepted for carriage (**see 10.10.2**).

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 (**see 10.5.13 and 10.10.2**).

⊗

IG (Meridiana)

IG-01 Class 1 explosives will not be accepted for carriage, except for Division 1.4S UN 0323 **Cartridges, power device** as COMAT. Ammunition for hunting or sporting purposes only may be transported in checked baggage (**See Packing Instructions 101–143**).

IG-02 The carriage of dry ice will be limited to 200 kg per hold.

IJ (Great Wall Airlines)

IJ-01 Only Division 1.4S and Division 1.4G explosives can be accepted for carriage on GWL services. Division 1.4S explosives must be packed for passenger aircraft. Division 1.4G explosives can ONLY be uplifted from Shanghai.

IJ-02 Items with a primary or subsidiary risk of Division 2.1, Class 4 and Class 5, when packed for Cargo Aircraft Only, will not be accepted for carriage.

IJ-03 Class 7, Fissile Material (uranium-233/235 and plutonium-238/239/241) will not be accepted on any aircraft.

IJ-04 Dangerous goods sent as air mail will not be accepted for uplift.

IJ-05 Oxygen generators, chemical, (UN 3356) will not be accepted on any aircraft.

IJ-06 Infected animals, dead or alive, are prohibited.

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.

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 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 (**see 8.1.6.11 and 10.8.3.11**).

A 24-hour emergency telephone number is not required for shipments that do not require a Shipper's Declaration for Dangerous Goods.

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 (**See Packing Instruction 650**).

IJ-11 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.

See (1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5)

IJ-12 The carriage of Limited Quantities of dangerous goods ("Y" packing instructions) is not permitted (**see Subsection 2.7 and all "Y" Packing Instructions**).

IJ-13 Only Division 6.2, Class 7 and Class 9 will be uplifted into/over the United States.

△ IP (Iberworld Airlines)

Editorial Note:

IP variations have been moved from TY due to an airline code change.

IP-01 Dangerous goods in excepted quantities will not be accepted for carriage (**see Subsection 2.6**).

IP-02 Dangerous goods in consolidations will not be accepted for carriage (**see 1.3.3 and 9.1.8**).

IP-03 Infected animals, dead or alive, will not be accepted for carriage (**see Packing Instruction 620 and 650**).

IP-04 Class 7—Radioactive material will not be accepted for carriage (**see 10.10.2**).

IP-05 Wheelchairs with spillable batteries, will not be accepted for carriage (**see 2.3.2.3 and 9.3.16**).

IP-06 Dry ice will not be accepted as cargo (**see Packing Instruction 954**).

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 (**see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5**).

IR-03 All package and overpack markings required by these Regulations 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 (**see 7.1.3.2, 7.1.3.3, 7.1.4, 7.1.5**).

IR-04 Carriage of Class 1—Explosives on IRAN Air flights is strictly prohibited with the exception of:

1. 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.
2. Cartridges for sporting purposes, UN 0012 & UN 0014, Division 1.4S, **Packing Instruction 130**, will be acceptable as cargo when limited to:
 - maximum 5 kg per package on passenger aircraft;
 - maximum 25 kg per package on cargo aircraft.

IR-05 Oxygen generators (chemical) under the following descriptions will not be accepted for carriage (**see Packing Instructions [-] listed after each substance**):

UN Number—Description

UN 1325—**Flammable solid, organic, n.o.s.★** (Division 4.1) [Y441, 445, 448, Y443, 446, 449]

UN 1449—**Barium peroxide** (Division 5.1, Subrisk 6.1) [Y543, 558, 562]

UN 1479—**Oxidizing solid, n.o.s.★** (Division 5.1) [557, 561, Y544, 558, 562, Y546, 559, 563]

UN 1489—**Potassium perchlorate** (Division 5.1) [Y544, 558, 562]

UN 1491—**Potassium peroxide** (Division 5.1) [561]

UN 1495—**Sodium chlorate** (Division 5.1) [Y544, 558, 562]

UN 1504—**Sodium peroxide** (Division 5.1) [561]

UN 2466—**Potassium superoxide** (Division 5.1) [561]

UN 2547—**Sodium superoxide** (Division 5.1) [561]

UN 3356—**Oxygen generator, chemical** (Division 5.1) [565]

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.

IR-06 The following dangerous goods will not be accepted for carriage on Iran Air (**see Packing Instructions [-] listed after each substance**):

UN Number—Description

UN 1040—**Ethylene oxide** [200]

UN 1063—**Methyl chloride** (Division 2.1) [200]

UN 1261—**Nitromethane** [364]

UN 1294—**Toluene** (Class 3) [353, Y341, 364]

UN 1410—**Lithium aluminium hydride** [487]

UN 1715—**Acetic anhydride** (Class 8) [851, Y840, 855]

UN 1739—**Benzyl chloroformate** [854]

UN 1786—**Hydrofluoric acid and sulphuric acid mixture** [854]

UN 1838—**Titanium tetrachloride** [—]

UN 1950—**Aerosols, flammable, corrosive**
(Division 2.1) [203, Y203]

UN 2428—**Sodium chlorate, aqueous solution**
(Division 5.1) [550, 551 Y540, Y541, 554, 555]

UN 2495—**Iodine pentafluoride** [—]

UN 2806—**Lithium nitride** (Division 4.3) [488]

IT (Kingfisher Airlines)

IT-01 Battery-powered wheelchairs or mobility-aids with spillable batteries will not be accepted on Kingfisher aircraft as checked baggage (see 2.3.2.3 and 9.3.16).

Note:

Battery-powered wheelchairs and mobility aids with non-spillable batteries are acceptable.

IT-02 Used camping stoves (fuel or gas) will not be accepted for carriage in baggage, even if thoroughly cleaned (see 2.3.2.5).

IT-03 Small gaseous oxygen (oxygen compressed UN 1072) or air cylinders required for medical use are not permitted in passenger checked or carry-on baggage. Should a passenger require supplementary oxygen, a request 72 hrs prior to the flight must be made to Kingfisher Airlines.

IT-04 Mercury barometers will not be accepted for carriage as carry-on or checked baggage, except a small medical or clinical thermometer for personal use when in protective case (see 2.3.3.1).

IT-05 Dangerous Goods in salvage packaging will not be accepted for carriage (see 5.0.1.6, 6.0.6, 6.7, 7.1.5 and 7.2.3.10).

IT-06 Mercury (UN 2809) or Mercury contained in manufactured articles will not be accepted for carriage under any circumstances.

IT-07 Hazardous waste as defined by any regulation, will not be accepted for carriage (see Packing Instruction 622 and 8.1.3.3).

IT-08 The shipper must provide a 24 hour emergency telephone number of a person/agency who is knowledgeable of the hazards characteristics and the 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 "24hour number" must be inserted in the "Additional Handling Information" box of the DGD.

IT-09 Dangerous goods as defined by any regulation will not be accepted in AIR MAIL (see 2.4 and 10.2.2).

IT-10 Class-1 Explosives will not be accepted for carriage except substances and articles of Division 1.4S, UN 0012 or UN 0014 only (see Packing Instruction 130).

IT-11 Division 2.3, Toxic gases will not be accepted for carriage (see Packing Instruction 200 and 206).

IT-12 Class-4 Flammable Solids will not be accepted for carriage.

▲ IT-13 Class-7 Radioactive material will not be accepted for carriage (see 10.10.2).

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 the shipper will take back his shipment at his own cost.

JJ (TAM Airlines)

△ JJ-01 Dangerous Goods offered for transport under an approval or an exemption as provided by 1.2.5 and 1.2.6 and any other LAN conditioned by pre-approval, 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 with the Dangerous Goods Department, who will refer any decision to the LAN Dangerous Goods Technical Committee.

An application for approval must be undertaken at least 15 working days of the scheduled date for the flight attaching the MSDS or other documentation that covers the shipment. Applications should be addressed to:

TAM Dangerous Goods Department

Tel: +56-2-6947898

+56-2-6774571

+1 305-7722894

E-mail: DangerousGoodsBoard@lan.com

△ JJ-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 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 declaration for dangerous goods in the "Handling Information" box (see 8.1.6.11 and 10.8.3.11).

An emergency response telephone number is not required for:

- Battery powered equipment
- Battery powered vehicle
- Flammable gas powered vehicle
- Flammable liquid powered vehicle
- Engine, internal combustion
- Dangerous goods in Limited Quantities as described in 2.7
- Carbon dioxide, solid (Dry Ice)
- Consumer commodity
- Refrigerating machines

△ JJ-03 For Toxic substances of Division 6.1 or Division 2.3, the following requirements must be complied with:

- (a)** 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**).

(b) Toxic gases of Division 2.3, will not be accepted for carriage unless a prior approval has been obtained (**see LA-01**).

(c) 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 inhalation hazard", as appropriate.

Notes:

1. This requirement only applies to the primary risk.
2. Where the substance has more than one route of toxicity, the risk that determined the packing group must be used.

(d) Solid toxic substances of any kind will not be accepted for carriage in bags 5H1, 5H2, 5H3, 5H4, 5L2, 5L3, 5M1 or 5M2 as single packagings unless contained in a strong hot sealed polyethylene bag at least 200 microns thick. If this type of packages are offered overpacked in a warehouse pallet, they will be accepted for carriage provided:

1. the warehouse pallet is rigid and strong enough to support the weight assembled on it, without bending when fork lifted;
2. the surface of the warehouse pallet is continuous, soft and free of sharp protruding points which could pierce the bags; and
3. the warehouse pallet is provided with separation bars from the floor for the use of a forklift.

△ **JJ-04** Infectious substances will be accepted under specific advance arrangements and the following requirements must be met:

(a) 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 that all the requirements of the countries of origin and destination of the shipment have been complied with.

(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 Biological Substance, Category B;
- Shipment of any Patient Specimens, prepared according 3.6.2.2.3.6.

(c) **Prohibitions.** Infected animals, dead (whole bodies) or alive will not be accepted for carriage.

△ **JJ-05** Formaldehyde solutions containing less than 25% of formaldehyde must be shipped under UN 3334 "Aviation Regulated Liquid, n.o.s. ★", Class 9, PG.III.

△ **JJ-06** The marking required by 7.1.5 and application of hazard and handling labels on packages containing dangerous goods must not be applied to the top or bottom of 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.

▲ **JJ-07** Fissile material as defined in 10.3.7 will be accepted only with prior review and approval by the LAN Dangerous Goods Technical Committee (**see LA-01**).
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JL (Japan Airlines)

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 (**see Subsection 10.5**).

JL-04 Not used.

▲ **JL-05** Any Type B(U) Packages will not be accepted for carriage on passenger aircraft unless they are intended for use in or incident to medical diagnosis, treatment or research (**see 9.3.10, 10.5.11 and 10.10.2**).

JL-06 Magnetized materials will not be carried aboard an aircraft if the net weight of the magnet itself exceeds:

- 2,000 kg or 4,400 lb in each Unit Load Device (ULD) and bulk compartment—(B-747F or B-747 aircraft);
- 2,000 kg or 4,400 lb in each Unit Load Device (ULD) and bulk compartment—(B-767F or B-767 aircraft);
- 2,000 kg or 4,400 lb in each Unit Load Device (ULD) and bulk compartment—(B-777 aircraft);
- 600 kg or 1,320 lb in one aircraft—(B-737 aircraft).

(**see Packing Instruction 953**).

JL-07 Not used.

JL-08 Division 6.1, Toxic substances in Packing Group I will not be accepted for carriage.

JL-09 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.

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 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**).

A 24-hour emergency telephone number is not required for shipments that do not require a Shipper's Declaration for Dangerous Goods.

JP (Adria Airways)

JP-01 Dangerous Goods, as defined by these Regulations, are prohibited 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 (**see 1.3.2 and 9.1.2**).

JQ (Jetstar)

- △ **JQ-01** Not used.
- △ **JQ-02** Not used.

JU (JAT Airways)

JU-01 The import of dangerous goods waste for the purposes of temporary or permanent warehousing within the territory of Yugoslavia is forbidden (**see Packing Instruction 622 and 8.1.3.3**).

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 (**see 1.2.8, 10.8.3.9.4 and 10.10.2**).

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**. If the State of origin requires text in a language other than English, both languages are to be given equal prominence (**see Figure 7.3.A through Figure 7.3.V, Figure 7.4.A and 10.7.7**).

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 (**see 2.3.5.6**).

JW-03 Not used.

JW-04 Division 5.2, Organic peroxide. No substance required to bear an "Organic peroxide" hazard label will be accepted for carriage.

JX (Jett8 Airlines Cargo)

▲ **JX-01** Class 7, Fissile Material will not be accepted.

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 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 (**see 8.1.6.11 and 10.8.3.11**).

A 24-hour emergency telephone number is not required for shipments that do not require a Shipper's Declaration for Dangerous Goods.

JX-03 Dangerous goods in Excepted Quantities will not be accepted (**see Subsection 2.6**).

JX-04 Dangerous goods in salvage packagings will not be accepted for carriage (**see 5.0.1.6, 6.0.6, 6.7, 7.1.5, 7.2.3.11**).

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.

△ **KA-03** Not used.

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 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**).

△ **KA-05** Liquid dangerous goods in single packagings of drums and jerricans of any material must be prepared as follows:

1. the steel drums/plastic drums/plastic jerricans must be protected by other strong outer packaging, for example fibreboard box; or
2. if prepared as an open overpack, a suitably sized plastic or foam pallet must be used to protect at least the top and bottom of the packaging.

△ **KA-06** In addition to the requirements of 8.2.5, the UN number(s) of all shipments of dangerous goods in excepted quantities must be indicated on the air waybill.

△ **KA-07** Not used.

△ **KA-08** All shipments of lithium batteries contained in equipment prepared in accordance with Section II of PI 967 or PI 970 must include the mandatory wording on the air waybill as shown in Section II ("Lithium ion batteries in compliance with Section II of PI 967" or "Lithium metal batteries in compliance with Section II of PI 970"). This applies even to shipments where no lithium battery handling label is required to be affixed to the package(s).

KC (Air Astana)

KC-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 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).

A 24-hour emergency telephone number is not required for shipments that do not require a Shipper's Declaration for Dangerous Goods.

KC-02 The following Classes are ACCEPTED for carriage without prior permission from KC Head Office:

- Division 2.2 Non-flammable, non-toxic gases
- Class 3 Flammable liquids
- Class 8 Corrosives
- Class 9 Miscellaneous

For carriage of other Classes and Divisions, Local Cargo Sales Office and/or KC Cargo Sales Head office (cargo@airastana.com) should be contacted in advance.

KC-03 The carriage of Carbon Dioxide, solid (dry ice) UN 1845 will be limited to the following:

- A 319/A 320/A 321–250 kg per aircraft (in AFT compartment ONLY)
- B 757/B 767–200 kg per aircraft (100 kg in FWD compartment; 100 kg in AFT compartment)

KC-04 The carriage of dangerous goods onboard of Fokker-50 aircraft is PROHIBITED.

KC-05 The operative telephone or facsimile number of the consignee must be shown on the Air Waybill.

KC-06 Single packagings containing liquid dangerous goods are not acceptable for transport unless overpacked with, for example, a suitable sized wooden pallet to protect at least the top and bottom of the packagings (see 5.0.1.5).

KC-07 All hazard labels must include text indicating the nature of the risk (see Figure 7.3.A through Figure 7.3.V, Figure 7.4.A and 10.7.7).

KC-08 Infected animals, dead or alive, will not be accepted for carriage.

KC-09 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 Cargo Sales Office to confirm the cut-off time (See 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5).

KC-10 Radioactive materials, including all categories of excepted packages, are NOT ACCEPTED for carriage.

KC-11 Except for ID 8000, Consumer commodity, dangerous goods in Limited Quantities ("Y" packing instructions) are NOT ACCEPTED for carriage (see Subsection 2.7 and all "Y" Packing Instructions).

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.

(see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5).

KE-02 Reservations must be made well in advance for any shipment containing dangerous goods as defined in these Regulations (see 1.3.2 and 9.1.2).

KE-03 Shipper's Declarations for Dangerous Goods must be completed in English, with copies requested by KE but not less than 2 copies for each shipment (see 8.1.2.1 and 10.8.1.4).

All package and overpack markings required by these Regulations must also be completed in English.

KE-04 Not used.

KE-05 Radioactive Type B(M) packages will not be accepted for carriage.

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 flight. The only exceptions are UN 3166, ID 8000, UN 1845, UN 2807 and UN 3373.

KE-07 Except for ID 8000, Consumer commodity, all liquid dangerous goods must comply with the following packaging requirements in addition to those specified in the packing instructions (see 5.0.2.14):

(a) 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); or
- acceptable if it is overpacked by a strong wooden crate.

(b) Combination Packaging using Limited Quantity Packaging is:

- acceptable if it is overpacked by a strong wooden crate.

KL (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 (See Packing Instructions 101–143).

Written authorization is not required for Division 1.4S Explosives with the exclusion of the UN numbers mentioned below.

Written authorization is required for UN numbers 0012, 0014, 0044, 0055, 0110, 0337, 0345, 0366, 0376 and 0481 and other Class 1 Explosives.

Applications in writing must be submitted to:

KLM Royal Dutch Airlines
Dangerous Goods Competence Centre—SPL/KI
PO 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 conditions of Sub-section 2.3 "Dangerous goods carried by passengers or crew".

KL-02 Class 7-Radioactive material, with the exception of UN 2908, UN 2909, UN 2910 and UN 2911, will not be accepted for transport and handling.

KL-03 Dangerous Goods offered under State exemptions or approvals can be accepted provided a written authorization is granted by the Dangerous Goods Competence Center-SPL/KI (see KL-01).

KQ (Kenya Airways)

KQ-01 Dangerous goods in consolidations will not be accepted for carriage, except for:

- ID 8000 Consumer commodity
- UN 1845 Carbon dioxide, solid or dry ice when used as a refrigerant for non dangerous goods consignments.

(see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5).

KQ-02 Dangerous goods in excepted quantities will not be accepted for transport (see Subsection 2.6).

KQ-03 Dangerous goods in air mail will not be accepted for transport (see Subsection 2.4).

KQ-04 Dangerous goods shipments bearing Toxic gas labels (Division 2.3) will not be accepted for carriage (see Packing Instructions 200 and 206).

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 (see 8.1.6.11 and 10.8.3.11).

KQ-06 Salvage packagings will not be accepted for carriage (see 5.0.1.6, 6.0.6, 6.7, 7.1.5, 7.2.3.11).

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.

KQ-08 Dangerous Goods in Limited Quantities ("Y" packing instructions) will not be accepted for carriage except Consumer commodities, as defined in these Regulations and packed according to these Regulations (see Special Provision A112) (see Subsection 2.7 and all "Y" Packing Instructions).

KZ (Nippon Cargo Airlines)

KZ-01 Advance arrangements must be made for all shipments of dangerous goods as defined in these Regulations (see 1.3.2 and 9.1.2). For magnetized materials (see Packing Instruction 953) the number of package(s) must be advised in advance. When an overpack is used, the number of packages inside the overpack must be advised.

KZ-02 Any Type B package, Type C package, SCO or LSA Materials in Industrial Packaging, Packages containing Uranium Hexafluoride, and Fissile Materials (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 VP & GM, Operations Management, Nippon Cargo Airlines.

UN Number—Proper Shipping Name

UN 2916—Radioactive material, Type B(U) package, non-fissile or fissile excepted.

(see 1.2.5, 10.5.11, 10.8.3.9.4 and 10.10.2).

KZ-03 For packagings containing liquid dangerous goods, sufficient ullage must be left in the packaging as described in 5.0.2.8.

KZ-04 Not used.

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.

(see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5).

KZ-06 Not used.

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

These packagings must be overpacked to protect the top and bottom of the packaging (see 5.0.1.5).

KZ-08 Dangerous goods in salvage packagings will not be accepted for carriage (see 5.0.1.6, 6.0.6, 6.7, 7.1.5, 7.2.3.11).

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 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).

A 24-hour emergency telephone number is not required for shipments that do not require a Shipper's Declaration for Dangerous Goods.

KZ-10 Dangerous goods as defined in these Regulations including items exempted in Subsection 2.4 will not be accepted in air mail.

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.

L7 (LANCO-Línea Aérea Carguera de Colombia S.A.)

L7-01 Dangerous Goods offered for transport under and approval or an exemption as provided by 1.2.5 and 1.2.6 and any other LAN conditioned by pre-approval, 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 with the Dangerous Goods Department, who will refer any decision to the LAN Dangerous Goods Technical Committee.

An application for approval must be undertaken at least 15 working days of the scheduled date for the flight attaching the MSDS or other documentation that covers the shipment. Applications should be addressed to:

LANCO Dangerous Goods Department

Tel: +56-2-6947898

+56-2-6774571

+1 305-7722894

E-mail: DangerousGoodsBoard@lan.com

L7-02 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 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 declaration for dangerous goods in the "Handling Information" box (**see 8.1.6.11 and 10.8.3.11**).

An emergency response telephone number is not required for:

- Battery powered equipment
- Battery powered vehicle
- Flammable gas powered vehicle
- Flammable liquid powered vehicle
- Engine, internal combustion
- Dangerous goods in Limited Quantities as described in 2.7
- Carbon dioxide, solid (Dry Ice)
- Consumer commodity
- Refrigerating machines

L7-03 For Toxic substances of Division 6.1 or Division 2.3, the following requirements must be complied with:

- (a) 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**).
- (b) Toxic gases of Division 2.3, will not be accepted for carriage unless a prior approval has been obtained (**see LA-01**).
- (c) 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 inhalation hazard", as appropriate.

Notes:

1. This requirement only applies to the primary risk.
2. Where the substance has more than one route of toxicity, the risk that determined the packing group must be used.

(d) Solid toxic substances of any kind will not be accepted for carriage in bags 5H1, 5H2, 5H3, 5H4, 5L2, 5L3, 5M1 or 5M2 as single packagings unless contained in a strong hot sealed polyethylene bag at least 200 microns thick. If this type of packages are offered overpacked in a warehouse pallet, they will be accepted for carriage provided:

1. the warehouse pallet is rigid and strong enough to support the weight assembled on it, without bending when fork lifted;
2. the surface of the warehouse pallet is continuous, soft and free of sharp protruding points which could pierce the bags; and
3. the warehouse pallet is provided with separation bars from the floor for the use of a forklift.

L7-04 Infectious substances will be accepted under specific advance arrangements and the following requirements must be met:

- (a) 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 that all the requirements of the countries of origin and destination of the shipment have been complied with.
- (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 Biological Substance, Category B;
 - Shipment of any Patient Specimens, prepared according 3.6.2.2.3.6.
- (c) **Prohibitions.** Infected animals, dead (whole bodies) or alive will not be accepted for carriage.

L7-05 Formaldehyde solutions containing less than 25% of formaldehyde must be shipped under UN 3334 "Aviation Regulated Liquid, n.o.s.★", Class 9, PG.III.

L7-06 The marking required by 7.1.5 and application of hazard and handling labels on packages containing dangerous goods must not be applied to the top or bottom of 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.

▲ L7-07 Fissile material as defined in 10.3.7 will be accepted only with prior review and approval by the LAN Dangerous Goods Technical Committee (**see LA-01**).

LA (LAN Airlines)

LA Variations apply to Lan Airlines and its Subsidiaries.

△ LA-01 Dangerous Goods offered for transport under and approval or an exemption as provided by 1.2.5 and 1.2.6 and any other LAN conditioned by pre-approval, 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 with the Dangerous Goods Department, who will refer any decision to the LAN Dangerous Goods Technical Committee.

An application for approval must be undertaken at least 15 working days of the scheduled date for the flight attaching the MSDS or other documentation that covers the shipment. Applications should be addressed to:

LAN Airlines Dangerous Goods Department

Tel: +56-2-6947898

+56-2-6774571

+1 305-7722894

E-mail: DangerousGoodsBoard@lan.com

△ LA-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 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 declaration for dangerous goods in the "Handling Information" box (**see 8.1.6.11 and 10.8.3.11**).

An emergency response telephone number is not required for:

- Battery powered equipment
- Battery powered vehicle
- Flammable gas powered vehicle
- Flammable liquid powered vehicle
- Engine, internal combustion
- Dangerous goods in Limited Quantities as described in 2.7
- Carbon dioxide, solid (Dry Ice)
- Consumer commodity
- Refrigerating machines

LA-03 Not used.

LA-04 Not used.

△ LA-05 Not used.

△ LA-06 For Toxic substances of Division 6.1 or Division 2.3, the following requirements must be complied with:

- (a) 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**).
- (b) Toxic gases of Division 2.3, will not be accepted for carriage unless a prior approval has been obtained (**see LA-01**).
- (c) 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 inhalation hazard", as appropriate.

Notes:

1. This requirement only applies to the primary risk.
2. Where the substance has more than one route of toxicity, the risk that determined the packing group must be used.

(d) Solid toxic substances of any kind will not be accepted for carriage in bags 5H1, 5H2, 5H3, 5H4, 5L2, 5L3, 5M1 or 5M2 as single packagings unless contained in a strong hot sealed polyethylene bag at least 200 microns thick. If this type of packages are offered overpacked in a warehouse pallet, they will be accepted for carriage provided:

1. the warehouse pallet is rigid and strong enough to support the weight assembled on it, without bending when fork lifted;
2. the surface of the warehouse pallet is continuous, soft and free of sharp protruding points which could pierce the bags; and
3. 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 specific advance arrangements and the following requirements must be met:

- (a) 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 that all the requirements of the countries of origin and destination of the shipment have been complied with.
- (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 Biological Substance, Category B;
 - Shipment of any Patient Specimens, prepared according 3.6.2.2.3.6.

(c) Prohibitions. Infected animals, dead (whole bodies) or alive will not be accepted for carriage.

△ LA-08 Formaldehyde solutions containing less than 25% of formaldehyde must be shipped under UN 3334 "Aviation Regulated Liquid, n.o.s.★", Class 9, PG.III.

LA-09 Not used.

LA-10 Not used.

LA-11 Not used.

LA-12 Not used.

LA-13 Not used.

LA-14 The marking required by 7.1.5 and application of hazard and handling labels on packages containing dangerous goods must not be applied to the top or bottom of 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.

▲ LA-15 Fissile material as defined in 10.3.7 will be accepted only with prior review and approval by the LAN Dangerous Goods Technical Committee (**see LA-01**).



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.

LD-03 Not used.

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 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).

LD-05 Liquid dangerous goods in single packagings of drums and jerricans of any material must be prepared as follows:

1. the steel drums/plastic drums/plastic jerricans must be protected by other strong outer packaging, for example fibreboard box; or
2. if prepared as an open overpack, a suitably sized plastic or foam pallet must be used to protect at least the top and bottom of the packaging.

LD-06 In addition to the requirements of 8.2.5, the UN number(s) of all shipments of dangerous goods in excepted quantities must be indicated on the air waybill.

LD-07 All shipments of lithium batteries contained in equipment prepared in accordance with Section II of PI 967 or PI 970 must include the mandatory wording on the air waybill as shown in Section II ("Lithium ion batteries in compliance with Section II of PI 967" or "Lithium metal batteries in compliance with Section II of PI 970"). This applies even to shipments where no lithium battery handling label is required to be affixed to the package(s).

LG (Luxair)

LG-01 Class 7, fissile radioactive material will not be accepted for carriage on passenger aircraft (see 10.5.13 and 10.10.2).

LG-02 Radioactive material is accepted for carriage on passenger aircraft with a maximum transport index (T.I.) of 2 per aircraft (see 9.3.10.3 and 10.5.15).

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).

LH (Deutsche Lufthansa/Lufthansa Cargo AG)

LH-01 Dangerous goods in "Limited Quantities" ("Y" Packing Instructions) will not be accepted for carriage. Exception: **Consumer commodity** (ID 8000) will be accepted (see Subsection 2.7 and all "Y" Packing Instructions).

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.

(see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5).

LH-03 Biological substance, Category B (UN 3373) will not be accepted in air mail (see 2.4).

LH-04 Oxygen generators will not be accepted.

LH-05 Biological substance, Category B, UN 3373 will not be accepted as cargo.

LH-06 Fissile Material will not be accepted.

LH-07 Intermediate bulk containers (IBC) will not be accepted. Exception: The IBC packagings 11A, 21A, 11B, 21B, 11N, 21N and 11C will be accepted under the condition that they are stackable with a minimum topload of 2,000 kg (stacking test load at least 3,600 kg). Advance arrangements with Lufthansa Cargo AG are required.

LP (LAN Peru)

LP-01 Dangerous Goods offered for transport under and approval or an exemption as provided by 1.2.5 and 1.2.6 and any other LAN conditioned by pre-approval, 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 with the Dangerous Goods Department, who will refer any decision to the LAN Dangerous Goods Technical Committee.

An application for approval must be undertaken at least 15 working days of the scheduled date for the flight attaching the MSDS or other documentation that covers the shipment. Applications should be addressed to:

LAN Peru Dangerous Goods Department

Tel: +56-2-6947898

+56-2-6774571

+1 305-7722894

E-mail: DangerousGoodsBoard@lan.com

LP-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 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 declaration for dangerous goods in the "Handling Information" box (see 8.1.6.11 and 10.8.3.11).

An emergency response telephone number is not required for:

- Battery powered equipment
- Battery powered vehicle
- Flammable gas powered vehicle

- Flammable liquid powered vehicle
- Engine, internal combustion
- Dangerous goods in Limited Quantities as described in 2.7
- Carbon dioxide, solid (Dry Ice)
- Consumer commodity
- Refrigerating machines

LP-03 For Toxic substances of Division 6.1 or Division 2.3, the following requirements must be complied with:

- (a) 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**).
- (b) Toxic gases of Division 2.3, will not be accepted for carriage unless a prior approval has been obtained (see **LA-01**).
- (c) 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 inhalation hazard", as appropriate.

Notes:

1. *This requirement only applies to the primary risk.*
 2. *Where the substance has more than one route of toxicity, the risk that determined the packing group must be used.*
- (d) Solid toxic substances of any kind will not be accepted for carriage in bags 5H1, 5H2, 5H3, 5H4, 5L2, 5L3, 5M1 or 5M2 as single packagings unless contained in a strong hot sealed polyethylene bag at least 200 microns thick. If this type of packages are offered overpacked in a warehouse pallet, they will be accepted for carriage provided:
 1. the warehouse pallet is rigid and strong enough to support the weight assembled on it, without bending when fork lifted;
 2. the surface of the warehouse pallet is continuous, soft and free of sharp protruding points which could pierce the bags; and
 3. the warehouse pallet is provided with separation bars from the floor for the use of a forklift.

LP-04 Infectious substances will be accepted under specific advance arrangements and the following requirements must be met:

- (a) 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 that all the requirements of the countries of origin and destination of the shipment have been complied with.
- (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 Biological Substance, Category B;
 - Shipment of any Patient Specimens, prepared according 3.6.2.2.3.6.
- (c) **Prohibitions.** Infected animals, dead (whole bodies) or alive will not be accepted for carriage.

LP-05 Formaldehyde solutions containing less than 25% of formaldehyde must be shipped under UN 3334 "Aviation Regulated Liquid, n.o.s.★", Class 9, PG.III.

LP-06 The marking required by 7.1.5 and application of hazard and handling labels on packages containing dangerous goods must not be applied to the top or bottom of 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.

▲ **LP-07** Fissile material as defined in 10.3.7 will be accepted only with prior review and approval by the LAN Dangerous Goods Technical Committee (see **LA-01**).

LX (Swiss International)

▲ **LX-01** Following class 7 articles or substances will not be accepted for carriage (see **Subsection 10.4**):

UN Number—Description

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 non-special form

UN 3328—Radioactive material, Type B(U) package, fissile

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 Except for ID 8000, **Consumer commodity**, dangerous goods in limited quantities ("Y" packing instructions) will not be accepted for carriage (see **Subsection 2.7 and all "Y" Packing Instructions**).

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 (see **2.3.3.1**).

LX-04 Camping stoves (gas or fuel) will not be accepted for carriage in baggage. This variation applies also to

used camping stoves which have been thoroughly cleaned (**see 2.3.2.5**).

LX-05 The shipper must provide a 24-hour emergency telephone number of a person who is knowledgeable of the hazard, characteristics and actions to be taken in case of an accident or incident. The telephone number must include 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, 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.

LU (LAN Express)

LU-01 Dangerous Goods offered for transport under and approval or an exemption as provided by 1.2.5 and 1.2.6 and any other LAN conditioned by pre-approval, 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 with the Dangerous Goods Department, who will refer any decision to the LAN Dangerous Goods Technical Committee.

An application for approval must be undertaken at least 15 working days of the scheduled date for the flight attaching the MSDS or other documentation that covers the shipment. Applications should be addressed to:

LAN Express Dangerous Goods Department

Tel: +56-2-6947898
+56-2-6774571
+1 305-7722894

E-mail: DangerousGoodsBoard@lan.com

LU-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 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 declaration for dangerous goods in the "Handling Information" box (**see 8.1.6.11 and 10.8.3.11**).

An emergency response telephone number is not required for:

- Battery powered equipment
- Battery powered vehicle
- Flammable gas powered vehicle
- Flammable liquid powered vehicle
- Engine, internal combustion
- Dangerous goods in Limited Quantities as described in 2.7
- Carbon dioxide, solid (Dry Ice)
- Consumer commodity
- Refrigerating machines

LU-03 For Toxic substances of Division 6.1 or Division 2.3, the following requirements must be complied with:

- (a) 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**).
- (b) Toxic gases of Division 2.3, will not be accepted for carriage unless a prior approval has been obtained (**see LA-01**).
- (c) 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 inhalation hazard", as appropriate.

Notes:

1. *This requirement only applies to the primary risk.*
2. *Where the substance has more than one route of toxicity, the risk that determined the packing group must be used.*

- (d) Solid toxic substances of any kind will not be accepted for carriage in bags 5H1, 5H2, 5H3, 5H4, 5L2, 5L3, 5M1 or 5M2 as single packagings unless contained in a strong hot sealed polyethylene bag at least 200 microns thick. If this type of packages are offered overpacked in a warehouse pallet, they will be accepted for carriage provided:
 1. the warehouse pallet is rigid and strong enough to support the weight assembled on it, without bending when fork lifted;
 2. the surface of the warehouse pallet is continuous, soft and free of sharp protruding points which could pierce the bags; and
 3. the warehouse pallet is provided with separation bars from the floor for the use of a forklift.

LU-04 Infectious substances will be accepted under specific advance arrangements and the following requirements must be met:

- (a) 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 that all the requirements of the countries of origin and destination of the shipment have been complied with.
- (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 Biological Substance, Category B;
 - Shipment of any Patient Specimens, prepared according 3.6.2.2.3.6.
- (c) **Prohibitions.** Infected animals, dead (whole bodies) or alive will not be accepted for carriage.

LU-05 Formaldehyde solutions containing less than 25% of formaldehyde must be shipped under UN 3334 "Aviation Regulated Liquid, n.o.s.★", Class 9, PG.III.

LU-06 The marking required by 7.1.5 and application of hazard and handling labels on packages containing dangerous goods must not be applied to the top or bottom of 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.

LU-07 Fissile material as defined in 10.3.7 will be accepted only with prior review and approval by the LAN Dangerous Goods Technical Committee (**see LA-01**).

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."

(**see Subsection 8.2**).

LY-02 Not used.

LY-03 Not used.

LY-04 Dangerous Goods **not** acceptable on El Al passenger aircraft:

Class 1: Explosive.

Except those explosives in Division 1.4S permitted by these Regulations.

Class 2: Division 2.1 Flammable gas; Division 2.2 Non-flammable, non-toxic gas; Division 2.3 Toxic gas.

Except:

(a) **Fire extinguishers**—UN 1044;

(b) **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;

(c) **Compressed gas, n.o.s.**—UN 1956.

Class 3: Flammable liquids.

Except: Perfumery products, UN 1266 packed according to **Packing Instruction 353**, Packing Group II or packed according to **Packing Instruction 355**, 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.

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 6: Division 6.2 Infectious substances.

Except:

1. **Infectious substances, affecting humans**—UN 2814.

2. **Infectious substances, affecting animals**—UN 2900.

3. **Biological substances, Category B**—UN 3373.

Class 9: Miscellaneous dangerous goods.

Except:

- **Life-saving appliances, self-inflating, UN 2990 and Air bag inflators/Air bag modules/Seat belt pretensioners** UN 3268;

- **Consumer commodity**, ID 8000, **Packing Instruction Y963**, prepared according to these Regulations;

- **Battery-powered vehicle or Battery-powered equipment**, UN 3171 or **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 ¼ tank of fuel;

- 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 ¼ tank of gasoline or diesel.

- **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”.

- **Magnetized material**—UN 2807;

- **Carbon dioxide, solid (dry ice)**—UN 1845, not more than 200 kg per hold and not more than 400 kg in the lower deck.

- Lithium batteries:

- 1. Fully regulated lithium ion batteries as per Section I of PI 965–967;

- 2. Fully regulated lithium metal batteries as per Section I of PI 968–970

- Environmentally hazardous substances, solid, n.o.s. UN 3077 and Environmentally hazardous substances, liquid, n.o.s. UN 3082

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.

Class 9: Dry ice (carbon dioxide, solid) UN 1845

- No more than 200 kg per hold, and no more than a total of 400 kg in the lower decks.
- No more than 3000 kg, in cargo aircraft main deck.

Note:

Livestock shall not be loaded in the vicinity of dry ice.

 M3 (ABSA Cargo Airline)

M3-01 Dangerous Goods offered for transport under and approval or an exemption as provided by 1.2.5 and 1.2.6 and any other LAN conditioned by pre-approval, 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 with the Dangerous Goods Department, who will refer any decision to the LAN Dangerous Goods Technical Committee.

An application for approval must be undertaken at least 15 working days of the scheduled date for the flight attaching the MSDS or other documentation that covers the shipment. Applications should be addressed to:

ABSA Dangerous Goods Department

Tel: +56-2-6947898
+56-2-6774571

+1 305-7722894

E-mail: DangerousGoodsBoard@lan.com

M3-02 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 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 declaration for dangerous goods in the "Handling Information" box (**see 8.1.6.11 and 10.8.3.11**).

An emergency response telephone number is not required for:

- Battery powered equipment
- Battery powered vehicle
- Flammable gas powered vehicle
- Flammable liquid powered vehicle
- Engine, internal combustion
- Dangerous goods in Limited Quantities as described in 2.7
- Carbon dioxide, solid (Dry Ice)
- Consumer commodity
- Refrigerating machines

M3-03 For Toxic substances of Division 6.1 or Division 2.3, the following requirements must be complied with:

- (a) 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**).

(b) Toxic gases of Division 2.3, will not be accepted for carriage unless a prior approval has been obtained (**see LA-01**).

(c) 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 inhalation hazard", as appropriate.

Notes:

1. This requirement only applies to the primary risk.
2. Where the substance has more than one route of toxicity, the risk that determined the packing group must be used.

(d) Solid toxic substances of any kind will not be accepted for carriage in bags 5H1, 5H2, 5H3, 5H4, 5L2, 5L3, 5M1 or 5M2 as single packagings unless contained in a strong hot sealed polyethylene bag at least 200 microns thick. If this type of packages are offered overpacked in a warehouse pallet, they will be accepted for carriage provided:

1. the warehouse pallet is rigid and strong enough to support the weight assembled on it, without bending when fork lifted;
2. the surface of the warehouse pallet is continuous, soft and free of sharp protruding points which could pierce the bags; and
3. the warehouse pallet is provided with separation bars from the floor for the use of a forklift.

M3-04 Infectious substances will be accepted under specific advance arrangements and the following requirements must be met:

- (a) 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 that all the requirements of the countries of origin and destination of the shipment have been complied with.
- (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 Biological Substance, Category B;
 - Shipment of any Patient Specimens, prepared according 3.6.2.2.3.6.

(c) **Prohibitions.** Infected animals, dead (whole bodies) or alive will not be accepted for carriage.

M3-05 Formaldehyde solutions containing less than 25% of formaldehyde must be shipped under UN 3334 "Aviation Regulated Liquid, n.o.s.★", Class 9, PG.III.

M3-06 The marking required by 7.1.5 and application of hazard and handling labels on packages containing dangerous goods must not be applied to the top or bottom of 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.

▲ **M3-07** Fissile material as defined in 10.3.7 will be accepted only with prior review and approval by the LAN Dangerous Goods Technical Committee (**see LA-01**).

M7 (MASAIR - Aerotransportes Mas de carga SA. De CV.)

M7-01 Dangerous Goods offered for transport under and approval or an exemption as provided by 1.2.5 and 1.2.6 and any other LAN conditioned by pre-approval, 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 with the Dangerous Goods Department, who will refer any decision to the LAN Dangerous Goods Technical Committee.

An application for approval must be undertaken at least 15 working days of the scheduled date for the flight attaching the MSDS or other documentation that covers the shipment. Applications should be addressed to:

MASAIR Dangerous Goods Department

Tel: +56-2-6947898
+56-2-6774571
+1 305-7722894

E-mail: DangerousGoodsBoard@lan.com

M7-02 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 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 declaration for dangerous goods in the "Handling Information" box (**see 8.1.6.11 and 10.8.3.11**).

An emergency response telephone number is not required for:

- Battery powered equipment
- Battery powered vehicle
- Flammable gas powered vehicle
- Flammable liquid powered vehicle
- Engine, internal combustion
- Dangerous goods in Limited Quantities as described in 2.7
- Carbon dioxide, solid (Dry Ice)
- Consumer commodity
- Refrigerating machines

M7-03 For Toxic substances of Division 6.1 or Division 2.3, the following requirements must be complied with:

- (a) 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**).
- (b) Toxic gases of Division 2.3, will not be accepted for carriage unless a prior approval has been obtained (**see LA-01**).
- (c) 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 inhalation hazard", as appropriate.

Notes:

1. This requirement only applies to the primary risk.
2. Where the substance has more than one route of toxicity, the risk that determined the packing group must be used.

(d) Solid toxic substances of any kind will not be accepted for carriage in bags 5H1, 5H2, 5H3, 5H4, 5L2, 5L3, 5M1 or 5M2 as single packagings unless contained in a strong hot sealed polyethylene bag at least 200 microns thick. If this type of packages are offered overpacked in a warehouse pallet, they will be accepted for carriage provided:

1. the warehouse pallet is rigid and strong enough to support the weight assembled on it, without bending when fork lifted;
2. the surface of the warehouse pallet is continuous, soft and free of sharp protruding points which could pierce the bags; and
3. the warehouse pallet is provided with separation bars from the floor for the use of a forklift.

M7-04 Infectious substances will be accepted under specific advance arrangements and the following requirements must be met:

- (a) 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 that all the requirements of the countries of origin and destination of the shipment have been complied with.
- (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 Biological Substance, Category B;
 - Shipment of any Patient Specimens, prepared according 3.6.2.2.3.6.
- (c) **Prohibitions.** Infected animals, dead (whole bodies) or alive will not be accepted for carriage.

M7-05 Formaldehyde solutions containing less than 25% of formaldehyde must be shipped under UN 3334 "Aviation Regulated Liquid, n.o.s.★", Class 9, PG.III.

M7-06 The marking required by 7.1.5 and application of hazard and handling labels on packages containing dangerous goods must not be applied to the top or bottom of 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.

▲ **M7-07** Fissile material as defined in 10.3.7 will be accepted only with prior review and approval by the LAN Dangerous Goods Technical Committee (**see LA-01**).

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MD (Air Madagascar)

▲ **MD-01** Fissile materials as defined in these Regulations will not be accepted for carriage on board Air Madagascar aircraft (**see 10.5.13**).

▲ **MD-02** Radioactive material of categories I-White, II-Yellow and III-Yellow will be accepted on board Air

Madagascar long-haul flight 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 (T.I.) total transport index in group of package or in one package must not exceed 3.0;
- (c) A prior approval of Civil Aviation Authority and Air Madagascar Regulation Department.

MD-03 Class 7 radioactive materials of any kind will not be accepted for carriage on Air Madagascar domestic flights.

MD-04 Class 1 explosives: shippers must obtain prior approval from Civil Aviation Authority and Air Madagascar regulation department for all explosives transported to and through Madagascar. The request must be submitted at least 5 working days prior to shipment.

MD-05 Fireworks will not be accepted for carriage.

ME (Middle East Airlines)

ME-01 Dangerous goods in excepted quantities will not be accepted for carriage (**see Subsection 2.6**).

ME-02 Dangerous Goods in Consolidations will not be accepted for carriage (**see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5**).

ME-03 Advance arrangements must be made for all shipments containing dangerous goods as defined in these Regulations (**see 1.3.2 and 9.1.2**).

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.

(**see Packing Instructions 870, 950, 951 and 952**).

ME-05 Dangerous goods in salvage packaging will not be accepted for carriage (**see 5.0.1.6, 6.0.6, 6.7, 7.1.5 and 7.2.3.11**).

ME-06 Hazardous waste, as defined by any regulation, will not be accepted for carriage (**see Packing Instruction 622 and 8.1.3.3**).

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 Number—Description

UN 1449—Barium peroxide [Y543, 558, 562]

UN 1489—Potassium perchlorate [Y544, 558, 562]

UN 1491—Potassium peroxide [561]

UN 1495—Sodium chlorate [Y544, 558, 562]

UN 1504—Sodium peroxide [561]

UN 2466—Potassium superoxide [561]

UN 2547—Sodium superoxide [561].

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.

ME-08 Not used.

ME-09 Package orientation (This Way Up) labels must be used on any combination and single packaging containing dangerous goods (**see 5.0.2.13.3 and 7.2.4.4**).

MH (Malaysia Airlines)

MH-01 Advance arrangements must be made for all shipments of dangerous goods as defined in the Regulations. Dangerous goods without bookings will be rejected (**see 1.3.2 and 9.1.2**).

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 materials are not accepted for carriage in mail (**see 2.4 and 10.2.2**).

MH-03 Salvage packaging will not be accepted (**see 5.0.1.6, 6.0.6, 6.7, 7.1.5 and 7.2.3.11**).

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.

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.

(**see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5**).

MH-06 Dangerous Goods in excepted quantities will not be accepted for carriage (**see Subsection 2.6**).

MH-07 All dangerous goods must be secured to prevent movement and damage (**see 9.3.5**).

MH-08 UN 2803 Gallium, will not be carried under any circumstances (**see Packing Instruction 867**).

MH-09 UN 2211 Polymeric beads, expandable will not be accepted for carriage (**see Packing Instruction 957**).

MH-10 Class 8, Corrosive materials (Packing Group I & II) will not be accepted for carriage (**see Subsection 3.8**).

MH-11 Explosives will not be accepted for carriage, except substances and articles of Division 1.4S (**see Packing Instructions 101–143**).

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, lawn mowers, outboard motors and other vehicles, machines or equipment (**see Packing Instruction 950**).

MH-13 Material Safety Data Sheet (MSDS) must be provided for dangerous goods except for dangerous goods in Class 7, vehicles, dangerous goods in apparatus or machinery and engines, ID8000, 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 (**see 8.0.1 and 8.3**).

MH-14 Except for ID 8000, Consumer Commodity, other dangerous goods in Limited Quantity ("Y" Packing Instructions) will not be accepted (**see Subsection 2.7 and all "Y" Packing Instructions**).

☢ **MH-15** Radioactive materials in Type A packages will be accepted for carriage on passenger aircraft subject to the limitations of MH-18 (**see 9.3.10 and 10.5.10**).

☢ **MH-16** Radioactive materials in Type B(U), Type B(M) and Type C packages will only be accepted for carriage on cargo aircraft (**see 9.3.10, 10.5.11 and 10.5.12**).

☢ **MH-17** Class 7, fissile radioactive materials will not be accepted (**see 10.5.13**).

☢ **MH-18** The carriage of Class 7, Radioactive materials is subject to the following limitations (**see 9.3.10.3**):

- Maximum of 3.0 T.I. per package on passenger aircraft;
- Maximum 3.0 total sum of T.I. per narrow-body passenger aircraft;
- Maximum 25.0 total sum of T.I. per wide-body passenger aircraft; and
- Maximum 50.0 total sum of T.I. per cargo aircraft.

MK (Air Mauritius)

☢ **MK-01** Class 7 Radioactive Materials of categories White-I, Yellow-II and Yellow-III will be accepted for carriage, provided the following conditions are complied with:

1. The Radioactive Materials must be for medical diagnosis or medical research or treatment; or
2. To be used in analysis for medical purposes with direct relation to human health; and
3. The total Transport Index (T.I.) 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".

MK-02 Fireworks will not be accepted for carriage.

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. UN 0323 will only be accepted as COMAT (aircraft parts), all packed for passenger aircraft.

MK-04 Dangerous Goods in Excepted Quantities will not be accepted for carriage (**see Subsection 2.6**).

MK-05 Shipper's Declarations must be in English and typewritten or computer generated. Hand written forms will not be accepted.

MK-06 Dangerous Goods in Limited Quantities ("Y" Packing Instructions) will only be accepted for carriage under advance arrangement with the Air Mauritius Ground Services Department, Tel: +230 603 3093/+203 603 3798 during office hours only (**see 1.3.2, 2.7 and 9.1.2**).

MK-07 Infectious substances and biological products will not be accepted for carriage in airmail (**See Subsection 2.4**).

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 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 (**See 8.1.6.11 and 10.8.3.11**).

MK-09 The telephone number of the consignee must be shown on the Air Waybill.

MK-10 All hazards labels must include text indicating the name 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.

MK-11 Single packaging is not acceptable for liquids of concentrates or essences with strong 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.

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.

MK-13 Air Mauritius will not transport Cargo Only Consignments (CAO) on its aircraft when operating cargo flights.

MK-14 Carriage of Carbon dioxide, solid (Dry ice) UN 1845 is subject to prior approval by Air Mauritius (**see 2.3.4.6**).

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 (see Subsection 2.3 and Table 2.3.A).

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 (see 2.3.4.1).

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.

MN-04 Bicycle Inflation Pumps filled with Division 2.2 Carbon Dioxide non-flammable gas will be accepted for transportation as checked baggage only. The maximum amount per passenger is limited to four 16 g cartridges. Cartridges larger than 16 g will not be permitted for carriage. This is outside the Company policy as specified in MN-01.

MP (Martinair Holland)

MP-01 Not used.

MP-02 Salvage packagings will not be accepted for carriage (see 5.0.1.6, 6.0.6, 6.7, 7.1.5 and 7.2.3.11).

MP-03 Not used.

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. (see 8.1.6.11 and 10.8.3.11).

MP-05 Class 7-Radioactive Materials, with the exception of UN 2908, UN 2909, UN 2910 and UN 2911, are not accepted for carriage.

MS (Egyptair)

MS-01 The transport of dangerous goods on board EGYPTAIR NETWORK must comply with the following:

1. The name, address and telephone number of the shipper/consignee must be written in full on the air waybill and on the package(s);

MS-02 Advance arrangements must be made for all shipments of dangerous goods as defined in these Regulations (see Subsections 1.3.2 and 9.1.2).

MS-03 Dangerous goods as defined in these Regulations will not be accepted by post.

MS-04 Where any doubt arises regarding the classification or identification of a substance, the shipper must provide, upon request of EGYPTAIR the Material Safety Data Sheet (MSDS) for the substance which must include the transport information, or a declaration on company letterhead confirming the classification & ASSUMING FULL LIABILITY (see 8.0.1 and 8.3).

MS-05 Dangerous goods in excepted quantities originating in Egypt will be accepted as dangerous goods, according to the IATA Dangerous Goods Regulations.

This provision does not apply to radioactive materials in excepted packages.

MS-06 Infected animals, dead or alive, will not be accepted on board EGYPTAIR network.

MS-07 For all types of Radioactive Materials packages including (excepted packages and for medical use) for import to Egypt, the shipper must notify the consignee and the station of destination before the arrival of the shipment by at least 48 hours. In case the shipment is not cleared through customs in 7 working days, the shipment will be returned to the originator on the shipper's account.

MU (China Eastern Airlines Co., LTD.)

MU-01 Class 7, fissile radioactive materials will not be accepted for carriage (see 10.5.13).

MU-02 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;

(see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5).

MU-03 Dangerous goods in air mail originating from China will not be accepted for carriage (See Subsection 2.4).

MU-04 Fireworks originating from China will not be accepted for carriage (See Packing Instruction 135).

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 Co., LTD. (see 2.3.4.1).

NF (Air Vanuatu)

NF-01 Radioactive material, including all categories of excepted packages, will not be accepted for transport (see 10.10.2).

NG (Lauda Air Luftfahrt AG)

NG-01 Booking and confirmation is required for all dangerous goods shipments as defined in these Regulations (see 1.3.2 and 9.1.2).

NH (All Nippon Airways)

NH-01 Advance arrangements must be made for all shipments of dangerous goods as defined in these Regulations (see 1.3.2 and 9.1.2).

NH-02 Not used.

NH-03 Type B(M), Type C, Fissile material (excluding fissile-excepted) packages, SCO and LSA material in Industrial Packagings will not be accepted for carriage (see 10.5.9, 10.5.11, 10.5.12, 10.5.13 and 10.10.2).

NH-04 Not used.

NH-05 Dangerous Goods in Salvage Packagings will not be accepted for carriage (see 5.0.1.6, 6.0.6, 6.7, 7.1.5 and 7.2.3.11).

NH-06 Dangerous goods packed in single metal packagings (1A1, 1A2, 1B1, 1B2, 3A1, 3A2, 3B1 & 3B2) are not acceptable for carriage unless an overpack is used (**see 5.0.1.5**).

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 (**see 2.3.5.6**).

NZ-02 Machinery incorporating internal combustion engines fuelled by petrol are to be classified as "Engines, internal combustion, flammable liquid powered" (UN 3166) whether they are used or new, unless the shipper can present a certificate that certifies that the fuel tank and fuel system have been purged of fuel.

Such machinery includes chainsaws, motor mowers, weed eaters, leaf blowers, etc.

OK (Czech Airlines)

OK-01 Dangerous goods as defined in these Regulations will not be accepted in air mail (**see 2.4 and 10.2.2**).

OK-02 Not used.

OK-03 Fissile radioactive material will not be accepted for carriage (**see 10.5.13**).

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**).

OK-05 Small oxygen cylinders containing gaseous oxygen or air required for medical use are not permitted on the person, in checked and carry-on baggage. Czech Airlines provides oxygen cylinders on request of passenger during flight booking, but at least 48 hours in advance (**see 2.3.4.1**).

OM (Mongolian Airlines)

OM-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 (**See 1.3.2 and 9.1.2**).

OM-02 Dangerous goods requiring a cargo aircraft only (CAO) label will not be accepted for carriage.

OM-03 Dangerous goods in airmail will not be accepted for carriage (**See Subsection 2.4**).

△ OM-04 Except for ID 8000, Consumer commodity, dangerous goods in limited quantities ("Y" packing instructions) will not be accepted for carriage (**See Subsection 2.7**).

OM-05 Dangerous goods in excepted quantities will not be accepted for carriage (**See Subsection 2.6**).

OM-06 Dangerous goods in consolidations will not be accepted for carriage (**See 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5**).

OM-07 Salvage packaging will not be accepted.

▲ OM-08 Class 7—Radioactive material of any kind will not be accepted for carriage (**See 10.10.2**).

OO (SkyWest Airlines)

OO-01 Commercial shipments of dangerous goods are limited only to UN 3373 Category B Infectious substances (**See Packing Instruction 650**).

Category B 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 cannot exceed 4 Kg for solids and 4 L for liquids.

OS (Austrian Airlines)

OS-01 Booking and confirmation is required for all dangerous goods shipments as defined in these Regulations (**see 1.3.2 and 9.1.2**).

OS-02 Wheelchairs or other battery-powered mobility devices with spillable batteries will not be accepted for carriage as checked or carry-on baggage (**see 2.3.2.3 and 9.3.16**).

OS-03 Dangerous goods in "Limited Quantities" ("Y" Packing Instructions) will not be accepted for carriage. Exception: **Consumer commodity** (ID 8000) will be accepted (**see Subsection 2.7 and all "Y" Packing Instructions**).

OS-04 Infectious substances, UN 2814, UN 2900 and UN 3373 will not be accepted in air mail (**see 2.4**).

OU (Croatia Airlines)

OU-01 Advance arrangements must be made for all shipments of dangerous goods as defined in these Regulations (**see 1.3.2 and 9.1.2**).

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**).

OU-03 Wheelchairs or other battery-powered mobility devices with spillable batteries will not be accepted for carriage (**see 2.3.2.3 and 9.3.16**).

OU-04 Dangerous goods in Limited Quantities ("Y" packing instructions) will not be accepted for carriage, except for Consumer commodity (ID 8000) (**see Subsection 2.7 and all "Y" Packing Instructions**).

△ OU-05 Not used.

OU-06 Biological substances Category B (UN 3373) will not be accepted in airmail (**see Subsection 2.4**).

OU-07 Oxygen generators, chemical (UN 3356) will not be accepted.

OU-08 Dangerous Goods in Salvage Packagings will not be accepted for carriage (**see 5.0.1.6, 6.0.6, 6.7, 7.1.5 and 7.2.3.11**).

▲ **OU-09** Class 7, fissile radioactive materials will not be accepted for carriage (**see 10.5.13**).

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 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 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**).

A 24-hour emergency telephone number is not required for shipments that do not require a Shipper's Declaration for Dangerous Goods.

OU-11 Explosives will not be accepted for carriage, except substances and articles of Division 1.4S (**see Packing Instructions 101–143**).

OU-12 Infected animals, dead or alive, will not be accepted for carriage.

OU-13 Not used.

OU-14 Dangerous Goods in consolidations will not be accepted for carriage, except for Carbon dioxide, solid (dry ice) when used as a refrigerant (**see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5**).

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 955**.

OU-16 Biological substances, Category B UN 3373 (human or animal) will only be accepted from approved Croatia Airlines customers. For additional information contact Croatia Airlines Cargo Sales Department.

OZ (Asiana Airlines)

OZ-01 Advance arrangements must be made for all shipments of dangerous goods as defined in these Regulations. Dangerous goods without booking will be rejected (**see 1.3.2 and 9.1.2**).

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 same shipper and consignee in each HAWB.

(**see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5**).

OZ-03 Class 1, Explosives are acceptable for carriage provided that prior approval has been received from Asiana Airlines. Prior approval is not required for COMAT parts and supplies containing explosives, and small quantities of ammunition in passenger baggage permitted by 2.3.2.2.

Contact for additional information or operator approval is:

Asiana Airlines, Cargo Service Team
PO 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.

OZ-05 Oxygen generator, chemical - UN 3356 will not be accepted for carriage.

▲ **OZ-06** Class 7, Radioactive Material: Type B(M), Fissile Material and Type C packages will not be accepted for carriage.

▲ **OZ-07** Class 7, Radioactive Material: Type B(U) packages will only be accepted for carriage on cargo aircraft.

OZ-08 All liquid dangerous goods shipments must be packed in accordance with the following requirements in addition to specified packing instructions:

- (a) Single packagings and composite packagings must be overpacked except single packaging code 1A1, 1A2 and composite packaging code 6HA1.
- (b) Shipments specified in (a) must be overpacked on a suitably sized wooden or plastic pallet to protect at least the top and bottom of the packaging.

P2 (Airkenya Express Ltd.)

P2-01 Dangerous goods, as defined by these 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**) and UN 1845 Carbon dioxide, solid (dry ice) when used as a refrigerant for non-dangerous goods.

PG (Bangkok Airways)

PG-01 Dangerous goods, as defined by these 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**).

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**).

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 - Tarr 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

PL (AeroPeru)

PL-01 All kinds of explosives are not accepted for transport by air.

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 Number—Description

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]

Any other dangerous goods under Division 1.4S wherein these Regulations 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

Pasay City

Metro-Manila

PHILIPPINES

Tel: +63 (2) 833 3862/879 5714

Fax: +63 (2) 831 1810

Telex: MNLNWPR

E-mail: Safety@pal.com.ph

(see 9.1.2).

PR-02 Wheelchairs or other battery-powered mobility devices with spillable batteries will not be accepted for carriage as checked baggage (see **2.3.2.3 and 9.3.16**).

PR-03 Fuel containers for camping stoves that have contained a flammable liquid fuel will not be accepted for carriage as checked baggage (see **2.3.2.5**).

PS (Ukraine International Airlines)

⚠ **PS-01** Radioactive Materials are not accepted for carriage on passenger aircraft. This requirement does not apply to Excepted Packages as defined in 10.5.8.

PX (Air Niugini)

PX-01 All package and overpack markings required by these Regulations 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 (see **6.0.4, 7.1.3.3, 7.1.4, 7.1.5, 10.7.1.2.2**).

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**. If the State of origin requires text in a language other than English, both languages are to be given equal prominence (see **Figure 7.3.A through Figure 7.3.V, Figure 7.4.A and 10.7.7**).

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 (see **1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5**).

⚠ **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:

Air Niugini
 Cargo Systems and Training
 PO Box 7186
 Boroko
 PAPUA NEW GUINEA
 Teletype: POMFUPX or POMFBPX (Attn: Cargo Training and Systems Office)

(see **Subsection 9.1**).

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 (see **Subsection 2.6**).

PX-06 Flammable solids of Division 4.1. Book Matches taken into aircraft cabin by crew and passengers for personal use is not permitted. Such items must be declared as dangerous goods through PX cargo agent offices (see **2.3.5.6**).

PX-07 Material Safety Data Sheet (MSDS) must be provided for all dangerous goods except for dangerous goods in Class 7, UN 2794, UN 3166, UN 3363, UN 3358, ID 8000, Magnetized material, Carbon dioxide, solid (dry ice), Division 6.2. 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 (see 8.3).

This variation only applies to shipments within and from Papua New Guinea and does not apply to transhipments from an international origin.

PX-08 Infectious substances packed in accordance with **Packing Instruction 650** are not permitted in the passenger cabin and must be lodged as cargo.

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. Copy of the check list must be attached.

This variation only applies to shipments within and from Papua New Guinea and does not apply to transhipments from an international origin.

PX-10 Dangerous goods in Limited Quantities ("Y" packing instructions) will not be accepted by PX and airlines handled by PX, except for dangerous goods in Class 9 (see Subsection 2.7 and "Y" Packing Instructions in Class 2 to 8).

PZ (Transportes del Mercosul-TAM)

PZ-01 Class 1, explosives, will not be accepted for carriage (See **Packing Instructions 101–143**).

PZ-02 Fuel products will not be accepted for carriage.

PZ-03 The shipper's declaration for dangerous goods as defined in these regulations must include a 24 hour emergency response phone number (see 8.1.6.11 and 10.8.3.11).

▲ PZ-04 The following maximum loading limits for radioactive material will be applied:

1. Fokker 100 - 3 TI per hold.
2. Airbus 319/320/330 - 5 TI per hold.

QF (Qantas Airways)

△ QF-01 Not used.

△ QF-02 Not used.

QR (Qatar Airways)

QR-01 UN 1845 Carbon dioxide, solid (Dry Ice) is restricted as follows:

- Maximum of 200 kg per aircraft hold (Aft and bulk holds are considered as one hold) on all aircraft types except on B777F.
- B777F-400 kg in lower deck (Total in FWD + AFT + Bulk). Total Dry Ice quantity in lower deck and main deck must not exceed 1000 kg.

QR-02 Dangerous goods are not permitted in courier and mail.

QR-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 during an emergency concerning each of the dangerous goods being transported. This telephone number, including the country and area code, preceded by the words "Emergency Contact" must be inserted on the "Handling Information" box of the DGD.

QR-04 The following will not be accepted for carriage on Qatar Airways passenger flights:

- UN 3090—lithium metal batteries;
- UN 3091—lithium metal batteries contained in equipment;
- UN 3091—lithium metal batteries packed with equipment.

The above include both Section I (fully regulated) and Section II (excepted) (see PI 968–970).

QR-05 Class 8—Corrosives. The following items will not be accepted on Qatar Airways passenger and cargo aircraft:

- UN 2803—Gallium;
- UN 2809—Mercury; and
- UN 3506—Mercury contained in manufactured articles.

QT (TAMPA Cargo)

QT-01 Not used.

△ QT-02 Mercury (UN 2809) will be accepted for carriage, provided the following conditions are complied with:

- (a) only combination packaging will be accepted;
- (b) outer packaging must have a strong inner lining, or bags of strong leak-proof, puncture-resistant material, impervious to mercury; must meet Packing Group I performance standards;
- (c) must be over packed with a plastic skid.

QT-03 Not used.

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).

QT-05 Material Safety Data Sheet (MSDS) must be provided for all dangerous goods classes, excepted for carbon dioxide, solid (dry ice), Vehicles and Engines (UN 3166), additionally for non-dangerous goods that have a chemical base. 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.

QY (European Air Transport Leipzig GmbH-DHL)

△ QY-01 Dangerous goods shipments transported by European Air Transport Leipzig GmbH (EAT) will only be accepted by advance arrangements and approval by the Regional Restricted Commodities Group—DHL Express Europe Headquarters before presenting for transport:

Regional Restricted Commodities Group—DHL Express Europe Headquarters
Tel: +49 (0) 341 4499 4949
Fax: +49 (0) 341 4499 88 4942
E-mail: rcgalert@dhl.com

△ QY-02 The waybill for dangerous goods in "Excepted Quantities" must show the applicable UN Number in addition to the requirements of 2.6.8.2.

△ QY-03 All lithium batteries, including refurbished, prepared under Section II of packing instructions 965–970 will only be accepted for carriage with the approval of Regional/Global Restricted Commodities Group—DHL Express Europe Headquarters.

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 and approval by the Regional Restricted Commodities Group—DHL Express Europe Headquarters.

QY-05 Not used.

☢ QY-06 Radioactive and fissile wastes will not be accepted for carriage.

QY-07 Not used.

△ QY-08 Hand written 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;
- packing instruction;
- authorization;
- emergency telephone number.

The technical name, when required, may be handwritten. 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 QY-08 are acceptable if each alteration/amendment is legible and signed with the same signature used to sign the Shipper's Declaration.

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.

RJ (Royal Jordanian)

RJ-01 Advance arrangements must be made for all shipments of dangerous goods as defined in these Regulations (see 1.3.2 and 9.1.2).

RJ-02 "Cargo Aircraft Only" dangerous goods are not permitted in consolidations (see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5).

RO (TAROM Airlines)

☢ RO-01 Class 7 Radioactive material of any kind will not be accepted for carriage.

S7 (JSC Siberia Airlines)

☢ S7-01 Shipment of dangerous goods transported by Siberia Airlines flights will only be acceptable after getting advance approval of Siberia Airlines. Requests for dangerous goods shipments must be sent to the following email address:

email: cgo@s7.ru

Request for approval must be submitted and be made according to the special form of approval (form is provided by request). Form of approval to be attached to the set of accompanying documents and forwarded on board to the crew by the handling company at the airport of departure.

S7-02 Patient specimens will only be accepted if assigned to UN 2814 or UN 2900 or UN 3373 as appropriate. Biological substance, Category B - UN 3373 may only be accepted for carriage under necessary requirements and after a prior Siberia Airlines written approval has been granted.

S7-03 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 case of an accident or incident concerning (any 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 DGD in the "Additional Handling Information" box, e.g. "Emergency Contact +7(495)-123-45-78".

SJ (Southern Air Transport)

SJ-01 Prior approval is required for shipments containing mercury.

SK (SAS—Scandinavian Airline System)

SK-01 UN 3090 Lithium batteries. Primary (non-rechargeable) lithium (metal) batteries and cells are prohibited from carriage as cargo unless permitted in Packing Instruction 968 Section II.

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).

SK-02 Not used.

SK-03 Not used.

SK-04 Single packagings containing liquid are not acceptable for carriage on SAS aircraft unless overpacked with, for example, a suitably sized pallet to

protect the base of the packaging (see all Packing Instructions for single packagings of liquids).

SQ-05 Not used.

SQ-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 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).

A 24-hour emergency telephone number is not required for shipments that do not require a Shipper's Declaration for Dangerous Goods.

SQ-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
- consolidations with only one house air waybill
- consolidations with more than one house air waybill, in case of identical shipper.

(see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5).

SN (Brussels Airlines)

SN-01 Used camping stoves (fuel or gas) will not be accepted for carriage in baggage, even if thoroughly cleaned (see 2.3.2.5).

SN-02 Small gaseous oxygen or air cylinders required for medical use will only be accepted empty as checked baggage (see 2.3.4.1).

SN-03 Exempt patient specimens as defined in paragraph 3.6.2.2.3.6 will only be accepted on Brussels Airlines flights after written approval from the Brussels Airlines Dangerous Goods Department:

Brussels Airlines DG Department
Brussels Airport
b-house Building 26 box 1.7
1930 Zaventem
BELGIUM
E-mail: dgdepartment@brusselsairlines.com

SQ (Singapore Airlines/Singapore Airlines Cargo)

SQ-01 Only explosives of Division 1.4S packed for "Passenger and Cargo Aircraft" or "Cargo Aircraft Only" may be accepted.

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 of all aircraft.

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.

▲ SQ-04 Class 7, Fissile Material will not be accepted.

SQ-05 Only Division 6.2 and/or Class 7 and/or Class 9 will be uplifted into/over the United States in a passenger aircraft. For uplift in a cargo aircraft, please refer to Tables USG-13.B and USG-13.C.

SQ-06 UN 3356 Oxygen generator, chemical will not be accepted.

SQ-07 Not used.

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 "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 (see 8.1.6.11 and 10.8.3.11).

A 24-hour emergency telephone number is not required for shipments that do not require a Shipper's Declaration for Dangerous Goods.

SQ-09 Dangerous goods shipments from other carriers will not be accepted.

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.

SS (Corsair)

▲ SS-01 Class 7—Radioactive material, including all categories of excepted packages, will not be accepted for transport (see 10.10.2).

SV (Saudi Arabian Airlines)

SV-01 Dangerous goods in excepted quantities will not be accepted (see Subsection 2.6).

SV-02 Not used.

SV-03 Dangerous goods in consolidations will not be accepted for carriage (see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5).

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 (see 5.0.2.13.3 and 7.2.4.4).

SV-05 Maximum net weight of Carbon dioxide, solid (dry ice) accepted for loading is 200 kg per lower hold of a passenger aircraft (see 9.3.12).

SV-06 Salvage packagings will not be accepted for carriage without prior approval from Cargo Operations Control Centre (see 5.0.1.6, 6.0.6, 6.7, 7.1.5, 7.2.3.11).

SV-07 Steel drums (1A1) with plastic pullout spout or cap will not be accepted for carriage on any aircraft.

SV-08 Not used.

SV-09 Class 7, fissile radioactive material will not be accepted for carriage. (See 10.5).

SV-10 Battery-powered wheelchairs or mobility-aids with spillable batteries will not be accepted on SVA aircraft as checked baggage (see 2.3.2.3 and 9.3.16).

SV-11 Fuel containers for camping stoves that have contained a flammable liquid fuel will not be accepted for carriage as checked baggage (see 2.3.2.5).

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.

SV-13 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 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).

A 24-hour emergency telephone number is not required for shipments that do not require a Shipper's Declaration for Dangerous Goods.

SW (Air Namibia)

SW-01 Dangerous goods, as defined in these Regulations, will not be accepted for carriage on the Beechcraft B1900 Aircraft (see 9.1.2).

SW-02 Except for dangerous goods classified as ID 8000, consumer commodities, dangerous goods in Limited Quantities ("Y" packing instructions) will not be accepted for carriage (see Subsection 2.7 and all "Y" Packing Instructions).

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.

(see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5).

TG (Thai Airways International)

TG-01 Dangerous goods in excepted quantities will not be accepted (see Subsection 2.6).

TG-02 All dangerous goods packed in single packagings 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 the base of the packaging.

TG-03 All kinds of explosives in class 1 will not be accepted for carriage, except substances and articles of

Division 1.4 S. that fall under shipment of THAI urgent aircraft spare parts carried to/from home base or line stations or AOG and supplies.

TG-04 Only radioactive materials with maximum TI not exceeding 3.0 which is intended for medical purpose will be accepted for carriage.

TG-05 Radioactive materials packed in Type B(U), Type B(M) packages; SCO or LSA packed in industrial packages will not be accepted for carriage.

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 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, (see 8.1.6.11 and 10.8.3.11).

TG-07 The shipments under State approval in accordance with Special Provision A1 or A2 are not accepted.

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 on the "Handling Information" box of the DGD and also outside of the package (see 8.1.6.11 and 10.8.3.11).

A 24-hour emergency telephone number is not required for shipments that do not require a Shipper's Declaration for Dangerous Goods.

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.

(see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5).

TK-04 Booking and confirmation are required for all dangerous goods shipments as defined in these regulations (see 1.3.2 and 9.1.2).

Turkish Cargo Reservation Department:

Tel: +90 212 465 22 22

Fax: +90 465 24 78

ISTFCTK

TK-05 Not used.

TK-06 All dangerous goods classes and radioactive materials will not be accepted in airmail (see 2.4 and 10.2.2).

TK-07 Infected animals, dead or alive, will not be accepted for carriage.

TN (Air Tahiti Nui)

TN-01 Not used.

TN-02 Shipments under State approval in accordance with Special Provisions A1 or A2 (see Subsection 4.2, Column M) are not accepted.

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 (see 2.3.4.1 and Packing Instruction 200).

TN-04 Dangerous goods in Limited Quantities ("Y" packing instructions) will not be accepted for carriage, except for dangerous goods classified as ID 8000, Consumer commodity (see Subsection 2.7 and all "Y" Packing Instructions).

TN-05 Category B infectious substances and biological products listed under UN 3373, Packing Instruction 650, may only be transported when the following information is indicated on the air waybill:

- the proper shipping name: "Biological substance, category B";
- the UN number "UN 3373";
- the division number, 6.2;
- the number of packages;
- the net quantity of infectious substances in each package.

The name, address and a telephone number of a responsible person must be indicated on the air waybill and on the package.

TU (Tunis Air)

TU-01 Class 1, Explosives are not acceptable for carriage with the exception of those in Division 1.4S.

TU-02 Division 2.1, Flammable gases are not acceptable for carriage with the exception of **Aerosols, flammable**, UN 1950.

TU-03 Division 2.3, Toxic gases are not acceptable for carriage.

TU-04 The following articles or substances are not acceptable for carriage (see Packing Instructions [-] listed after each substance):

UN Number—Description

UN 1003—Air, refrigerated liquid [202]

UN 1043—Fertilizer ammoniating solution [200]

UN 1724—Allyltrichlorosilane, stabilised [876]

UN 1732—Antimony pentafluoride [855]

UN 1747—Butyltrichlorosilane [876]

UN 1753—Chlorophenyltrichlorosilane [876]

UN 1762—Cyclohexenyltrichlorosilane [876]

UN 1763—Cyclohexyltrichlorosilane [876]

UN 1769—Diphenyldichlorosilane [876]

UN 1771—Dodecyltrichlorosilane [876]

UN 1781—Hexadecyltrichlorosilane [876]

UN 1784—Hexyltrichlorosilane [876]

UN 1792—Iodine monochloride [863]

UN 1796—Nitrating acid mixture [854, 855]

UN 1799—Nonyltrichlorosilane [876]

UN 1800—Octadecyltrichlorosilane [876]

UN 1801—Octyltrichlorosilane [876]

UN 1802—Perchloric acid [876]

UN 1806—Phosphorus pentachloride [863]

UN 1808—Phosphorus tribromide [855]

UN 1809—Phosphorus trichloride [-]

UN 1810—Phosphorus oxychloride [-]

UN 1816—Propyltrichlorosilane [876]

UN 1826—Nitrating acid mixture, spent [854, 855]

UN 1832—Sulphuric acid, spent [855]

UN 1837—Thiophosphoryl chloride [855]

UN 1906—Sludge acid [855]

UN 1912—Methyl chloride and methylene chloride mixture [200]

UN 1939—Phosphorus oxybromide [863]

UN 2028—Bombs, smoke, non-explosive [866]

UN 2031—Nitric acid [854, Y840, 851, 855]

UN 2073—Ammonia solution [200]

UN 2435—Ethyl phenyl dichlorosilane [876]

UN 2691—Phosphorus pentabromide [863]

UN 2799—Phenyl phosphorus thiodichloride [855]

The following articles and substances in Class 9 are not acceptable for carriage:

UN Number—Description

UN 2211—Polymeric beads, expandable [957]

UN 2590—White asbestos [958]

TU-05 Class 3, Flammable liquids (Packing Group I) are not acceptable for carriage.

TU-06 Class 4 Substances (Packing Group I) are not acceptable for carriage.

TU-07 The following articles and substances in Class 4 are not acceptable for carriage (see Packing Instructions [-] listed after each substance):

UN Number—Description

UN 1390—Alkali metal amides [Y475, 483, 489]

UN 1415—Lithium [487]

- UN 1420—**Potassium, metal alloys, liquid** [480]
 UN 1428—**Sodium** [487]
 UN 1868—**Decaborane** [448]
 UN 2257—**Potassium** [487]
 UN 2813—**Water-reactive solid, n.o.s.★** [488, Y475, 484, 490, Y477, 486, 491]
 UN 3404—**Potassium, metal alloys, solid** [487]

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.

TU-09 Division 6.1 Substances (Packing Group I) are not acceptable for carriage.

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 Regulations. Type B(M) packages of radioactive material are not acceptable for carriage (**see 10.5.11 and 10.8**).

TU-11 Class 8, Corrosive materials (Packing Group I) are not acceptable for carriage.

TU-12 The following substances in Class 8 are not acceptable for carriage (**see Packing Instructions [-] listed after each substance**):

UN Number—Description

- UN 1766—**Dichlorophenyltrichlorosilane** [876]
 UN 1767—**Diethylchlorosilane** [876]
 UN 2798—**Phenyl phosphorus dichloride** [855]

TX (Air Caraibes)

TX-01 Only radioactive material Category I-White (IMP code RRW, see B.2.2.4) where the maximum radiation level at any point on any external surface of a package or overpack does not exceed 0.005 mSv/h is accepted for transport.

UA (United Airlines)

UA-01 All liquid dangerous goods in all classes and divisions must be packed in combination packaging. Single packaging is not allowed. An overpack, by definition, is not a combination packaging. (See definitions in Appendix A and 5.0.1.5).

UA-02 Division 6.1 Toxic Substances are only accepted:

- on B747, B767, B777 or B787 aircraft. Any aircraft that is capable of transporting unit load devices (ULD);
- when these shipments are PG II or PG III;
- without inhalation toxicity.
- the Shipper's Declaration for the toxic materials must contain a certifying statement which indicates that the shipment contains materials intended for use in, or incident to medical purposes.

UA-03 The carriage of Carbon dioxide, solid (Dry ice), UN1845, is limited by aircraft type and must be booked

with weight of the dry ice to determine whether aircraft limits may be exceeded.

United Express and regional partners are limited to:

- 2.5 kg net per package
- 35 kg net per aircraft.

UC (LAN Cargo)

UC-01 Dangerous Goods offered for transport under and approval or an exemption as provided by 1.2.5 and 1.2.6 and any other LAN conditioned by pre-approval, 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 with the Dangerous Goods Department, who will refer any decision to the LAN Dangerous Goods Technical Committee.

An application for approval must be undertaken at least 15 working days of the scheduled date for the flight attaching the MSDS or other documentation that covers the shipment. Applications should be addressed to:

LAN Cargo Dangerous Goods Department
 Tel: +56-2-6947898
 +56-2-6774571
 +1 305-7722894
 E-mail: DangerousGoodsBoard@lan.com

UC-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 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 declaration for dangerous goods in the "Handling Information" box (**see 8.1.6.11 and 10.8.3.11**).

An emergency response telephone number is not required for:

- Battery powered equipment
- Battery powered vehicle
- Flammable gas powered vehicle
- Flammable liquid powered vehicle
- Engine, internal combustion
- Dangerous goods in Limited Quantities as described in 2.7
- Carbon dioxide, solid (Dry Ice)
- Consumer commodity
- Refrigerating machines

UC-03 For Toxic substances of Division 6.1 or Division 2.3, the following requirements must be complied with:

- (a)** 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**).

- (b) Toxic gases of Division 2.3, will not be accepted for carriage unless a prior approval has been obtained (see LA-01).
- (c) 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 inhalation hazard", as appropriate.

Notes:

1. This requirement only applies to the primary risk.
2. Where the substance has more than one route of toxicity, the risk that determined the packing group must be used.

- (d) Solid toxic substances of any kind will not be accepted for carriage in bags 5H1, 5H2, 5H3, 5H4, 5L2, 5L3, 5M1 or 5M2 as single packagings unless contained in a strong hot sealed polyethylene bag at least 200 microns thick. If this type of packages are offered overpacked in a warehouse pallet, they will be accepted for carriage provided:
1. the warehouse pallet is rigid and strong enough to support the weight assembled on it, without bending when fork lifted;
 2. the surface of the warehouse pallet is continuous, soft and free of sharp protruding points which could pierce the bags; and
 3. the warehouse pallet is provided with separation bars from the floor for the use of a forklift.

UC-04 Infectious substances will be accepted under specific advance arrangements and the following requirements must be met:

- (a) 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 that all the requirements of the countries of origin and destination of the shipment have been complied with.
- (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 Biological Substance, Category B;
 - Shipment of any Patient Specimens, prepared according 3.6.2.2.3.6.
- (c) **Prohibitions.** Infected animals, dead (whole bodies) or alive will not be accepted for carriage.

UC-05 Formaldehyde solutions containing less than 25% of formaldehyde must be shipped under UN 3334 "Aviation Regulated Liquid, n.o.s.★", Class 9, PG.III.

UC-06 The marking required by 7.1.5 and application of hazard and handling labels on packages containing dangerous goods must not be applied to the top or bottom of 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.

❖ **UC-07** Fissile material as defined in 10.3.7 will be accepted only with prior review and approval by the LAN Dangerous Goods Technical Committee (see LA-01).

□ **UL (Srilankan Airlines)**

UL-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 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 DGD, preferably in the "Handling Information" box (see 8.1.6.11 and 10.8.3.11).

This will be applied on shipments to, from or transiting through Sri Lanka. The 24-hour emergency telephone number is not required for shipments that do not require a Shipper's Declaration for dangerous goods.

Additional information or operator approval can be obtained from:

Cargo Duty Manager—Dangerous Goods
Srilankan Airlines
Cargo Centre
Bandaranike International Airport
Katunayake
SRI LANKA
Tel: +94 1 9733 3269
+94 1 9733 2455
Fax: +94 1 9733 5288
SITA: CMBDGUL
E-mail: cargodg@srilankan.aero

UL-02 Items listed in these Regulations which are totally forbidden or forbidden on passenger aircraft will not be accepted for transportation.

UL-03 Prior approval from the carrier is needed for shipments of explosives and weapons.

UL-04 Dangerous goods in airmail will not be accepted for carriage.

UL-05 A brief text in the English language indicating the nature of the risk involved shall appear on all hazard labels. The text should appear prominently in English in the lower half of the label as described in 7.2.2.4.

Package and overpack markings required by these Regulations must be completed in English in addition to the language which may be required by the State of Origin (see Figure 7.3.A through Figure 7.3.V and Figure 7.4.A and 10.7.7).

❖ **UL-06** Prior approval is required for shipments containing radioactive material. Information can be obtained from:

Atomic Energy Authority
Head, Radiation Protection
No. 60/460, Baseline Road
Orugodawatta
Wellampitiya
SRI LANKA
Tel: +94 11 253 3427-8 or
+94 11 253 4209
Fax: +94 11 253 3448
E-mail: anil@aea.ac.lk

UL-07 Gaseous oxygen or air cylinders required for medical use will not be accepted for carriage. Contact carrier for more details (**see 2.3.4.1**).

US (US Airways)

US-01 US Airways will not accept shipments for carriage which contain articles and substances listed in these Regulations and/or DOT Hazardous Materials Regulations and revisions thereto, except for the following:

- Articles and substances listed as not restricted or non-regulated in said regulations;
- Carbon dioxide, solid (dry ice) in individual packages cooling non-restricted contents;
- Envirotainer—unit load device equipment with dry ice cooling non-restricted contents;
- Class 9 Dangerous Goods, with the exception of the following which will not be accepted for transportation UN 2807, **Magnetized Material**; UN 2211, **Polymeric beads, expandable**; UN 3082, **Environmentally hazardous substance, liquid, n.o.s.**; UN 3077, **Environmentally hazardous substance, solid, n.o.s.**; UN 3480, **Lithium ion batteries**; UN 3481, Lithium ion batteries contained in, or packed with equipment; UN 3090, Lithium metal batteries; and UN 3091, Lithium metal batteries contained in, or packed with equipment;
- UN 3373, Biological substance, Category B;
- US Airways company material transported as aircraft replacement items.

US-02 Dangerous goods will not be accepted for carriage on US Airways Express.

UU (Air Austral)

UU-01 Dangerous goods as defined in the current edition of the IATA Dangerous Goods Regulations will not be accepted in AIR MAIL (**see 2.4 and 10.2.2**).

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**):

- (a) Infected or venomous animals;
- (b) Corrosive Material:

UN Number—Description

UN 1798—**Nitrohydrochloric acid** [854]

(c) Substances which in contact with water emit flammable gases:

UN Number—Description

UN 3132—**Water-reactive solid, flammable, n.o.s.**★ [488, Y475, 483, 490, Y476, 486, 491]

UN 3135—**Water-reactive solid, self-heating, n.o.s.**★ [488, 483, 490, 486, 491]

☢ **UU-03** Radioactive material will not be accepted for carriage (**see 10.10.2**).

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 10 days in advance and must be provided by the Cargo Manager, SITA Telex: RUNDKUU, copy RUNFKUU.

(Madagascar Island), Mahe (Seychelles), are subject to prior approval from Air Austral. Authorization must be requested 10 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 substances, affecting animals**, (liquid or solid) both in Division 6.2 and packed according to Packing Instruction 620. 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 must be packed in accordance with Packing Instruction 620 (**see Packing Instruction 620**).

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 (**see 1.3.2 and 9.1.2**).

UU-08 Not used.

UX (Air Europa)

UX-01 Dangerous Goods in excepted quantities will not be accepted for carriage (**see Subsection 2.6**).

UX-02 Dangerous Goods in limited quantities will not be accepted for carriage, except for ID 8000, **Consumer commodity**, COMAT, AOG, aircraft parts and supplies (**see Subsection 2.7 and all "Y" packing instructions**).

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.

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.

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.

UX-06 Dangerous Goods of which the primary hazard belongs to division 5.2 will not be accepted for carriage.

UX-07 The following dangerous goods will not be accepted for carriage (**see Packing Instructions [-] listed after each substance**):

UN Number—Description

UN 1787—**Hydriodic acid** [Y840, 851, 855, Y841, 852 and 856].

UN 2803—**Gallium** [867].

UX-08 Hazardous waste in any form, as defined by any regulation, will not be accepted for carriage.

UX-09 Salvage packagings will not be accepted for carriage.

UX-10 Class 7, Radioactive materials, will not be accepted for carriage.

UX-11 Not used.

UY (Cameroon Airlines)

UY-01 Dangerous goods in excepted quantities as defined in **Subsection 2.6** will not be accepted for carriage.

V3 (Carpatair SA)

V3-01 Dangerous Goods of Class 1 Explosives and Class 7 Radioactive material will not be accepted for carriage.

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 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 (**see 8.1.6.11 and 10.8.3.11**).

A 24-hour emergency telephone number is not required for shipments that do not require a Shipper's Declaration for Dangerous Goods.

VN (Vietnam Airlines)

VN-01 The shipper must make advance arrangements of procedures for all dangerous goods. Except for dangerous goods which do not require a DGD, all dangerous goods prior to being loaded in VNA's aircraft must obtain acceptance messages: The messages from HDQUDVN for dangerous goods departing from overseas and messages from VNA's Regional Offices for dangerous goods departing from Vietnam. (**see 1.3.2 and 9.1.2**).

VN-02 Dangerous Goods in Excepted Quantities will not be accepted for carriage, except Radioactive Material in Empty Packages (UN 2908) and Radioactive material, excepted package—instruments (UN 2911).

VN-03 Dangerous Goods in Airmail will not be accepted for carriage (**see 2.4 and 10.2.2**).

VN-04 All dangerous Goods of Packing Group I will not be accepted for carriage.

VN-05 Class 1—All kinds of explosives will not be accepted for carriage, except the substances and articles of Division 1.4S.

VN-06 Division 2.1—Flammable gases and Division 2.3—Toxic gases will not be accepted for carriage (Exception COMAT parts and supplies).

VN-07 Class 4—All dangerous goods of Division 4.3 will not be accepted for carriage.

VN-08 Not used.

▲ VN-09 Class 7—Radioactive Materials packed in Type B(U), Type B(M) or Type C packages; SCO or LSA packed in industrial packages and Radioactive Materials with Transport Index exceeding 3.0 will not be accepted for carriage.

VN-10 Not used.

VN-11 Class 9—Yeast active; Dry ice exceeding 400 kg; Polymeric beads or granules; and Magnetized materials exceeding 2,000 kg will not be accepted for carriage.

VN-12 Dangerous goods in consolidation 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 commodities); or
- consolidations having multi house air waybill containing UN 1845 (carbon dioxide, solid - or dry ice) when used as a refrigerant for non-dangerous goods.

(**see 1.3.3, 8.1.2.4, 9.1.8 and 10.8.1.5**).

VO (Tyrolean Airways)

VO-01 Booking and confirmation is required for all dangerous goods shipments as defined in these Regulations (**see 1.3.2 and 9.1.2**).

VO-02 Wheelchairs or other battery-powered mobility devices with spillable batteries will not be accepted for carriage as checked or carry-on baggage (**see 2.3.2.3 and 9.3.16**).

VO-03 Dangerous goods in "Limited Quantities" ("Y" Packing Instructions) will not be accepted for carriage. Exception: **Consumer commodity** (ID 8000) will be accepted (**see Subsection 2.7 and all "Y" Packing Instructions**).

VO-04 Infectious substances, UN 2814, UN 2900 and UN 3373 will not be accepted in air mail (**see 2.4**).

VS (Virgin Atlantic)

▲ VS-01 Radioactive materials will not be accepted for carriage, apart from excepted packages: UN 2908, UN 2909, UN 2910, UN 2911.

VT (Air Tahiti)

VT-01 Dangerous goods in Limited Quantities ("Y" packing instructions) will not be accepted for carriage (**see Subsection 2.7 and all "Y" Packing Instructions**)

VT-02 Specific limitations apply to the following items carried as cargo (ask the carrier by e-mail at resp-md@airtahiti.pf):

- Gases of Division 2.1 and Division 2.3;
- Solids of Division 4.2 and Division 4.3;
- Radioactive materials of Category II-Yellow and III-Yellow ("RRY" code)

VT-03 From any station other than the main base (Tahiti-Faa'a, "PPT" code), only 15 types of dangerous goods are accepted (ask the carrier).

VT-04 For carriage of dangerous goods of Packing Group I, and for carriage of dangerous goods in excepted quantities, prior approval from the Air Tahiti DG Manager is required.

VT-05 Not used.

VT-06 Different dangerous goods packed in one outer package are not accepted, except for carbon dioxide, solid (UN 1845) used as a refrigerant (**see 5.0.2.11**).

VT-07 All dangerous goods packages must show the package orientation label ("This Way Up" label) and the hazard label(s) on at least two opposite sides and must be loaded in the upright position (**see 7.2.4.4**).

VT-08 Medical and clinical wastes, infected animals and venomous animals are not accepted for carriage.

VT-09 The carriage of Carbon dioxide, solid (dry ice), UN 1845 is limited to 10 kg per package and two packages per aircraft.

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**).

XK-02 Not used.

XK-03 Dangerous Goods in Limited Quantities ("Y" packing instructions) will not be accepted for carriage (**see Subsection 2.7 and all "Y" Packing Instructions**).

XL (LAN Ecuador)

XL-01 Dangerous Goods offered for transport under and approval or an exemption as provided by 1.2.5 and 1.2.6 and any other LAN conditioned by pre-approval, 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 with the Dangerous Goods Department, who will refer any decision to the LAN Dangerous Goods Technical Committee.

An application for approval must be undertaken at least 15 working days of the scheduled date for the flight attaching the MSDS or other documentation that covers the shipment. Applications should be addressed to:

LAN Ecuador Dangerous Goods Department

Tel: +56-2-6947898

+56-2-6774571

+1 305-7722894

E-mail: DangerousGoodsBoard@lan.com

XL-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 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 declaration for dangerous goods in the "Handling Information" box (**see 8.1.6.11 and 10.8.3.11**).

An emergency response telephone number is not required for:

- Battery powered equipment
- Battery powered vehicle
- Flammable gas powered vehicle
- Flammable liquid powered vehicle
- Engine, internal combustion
- Dangerous goods in Limited Quantities as described in 2.7
- Carbon dioxide, solid (Dry Ice)
- Consumer commodity
- Refrigerating machines

XL-03 For Toxic substances of Division 6.1 or Division 2.3, the following requirements must be complied with:

- (a) 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**).
- (b) Toxic gases of Division 2.3, will not be accepted for carriage unless a prior approval has been obtained (**see LA-01**).
- (c) 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 inhalation hazard", as appropriate.

Notes:

1. This requirement only applies to the primary risk.
2. Where the substance has more than one route of toxicity, the risk that determined the packing group must be used.

(d) Solid toxic substances of any kind will not be accepted for carriage in bags 5H1, 5H2, 5H3, 5H4, 5L2, 5L3, 5M1 or 5M2 as single packagings unless contained in a strong hot sealed polyethylene bag at least 200 microns thick. If this type of packages are offered overpacked in a warehouse pallet, they will be accepted for carriage provided:

1. the warehouse pallet is rigid and strong enough to support the weight assembled on it, without bending when fork lifted;
2. the surface of the warehouse pallet is continuous, soft and free of sharp protruding points which could pierce the bags; and
3. the warehouse pallet is provided with separation bars from the floor for the use of a forklift.

XL-04 Infectious substances will be accepted under specific advance arrangements and the following requirements must be met:

- (a) 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 that all the requirements of the countries of origin and destination of the shipment have been complied with.

(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 Biological Substance, Category B;
- Shipment of any Patient Specimens, prepared according 3.6.2.2.3.6.

(c) **Prohibitions.** Infected animals, dead (whole bodies) or alive will not be accepted for carriage.

XL-05 Formaldehyde solutions containing less than 25% of formaldehyde must be shipped under UN 3334 “**Aviation Regulated Liquid, n.o.s.★**”, Class 9, PG.III.

XL-06 The marking required by 7.1.5 and application of hazard and handling labels on packages containing dangerous goods must not be applied to the top or

bottom of 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.

▲ **XL-07** Fissile material as defined in 10.3.7 will be accepted only with prior review and approval by the LAN Dangerous Goods Technical Committee (**see LA-01**).

ZW (Air Wisconsin)

ZW-01 Commercial shipments of dangerous goods will not be accepted. Properly prepared company material (COMAT) shipments will be accepted.

SECTION 3—CLASSIFICATION

3

3.0 General Principles

3.0.1 Classifying Dangerous Goods

3.0.1.1 Dangerous goods are defined as those goods which meet the criteria of one or more of nine UN hazard classes and, where applicable, to one of three UN Packing Groups according to the provisions of this section. The nine classes relate to the type of hazard whereas the packing groups relate to the applicable degree of danger within the class.

3.0.1.2 Wastes must be transported under the requirements of the appropriate class considering their hazards and the criteria of the Regulations. Wastes not otherwise subject to these Regulations, but covered under the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal* (1989), may be transported under Class 9.

3.0.1.3 Many of the substances listed in Classes 1 to 9 are deemed, without additional labelling, as being environmentally hazardous.

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

3.0.2 Hazard Classes

Some hazard classes are further subdivided into hazard divisions due to the wide scope of the class. The nine hazard classes and their divisions are listed below. The order in which they are numbered is for convenience and does not imply a relative degree of danger.

3.0.2.1 Class 1—Explosives

- Division 1.1—Articles and substances having a mass explosion hazard.
- Division 1.2—Articles and substances having a projection hazard but not a mass explosion hazard.
- Division 1.3—Articles and substances having a fire hazard, a minor blast hazard and/or a minor projection hazard but not a mass explosion hazard.
- Division 1.4—Articles and substances presenting no significant hazard.
- Division 1.5—Very insensitive substances having a mass explosion hazard.
- Division 1.6—Extremely insensitive articles which do not have a mass explosion hazard.

3.0.2.2 Class 2—Gases

- Division 2.1—Flammable gas.
- Division 2.2—Non-flammable, non-toxic gas.
- Division 2.3—Toxic gas.

3.0.2.3 Class 3—Flammable Liquids

This class has no sub-divisions.

3.0.2.4 Class 4—Flammable Solids; Substances Liable to Spontaneous Combustion; Substances Which, in Contact with Water, Emit Flammable Gases

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

3.0.2.5 Class 5—Oxidizing Substances and Organic Peroxides

- Division 5.1—Oxidizer.
- Division 5.2—Organic peroxides.

3.0.2.6 Class 6—Toxic and Infectious Substances

- Division 6.1—Toxic substances.
- Division 6.2—Infectious substances.

3.0.2.7 Class 7—Radioactive Material

This class has no sub-divisions.

3.0.2.8 Class 8—Corrosives

This class has no sub-divisions.

3.0.2.9 Class 9—Miscellaneous Dangerous Goods

This class has no sub-divisions.

3.0.3 Packing Groups

3.0.3.1 For packing purposes, substances are assigned to the relevant packing group according to the degree of danger they present:

- Packing Group I—high danger.
- Packing Group II—medium danger.
- Packing Group III—low danger.

3.0.3.2 Criteria for Packing Groups I, II and III have been developed for substances in Classes 3, 4, Division 5.1, Division 6.1 and Class 8 and are given in Subsections 3.3, 3.4, 3.5, 3.6 and 3.8. Some substances in Class 9, liquids in Division 5.1 and waste material in Division 6.2 (UN 3291) have been assigned to packing groups by experience rather than through the application

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3.0
to
3.1

of any technical criteria and these are shown in the List of Dangerous Goods in Subsection 4.2. Unless otherwise provided for, the UN specification packagings detailed in the packing instructions must meet the performance test requirements of the relevant packing group shown in Column E of the List of Dangerous Goods for the particular article or substance.

3.0.4 Multiple Hazards

Subsection 3.10 describes the procedure for determining which hazard takes precedence for an article or substance with more than one hazard. However, the most stringent packing group based on the different hazards must then be the packing group for the article or substance.

3.0.5 Shipper's Responsibility

The shipper is responsible for identifying and classifying all dangerous goods intended for transport by air in compliance with these Regulations. Specifically, before packing any dangerous goods for transport by air, the shipper must:

- (a) identify, correctly and fully, all articles and substances that meet the criteria as dangerous goods within the consignment;
- (b) classify each item of dangerous goods by determining under which of the nine classes it falls and, where relevant, determining any subsidiary hazards;
- (c) where relevant, assign each item of dangerous goods to one of the three packing groups within the assigned class or division.

3.1 Class 1—Explosives

STATE VARIATIONS: BEG-01/02/03, GBG-01, HKG-03, SAG-04, USG-05/16, ZAG-01

3.1.1 Definition

Class 1 comprises:

- (a) explosive substances (a substance which 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 (see 3.1.7); and
- (c) articles and substances not mentioned under (a) and (b) above which are manufactured with a view to producing a practical, explosive or pyrotechnic effect.

Notes:

1. Class 1 is a restricted class, that is, only those explosive articles and substances that are listed in Subsection 4.2—List of Dangerous Goods may be accepted for transport. However, the appropriate authorities of the States concerned retain

the right by mutual agreement to approve transport of explosive articles and substances for special purposes under special conditions. Therefore, entries have been included in Subsection 4.2—List of Dangerous Goods for “Articles, explosive, n.o.s.” and “Substances, explosive, n.o.s.”. It is intended that these entries be used only when no other method of operation is possible.

- 2. Most of the explosives listed in Subsection 4.2—List of Dangerous Goods are not normally permitted for transport by air. Information concerning them is included in this list, however transportation must be approved by the appropriate authorities of the States concerned under the provisions of 1.2.6.
- 3. 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.
- 4. A number of articles and substances, which are in Class 1, are described in Appendix A of these Regulations. These descriptions are given because a term may not be well known or may be at variance with its usage for regulatory purposes. Other definitions for terms used in this Subsection are also provided in Appendix A.
- 5. 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 Subsection.

3.1.2 Description

Explosive articles and substances are assigned to one of six divisions and to one of thirteen compatibility groups. Not all compatibility groups are to be found in all divisions.

Notes:

1. Only explosives in Division 1.4, compatibility group S are permitted on a passenger aircraft.
2. Only explosives in Division 1.3, compatibility groups C and G and Division 1.4, compatibility groups B, C, D, E, G and S are permitted on a cargo aircraft.

3.1.3 Divisions

Class 1 is divided into six divisions.

3.1.3.1 Division 1.1

Articles and substances having a mass explosion hazard (a mass explosion is one which affects almost the entire load virtually instantaneously).

3.1.3.2 Division 1.2

Articles and substances having a projection hazard but not a mass explosion hazard.

3.1.3.3 Division 1.3

Articles and substances having 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 articles and substances that:

- (a) give rise to considerable radiant heat; or
- (b) burn one after another, producing minor blast and/or projection effects.

3.1.3.4 Division 1.4

Articles and substances that present no significant hazard. This division comprises articles and substances 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:

Articles and substances in this division are placed in Compatibility Group S when 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.

3.1.3.5 Division 1.5

Very insensitive substances, having a mass explosion hazard, which 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 normal conditions of transport see 5.0.4.

△ 3.1.3.6 Division 1.6

Extremely insensitive articles which do not have a mass explosion hazard. This division comprises articles which contain only extremely insensitive 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.

3.1.4 Compatibility Groups

3.1.4.1 Goods of Class 1 are assigned to one of six divisions, depending on the type of hazard they present (see 3.1.3) and to one of thirteen compatibility groups which identify the kinds of explosive articles and substances that are deemed to be compatible. Tables 3.1.A and 3.1.B show the scheme of classification into compatibility groups, the possible hazard divisions associated with each group, and the consequential classification codes.

3.1.4.2 The definitions of compatibility groups in Table 3.1.A are intended to be mutually exclusive, except for an article or substance 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.

3.1.4.3 Certain Division 1.4S explosives, identified by Special Provision A165 in Subsection 4.2, are subject to Test Series 6(d) of Part I of the UN Manual of Tests and Criteria (see ST/SR/AC.10/11/Rev.5/Amend.1) to demonstrate that any hazardous effects arising from functioning are confined within the package. Evidence of a hazardous effect outside the package includes:

- (a) denting or perforation of the witness plate beneath the package;
- (b) a flash or flame capable of igniting such as a sheet of $80 \pm 3 \text{ g/m}^2$ paper at a distance of 25 cm from the package;
- (c) disruption of the package causing projection of the explosives contents; or
- (d) a projection which passes completely through the packaging (a projection or fragment retained or stuck in the wall of the packaging is considered as non hazardous).

The appropriate national authority may wish to take into account the expected effect of the initiator when assessing the results of the test, if these are expected to be significant when compared to the articles being tested. If there are hazardous effects outside the package, then the product is excluded from Compatibility Group S.

TABLE 3.1.A
Compatibility Group For Explosives (3.1.4)

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3.1

Compatibility Group	Hazard Division	Article or Substance to be Classified
A	1.1	Primary explosive substance
B	1.1; 1.2; 1.4	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, cap type, are included, even though they do not contain primary explosives
C	1.1; 1.2; 1.3; 1.4	Propellant explosive substance or other deflagrating explosive substance or article containing such explosive substance
D	1.1; 1.2; 1.4; 1.5	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
E	1.1; 1.2; 1.4	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)
F	1.1; 1.2; 1.3; 1.4	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
G	1.1; 1.2; 1.3; 1.4	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, phosphide, a pyrophoric substance, a flammable liquid or gel or hypergolic liquids)
H	1.2; 1.3	Article containing both an explosive substance and white phosphorus
J	1.1; 1.2; 1.3	Article containing both an explosive substance and a flammable liquid or gel
K	1.2; 1.3	Article containing both an explosive substance and a toxic chemical agent
L	1.1; 1.2; 1.3	Explosive article or substance containing an explosive substance and presenting a special risk (e.g. due to water activation, or the presence of hypergolic liquids, phosphides or a pyrophoric substance) and needing isolation of each type
N	1.6	Articles containing only extremely insensitive substances
S	1.4	Article or substance 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 efforts in the immediate vicinity of the package

Notes:

1. Articles of Compatibility Groups D and E may be fitted or packed together with their own means of initiation provided that such means have at least two effective protective features designed to prevent an explosion in the event of accidental functioning of the means of initiation. Such articles and packages must be assigned to Compatibility Groups D or E.
2. Articles of Compatibility Groups D and E may be packed together with their own means of initiation, which do not have two effective protective features when, in the opinion of the appropriate national authority of the State of Origin, the accidental functioning of the means of initiation does not cause the explosion of an article under normal conditions of transport. Such packages must be assigned to Compatibility Groups D or E.

TABLE 3.1.B
**Scheme of Classification of Explosives, Combination of Hazard Division
with Compatibility Group (3.1.4.1)**

Hazard	Compatibility Group													
	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
1.6												1.6N		1
1.1-1.6 Σ	1	3	4	4	3	4	4	2	3	2	3	1	1	35

3.1.5 Classification of Explosives

3.1.5.0 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.

3.1.5.1 Any article or substance having or suspected of having explosive characteristics must first be considered for classification in Class 1 in accordance with the procedures in 3.1.5.2 to 3.1.5.5. Goods are not classified in Class 1 when:

- (a) unless specially authorized, the transport of an explosive substance is forbidden because sensitivity of the substance is excessive;
- (b) the article or substance comes within the scope of those explosive articles and substances which are specifically excluded from Class 1 by the definition of this class; or
- (c) the article or substance has no explosive properties.

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

3.1.5.3 Any article or substance 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 Section 2.1.3 of the *UN Recommendations on the Transport of Dangerous Goods*, and Part I of the *UN Manual of Tests and Criteria*. Articles and substances classified in Class 1 must be assigned to the appropriate division and compatibility group in accordance with the procedures and criteria in those documents.

3.1.5.4 Except for substances which are listed by their proper shipping name in Subsection 4.2–List of Dangerous Goods, goods must not be offered for transport as Class 1 until they have been subjected to the classification procedure prescribed in this Subsection. 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 an explosive 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 article or substance 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.

3.1.5.5 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.

3.1.6 Nomenclature of Explosives

Definitions for the special terms used in describing explosives may be found in Appendix A.

3.1.7 Exclusion from Class 1

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

3.1.7.2 Where a substance provisionally accepted into Class 1 is excluded from Class 1 by performing UN 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 Subsection 4.2–List of Dangerous Goods in that class or division with a special provision restricting it to the type and size of package tested.

3.1.7.3 Where a substance is assigned to Class 1 but is diluted to be excluded from Class 1 by UN Test Series 6, this diluted substance (hereafter referred to as a desensitized explosive) should be listed in Subsection 4.2–List of Dangerous Goods with an indication of the highest concentration which excluded it from Class 1 (see 3.3.1.6 and 3.4.1.3) and if applicable, the concentration below which it is no longer deemed subject to these Regulations. New solid desensitized explosives subject to these Regulations 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.

- 3.1.7.4** An article may be excluded from Class 1 when three unpackaged articles, each individually activated by its own means of initiation or ignition or external means to function in the designed mode, meet the following test criteria:

- (a) no external surface has a temperature of more than 65°C. A momentary spike in temperature up to 200°C is acceptable;
- (b) no rupture or fragmentation of the external casing or movement of the article or detached parts thereof of more than 1 m in any direction;

Note:

Where the integrity of the article may be affected in the event of an external fire these criteria must be examined by a fire test, such as described in ISO 12097-3.

- (c) no audible report exceeding 135 dB(C) peak at a distance of 1 m;
- (d) no flash or flame capable of igniting a material such as a sheet of 80 ±10 g/m² paper in contact with the article; and
- (e) no production of smoke, fumes or dust in such quantities that the visibility in a 1 m³ chamber equipped with appropriately sized blow out panels is reduced more than 50% as measured by a calibrated light (lux) meter or radiometer located 1 m from a constant light source located at the midpoint on opposite walls. The general guidance on Optical Density Testing in ISO 5659-1 and the general guidance on the Photometric System described in Section 7.5 in ISO 5659-2 may be used or similar optical density measurement methods designed to accomplish the same purpose may also be employed. A suitable hood cover surrounding the back and sides of the light meter must be used to minimize effects of scattered or leaking light not emitted directly from the source.

Notes:

1. If during the tests addressing criteria (a), (b), (c) and (d) no or very little smoke is observed the test described in (e) may be waived.
2. The appropriate national authority may require testing in packaged form if it is determined that, as packaged for transport, the article may pose a greater risk.

3.2 Class 2—Gases

STATE VARIATIONS: BHG-02, USG-02

3.2.1 Definition

3.2.1.1 A gas is a substance which:

- (a) at 50°C has a vapour pressure greater than 300 kPa (3.0 bar); or
- (b) is completely gaseous at 20°C at a standard pressure of 101.3 kPa (1.01 bar).

3.2.1.2 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.

3.2.1.3 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 3.2.5).

Note:

"Cryogenic liquid" means the same as "refrigerated liquefied gas".

3.2.1.4 Pressures of all kinds relating to receptacles (such as test pressure, internal pressure, safety-valve opening pressure) are always indicated in gauge pressure (pressure in excess of atmospheric pressure); however, the vapour pressure of substances is always expressed in absolute pressure.

3.2.2 Divisions

3.2.2.0 Classification

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

Note:

Aerosols (UN 1950), Receptacles, small, containing gas (UN 2037) and Gas cartridges (UN 2037) must be regarded as being in Division 2.1 when the criteria in 3.2.5.2.1 are met.

3.2.2.1 Division 2.1 Flammable Gas

Gases which at 20°C and a standard pressure of 101.3 kPa (1.01 bar):

- (a) are ignitable when in a mixture of 13% or less by volume with air; or
- △ (b) 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 10156:2010). Where insufficient data are available to use these methods, tests by a comparable method recognized by the appropriate national authority must be used.

3.2.2.2 Division 2.2 Non-flammable, Non-toxic Gas

Gases which:

- (a) are asphyxiant—gases which dilute or replace the oxygen normally in the atmosphere; or
- (b) are oxidizing—gases which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does; or
- (c) do not come under the other divisions.

△ **Note:**

In 3.2.2.2(b) “gases which cause or contribute to the combustion of other material more than air does” means pure gases or gas mixtures with an oxidizing power greater than 23.5 per cent as determined by a method specified in ISO 10156:2010.

3.2.2.3 Division 2.3 Toxic Gas

Gases which:

- (a) are known to be so toxic or corrosive to humans as to pose a hazard to health; or
- (b) are presumed to be toxic or corrosive to humans because they have an LC₅₀ value equal to or less than 5,000 mL/m³ (ppm) when tested in accordance with 3.6.1.5.3.

Note:

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

3.2.2.4 Exemptions

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

3.2.2.4.2 Gases of Division 2.2 are not subject to these Regulations when contained in the following:

- (a) foodstuffs, including carbonated beverages (except UN 1950);
- (b) balls intended for use in sports;
- (c) tyres which meet the provisions of Special Provision A59; or
- (d) light bulbs, provided they are packaged so that the projectile effects of any rupture of the bulb will be contained within the package.

3.2.3 Mixtures of Gases

3.2.3.1 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:

△ **3.2.3.1.1** Flammability must be determined by tests or by calculation in accordance with methods adopted by ISO (see ISO Standard 10156:2010). Where insufficient data are available to use these methods, tests by a comparable method recognized by the appropriate national authority must be used.

3.2.3.1.2 The level of toxicity is determined by either tests in accordance with 3.6.1.5.3 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 ith component substance of the mixture

T_i = toxicity index of the ith component substance of the mixture (the T_{c_i} equals the LC₅₀ value when available).

3.2.3.1.2.1 When LC₅₀ values are unknown the toxicity index is determined by using the lowest LC₅₀ value of substances of similar physiological and chemical effects, or through testing if this is the only practical possibility.

3.2.3.1.3 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 LC₅₀ value of the mixture's corrosive components is equal to or less than 5,000 mL/m³ (ppm) when the LC₅₀ is calculated by the formula:

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

where:

f_{c_i} = mole fraction of the ith corrosive component substance of the mixture

T_{c_i} = toxicity index of the ith corrosive component substance of the mixture (the T_{c_i} equals the LC₅₀ value when available).

△ **3.2.3.1.4** Oxidizing ability is determined either by tests or by calculation methods adopted by the International Standards Organization (ISO) (see the Note under 3.2.2.2, ISO 10156:2010).

3.2.4 Hazard Precedence

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

- Division 2.3 takes precedence over all other divisions;
- Division 2.1 takes precedence over Division 2.2.

3.2.5 Aerosols or Aerosol Dispensers

3.2.5.1 Definition

STATE VARIATION: USG-06

Class 2 also includes “aerosols”. For the purpose of these Regulations an aerosol or aerosol dispenser means any non-refillable receptacle 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 self-closing 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 or gaseous state.

3.2.5.2 Classification

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 apply:

3.2.5.2.1 An aerosol must be assigned to Division 2.1 if the contents include 85% by weight or more of flammable components and the chemical heat of combustion is 30 kJ/g or more.

3.2.5.2.2 An aerosol must be assigned to Division 2.2 if the contents contain 1% by weight or less of flammable components and the heat of combustion is less than 20 kJ/g.

3.2.5.2.3 Aerosols not meeting the provisions of 3.2.5.2.1 or 3.2.5.2.2 must be classified in accordance with 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.

3.2.5.2.4 Gases of Division 2.3 must not be used as a propellant in an aerosol dispenser.

3.2.5.2.5 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.

3.2.5.3 Flammable Aerosols

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.

3.2.5.4 Toxic Aerosols

Gases of Division 2.3 contained in an aerosol are forbidden from transport.

3.2.5.5 Aerosols in Packing Group I

Aerosols with contents meeting the criteria for Packing Group I for toxicity or corrosivity are forbidden from transport.

3.3 Class 3—Flammable Liquids

3.3.1 Definition

3.3.1.1 Class 3 includes the following substances:

(a) Flammable liquids (see 3.3.1.2 to 3.3.1.5); and

(b) Liquid desensitized explosives (see 3.3.1.6).

3.3.1.2 This class has no subdivisions. It comprises liquids or mixtures of liquids or liquids containing solids in solution or in 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.

3.3.1.3 Liquids described in 3.3.1.2 with a flash point exceeding 35°C which do not sustain combustion need not be considered as flammable liquids for the purposes of these Regulations, if:

- (a) they have passed a suitable test for combustibility (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 2592:1973 is greater than 100°C; or
- (c) they are miscible solutions with a water content of more than 90% by weight.

3.3.1.4 Notwithstanding 3.3.1.2 and 3.3.1.3, liquids offered for transport at temperatures at or above their flash point are considered as flammable liquids.

3.3.1.5 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) are also considered to be flammable liquids.

3.3.1.6 Liquid desensitized explosives are explosive substances which are dissolved or suspended in water or other liquid substances, to form a homogeneous liquid mixture to suppress their explosive properties (see 3.1.7.3). Entries in Subsection 4.2—List of Dangerous Goods for liquid desensitized explosives are: UN 1204; UN 2059; UN 3064; UN 3343, UN 3357, and UN 3379.

Notes:

1. The word "flammable" has the same meaning as "inflammable."
2. The flash point of a flammable liquid may be altered by the presence of an impurity. The substances listed in Class 3 in Subsection 4.2—List of Dangerous Goods 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. Since the results of open-cup tests and closed-cup tests are not strictly comparable and even individual results by the same tests are often variable, regulations varying from the above figures to make allowances for such differences would be within the spirit of this definition.

3.3.2 Packing Group Criteria

3.3.2.1 Flammable liquids are assigned to packing groups according to the flash point and the boiling point of the liquid.

3.3.2.2 Use Table 3.3.A to determine the packing group of a liquid that presents a risk only due to flammability.

TABLE 3.3.A
Class 3—Packing Group Assignment (3.3.2.2)

Packing Group	Flash Point (closed-cup)	Initial Boiling Point
I	—	≤ 35°C
II	< 23°C	> 35°C
III	≥ 23°C but ≤ 60°C	

3.3.2.3 For a liquid possessing an additional hazard(s), the packing group determined from Table 3.3.A and the packing group based on the severity of the additional hazard(s) must be considered. In such cases, the precedence of hazard characteristics appearing in Table 3.10.A should be used to determine the correct classification and packing group of the liquid.

△ 3.3.3 Viscous Substances

3.3.3.1 Criteria for Inclusion in Packing Group III

3.3.3.1.1 Viscous flammable liquids such as paints, enamels, varnishes, adhesives and polishes with a flash point of less than 23°C may be assigned to Packing Group III in conformity with the procedures prescribed in the UN *Manual of Tests and Criteria* Part III, subsection 32.3 provided that:

(a) the viscosity and flash point are in accordance with Table 3.3.B;

TABLE 3.3.B
Viscous Substances Packing Group III criteria (3.3.3.1.1(a))

Flow time (t) in seconds	Jet diameter (mm)	Flash point (°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

- (b)** less than 3% of the clear solvent layer separates in the solvent separation test;
- (c)** the mixture or any separated solvent does not meet the criteria for Division 6.1 or Class 8;
- (d)** when assigned to Packing Group III, the flammable liquids must not exceed a net quantity per package of 30 L for passenger aircraft or 100 L for cargo aircraft.

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

Note:

Elevated temperature liquids are normally forbidden from transportation by air.

3.3.4 Determination of Flash Point

The following methods for determining the flash point of flammable liquids may be used:

International Standards

- ISO 1516
- ISO 1523
- ISO 2719
- ISO 3679
- ISO 3680
- ISO 13736

National Standards

- (a)** Association française de normalisation (AFNOR)
11 avenue Francis de Pressencé
93571 Saint-Denis la Plaine
Cedex, France
Website: www.afnor.fr
Website: www.boutique-normes.afnor.org
 - Petroleum products: *NF-M-07-011, NF-M-07-019, NF-M-07-036*
 - Paints, pigments and varnishes: *NF-T-30-050*
 - Black products (tar, etc.): *NF-T-66-009*
- (b)** Deutsches Institut fur Normung
Burggrafenstrasse 6
D-10787
Berlin
 - Standard *DIN 51755* (flash points below 65°C)
- (c)** State Committee of the Council of Ministers for Standardization
Leninsky Prospect 9
113813, GSP
Moscow—49
 - *GOST 12.1.044-84*
- (d)** American Society for Testing Materials
100 Barr Harbor Drive, PO Box C700
West Conshohocken
Pennsylvania
19428-2959
 - 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
 - ASTM 3278-96, Standard Test Methods for Flash Point of Liquids by Setaflash Closed-Cup Apparatus
 - ASTM 0093-96, Standard Test Methods for Flash Point by Pensky-martens Closed-Cup Tester

3.3.5 Determination of Initial Boiling Point

The following methods for determining the initial boiling point of flammable liquids may be used:

International standards

- ISO 3924
- ISO 4626
- ISO 3405

National standards

American Society for Testing Materials
100 Barr Harbor Drive, PO Box C700
West Conshohocken
Pennsylvania
19428-2959

- ASTM D86-07a, Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure
- ASTM D1078-05, Standard Test Method for Distillation Range of Volatile Organic Liquids

Further acceptable methods

- Method A.2 as described in Part A of the Annex to Commission Regulation (EC) No 440/2008

3.4 Class 4—Flammable Solids; Substances Liable to Spontaneous Combustion; Substances which, in Contact with Water, Emit Flammable Gases

3.4.0 General

3.4.0.1 Class 4 is divided into three divisions as follows:

- 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 (Dangerous when wet).

Notes:

1. Where the term “water-reactive” is used in these Regulations, it refers to a substance, which in contact with water, emits flammable gas.
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 given in 3.4.1, 3.4.2 and 3.4.3 and also in the UN Manual of Tests and Criteria, Part III, Section 33.
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 flow chart for these substances is given in Figure 2.4.2 of the UN Recommendations on the Transport of Dangerous Goods.

3.4.0.2 As referenced in this subsection, 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 the *UN Manual of Test and Criteria, Part II*, and test methods and criteria for other types of substances of Class 4 are given in the *UN Manual of Tests and Criteria, Part III*, section 33.

3.4.1 Division 4.1—Flammable Solids; Self-reactive Substances; and Desensitized Explosives

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. Division 4.1 contains:

- flammable solids (3.4.1.1);
- self-reactive substances (3.4.1.2);
- solid desensitized explosives (3.4.1.3).

3.4.1.1 Flammable Solids

3.4.1.1.1 Properties

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

3.4.1.1.2 Classification of Flammable Solids

3.4.1.1.2.1 Powdered, Granular or Pasty Substances Other Than Metal Powders

Powdered, granular or pasty substances must be classified as readily combustible solids in Division 4.1 when the time of burning of one or more of the test runs, performed in accordance with the test method 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 per second.

3.4.1.1.2.2 Metal Powders

Powders of metal 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.

3.4.1.1.2.3 Solids Which May Cause Fire through Friction

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

3.4.1.1.3 Assignment of Packing Groups

3.4.1.1.3.1 Other Than Metal Powders

Readily combustible powdered, granular or pasty substances, other than metal powders are allocated packing groups as follows:

- (a) Packing Group II if the burning time measured in the test is less than 45 seconds and the flame passes the wetted zone; or
- (b) Packing Group III if the burning time measured in the test is less than 45 seconds and the wetted zone stops the flame propagation for at least four minutes.

3.4.1.1.3.2 Metal Powders

Metal powders or metal alloys must be allocated packing groups as follows:

- (a) Packing Group II if the zone of reaction observed during the test spreads over the whole length of the sample in 5 minutes or less; or
- (b) Packing Group III if the zone of reaction observed during the test spreads over the whole length of the sample in more than 5 minutes but not more than 10 minutes.

3.4.1.2 Self-reactive Substances

3.4.1.2.1 Definition

Self-reactive substances of Division 4.1 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:

- (a) explosives according to the criteria of Class 1;
- (b) oxidizing substances according to the classification procedure for Division 5.1 (see 3.5.1.2) except that mixtures of oxidizing substances which contain 5.0% or more of combustible organic substances must be subjected to the classification procedure defined in 3.4.1.2.2 to 3.4.1.2.2.4;
- (c) organic peroxides according to the criteria of Division 5.2 (see 3.5.2);
- (d) substances where their heat of decomposition is less than 300 J/g; or
- (e) substances where their self-accelerating decomposition temperature is greater than 75°C for a 50 kg package.

Note:

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

3.4.1.2.2 Criteria for Classification

3.4.1.2.2.1 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 for inclusion in Division 4.2 according to 3.4.2.3.3.

3.4.1.2.2.2 Mixtures of oxidizing substances meeting the criteria of Division 5.1 which contain 5.0% or more of combustible organic substances which do not meet the criteria mentioned in 3.4.1.2.1 (a), (c), (d) or (e) must be subjected to the self-reactive substance classification procedure.

3.4.1.2.2.3 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.

3.4.1.2.2.4 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 3.5.1.2).

3.4.1.2.3 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:

- aliphatic azo compounds (-C-N=N-C-);
- organic azides (-C-N₃);
- diazonium salts (-CN₂⁺Z⁻);
- N-nitroso compounds (-N-N=O); and
- aromatic sulphonylhydrazides (-SO₂-NH-NH₂).

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

3.4.1.2.4 Classification

Self-reactive substances are classified according to the degree of danger they present. Self-reactive substances permitted for transport in packages are listed in Appendix C.1. For each permitted substance listed, the appropriate generic entry appearing in Subsection 4.2–List of Dangerous Goods (UN 3221 to UN 3240) is assigned, and appropriate subsidiary risks and remarks providing relevant information are given. Related substances specifically listed by name in Subsection 4.2–List of Dangerous Goods are UN 2956, UN 3242 and UN 3251. The generic entries specify:

- the self-reactive substance type (B to F);
- the physical state, i.e. liquid/solid;
- when temperature control is required.

3.4.1.2.4.1 Classification of self-reactive substances not listed in Appendix C.1 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 on the Transport of Dangerous Goods. 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.

3.4.1.2.5 Transport of Samples

Samples of self-reactive substances not listed in Appendix C.1, 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 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 a 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.

3.4.1.2.6 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 2.1.2). 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 provided 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.

3.4.1.2.7 Desensitization of Self-reactive Substances

3.4.1.2.7.1 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.

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

3.4.1.2.7.3 The diluent 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.

Note:

During the course of transport, packages or unit load devices containing self-reactive substances of Division 4.1 must be protected from direct sunlight and all sources of heat and be placed in adequately ventilated areas.

3.4.1.3 Solid Desensitized Explosives

3.4.1.3.1 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 Subsection 4.2—List of Dangerous Goods 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, 3380 and 3474.

3.4.1.3.2 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.

3.4.2 Division 4.2—Substances Liable to Spontaneous Combustion

3.4.2.1 Definition

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.

The following types of substances are classified in Division 4.2:

- pyrophoric substances; and
- self-heating substances.

3.4.2.2 Properties

Self-heating of a substance is a process where the gradual reaction of that substance with oxygen (in the air) generates heat. If the rate of heat production exceeds the rate of heat loss, then the temperature of the substance will rise which, after an induction time, may lead to self-ignition and combustion. Two types of substances can be distinguished with spontaneous combustion properties.

3.4.2.2.1 Pyrophoric Substances

Pyrophoric substances (liquid or solid) including mixtures and solutions are substances which, even in small quantities, ignite within 5 minutes of coming in contact with air.

These substances are the most liable to spontaneous combustion.

3.4.2.2.2 Self-heating Substances

Self-heating substances are substances, which in contact with air without an additional energy supply are liable to self-heating. These substances will ignite only in large amounts (kilograms) and after long periods of time (hours or days).

3.4.2.3 Classification

3.4.2.3.1 Pyrophoric Solids

Solids are considered pyrophoric solids which must be classified in Division 4.2 if, in tests performed in accordance with the test methods and criteria of 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.

3.4.2.3.2 Pyrophoric Liquids

Liquids are considered pyrophoric liquids which must be classified in Division 4.2 if, in tests performed in accordance with the test methods and criteria of the current edition of the *UN Manual of Tests and Criteria, Part III, subsection 33.3.1*, the liquid ignites in the first part of the test, or if it ignites or chars the filter paper.

3.4.2.3.3 Self-heating Substances

3.4.2.3.3.1 A substance must be classified as a self-heating substance of Division 4.2 if, in tests performed in accordance with the test method and criteria in the current edition of the *UN Manual of Tests and Criteria, Part III, subsection 33.3.1*:

- (a) a positive result is obtained in a test 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 cube sample at 120°C and the substance is to be transported in packages with a volume of more than 3 m³;
- (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 cube sample at 100°C and the substance is to be transported in packages with a volume of more than 450 L; and
- (d) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a positive result is obtained in the test using a 100 mm cube sample at 100°C.

3.4.2.3.3.2 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 3.4.1.2.1).

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

- (a) a negative result is obtained in the test using a 100 mm sample cube at 140°C;
- (b) a positive result is obtained in the test using a 100 mm sample cube at 140°C and a negative result is obtained in the test using a 25 mm cube sample at

140°C, a negative result is obtained in the test using a 100 mm cube sample at 120°C and the substance is to be transported in packagings with a volume of not more than 3 m³; or

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

3.4.2.4 Packing Group Criteria

3.4.2.4.1 Pyrophoric Substances

Pyrophoric liquids and solids of Division 4.2 must be assigned to Packing Group I.

3.4.2.4.2 Self-heating Substances

Self-heating substances must be allocated to packing groups in accordance with the following criteria:

3.4.2.4.2.1 Packing Group II

Packing Group II must be assigned if the substance gives a positive result in the test using a 25 mm cube sample at 140°C.

3.4.2.4.2.2 Packing Group III

Packing Group III must be assigned to the substance if:

- (a) a positive result is obtained in the test using a 100 mm sample cube at 140°C and a negative result is obtained in the test using a 25 mm cube sample at 140°C and the substance is to be transported in packagings with a volume of more than 3 m³;
- (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 the test using a 25 mm cube sample at 140°C, a positive result is obtained in the test using a 100 mm cube sample 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 the test using a 100 mm sample cube at 140°C and a negative result is obtained in the test using a 25 mm cube sample at 140°C and a positive result is obtained in a test using a 100 mm cube sample at 100°C.

3.4.3 Division 4.3—Substances Which, in Contact with Water, Emit Flammable Gases

3.4.3.1 Definition

Division 4.3—Substances, which, in contact with water, emit flammable gases (Dangerous when wet). Substances which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.

Note:

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

3.4.3.2 Properties

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 hand tools or unprotected light bulbs. The resulting blast wave and flames may endanger people and the environment. The test method in 3.4.3.3 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.

3.4.3.3 Classification

Substances which, in contact with water, emit flammable gases must be classified in Division 4.3 if, in tests performed in accordance with the methods and criteria in the current edition of 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.

3.4.3.3.1 Principle of the Method

The test method can be applied to solid and liquid substances. It is not applicable to pyrophoric substances. The substance must be tested in its commercial form at ambient temperature (20°C) by bringing it into contact with water. If during any stage of the test the gas emitted ignites, then no further testing is necessary and the substance must be assigned to Division 4.3. If spontaneous ignition of the emitted gas does not occur, then the final stage of the test must be performed to determine the rate of emission of flammable gas. Whether a substance is a water-reactive substance of Division 4.3 and, if so, whether Packing Group I, II or III should be assigned is decided on the basis of the test result.

3.4.3.4 Packing Group Criteria

Substances which, in contact with water, emit flammable gases must be allocated to packing groups as follows:

3.4.3.4.1 Packing Group I

If the substance reacts vigorously with water at ambient temperatures and generally demonstrates 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 period.

3.4.3.4.2 Packing Group II

If the substance 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 does not meet the criteria for Packing Group I.

3.4.3.4.3 Packing Group III

If the substance reacts slowly with water at ambient temperatures such that the maximum rate of evolution of flammable gas is greater than 1 L/kg of substance per hour, and does not meet the criteria for Packing Groups I or II.

3.4.4 Organometallic Substances

3.4.4.1 Classification

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*.

3.5 Class 5—Oxidizing Substances and Organic Peroxides

3.5.0 General

Class 5 is divided into two divisions:

- Division 5.1 Oxidizing substances.
- Division 5.2 Organic peroxides.

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 subsection and in the *UN Manual of Tests and Criteria*.

3.5.1 Division 5.1—Oxidizing Substances

3.5.1.1 Definition

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

3.5.1.2 Classification

Oxidizing substances are classified in Division 5.1 in accordance with the test methods, procedures and criteria in 3.5.1.3 and 3.5.1.4 and the current edition of the *UN Manual of Tests and Criteria*, Part III, subsection 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 4.2, reclassification of those substances in accordance with

these criteria need only be undertaken when this is necessary for safety.

3.5.1.3 Solid Oxidizers

3.5.1.3.1 Classification Criteria

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 34.1.1. 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.

3.5.1.3.1.1 The 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.

3.5.1.3.1.2 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.

3.5.1.3.2 Assignment of Packing Groups

Solid oxidizing substances are assigned to a packing group according to the test procedures in the current edition of the *UN Manual of Tests and Criteria*, Part III, Section 34, in accordance with the following requirements:

3.5.1.3.2.1 Packing Group I

Substances which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibit a mean burning time less than the mean burning time of a 3:2 mixture, by mass, of potassium bromate and cellulose.

3.5.1.3.2.2 Packing Group II

Substances which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibit 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.

3.5.1.3.2.3 Packing Group III

Substances which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibit 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.

3.5.1.3.2.4 Not Division 5.1

Substances which, in both the 4:1 and 1:1 sample-to-cellulose ratio (by mass) tested, do not ignite and burn, or exhibit mean burning times greater than that of a 3:7 mixture (by mass) of potassium bromate and cellulose.

3.5.1.3.2.5 Other Substances

For substances having other risks, e.g. toxicity or corrosivity, the requirements of Subsection 3.10 must be met.

3.5.1.4 Liquid Oxidizers

3.5.1.4.1 Classification Criteria

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, Section 34. 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 should be assigned, is decided on the basis of the test result (see also Precedence of Hazard Characteristics in Subsection 3.10).

3.5.1.4.1.1 The test results are assessed on the basis of:

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

3.5.1.4.1.2 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 of a 1:1 mixture (by mass) of 65% aqueous nitric acid and cellulose.

3.5.1.4.2 Assignment of Packing Groups

Liquid oxidizers are assigned to a packing group according to the test procedures in the current edition of the *UN Manual of Tests and Criteria*, Part III, Section 34, in accordance with the following requirements:

3.5.1.4.2.1 Packing Group I

Substances which, in the 1:1 mixture, by mass, of substance and cellulose tested, spontaneously ignite; 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% perchloric acid and cellulose.

3.5.1.4.2.2 Packing Group II

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

3.5.1.4.2.3 Packing Group III

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

3.5.1.4.2.4 Not Division 5.1

Substances which, in the 1:1 mixture, by mass, of substance and cellulose tested, exhibit a pressure rise of less than 2,070 kPa gauge; or, exhibit a mean pressure rise time greater than the mean pressure rise time of a 1:1 mixture, by mass, of 65% aqueous nitric acid and cellulose.

3.5.1.4.2.5 Substances having other Risks

For substances having other risks, e.g. toxicity or corrosivity, the requirements of Subsection 3.10 must be met.

3.5.2 Division 5.2—Organic Peroxides

3.5.2.1 Definition

This division is made up of organic substances which contain the bivalent structure -O-O- and may be considered derivatives of hydrogen peroxide in which one or both of the hydrogen atoms have been replaced by organic radicals.

Note:

Hydrogen peroxide is made up of two hydrogen atoms and two oxygen atoms connected in a chain: H-O-O-H.

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:

- be liable to explosive decomposition;
- burn rapidly;
- be sensitive to impact or friction;
- react dangerously with other substances;
- cause damage to the eyes.

3.5.2.2 Classification

Organic peroxides are classified according to the degree of danger they present. Any organic peroxide must be considered for classification in Division 5.2 unless the organic peroxide formulation contains:

- (a) not more than 1.0% available oxygen from the organic peroxides when containing not more than 1.0% hydrogen peroxide; or
- (b) not more than 0.5% available oxygen from the organic peroxides when containing more than 1.0% but not more than 7.0% hydrogen peroxide.

Note:

The available oxygen content (percent) of an organic peroxide formulation is given by the formula:

$$O_A = 16 \times \sum \left(\frac{n_i \times C_i}{m_i} \right)$$

where:

O_A = available oxygen content (percent);

n_i = number of peroxy groups per molecule of organic peroxide "i";

C_i = concentration (mass percent) of organic peroxide "i"; and

m_i = molecular mass of organic peroxide "i".

3.5.2.3 Type of Organic Peroxide

Organic peroxides permitted for transport are listed in Appendix C.2. For each permitted substance, Appendix C.2 assigns the appropriate generic entry appearing in Subsection 4.2—List of Dangerous Goods (UN 3103 to UN 3120) and provides relevant information. The generic entries specify:

- (a) the organic peroxide type ("B" to "F");
- (b) the physical state (liquid or solid); and
- (c) when temperature control is required (see 3.5.2.7).

Note:

Organic peroxides requiring temperature control during transport are forbidden for transport by air unless exempted (see 2.1.2) under the procedures outlined in 1.2.6.

3.5.2.3.1 Classification Approvals

Classification of organic peroxides not listed in Appendix C.2 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 on the Transport of Dangerous Goods*. The applicable classification procedures, test methods and criteria, and an example of a suitable test report, are provided in the current edition of the *UN Manual of Test and Criteria, Part II*. The statement of approval must contain the classification and the relevant transport conditions.

3.5.2.3.2 Mixtures

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 3.5.2.7.

3.5.2.4 Properties

3.5.2.4.1 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.

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

3.5.2.4.3 During the course of transport, packages or unit load devices containing organic peroxides must be protected from direct sunlight and all sources of heat and be placed in adequately ventilated areas.

3.5.2.5 Desensitization

3.5.2.5.1 In many cases, organic peroxides are desensitized by the addition of organic liquids or solids, inorganic solids or water in order to ensure safety during transport and handling. 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 the case of spillage or fire, the organic peroxide may not concentrate to a dangerous extent.

3.5.2.5.2 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 flashpoint of not less than 5°C. Type B diluents may be used for desensitization of all organic peroxides provided that the boiling point of the liquid is at least 60°C higher than the SADT in a 50 kg package.

3.5.2.5.3 Diluents, other than type A or type B, may be added to organic peroxide formulations as listed in Appendix C.2 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.

3.5.2.5.4 Water may only be used for the desensitization of organic peroxides which are shown in Appendix C.2 or in the statement of approval according to 3.5.2.3.1 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.

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

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

3.5.2.6 Transport of Samples

Samples of new formulations of organic peroxides not listed in Appendix C.2 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 peroxides type B;
- (b) the sample is packed in a combination packaging consisting of a plastic 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 a 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.

3.5.2.7 Temperature Control Requirements

3.5.2.7.1 An organic peroxide 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 2.1.2).

3.5.2.7.2 The following organic peroxides must be subjected to temperature control during transport:

- (a) organic peroxides types B and C with an SADT $\leq 50^{\circ}\text{C}$;
- (b) organic peroxides type D showing a medium effect when heated under confinement with an SADT $\leq 50^{\circ}\text{C}$ or showing a low or no effect when heated under confinement with an SADT $\leq 45^{\circ}\text{C}$; and
- (c) organic peroxides types E and F with an SADT $\leq 45^{\circ}\text{C}$.

3.5.2.7.3 Test methods for determining the SADT are provided in the current edition of 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.

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

3.6 Class 6—Toxic and Infectious Substances

3.6.0 General

Class 6 is divided into two divisions as follows:

- Division 6.1—Toxic substances.
- Division 6.2—Infectious substances.

3.6.1 Division 6.1—Toxic Substances

STATE VARIATION: USG-02

OPERATOR VARIATION: JU-03

3.6.1.1 Definition

Division 6.1 Toxic substances are substances which are liable to cause death or injury or to harm human health if swallowed, inhaled or contacted by the skin.

Note:

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

3.6.1.2 Classification

To be classified as “Toxic” for purposes of these Regulations, a substance must meet the minimum criteria for Packing Group III shown in Tables 3.6.A and 3.6.B.

3.6.1.3 Packing Group Criteria

3.6.1.3.1 Toxic substances of Division 6.1, including pesticides, must be allocated to packing groups referred 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.

3.6.1.3.2 In allocating the packing group, 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.

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

- (a) oral ingestion;
- (b) dermal contact; and
- (c) inhalation of dusts, mists or vapours.

3.6.1.3.4 Appropriate animal tests for the various routes of exposure are described in 3.6.1.5.1 to 3.6.1.5.3. 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.

3.6.1.3.5 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.

3.6.1.3.6 The grouping for the oral and dermal routes as well as for inhalation of dusts and mists are as shown in Table 3.6.A.

3.6.1.4 Forbidden Toxic Substances

Liquids having a vapour inhalation toxicity of Packing Group I are forbidden on both passenger and cargo aircraft.

TABLE 3.6.A
Oral, Dermal and Dust/Mist Inhalation Hazards Division 6.1 Packing Group Criteria (3.6.1.3)

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 but ≤ 50	> 50 but ≤ 200	> 0.2 but ≤ 2.0
III ^a	> 50 but ≤ 300	> 200 but ≤ 1,000	> 2.0 but ≤ 4.0

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

3

3.6

Notes:

1. See 3.6.1.5 for explanation of LD₅₀ and LC₅₀.
2. Substances meeting the criteria of Class 8 and with an inhalation toxicity of dusts and mists (LC₅₀) 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 3.8.2.2).

TABLE 3.6.B
Vapour Inhalation Hazard—Division 6.1 Packing Group Criteria (3.6.1.3)

Packing Group	Inhalation Hazard
I	LC ₅₀ ≤ 1,000 mL/m ³ and V ≥ 10 × LC ₅₀
II	LC ₅₀ ≤ 3,000 mL/m ³ and V ≥ LC ₅₀ and not meeting criteria for Packing Group I
III	LC ₅₀ ≤ 5,000 mL/m ³ and V ≥ 0.2 × LC ₅₀ and not meeting criteria for Packing Group I or II

Notes:

1. V is that saturated vapour concentration in air of the substance in mL/m³ at 20°C and standard atmospheric pressure. If the vapour pressure at 20°C is known, V can be calculated as follows:

$$V = \frac{P}{P_0} 10^6 \text{ mL/m}^3$$

where:

p = vapour pressure at 20°C.

P = standard atmospheric pressure.

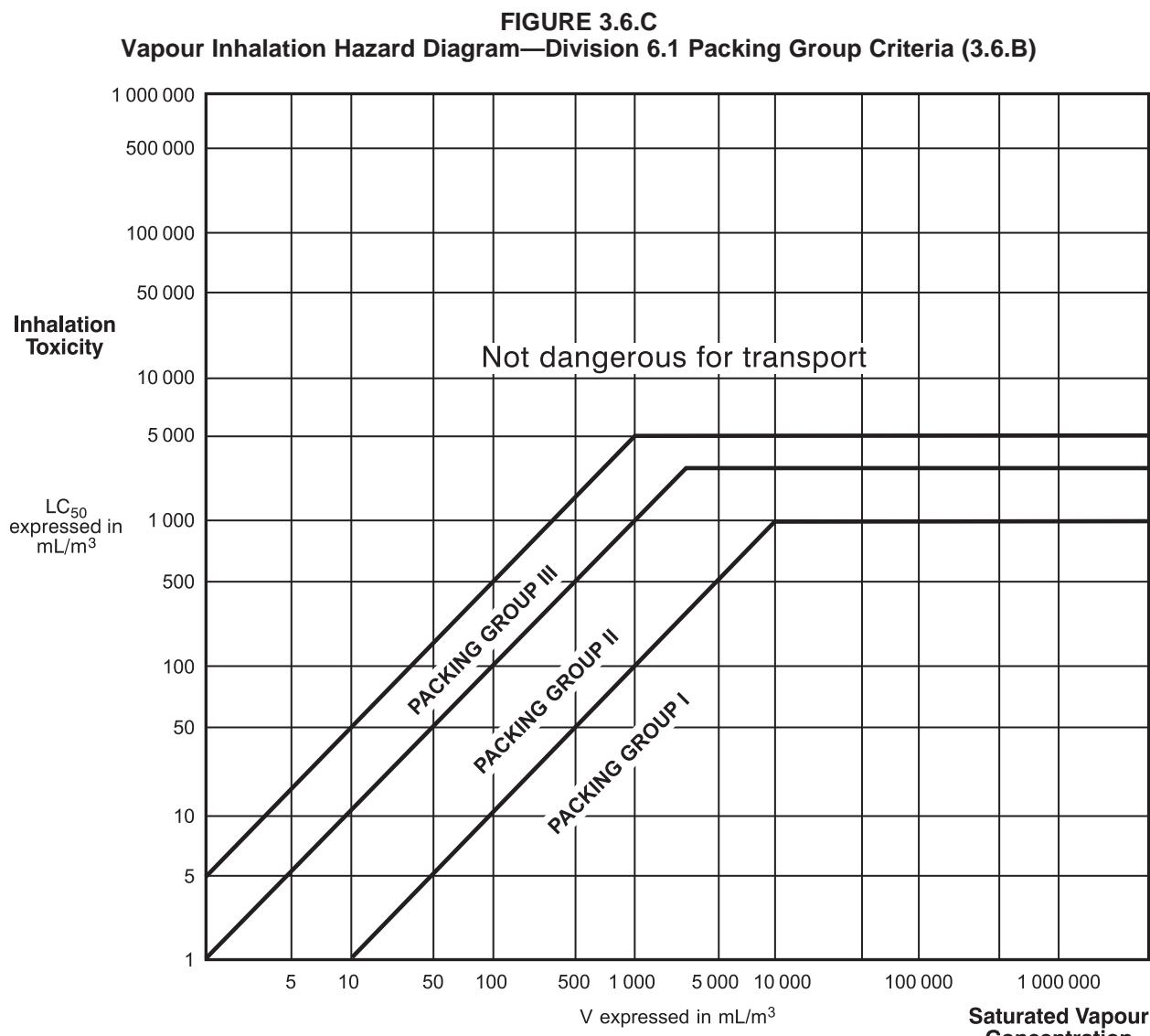
Note p and P must be the same, e.g.:

if p is in kPa, P = 100 kPa;

if p is in mBar, P = 1,000 mBar;

if p is in psi, P = 14.7 psi.

2. Tear gas substances having toxicity data corresponding to Packing Group III values are nevertheless included in Packing Group II.
3. Figure 3.6.C is a graphic representation of Table 3.6.B.



3.6.1.5 Tests—Division 6.1, Toxic Substances

The criteria listed in Tables 3.6.A and 3.6.B are derived from the test methods described in 3.6.1.5.1 to 3.6.1.5.3.

3.6.1.5.1 Oral Toxicity

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

3.6.1.5.2 Dermal Toxicity

The LD_{50} for acute dermal toxicity is that dose of the substance which, when administered by continuous contact with the bare skin of an albino rabbit for 24 hours, 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.

3.6.1.5.3 Inhalation Toxicity

The LC_{50} for acute toxicity on inhalation is that concentration of dust, mist or vapour which, when 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% (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% (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/m³ of air (parts per million) for vapours.

3.6.1.5.3.1 Inhalation Criteria for Dust and Mist

The criteria for inhalation toxicity of dusts and mists in 3.6.1.3 and Table 3.6.A are based on LC₅₀ data relating to 1 hour exposures, and where such information is available it must be used. However, where only LC₅₀ 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. LC₅₀ (4 h) × 4 is considered the equivalent of LC₅₀ (1 h).

3.6.1.5.3.2 Inhalation Criteria for Vapours

Liquids having toxic vapours must be assigned to packing groups shown in 3.6.1.3 and Table 3.6.B where V is that saturated vapour concentration in air of the substance in mL/m³ at 20°C and standard atmospheric pressure. The criteria for inhalation toxicity of vapours in 3.6.1.3 and Table 3.6.B are based on LC₅₀ data relating to 1 hour exposures, and where such information is available it must be used. However, where only LC₅₀ 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. LC₅₀ (4 h) × 2 is considered the equivalent of LC₅₀ (1 h). In Figure 3.6.C, the above criteria 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.

3.6.1.6 Inhalation Criteria for Liquid Mixtures

Mixtures of liquids that are toxic by inhalation must be assigned to packing groups according to 3.6.1.6.1 or 3.6.1.6.2.

3.6.1.6.1 Calculations to Establish Packing Group

If LC₅₀ data is available for each of the toxic substances comprising a liquid mixture, the packing group may be determined as follows:

- (a) Estimate the LC₅₀ of the mixture using the formula:

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

f_i = mole fraction of the ith component substance of the liquid mixture; and

LC_{50,i} = mean lethal concentration of the ith component substance of the liquid mixture in mL/m³;

- (b) Estimate the volatility of each component substance of the liquid mixture using the following formula:

$$V_i = p_i \times \frac{10^6}{101.3} \text{ mL/m}^3$$

p_i = partial pressure of the ith component substance in kPa at 20°C and one atmosphere pressure;

- (c) Calculate the ratio of the volatility to the LC₅₀ using the formula:

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

- (d) Using the calculated values for LC₅₀ (mixture) and for R, the packing group of the mixture is determined as follows:

- Packing Group I: R ≥ 10 and LC₅₀ (mixture) ≤ 1,000 mL/m³;
- Packing Group II: R ≥ 1 and LC₅₀ (mixture) ≤ 3,000 mL/m³ and not meeting criteria for Packing Group I;
- Packing Group III: R ≥ 0.2 and LC₅₀ (mixture) ≤ 5,000 mL/m³ and not meeting criteria for Packing Group I or II.

3.6.1.6.2 Tests to Establish Packing Group

In the absence of LC₅₀ data on the toxic component 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.

3.6.1.6.2.1 Packing Group I

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

- (a) A sample of the liquid mixture is vaporized and diluted with air to create a test atmosphere of 1,000 mL/m³ vaporized mixture in air. Ten albino rats (five male and five female) are exposed to the test atmosphere for one hour and observed for 14 days. If five or more of the animals die within the 14 day observation period, the mixture is assumed to have an LC₅₀ equal to or less than 1,000 mL/m³; and
- (b) A sample of the vapour in equilibrium with the liquid mixture at 20°C is diluted with nine equal volumes of air to form a test atmosphere. Ten albino rats (five male and five female) are exposed to the test atmosphere for one hour and observed for 14 days. If five or more of the animals die within the 14 day observation period, the mixture is assumed to have a volatility equal to or greater than ten times the LC₅₀ of the mixture.

3.6.1.6.2.2 Packing Group II

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:

- (a) A sample of the liquid mixture is vaporized and diluted with air to create a test atmosphere of 3,000 mL/m³ vaporized mixture in air. Ten albino rats (five male and five female) are exposed to the test atmosphere for one hour and observed for 14 days. If five or more of the animals die within the 14 day observation period, the mixture is assumed to have an LC₅₀ equal to or less than 3,000 mL/m³; and

- (b) A sample of the vapour in equilibrium with the liquid mixture at 20°C is used to form a test atmosphere. Ten albino rats (five male and five female) are exposed to the test atmosphere for one hour and observed for 14 days. If five or more of the animals die within the 14 day observation period, the mixture is assumed to have a volatility equal to or greater than the LC₅₀ of the mixture.

3.6.1.6.2.3 Packing Group III

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 Group I or II:

- (a) A sample of the liquid mixture is vaporized and diluted with air to create a test atmosphere of 5,000 mL/m³ vaporized mixture in air. Ten albino rats (five male and five female) are exposed to the test atmosphere for one hour and observed for 14 days. If five or more of the animals die within the 14 day observation period, the mixture is assumed to have an LC₅₀ equal to or less than 5,000 mL/m³; and
- (b) The vapour pressure of the liquid mixture is measured and if the vapour pressure is equal to or greater than 1,000 mL/m³, the mixture is presumed to have a volatility equal to or greater than 0.2 or (1/5) the LC₅₀ of the mixture.

3.6.1.7 Methods for Determining Oral and Dermal Toxicity of Mixtures

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 3.6.A, it is necessary to determine the acute LD₅₀ of the mixture.

3.6.1.7.1 One Active Substance

If a mixture contains only one active substance, and the LD₅₀ 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 LD₅₀ may be obtained by the following method:

$$\text{LD}_{50} \text{ value of preparation} = \frac{\text{LD}_{50} \text{ value of active substance} \times 100}{\text{percentage of active substance by mass}}$$

3.6.1.7.2 More Than One Active Substance

If a mixture contains more than one active constituent, there are three possible approaches that may be used to determine the oral or dermal LD₅₀ 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, accurate data is not available, then either of the following methods in 3.6.1.7.2.1 or 3.6.1.7.2.2 may be performed.

3.6.1.7.2.1 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.

3.6.1.7.2.2 Apply the formula:

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

where:

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

T = the oral LD₅₀ values of constituent A, B ... Z

T_m = the oral LD₅₀ 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.

3.6.1.8 Pesticides

3.6.1.8.1 All active pesticide substances and their preparations for which the LC₅₀ and/or LD₅₀ 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 3.6.1.5. Substances and preparations which are characterized by subsidiary risks must be classified according to the Precedence of Hazard Table 3.10.A with the assignment of appropriate packing groups.

3.6.1.8.2 If the oral or dermal LD₅₀ value for a pesticide preparation is not known, but the LD₅₀ value of its active substance(s) is known, the LD₅₀ value for the preparation may be obtained by applying the procedures in 3.6.1.7.

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

3.6.1.8.4 LD₅₀ 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 LD₅₀ 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 Regulations.

3.6.2 Division 6.2—Infectious Substances

STATE VARIATIONS: AUG-03, CAG-10/11, VUG-02

△ OPERATOR VARIATIONS: 4C-04, 4M-04, AF-02, BZ-07, FX-09, JJ-04, L7-04, LA-07, LP-04, LU-04, M3-04, OO-01, OU-16, SN-03, SQ-10, UC-04, UU-05, XL-04

3.6.2.1 Definitions

For the purposes of these Regulations:

3.6.2.1.1 Infectious substances are substances which are known 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.

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 assigned to UN 3172.

3.6.2.1.2 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.

3.6.2.1.3 Cultures are the result of a process by which pathogens are intentionally propagated. This definition does not include patient specimens as defined below in 3.6.2.1.4.

3.6.2.1.4 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, disease treatment and prevention.

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

3.6.2.2 Classification of Infectious Substances

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

3.6.2.2.2 Infectious substances are divided into the following categories:

3.6.2.2.2.1 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 3.6.D.

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 both in humans and animals must be assigned to UN 2814. Infectious substances which cause disease only in animals must be assigned to UN 2900.
- (b) Assignment 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.

Notes:

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.
2. The following table is not exhaustive. Infectious substances, including new or emerging pathogens, which do not appear in the table 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.
3. In the following table, the micro-organisms written in *italics* are bacteria, mycoplasma, rickettsiae or fungi.

TABLE 3.6.D
Indicative Examples of Infectious Substances Included in Category A in
Any Form Unless Otherwise Indicated (3.6.2.2.2.1)

UN Number and Proper Shipping Name	Micro-organism
UN 2814 Infectious substance affecting humans	<i>Bacillus anthracis</i> (cultures only) <i>Brucella abortus</i> (cultures only) <i>Brucella melitensis</i> (cultures only) <i>Brucella suis</i> (cultures only) <i>Burkholderia mallei</i> – <i>Pseudomonas mallei</i> –Glanders (cultures only) <i>Burkholderia pseudomallei</i> – <i>Pseudomonas pseudomallei</i> (cultures only) <i>Chlamydia psittaci</i> –avian strains (cultures only) <i>Clostridium botulinum</i> (cultures only) <i>Coccidioides immitis</i> (cultures only) <i>Coxiella burnetii</i> (cultures only) Crimean-Congo hemorrhagic fever virus Dengue virus (cultures only) Eastern equine encephalitis virus (cultures only) <i>Escherichia coli</i> , verotoxigenic (cultures only) Ebola virus Flexal virus <i>Francisella tularensis</i> (cultures only) Guanarito virus Hantaan virus Hantavirus causing hemorrhagic fever with renal syndrome Hendra virus Hepatitis B virus (cultures only) Herpes B virus (cultures only) Human immunodeficiency virus (cultures only) Highly pathogenic avian influenza virus (cultures only) Japanese Encephalitis virus (cultures only) Junin virus Kyasanur Forest disease virus Lassa virus Machupo virus Marburg virus Monkeypox virus <i>Mycobacterium tuberculosis</i> (cultures only) Nipah virus Omsk hemorrhagic fever virus <i>Poliovirus</i> (cultures only) Rabies virus (cultures only) <i>Rickettsia prowazekii</i> (cultures only) <i>Rickettsia rickettsii</i> (cultures only) Rift Valley fever virus (cultures only) <i>Russian spring-summer encephalitis virus</i> (cultures only)

TABLE 3.6.D
Indicative Examples of Infectious Substances Included in Category A in
Any Form Unless Otherwise Indicated (3.6.2.2.2.1) (continued)

UN Number and Proper Shipping Name	Micro-organism
	Sabia virus <i>Shigella dysenteriae type 1</i> (cultures only) <i>Tick-borne encephalitis virus</i> (cultures only) Variola virus Venezuelan equine encephalitis virus (cultures only) <i>West Nile virus</i> (cultures only) <i>Yellow fever virus</i> (cultures only) <i>Yersinia pestis</i> (cultures only)
UN 2900 Infectious substances affecting animals	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) Lumpy skin disease virus (cultures only) <i>Mycoplasma mycoides</i> –Contagious bovine pleuropneumonia (cultures only) Peste des petits ruminants virus (cultures only) Rinderpest virus (cultures only) Sheep-pox virus (cultures only) Goatpox virus (cultures only) Swine vesicular disease virus (cultures only) Vesicular stomatitis virus (cultures only)

3.6.2.2.2 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 substance Category B**.

3.6.2.2.3 Exceptions

3.6.2.2.3.1 Substances which do not contain infectious substances or substances which are unlikely to cause disease in humans or animals are not subject to these Regulations unless they meet the criteria for inclusion in another class.

3.6.2.2.3.2 Substances containing micro-organisms, which are non-pathogenic to humans or animals are not subject to these Regulations unless they meet the criteria for inclusion in another class.

3.6.2.2.3.3 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 Regulations unless they meet the criteria for inclusion in another class.

3.6.2.2.3.4 Environmental samples (including food and water samples), which are not considered to pose a significant risk of infection are not subject to these Regulations, unless they meet the criteria for inclusion in another class.

3.6.2.2.3.5 Dried blood spots, collected by applying a drop of blood onto absorbent material, or faecal occult blood screening tests and blood or blood components which 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 Regulations.

3.6.2.2.3.6 Patient specimens for which there is minimal likelihood that pathogens are present are not subject to these Regulations if the specimen is packed 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:
 1. a leak-proof primary receptacle(s);
 2. a leak-proof secondary packaging; and
 3. 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 x 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 minimal likelihood that pathogens are present, an element of professional judgment is required to determine if a substance is exempt under this paragraph. That judgment 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 the blood or urine tests to monitor cholesterol levels, blood glucose levels, hormone levels, or prostate specific antigens (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.).

- 3.6.2.2.3.7** Medical devices or equipment potentially contaminated with or containing infectious substances which are being transported for disinfection, cleaning, sterilization, repair, or equipment evaluation are not subject to the provisions of these Regulations if packed in packagings designed and constructed in such a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents. Packagings must be designed to meet the construction requirements listed in 6.2.

- 3.6.2.2.3.7.1** These packagings must meet the general packing requirements of 5.0.2.4.1, 5.0.2.6.1.1, 5.0.2.6.1.2 and 5.0.2.7.1. If the outer packaging is not liquid tight and the medical devices or equipment are contaminated with or contain liquid infectious substances, 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 effective means of containment. These packages must be capable of retaining the medical devices and equipment when dropped from a height of 1.2 m.

- 3.6.2.2.3.7.2** Packages must be marked "Used Medical Device" or "Used Medical Equipment". When packages are placed in an overpack this marking must be reproduced on the outside of the overpack unless the marking remains visible.

- 3.6.2.2.3.7.3** This exception does not apply to:

- (a) medical waste (UN 3291);
- (b) medical devices or equipment contaminated with or containing infectious substances in Category A (UN 2814 or UN 2900); and

- (c) medical devices or equipment contaminated with or containing other dangerous goods that meet the definition of another hazard class.

3.6.2.3 Biological Products

3.6.2.3.1 For the purposes of these Regulations, 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 Regulations;
- (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, competent authorities may require these biological products to be in compliance with local requirements for infectious substances or may impose other restrictions.

3.6.2.4 Genetically Modified Micro-organisms and Organisms

3.2.6.2.4.1 Genetically modified micro-organisms not meeting the definition of an infectious substance must be classified according to Subsection 3.9.

3.6.2.5 Medical or Clinical Wastes

3.6.2.5.1 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. For the assignment, international, regional or national waste catalogues may be taken into account.

3.6.2.5.2 Medical or clinical wastes which are reasonably believed to have a low probability of containing infectious substances must be assigned to UN 3291.

Note:

The proper shipping name for UN 3291 is Biomedical waste, n.o.s., Clinical waste, unspecified, n.o.s. or Medical waste, n.o.s. or Regulated medical waste, n.o.s.

3.6.2.5.3 Decontaminated medical or clinical wastes which previously contained infectious substances are not subject to these Regulations unless they meet the criteria for inclusion in another class.

3.6.2.6 Infected Animals

3.6.2.6.1 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.

3.6.2.6.2 Unless an infectious substance cannot be consigned by any other means, live animals must not be used to consign such a substance.

3.6.2.6.3 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.

3.6.2.7 Patient Specimens

Patient specimens must be assigned to UN 2814, UN 2900 or UN 3373 as appropriate except if they comply with 3.6.2.2.3.

3.7 Class 7—Radioactive Material

STATE VARIATIONS: RUG-01, USG-10

3.7.1 Definition

Radioactive material means any material containing radionuclides where both the activity concentration and the total activity in the consignment exceed the values specified in 10.3.2.

The following radioactive materials are not included in Class 7 for the purposes of these Regulations:

- (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 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 10.3.2.1(b) or calculated in accordance with 10.3.2.2 to 10.3.2.5;
- (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 10.3.6.

3.8 Class 8—Corrosives

3.8.1 Definition

Substances which by chemical action, can 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.

3.8.2 Packing Group Criteria

3.8.2.1 Assignment of substances in Class 8 to the packing groups referred to in 3.0.3 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 as indicated by the test used. Liquids, and solids which may become liquid during transport, which are judged not to cause full thickness destruction of human skin still must be considered for their potential to cause corrosion to certain metal surfaces in accordance with 3.8.3.3.2.

3.8.2.2 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 must be allocated to Class 8.

3.8.2.3 In assigning the packing group to a substance in accordance with 3.8.2.1, 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 the data obtained from experiments in accordance with *Organization for Economic Co-operation and Development (OECD) Guidelines for Testing of Chemicals No. 404, "Acute Dermal Irritation/Corrosion,"* 2002 or No. 435, *In Vitro Membrane Barrier Test Method for Skin Corrosion*, 2006. A substance which is determined not to be corrosive in accordance with OECD Guideline for the Testing of Chemicals No. 430, *In Vitro Skin Corrosion: Transcutaneous Electrical Resistance Test (TER)*, 2004 or No. 431, *In Vitro Skin Corrosion: Human Skin Model Test*, 2004 may be considered not to be corrosive to skin for the purposes of these Regulations without further testing.

3.8.3 Packing Group Test Criteria

Packing groups are assigned to corrosive substances in accordance with the criteria in 3.8.3.1 through 3.8.3.3.

3.8.3.1 Packing Group I

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.

3.8.3.2 Packing Group II

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.

3.8.3.3 Packing Group III

Substances are assigned to Packing Group III if they meet the criteria described in 3.8.3.3.1 or 3.8.3.3.2.

3.8.3.3.1 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 60 minutes but not more than 4 hours; or

3.8.3.3.2 Substances which are judged not to cause full thickness destruction of intact skin tissue but which exhibit a corrosion rate either on 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 must be used; for the purposes of 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.



TABLE 3.8.A
Class 8—Packing Group Assignment
based on Corrosivity (3.8.3)

Packing Group	Exposure Time	Observation Time	Effect
I	≤ 3 min	≤ 60 min	Full thickness destruction of intact skin
II	> 3 min ≤ 60 min	≤ 14 d	Full thickness destruction of intact skin
III	> 60 min ≤ 4 h	≤ 14 d	Full thickness destruction of intact skin
III	—	—	Corrosion rate on steel/aluminium > 6.25 mm a year at a test temperature of 55°C

Note:

h = hours, d = days.

3.9 Class 9—Miscellaneous Dangerous Goods

STATE VARIATIONS: CAG-13, DEG-05, NLG-04,
USG-11/16

3.9.1 Definition

3.9.1.1 Class 9 Substances and Articles

Articles and substances, which during air transport, present a danger not covered by other classes.

3.9.2 Assignment to Class 9

Class 9 includes, but is not limited to, the following articles and substances:

3.9.2.1 Aviation Regulated Solid or Liquid

Any material, which has narcotic, noxious, irritating or other properties such that, in the event of spillage or leakage on an aircraft, could cause extreme annoyance or discomfort to crew members so as to prevent the correct performance of assigned duties. The materials

included under this proper shipping name must not meet any of the definitions for Classes 1 through 8.

3.9.2.2 Magnetized Material

3.9.2.2.1 Any material which, when packed for air transport, has a maximum magnetic field strength sufficient to cause a compass deflection of more than 2 degrees at a distance of 2.1 m from any point on the surface of the assembled package. The magnetic field strength at the compass producing a 2 degree deflection is taken to be 0.418 A/m (0.00525 Gauss).

3.9.2.2.2 The magnetic field strength must be measured with a magnetic compass sensitive enough to read a 2 degree variation, preferably in 1 degree increments or finer, or using a Gauss meter having a sensitivity sufficient to measure magnetic fields greater than 0.0005 Gauss within a tolerance of ±5 per cent, or by an equivalent means.

3.9.2.2.3 Compass measurements must be taken in an area free from magnetic interference other than the earth's magnetic field. When using a compass, the material and the compass must be aligned in an East/West direction. Gauss meter measurements must be in accordance with the manufacturer's instructions. Measurements are taken while the packaged material is rotated through 360 degrees in its horizontal plane while maintaining a constant distance (2.1 m or 4.6 m as referred to in Packing Instruction 953) between the measuring device and any point on the outside surface of the package. Shielding may be used to reduce the package's magnetic strength.

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 affect aircraft compasses, as may packages or items which individually do not meet the definition of magnetized materials but cumulatively may have a magnetic field strength of a magnetized material.

3.9.2.3 Elevated Temperature Substances

Substances that are transported or offered for transport at temperatures equal to or exceeding 100°C in a liquid state or at temperatures equal or exceeding 240°C in a solid state (these substances may only be carried under the provisions of 2.1.2).

3.9.2.4 Environmentally Hazardous Substances

△ 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 national or international regulations established by the appropriate national authority in the State of origin, transit or destination of the consignment. The detailed classification categories and criteria for environmentally hazardous substances (aquatic environment) as set out in 2.9.3 of the UN Model Regulations can be found at http://www.iata.org/whatwedo/cargo/dangerous_goods/index.htm

Substances or mixtures dangerous to the aquatic environment not presenting a danger covered by other classes, 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.

3.9.2.5 Genetically Modified Micro-Organisms (GMMOs) or Genetically Modified Organisms (GMOs)

3.9.2.5.1 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.

3.9.2.5.2 Genetically modified organisms and micro-organisms which do not meet the definition of toxic or infectious substances must be assigned to UN 3245.

3.9.2.5.3 GMMOs or GMOs are not subject to these Regulations when authorised for use by the appropriate national authorities of the States of origin, transit and destination.

3.9.2.5.4 Genetically modified live animals must be transported under terms and conditions of the appropriate national authorities of the States of origin and destination.

□ 3.9.2.6 Lithium Batteries

Cells and batteries, cells and batteries contained in equipment, or cells and batteries packed with equipment, containing lithium in any form must be assigned to UN 3090, UN 3091, UN 3480 or UN 3481, as appropriate. They may be transported under these entries if they meet the following provisions:

(a) each cell or battery is of the type proved to meet the requirements of each test of the *UN Manual of Tests and Criteria*, Part III, subsection 38.3. However, batteries and cells manufactured before 1 January 2014 conforming to a design type tested according to the requirements of the 5th revised edition of the *UN Manual of Tests and Criteria*, Part III, subsection 38.3 may continue to be transported;

Note:

Batteries must be of a design type proved to meet the testing requirements of the Manual of Tests and Criteria, Part III, subsection 38.3, irrespective of the whether the cells of which they are composed are of a tested design type.

- (b)** each cell and battery incorporates a safety venting device or is designed to preclude a violent rupture under conditions normally incident to transport;
- (c)** each cell and battery is equipped with an effective means of preventing external short circuits;
- (d)** each battery containing cells or series of cells connected in parallel is equipped with effective means as

necessary to prevent dangerous reverse current flow (e.g., diodes, fuses, etc.);

- (e)** cells and batteries must be manufactured under a quality management program that includes:
 1. a description of the organizational structure and responsibilities of personnel with regard to design and product quality;
 2. the relevant inspection and test, quality control, quality assurance, and process operation instructions that will be used;
 3. process controls that should include relevant activities to prevent and detect internal short circuit failure during manufacture of cells;
 4. quality records, such as inspection reports, test data, calibration data and certificates. Test data must be kept and made available to the appropriate national authority upon request;
 5. management reviews to ensure the effective operation of the quality management programme;
 6. a process for control of documents and their revision;
 7. a means for control of cells or batteries that are not conforming to the type tested as mentioned in (a) above;
 8. training programmes and qualification procedures for relevant personnel; and
 9. procedures to ensure that there is no damage to the final product.

Note:

In house quality management programmes may be accepted. Third party certification is not required, but the procedures listed in 1. to 9. above must be properly recorded and traceable. A copy of the quality management programme must be made available to the appropriate national authority upon request.

3.9.2.7 Miscellaneous Articles and Substances

Examples included in this class:

- Asbestos
- Carbon dioxide, solid (dry ice)
- Consumer commodity
- Chemical and First aid kits
- Life-saving appliances
- Engines, internal combustion
- Vehicles (flammable gas powered), Vehicles (flammable liquid powered)
- Polymeric beads
- Battery-powered equipment or vehicles
- Zinc dithionite

3.10 Classification of Articles/Substances with Multiple Hazards

Where an article or substance is not specifically listed by name in Subsection 4.2—List of Dangerous Goods and has two hazards, the primary hazard must be determined in accordance with the criteria presented in this subsection.

3.10.1 Precedence of Hazards Table

When the two hazards fall within Classes 3, 4 or 8 or Divisions 5.1 or 6.1, Table 3.10.A must be used to determine which of two hazards must be regarded as the primary hazard. The class or division, which appears at the intersection of the relevant line and column, is the primary hazard and the other class or division is the subsidiary hazard. The correct packing group to be used is also shown at the intersection of the relevant line and column.

⊗

3.10.1.1 Packing Group

The most stringent packing group based on the different hazards of a material must then be the packing group for the article or substance and this is shown next to the primary hazard at the intersection of the relevant line and column.

3.10.1.2 Proper Shipping Name

The proper shipping name of an article or substance, when determined in accordance with Table 3.10.A must be the most appropriate n.o.s. entry in Table 4.1.A for the class or division shown as the primary hazard (see 4.1.3.2).

3.10.2 Exceptions

Articles and substances, which meet among other hazards, the criteria for the following classes, divisions or particular types of hazards are not dealt with by

Table 3.10.A since these classes, divisions or particular types of hazard always take precedence:

- (a) Classes 1, 2 and 7 (except see 3.10.3);
- (b) Divisions 5.2 and 6.2 (see also 3.10.5);
- (c) self-reactive and related substances and solid desensitized explosives of Division 4.1;
- (d) pyrophoric substances of Division 4.2;
- (e) 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; and
- (f) liquid desensitized explosives of Class 3.

3.10.3 Radioactive Materials

Radioactive Materials having other hazardous properties must always be classified in Class 7 and the subsidiary risk must also be identified, other than for excepted packages of radioactive materials where the other hazardous properties take precedence. For radioactive material in excepted packages, Special Provision A130 applies. It is also necessary to take into account the possible formation of products having additional dangerous properties by interaction of the materials with the atmosphere or with water.

3.10.4 Magnetized Material

An article, which also meets the criterion for a magnetized material, must be identified in accordance with the provisions of this subsection and, in addition, as a magnetized material.

3.10.5 Infectious Substances

Infectious substances having other hazardous properties must always be classified in Division 6.2 and the greatest of the additional hazards must also be identified.

TABLE 3.10.A
Precedence of Hazards and Packing Groups for Classes 3, 4 and 8 and for
Divisions 5.1 and 6.1 (3.10.1)

Class or Division	Packing Group	4.2	4.2	4.3	4.3	4.3	5.1	5.1	5.1	6.1 (d)	6.1 (o)	6.1	6.1	8 (l)	8 (s)	8 (l)	8 (s)	8 (l)	8 (s)
		II	III	I	II	III	I	II	III	I	I	II	III	I	I	II	II	III	III
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 (d)	I													8, I	8, I	6.1, I	6.1, I	6.1, I	6.1, I
6.1 (o)	I													8, I	8, I	6.1, I	6.1, I	6.1, I	6.1, I
6.1 (i)	II													8, I	8, I	6.1, I	6.1, II	6.1, II	6.1, II
6.1 (d)	II													8, I	8, I	6.1, I	6.1, II	6.1, II	6.1, II
6.1 (o)	II													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

I = 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 hazard must be Division 6.1.

Note:

This table is based on the UN Precedence of Hazards Table.

3.11 Transport of Samples for Further Testing

3.11.1 Classification

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 UN number must be assigned on the basis of the shipper's knowledge of the substance and application of:

- (a) the classification criteria of these Regulations; and
- (b) the precedence of hazards given in Subsection 3.10.

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

3.11.2 Proper Shipping Name

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 classifi-

cation criteria (e.g. **Gas sample, non-pressurized, flammable**, UN 3167) that proper shipping name must be used. When a n.o.s. entry is used to transport the sample, the proper shipping name need not be supplemented with the technical name.

3.11.3 Limitations

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 forbidden for transport by 2.1.1;
- (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 3.4.1.2.5 or 3.5.2.6, if it is a self-reactive substance or an organic peroxide, respectively;
- (d) the sample is transported in a combination packaging with a net weight per package not exceeding 2.5 kg; and
- (e) the sample is not packed together with other goods.

SECTION 4—IDENTIFICATION

4.0 General

STATE VARIATION: USG-04

4.0.1 Proper Shipping Name

Dangerous goods are assigned to UN numbers and proper shipping names according to their hazard classification and their composition. The process for selecting the proper shipping name for articles and substances is set out in Subsection 4.1.

4.0.2 List of Dangerous Goods

4.0.2.1 The List of Dangerous Goods, Subsection 4.2, contains approximately 3000 articles and substances most likely to be shipped by air. The list is not all-inclusive, therefore it contains a number of generic or not otherwise specified (n.o.s.) names or entries, under which unlisted items may be transported. A detailed description of the List, which is also referred to in these Regulations as the "List of Dangerous Goods", is found in 4.1.6. These substances or articles may be transported only after they have been classified according to the class definitions and test criteria set out in Section 3 and the name in the Dangerous Goods List which most appropriately describes the substance that 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 substance or article has been so classified, all conditions contained in these Regulations must be applied. Any substance or article having or suspected of having explosive characteristics must first be considered for inclusion in Class 1.

4.0.2.2 The List of Dangerous Goods includes a number of articles and substances that are forbidden in aircraft under any circumstance. See 2.1.1.

4.0.2.3 Where precautionary measures are laid down in the List of Dangerous Goods in respect of a given article or substance (e.g. that it must be "stabilized" or "with x% water or phlegmatizer") such an article or substance 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.

4.0.2.4 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 specialised agency.

4.0.3 Numerical Cross-Reference List

Subsection 4.3 provides a cross-reference from the UN/ID number to the proper shipping name, and is arranged in numerical order.

4.0.4 Special Provisions

Special conditions for the transport of some of the items in the List of Dangerous Goods may be found in Subsection 4.4.

4.0.5 Explanation of Terms

Explanations for terms relating to many of the entries found in the List of Dangerous Goods are included in the glossary. Although not mandatory, these descriptions are often useful in determining the proper shipping name to be used. The entries for which there is further explanation are indicated by a dagger symbol (†) as part of the entry.

4

4.1 Selecting Proper Shipping Name

4.1.0 General

4.1.0.1 Dangerous goods must be assigned to one of the proper shipping names shown in the List of Dangerous Goods. Such substances may contain technical impurities (for example those deriving from the production process) or additives for stability or other purposes that do not affect their classification. However, a substance listed by name containing technical impurities or additives for stability or other purposes affecting its classification must be considered a mixture or solution (see 4.1.3.1). The proper shipping name is used to identify the dangerous article or substance on the outside of the package and on the "Shipper's Declaration for Dangerous Goods". The proper shipping name is shown in the List of Dangerous Goods in bold type (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.

4.1.0.2 Entries in the List of Dangerous Goods are of the following four types, in the preferred order of use:

(a) single entries for well-defined substances or articles, for example

Kerosene UN 1223

Isopropyl butyrate UN 2405

(b) generic entries for a well-defined group of substances or articles, for example

Adhesives UN 1133

Organic peroxide, Type C, liquid UN 3103

Paint related material UN 1263

Triazine pesticide, liquid, toxic UN 2998

- (c) Specific n.o.s. entries covering a group of substances or articles of a particular chemical or technical nature, for example

Refrigerant gas, n.o.s. UN 1078

Selenium compound, solid, n.o.s. UN 3283

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

Corrosive solid, n.o.s. UN 1759

Toxic liquid, organic, n.o.s. UN 2810

4.1.0.3 Self-reactive substances of Division 4.1 must be assigned to one of the generic entries listed in Appendix C.1 in accordance with the classification principles described in 2.4.2.3.3 of the UN Recommendations.

4.1.0.4 Organic peroxides of Division 5.2 must be assigned to one of the generic entries listed in Appendix C.2 in accordance with the classification principles described in 2.5.3.3 of the UN Recommendations.

4.1.1 Items Listed by Name

4.1.1.1 If the name is known, go directly to the List of Dangerous Goods (Subsection 4.2).

4.1.1.2 If the UN or ID number is known, go to the Numerical/Cross-reference Index (Subsection 4.3) to find the List of Dangerous Goods.

4.1.2 Items Not Listed by Name

4.1.2.1 When an article or substance is not listed by name in the List of Dangerous Goods, the shipper must:

- (a) determine that the article or substance is not forbidden by referring to the characteristics in Subsection 2.1 and the classification criteria described in Section 3;
- (b) if the item is not forbidden, classify it by comparing its properties with the classification criteria described in Section 3. If the item has more than one hazard, the shipper must refer to Subsection 3.10 to determine the primary hazard;
- (c) use the generic or n.o.s. proper shipping name which most accurately describes the article or substance. Proper shipping names must be determined in the order shown in 4.1.0.2.

This means that a substance is only assigned to an entry of type 4.1.0.2 (c) if it cannot be assigned to an entry of type 4.1.0.2 (b) and to an entry of type 4.1.0.2 (d) if it cannot be assigned to an entry of 4.1.0.2 (b) or 4.1.0.2 (c).

Example 1: Methyl-n-amyl carbinol, an alcohol with a flash point of 54°C (130°F), is not listed by name so it must be declared under the most accurately descriptive name which is **Alcohol, n.o.s.** (Methyl-n-amyl carbinol) rather than **Flammable liquid, n.o.s.★**.

Example 2: Ethyl cyclohexane, a hydrocarbon with a flash point of 35°C (95°F) is not listed by name so it must be declared under the most accurately descriptive name which is **Hydrocarbons, liquid, n.o.s.** rather than **Flammable liquid, n.o.s.★**.

- (d) when indicated by the inclusion of the “★” symbol in Column B of the List of Dangerous Goods, supplement a generic or n.o.s. proper shipping name with the technical or chemical group names in brackets () immediately following the proper shipping name. Not more than the two constituents which most predominantly contribute to the hazard or hazards of a mixture need be shown. If a package containing a mixture is labelled with any subsidiary risk label, one of the two technical names as shown in parenthesis must be the name of the constituent which compels the use of the subsidiary risk label. This requirement does not apply to controlled substances when their disclosure is prohibited by national law or international convention. For explosives of Class 1, the dangerous goods description may be supplemented by additional descriptive text to indicate commercial or military names. The technical name must be a recognized chemical or biological name or other name currently used in scientific and technical handbooks, texts and journals. Trade names must not be used. For a pesticide, only the ISO common name(s), or other name(s) listed 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) must be used.

Example 3: The proper shipping name for a mixture of Freon® 14 and Freon® 23 is **Refrigerant gas, n.o.s.** (*Tetrafluoromethane, Trifluoromethane*). Freon® 14 and Freon® 23 are not acceptable because they are trade names.

Example 4: A solid pesticide product contains Carbofuran. It will be declared as **Carbamate pesticide, solid, toxic** (Carbofuran), UN 2757.

Example 5: A mixture consisting of xylene and acetone, exhibiting a flash point of 24°C (75°F) and an initial boiling point above 35°C (95°F), must be classified using a proper shipping name that accurately represents its hazard and its application. If it is in a form that is to be used as a paint remover, then a generic entry, **Paint related material**, UN 1263 is appropriate. On the other hand, if it does not have such a function, but is used (for example) as an intermediate in a manufacturing process, then a simple n.o.s. proper shipping name may be used: **Flammable liquid, n.o.s.★**.

- (e) 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 national authority.
- (f) Hydrates may be included under the proper shipping name for the anhydrous substance.

4.1.2.2 Table 4.1.A lists all the n.o.s. entries and the main generic entries, grouped by hazard class or division. Within each hazard class or division the names are placed into three groups, where appropriate, as follows:

- (a) specific entries covering a group of substances or articles of a particular chemical or technical nature;
- (b) pesticide entries, for Class 3 and Division 6.1;

(c) general entries covering a group of substances or articles having one or more general dangerous properties.

Generic or n.o.s. proper shipping names followed by a “★” symbol must be supplemented with the technical or chemical group name, see 4.1.2.1(d). The most specific proper shipping name must always be used.

TABLE 4.1.A
List of Generic and n.o.s. Proper Shipping Names (4.1.2.2)

Class or Division	Subsidiary Risk	UN or ID No.	Proper Shipping Names <i>(Note: The ★ is not part of the proper shipping name.)</i>
Class 1			
1		0190	Samples, explosive★ other than initiating explosive
Division 1.1			
1.1L		0354	Articles, explosive, n.o.s.★
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.★
1.1.B		0461	Components, explosive train, n.o.s.★
1.1C		0497	Propellant, liquid
1.1C		0498	Propellant, solid
1.1.L		0357	Substances, explosive, n.o.s.★
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.★
Division 1.2			
1.2K	6.1	0020	Ammunition, toxic★ with burster, expelling charge or propelling charge
1.2L		0355	Articles, explosive, n.o.s.★
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.★
1.2B		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
1.3L		0356	Articles, explosive, n.o.s.★
1.3C		0470	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.



Dangerous Goods Regulations

TABLE 4.1.A
List of Generic and n.o.s. Proper Shipping Names (4.1.2.2) (continued)

Class or Division	Subsidiary Risk	UN or ID No.	Proper Shipping Names <i>(Note: The ★ is not part of the proper shipping name.)</i>
1.3C		0495	Propellant, liquid
1.3C		0499	Propellant, solid
1.3L		0359	Substances, explosive, n.o.s.★
1.3C		0477	Substances, explosive, n.o.s.★
1.3G		0478	Substances, explosive, n.o.s.★
Division 1.4			
1.4S		0349	Articles, explosive, n.o.s.★
1.4B		0350	Articles, explosive, n.o.s.★
1.4C		0351	Articles, explosive, n.o.s.★
1.4D		0352	Articles, explosive, n.o.s.★
1.4G		0353	Articles, explosive, n.o.s.★
1.4E		0471	Articles, explosive, n.o.s.★
1.4F		0472	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.★
1.4S		0481	Substances, explosive, n.o.s.★
1.4G		0485	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			
<i>Specific entries</i>			
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.★
<i>General entries</i>			
2.1		1950	Aerosols, flammable
2.1		3501	Chemical under pressure, flammable, n.o.s.★
2.1	8	3505	Chemical under pressure, flammable, corrosive, n.o.s.★
2.1	6.1	3504	Chemical under pressure, flammable, toxic, n.o.s.★
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.★

TABLE 4.1.A
List of Generic and n.o.s. Proper Shipping Names (4.1.2.2) (continued)

Class or Division	Subsidiary Risk	UN or ID No.	Proper Shipping Names <i>(Note: The ★ is not part of the proper shipping name.)</i>
Division 2.2			
<i>Specific entries</i>			
2.2		1968	Insecticide gas, n.o.s.★
2.2		1078	Refrigerant gas, n.o.s.★
<i>General entries</i>			
2.2		1950	Aerosols, non-flammable
<input type="checkbox"/> 2.2		3500	Chemical under pressure, n.o.s.★
<input type="checkbox"/> 2.2	8	3503	Chemical under pressure, corrosive, n.o.s.★
<input type="checkbox"/> 2.2	6.1	3502	Chemical under pressure, toxic, n.o.s.★
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			
<i>Specific entries</i>			
2.3		1967	Insecticide gas, toxic, n.o.s.★
2.3	2.1	3355	Insecticide gas, toxic, flammable, n.o.s.★
<i>General entries</i>			
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 and 8	3305	Compressed gas, toxic, flammable, corrosive, n.o.s.★
2.3	5.1	3303	Compressed gas, toxic, oxidizing, n.o.s.★
2.3	5.1 and 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 and 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 and 8	3310	Liquefied gas, toxic, oxidizing, corrosive, n.o.s.★
Class 3			
<i>Specific entries</i>			
3	8	3274	Alcoholates solution, n.o.s.★ in alcohol
3	6.1	1986	Alcohols, flammable, toxic, n.o.s.★
3		1987	Alcohols, n.o.s.★



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TABLE 4.1.A
List of Generic and n.o.s. Proper Shipping Names (4.1.2.2) (continued)

Class or Division	Subsidiary Risk	UN or ID No.	Proper Shipping Names <i>(Note: The ★ is not part of the proper shipping name.)</i>
4			
4.1			
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	Isocyanates, flammable, toxic, n.o.s.★
3	6.1	2478	Isocyanate solution, 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	6.1	1228	Mercaptan mixture, liquid, flammable, toxic, n.o.s.★
3		3336	Mercaptans, liquid, flammable, 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		3343	Nitroglycerin mixture, desensitized, liquid, flammable, n.o.s.★ with 30% or less nitroglycerin, by weight
3		3357	Nitroglycerin mixture, desensitized, liquid, n.o.s.★ with 30% or less nitroglycerin, by weight
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	Arsenical pesticide, liquid, flammable, toxic★, flash point < 23°C (73°F)
	3	6.1	Bipyridilium pesticide, liquid, flammable, toxic★, flash point < 23°C (73°F)
	3	6.1	Carbamate pesticide, liquid, flammable, toxic★, flash point < 23°C (73°F)
	3	6.1	Copper based pesticide, liquid, flammable, toxic★, flash point < 23°C (73°F)
	3	6.1	Coumarin derivative pesticide, liquid, flammable, toxic★, flash point < 23°C (73°F)
	3	6.1	Mercury based pesticide, liquid, flammable, toxic★, flash point < 23°C (73°F)
	3	6.1	Organochlorine pesticide, liquid, flammable, toxic★, flash point < 23°C (73°F)
	3	6.1	Organophosphorus pesticide, liquid, flammable, toxic★, flash point < 23°C (73°F)
	3	6.1	Organotin pesticide, liquid, flammable, toxic★, flash point < 23°C (73°F)
	3	6.1	Pesticide, liquid, flammable, toxic, n.o.s.★, flash point < 23°C (73°F)

TABLE 4.1.A
List of Generic and n.o.s. Proper Shipping Names (4.1.2.2) (continued)

4

4.1

Class or Division	Subsidiary Risk	UN or ID No.	Proper Shipping Names <i>(Note: The ★ is not part of the proper shipping name.)</i>
3	6.1	3346	Phenoxyacetic acid derivative pesticide, liquid, flammable, toxic★, flash point < 23°C (73°F)
3	6.1	3350	Pyrethroid pesticide, liquid, flammable, toxic★, flash point < 23°C (73°F)
3	6.1	2780	Substituted nitrophenol pesticide, liquid, flammable, toxic★, flash point < 23°C (73°F)
3	6.1	2772	Thiocarbamate pesticide, liquid, flammable, toxic★, flash point < 23°C (73°F)
3	6.1	2764	Triazine pesticide, liquid, flammable, toxic★, flash point < 23°C (73°F)
<i>General entries</i>			
3		3256	Elevated temperature liquid, flammable, n.o.s.★ with flash point above 60°C (140°F), 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 and 8	3286	Flammable liquid, toxic, corrosive, n.o.s.★
Class 4			
Division 4.1			
<i>Specific entries</i>			
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.★
4.1		3344	Pentaerythrite tetranitrate mixture, desensitized, solid, n.o.s.★, with more than 10% but not more than 20% PETN, by weight
4.1		3344	Pentaerythritol tetranitrate mixture, desensitized, solid, n.o.s.★, with more than 10% but not more than 20% PETN, by weight
4.1		3344	PETN mixture, desensitized, solid, n.o.s.★, with more than 10% but not more than 20% PETN, by weight
4.1		3221	Self-reactive liquid type B★
4.1		3231	Self-reactive liquid type B, temperature controlled★
4.1		3223	Self-reactive liquid type C★
4.1		3233	Self-reactive liquid type C, temperature controlled★
4.1		3225	Self-reactive liquid type D★
4.1		3235	Self-reactive liquid type D, temperature controlled★
4.1		3227	Self-reactive liquid type E★
4.1		3237	Self-reactive liquid type E, temperature controlled★
4.1		3229	Self-reactive liquid type F★
4.1		3239	Self-reactive liquid type F, temperature controlled★
4.1		3224	Self-reactive solid type C★
4.1		3234	Self-reactive solid type C, temperature controlled★
4.1		3226	Self-reactive solid type D★

TABLE 4.1.A
List of Generic and n.o.s. Proper Shipping Names (4.1.2.2) (continued)

Class or Division	Subsidiary Risk	UN or ID No.	Proper Shipping Names <i>(Note: The ★ is not part of the proper shipping name.)</i>
4.1		3236	Self-reactive solid type D, temperature controlled★
4.1		3228	Self-reactive solid type E★
4.1		3238	Self-reactive solid type E, temperature controlled★
4.1		3230	Self-reactive solid type F★
4.1		3240	Self-reactive solid type F, temperature controlled★
<i>General entries</i>			
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			
<i>Specific entries</i>			
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 or vegetable or 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, n.o.s.★
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★
4.2		2006	Plastics, nitrocellulose-based, self-heating, n.o.s.★
4.2		1383	Pyrophoric alloy, n.o.s.★
4.2	4.3	1383	Pyrophoric metal, n.o.s.★
4.2		3342	Xanthates
<i>General entries</i>			
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.★

TABLE 4.1.A
List of Generic and n.o.s. Proper Shipping Names (4.1.2.2) (continued)

Class or Division	Subsidiary Risk	UN or ID No.	Proper Shipping Names <i>(Note: The ★ is not part of the proper shipping name.)</i>
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			
<i>Specific entries</i>			
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 and 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	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★
<i>General entries</i>			
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.★

TABLE 4.1.A
List of Generic and n.o.s. Proper Shipping Names (4.1.2.2) (continued)

Class or Division	Subsidiary Risk	UN or ID No.	Proper Shipping Names <i>(Note: The ★ is not part of the proper shipping name.)</i>
Class 5			
Division 5.1			
<i>Specific entries</i>			
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.
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.
<i>General entries</i>			
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			
<i>Specific entries</i>			
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★

TABLE 4.1.A
List of Generic and n.o.s. Proper Shipping Names (4.1.2.2) (continued)

Class or Division	Subsidiary Risk	UN or ID No.	Proper Shipping Names <i>(Note: The ★ is not part of the proper shipping name.)</i>
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			
<i>Specific entries</i>			
6.1		3140	Alkaloid salts, liquid, n.o.s.★
6.1		1544	Alkaloid salts, solid, n.o.s.★
6.1		3140	Alkaloids, liquid, n.o.s.★
6.1		1544	Alkaloids, solid, n.o.s.★
6.1		1549	Antimony compound, inorganic, solid, n.o.s.★
6.1		3141	Antimony compound, inorganic, liquid, 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 and 8	2742	Chloroformates, toxic, corrosive, flammable, n.o.s.★
6.1		1583	Chloropicrin mixtures, n.o.s.★
6.1	8	3361	Chlorosilanes, toxic, corrosive, n.o.s.★
6.1	3 and 8	3362	Chlorosilanes, toxic, corrosive, flammable, n.o.s.★
6.1		1935	Cyanide, solution, n.o.s.★
6.1		1588	Cyanides, inorganic, solid, n.o.s.★
6.1		3142	Disinfectants, liquid, toxic, n.o.s.★
6.1		1601	Disinfectants, solid, toxic, n.o.s.★
6.1		1602	Dye intermediates, liquid, toxic, n.o.s.★
6.1		3143	Dye intermediates, solid, toxic, n.o.s.★
6.1		1602	Dye, liquid, 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	3	3080	Isocyanate solution, toxic, flammable, n.o.s.★
6.1		2206	Isocyanates, toxic, 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.★



TABLE 4.1.A
List of Generic and n.o.s. Proper Shipping Names (4.1.2.2) (continued)

Class or Division	Subsidiary Risk	UN or ID No.	Proper Shipping Names (Note: The ★ is not part of the proper shipping name.)
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		1655	Nicotine compound, solid, n.o.s.★
6.1		3144	Nicotine compound, liquid, n.o.s.★
6.1		1655	Nicotine preparation, solid, n.o.s.★
6.1		3144	Nicotine preparation, liquid, n.o.s.★
6.1		3276	Nitriles, liquid, toxic, n.o.s.★
6.1		3439	Nitriles, solid, toxic, n.o.s.★
6.1	3	3275	Nitriles, toxic, flammable, 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, liquid, toxic, n.o.s.★
6.1		3467	Organometallic compound, solid, toxic, n.o.s.★
6.1		3278	Organophosphorus compound, liquid, toxic, n.o.s.★
6.1		3464	Organophosphorus compound, solid, toxic, n.o.s.★
6.1	3	3279	Organophosphorus compound, toxic, flammable, 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 substances, 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.★
<i>Pesticides, solid</i>			
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		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★

TABLE 4.1.A
List of Generic and n.o.s. Proper Shipping Names (4.1.2.2) (continued)

Class or Division	Subsidiary Risk	UN or ID No.	Proper Shipping Names <i>(Note: The ★ is not part of the proper shipping name.)</i>
6.1		2779	Substituted nitrophenol pesticide, solid, toxic★
6.1		2771	Thiocarbamate pesticide, solid, toxic★
6.1		2763	Triazine pesticide, solid, toxic★
<i>Pesticides, liquid</i>	3	2994	Arsenical pesticide, liquid, toxic★
		2993	Arsenical pesticide, liquid, toxic, flammable★, flash point ≥ 23°C (73°F)
		3016	Bipyridilium pesticide, liquid, toxic★
		3015	Bipyridilium pesticide, liquid, toxic, flammable★, flash point ≥ 23°C (73°F)
		2992	Carbamate pesticide, liquid, toxic★
		2991	Carbamate pesticide, liquid, toxic, flammable★, flash point ≥ 23°C (73°F)
		3010	Copper based pesticide, liquid, toxic★
		3009	Copper based pesticide, liquid, toxic, flammable★, flash point ≥ 23°C (73°F)
		3026	Coumarin derivative pesticide, liquid, toxic★
		3025	Coumarin derivative pesticide, liquid, toxic, flammable★, flash point ≥ 23°C (73°F)
		3012	Mercury based pesticide, liquid, toxic★
		3011	Mercury based pesticide, liquid, toxic, flammable★, flash point ≥ 23°C (73°F)
		2996	Organochlorine pesticide, liquid, toxic★
		2995	Organochlorine pesticide, liquid, toxic, flammable★, flash point ≥ 23°C (73°F)
		3018	Organophosphorus pesticide, liquid, toxic★
		3017	Organophosphorus pesticide, liquid, toxic, flammable★, flash point ≥ 23°C (73°F)
		3020	Organotin pesticide, liquid, toxic★
		3019	Organotin pesticide, liquid, toxic, flammable★, flash point ≥ 23°C (73°F)
		2902	Pesticide, liquid, toxic, n.o.s.★
		2903	Pesticide, liquid, toxic, flammable, n.o.s.★, flash point ≥ 23°C (73°F)
		3348	Phenoxyacetic acid derivative pesticide, liquid, toxic★
		3347	Phenoxyacetic acid derivative pesticide, liquid, toxic, flammable★, flash point ≥ 23°C (73°F)
		3352	Pyrethroid pesticide, liquid, toxic★
		3351	Pyrethroid pesticide, liquid, toxic flammable★, flash point ≥ 23°C (73°F)
		3014	Substituted nitrophenol pesticide, liquid, toxic★
		3013	Substituted nitrophenol pesticide, liquid, toxic, flammable★, flash point ≥ 23°C (73°F)
		3006	Thiocarbamate pesticide, liquid, toxic★
		3005	Thiocarbamate pesticide, liquid, toxic, flammable★, flash point ≥ 23°C (73°F)
		2998	Triazine pesticide, liquid, toxic★

TABLE 4.1.A
List of Generic and n.o.s. Proper Shipping Names (4.1.2.2) (continued)

Class or Division	Subsidiary Risk	UN or ID No.	Proper Shipping Names <i>(Note: The ★ is not part of the proper shipping name.)</i>
6.1	3	2997	Triazine pesticide, liquid, toxic, flammable★, flash point ≥ 23°C (73°F)
<i>General entries</i>			
6.1		3315	Chemical sample, toxic
6.1		3243	Solids containing toxic liquid, n.o.s.★
6.1		3381	Toxic by inhalation, liquid, n.o.s.★ with a LC₅₀ ≤ 200 mL/m³ and saturated vapour concentration ≥ 500 LC₅₀
6.1		3382	Toxic by inhalation, liquid, n.o.s.★ with a LC₅₀ ≤ 1,000 mL/m³ and saturated vapour concentration ≥ 10 LC₅₀
6.1	8	3389	Toxic by inhalation, liquid, corrosive, n.o.s.★ with a LC₅₀ ≤ 200 mL/m³ and saturated vapour concentration ≥ 500 LC₅₀
6.1	8	3390	Toxic by inhalation, liquid, corrosive, n.o.s.★ with a LC₅₀ ≤ 1,000 mL/m³ and saturated vapour concentration ≥ 10 LC₅₀
6.1	3	3383	Toxic by inhalation, liquid, flammable, n.o.s.★ with a LC₅₀ ≤ 200 mL/m³ and saturated vapour concentration ≥ 500 LC₅₀
6.1	3	3384	Toxic by inhalation, liquid, flammable, n.o.s.★ with a LC₅₀ ≤ 1,000 mL/m³ and a saturated vapour concentration ≥ 10 LC₅₀
6.1	3 and 8	3488	Toxic by inhalation, liquid, flammable, corrosive, n.o.s.★ with a LC₅₀ ≤ 200 mL/m³ and saturated vapour concentration ≥ 500 LC₅₀
6.1	3 and 8	3489	Toxic by inhalation, liquid, flammable, corrosive, n.o.s.★ with a LC₅₀ ≤ 1,000 mL/m³ and saturated vapour concentration ≥ 10 LC₅₀
6.1	5.1	3387	Toxic by inhalation, liquid, oxidizing, n.o.s.★ with a LC₅₀ ≤ 200 mL/m³ and saturated vapour concentration ≥ 500 LC₅₀
6.1	5.1	3388	Toxic by inhalation, liquid, oxidizing, n.o.s.★ with a LC₅₀ ≤ 1,000 mL/m³ and a saturated vapour concentration ≥ 10 LC₅₀
6.1	4.3	3385	Toxic by inhalation, liquid, water-reactive, n.o.s.★ with a LC₅₀ ≤ 200 mL/m³ and saturated vapour concentration ≥ 500 LC₅₀
6.1	4.3	3386	Toxic by inhalation, liquid, water-reactive, n.o.s.★ with a LC₅₀ ≤ 1,000 mL/m³ and saturated vapour concentration ≥ 10 LC₅₀
6.1	3 and 4.3	3490	Toxic by inhalation, liquid, water-reactive, flammable, n.o.s.★ with a LC₅₀ ≤ 200 mL/m³ and saturated vapour concentration ≥ 500 LC₅₀
6.1	3 and 4.3	3491	Toxic by inhalation, liquid, water-reactive, flammable, n.o.s.★ with a LC₅₀ ≤ 1,000 mL/m³ and saturated vapour concentration ≥ 10 LC₅₀
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.★
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.★

TABLE 4.1.A
List of Generic and n.o.s. Proper Shipping Names (4.1.2.2) (continued)

Class or Division	Subsidiary Risk	UN or ID No.	Proper Shipping Names <i>(Note: The ★ is not part of the proper shipping name.)</i>
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			
<i>Specific entries</i>			
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.
<i>General entries</i>			
6.2		2900	Infectious substance, affecting animals only
6.2		2814	Infectious substance, affecting humans
Class 7			
<i>General entries</i>			
7		2911	Radioactive material, excepted package—articles
7		2909	Radioactive material, excepted package—articles manufactured from depleted uranium
7		2909	Radioactive material, excepted package—articles manufactured from natural thorium
7		2909	Radioactive material, excepted package—articles manufactured from natural uranium
7		2908	Radioactive material, excepted package—empty packaging
7		2911	Radioactive material, excepted package—instruments
7		2910	Radioactive material, excepted package—limited quantity of material
7		2912	Radioactive material, low specific activity (LSA-I), non-fissile or fissile excepted
7		3321	Radioactive material, low specific activity (LSA-II), non-fissile or fissile excepted
7		3324	Radioactive material, low specific activity (LSA-II) fissile
7		3322	Radioactive material, low specific activity (LSA-III), non-fissile or fissile excepted
7		3325	Radioactive material, low specific activity (LSA-III) fissile
7		2913	Radioactive material, surface contaminated objects (SCO-I) or (SCO-II), non-fissile or fissile excepted
7		3326	Radioactive material, surface contaminated objects (SCO-I), fissile
7		3326	Radioactive material, surface contaminated objects (SCO-II), fissile
7		2919	Radioactive material, transported under special arrangement, non-fissile or fissile excepted
7		3331	Radioactive material, transported under special arrangement, fissile
7		2915	Radioactive material, Type A package, non-special form, non-fissile or fissile excepted
7		3327	Radioactive material, Type A package, fissile, non-special form

TABLE 4.1.A
List of Generic and n.o.s. Proper Shipping Names (4.1.2.2) (continued)

Class or Division	Subsidiary Risk	UN or ID No.	Proper Shipping Names <i>(Note: The ★ is not part of the proper shipping name.)</i>
7		3332	Radioactive material, Type A package, special form, non-fissile or fissile excepted
7		3333	Radioactive material, Type A package, special form, fissile
7		2917	Radioactive material, Type B(M) package, non-fissile or fissile excepted
7		3329	Radioactive material, Type B(M) package, fissile
7		2916	Radioactive material, Type B(U) package, non-fissile or fissile excepted
7		3328	Radioactive material, Type B(U) package, fissile
7		3323	Radioactive material, Type C package, non-fissile or fissile excepted
7		3330	Radioactive material, Type C package, fissile
Class 8			
<i>Specific entries</i>			
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	Bisulphate, aqueous solution
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	6.1	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.★
<i>General entries</i>			
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.★

TABLE 4.1.A
List of Generic and n.o.s. Proper Shipping Names (4.1.2.2) (continued)

Class or Division	Subsidiary Risk	UN or ID No.	Proper Shipping Names <i>(Note: The ★ is not part of the proper shipping name.)</i>
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			
<i>General entries</i>			
9		3334	Aviation regulated liquid, n.o.s.★
9		3335	Aviation regulated solid, n.o.s.★
9		8000	Consumer commodity
9		3257	Elevated temperature liquid, n.o.s.★ ≥ 100°C (212°F) and below its flash point (including molten metals, molten salts, etc.)
9		3258	Elevated temperature solid, n.o.s.★ ≥ 240°C (464°F)
9		3082	Environmentally hazardous substances, liquid, n.o.s.★
9		3077	Environmentally hazardous substances, solid, n.o.s.★

4.1.3 Mixtures and Solutions not Listed by Name

The following procedures are to be followed when determining the classification and proper shipping name for mixtures and solutions not specifically shown in the List of Dangerous Goods.

Note:

Where a substance is specifically listed by name in Table 4.2, it must be identified in transport by the proper shipping name in the List of Dangerous Goods. Such substances may contain technical impurities (for example, those deriving from the production process) or additives for stability or other purposes that do not affect their classification. However, a substance listed by name containing technical impurities or additives for stability or other purposes affecting its classification must be considered a mixture or solution (see 4.1.3.1).

4.1.3.1 Mixtures or Solutions

△ A mixture or solution meeting the classification criteria of these Regulations composed of a predominant substance identified by name in the List of Dangerous Goods together with one or more substances not subject to these Regulations and/or traces of one or more substances identified by name in the List of Dangerous Goods must be identified by the proper shipping name of

the predominant substance listed in Subsection 4.2; the qualifying word "mixture" or "solution", as appropriate must be added to the proper shipping name.

Example 6: A solution of Acetone is such that its flash point is below 23°C and its boiling point is above 35°C, therefore it is in the same flammability range as pure Acetone (UN 1090, Class 3, Packing Group II). Since neither hazard class nor the packing group has changed, this solution must be declared with the proper shipping name of **Acetone solution**.

In addition, the concentration of the mixture or solution may also be indicated after the basic description of the mixture or solution, e.g. **Acetone 75% solution**.

The exceptions to this rule are when:

- the mixture or solution is identified by name in Subsection 4.2–List of Dangerous Goods;
- the name and description of the substance named in the List of Dangerous Goods indicates that it applies only to the pure substance;
- the hazard class or division, subsidiary risk(s), physical state (solid, liquid, gas) or packing group of the mixture or solution differs from that of the substance named in listed Subsection 4.2–List of Dangerous Goods; or

- the hazard characteristics and properties of the mixture or solution necessitate emergency response measures that are different from those required for the substance identified by name in Subsection 4.2—List of Dangerous Goods.

Note:

Although traces of substances may not need to be taken into account for classification purposes, those traces may affect the properties of the substance and do need to be taken into account when considering the compatibility requirements of 5.0.2.6.3.

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. proper shipping name must be assigned, followed by the technical name of the substance in parentheses, unless it is a controlled substance and a national law or international convention prohibits its disclosure. Since qualifying words such as "containing", "mixture", "solution", etc. are helpful, it is advisable to add them.

Example 7: A mixture, containing 2-Chloropropane (UN 2356, Class 3, Packing Group I) and a solvent which is not subject to these Regulations, has a flash point below 23°C and a boiling point above 35°C; thus the mixture is in the flammability range for Packing Group II. Since the packing group has changed, the mixture should be declared as **Flammable liquid, n.o.s. (2-Chloropropane solution)** or **Flammable liquid, n.o.s. (2-Chloropropane mixture)**.

△ A mixture or solution meeting the classification criteria of these Regulations that is not identified by name in Subsection 4.2—List of Dangerous Goods and that is composed of two or more dangerous goods must be assigned to an entry that has the proper shipping name, description, hazard class or division, subsidiary risk(s) and packing group that most precisely describe the mixture or solution (see also Subsection 3.10, 4.1.2.1(c) and 4.1.2.1(d)).

Example 8: Engine cleaning mixture is not listed by name in the List of Dangerous Goods. It is described as a mixture of gasoline and carbon tetrachloride having a flash point less than 23°C and meeting the definition of Division 6.1 (oral toxicity). According to Table 3.10.A, the primary hazard is Class 3 with a subsidiary risk of Division 6.1. Therefore, the proper shipping name should be **Flammable liquid, toxic, n.o.s. (Gasoline/Carbon tetrachloride mixture)**, or **Flammable liquid, toxic, n.o.s. (Gasoline/Carbon tetrachloride solution)**.

4.1.3.2 Mixtures or Solutions not subject to these Regulations

If a mixture or formulation has a name which appears in the List of Dangerous Goods but does not meet the definition for the appropriate class shown in the list or any other class because of the concentration, it is not subject to these Regulations.

A mixture or a solution containing one or more substances identified by name in the Regulations or classified under a n.o.s. entry and one or more substances not subject to these Regulations is not subject to these Regulations 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. In either case, the words "Not Restricted" should then be included in the description on the Air Waybill to indicate that it has been checked.

4.1.4 Non-Restricted Articles

If an article or substance contains a chemical which could be suspected of being dangerous but is not listed in the List of Dangerous Goods and does not meet the criteria for any of the hazard classes or divisions, it may be offered for transport as not restricted if the words "Not Restricted" are included in the description of the article or substance on the Air Waybill to indicate that it has been checked.

4.1.5 Limited Quantities of Dangerous Goods

4.1.5.1 Dangerous goods may be carried as "Limited Quantity" only if they comply with the restrictions provided in Subsection 2.7, 4.1.5.2 and 4.1.5.3, the List of Dangerous Goods and in Section 5. All requirements of these Regulations must be met unless otherwise provided for.

4.1.5.2 Items, permitted to be carried under the limited quantity provisions, are shown in the List of Dangerous Goods by the Limited Quantity Packing Instruction number. The Limited Quantity Packing Instructions are identified with the prefix letter "Y".

4.1.5.3 The gross weight of a "Limited Quantity" package must not exceed 30 kg.

4.1.6 Using the List of Dangerous Goods

STATE VARIATIONS: AUG-01/02, CAG-07/08, GBG-03, IRG-03, JMG-01, NLG-01, USG-02/03

The List of Dangerous Goods, Subsection 4.2, lists specific dangerous articles and substances which experience has shown are likely to be offered for transport by air. The list is divided into 14 columns as follows:

Note:

The provisions of these Regulations apply to any article or substance meeting the definition of dangerous goods whether listed or not, except those articles or substances marked as "Not Restricted".

4.1.6.1 Column A

UN or ID (identification) number—Contains the serial number assigned to the article or substance under the United Nations classification system. When this number is used, it must be prefixed by the letters "UN". If the substance has not been assigned a number in the UN classification system, a temporary identification number in the 8000 series has been assigned and is indicated where appropriate. Numbers in the 8000 series must be identified with the "ID" prefix instead of when UN is indicated for markings and documentation in these Regulations. For example, the number would appear as UN 1950 or ID 8000 and not as 1950 or 8000.

4.1.6.2 Column B

Proper Shipping Name/Description—Contains an alphabetical listing of dangerous goods articles and substances identified by their proper shipping names together with qualifying descriptive text. The proper shipping name is shown in bold (dark) type whereas the descriptive text is shown in light type. See 8.1.3 for additional information concerning proper shipping names.

Also included, in light 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;
- (c) names of articles and substances which are subject to additional considerations under special provisions; and
- (d) names of substances and articles, which are considered to be not restricted.

The following symbols appear against some of the entries in this column:

Symbol—Meaning

★—Addition of technical or chemical group name(s) required. See 4.1.2.1(d).

†—Additional information can be found in Appendix A.

Note:

The “★” and “†” symbols are not part of the proper shipping name.

Names are given in strict alphabetical order of the proper shipping name appearing in bold print, i.e. where names comprise more than one word, they are alphabetized as if they were a single word. However, the following components of the names have been ignored:

- numerals;
- the single letters a-, b-, m-, N-, n-, O-, o-, p-;
- the prefixes alpha-, beta-, meta-, omega-, sec-, tert-;
- the term “n.o.s.”.

Unless otherwise indicated for an entry in the List of Dangerous Goods, 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 Regulations.

4.1.6.3 Column C

Class or Division (Subsidiary risk)—Contains the class or division number assigned to the article or substance according to the classification system described in Section 3. In the case of Class 1 Explosives, the compatibility group is also shown. Where the substance has a subsidiary risk(s) the class or division number, which have been identified by applying the classification criteria in Section 3 is shown in parentheses following the primary risk. All subsidiary risks are listed in numerical order.

4.1.6.4 Column D

Labels—Contains the hazard label(s) to be applied to the outside of each package and overpack for the commodity shown in Column B. The primary hazard label is listed first followed by any subsidiary risk label(s). For n.o.s. or generic articles and substances with more than one hazard, all applicable subsidiary risk labels may not be indicated. In these cases, subsidiary risk labels must be applied in accordance with 7.2.3.5, 7.2.3.6 and 7.2.3.8. In addition, handling labels for “Cryogenic liquid”, “Keep away from heat” and “Magnetized Material” are shown in this column against applicable articles and substances. See 7.2.4 for the application of Handling Labels.

4

4.1

4.1.6.5 Column E

Packing Group—Contains the UN Packing Group, i.e. I, II or III, where assigned to the article or substance (see 3.0.3).

4.1.6.6 Column F

Excepted Quantity Code—Contains the Excepted Quantity code assigned to the substance or article by packing group (see 2.6.4.1 and Table 2.6.A).

4.1.6.7 Column G

Passenger and Cargo Aircraft Limited Quantity—Packing Instructions—Refers to the relevant Limited Quantity (Y) Packing Instruction listed in Section 5 for transport of the article or substance on a passenger or on a cargo aircraft. If the word *Forbidden* is shown, the article or substance cannot be carried under Limited Quantity provisions.

Note:

Where an article or substance is packed according to the packing instruction in Column G or I and is within the maximum net quantity shown in Column H or J it may also be carried on a cargo aircraft. In such circumstances the package must not bear the “Cargo Aircraft Only” label.

△ 4.1.6.8 Column H

Passenger and Cargo Aircraft Limited Quantity—Maximum Net Quantity per Package—Shows the maximum net quantity (weight or volume) of the article or substance allowed in each package for transport on a passenger or cargo aircraft. The weight quoted is the net weight, unless otherwise indicated by a letter G which refers to the gross weight. Factors for converting imperial or US units to SI units appear in Appendix B. The maximum quantity per package may be further limited by the type of container used (see Section 5). If the word *Forbidden* is shown, the article or substance cannot be carried under Limited Quantity provisions.

Note:

Where an article or substance is packed according to the packing instruction in Column G or I and is within the maximum net quantity shown in Column H or J it may also be carried on a cargo aircraft. In such circumstances the package must not bear the “Cargo Aircraft Only” label.

4.1.6.9 Column I

Passenger and Cargo Aircraft—Packing Instructions—Refers to the relevant packing instructions listed in Section 5 for transport of the article or substance on a passenger or cargo aircraft.

Note:

Where an article or substance is packed according to the packing instruction in Columns G or I and is within the maximum net quantity shown in Columns H or J it may also be carried on a cargo aircraft. In such circumstances, the package must not bear the "Cargo Aircraft Only" label.

4

△ 4.1.6.10 Column J

4.1

Passenger and Cargo Aircraft—Maximum Net Quantity per Package—Shows the maximum net quantity (weight or volume) of the article or substance allowed in each package for transport on a passenger or cargo aircraft. Factors for converting imperial or US units to SI units appear in Appendix B. The maximum quantity per package may be further limited by the type of container used (see Section 5). The maximum net quantities indicated may be exceeded only if specified in these Regulations, or as permitted with the approval of the appropriate national authority of the State of Origin and the State of the Operator. If the word *Forbidden* is shown, the article cannot be carried on a passenger aircraft.

Note:

Where an article or substance is packed according to the packing instruction in Columns G or I and is within the maximum net quantity shown in Columns H or J it may also be carried on a cargo aircraft. In such circumstances the package must not bear the "Cargo Aircraft Only" label.

4.1.6.11 Column K

Cargo Aircraft Only—Packing Instructions—Refers to the relevant packing instructions listed in Section 5 for transport of the article or substance on a cargo aircraft only.

△ 4.1.6.12 Column L

Cargo Aircraft Only—Maximum Net Quantity per Package—Shows the maximum net quantity (weight or volume) of the article or substance allowed in each package for transport on a cargo aircraft only. Factors for converting imperial or US units to SI units appear in Appendix B. The maximum quantity per package may be further limited by the type of container used (see Section 5). The maximum net quantities indicated may be exceeded only if specified in these Regulations, or as permitted with the approval of the appropriate national authority of the State of Origin and the State of the Operator. If the word *Forbidden* is shown, the article cannot be carried on any aircraft unless exempted by States under the provisions of 1.2.6.

Note:

The quantity limitations in Columns H, J and L apply only to the amount contained in one package, not in one

consignment or aircraft. For example: in the List of Dangerous Goods the maximum net quantity per package of Acetyl chloride, UN 1717 is one litre per package on passenger aircraft. However, a passenger aircraft can carry as many one-litre packages of Acetyl chloride as may be necessary, unless further restricted by State or operator variations.

4.1.6.13 Column M

Special Provisions—May show a single, double or triple digit number preceded by the letter “A”, against appropriate entries in the List of Dangerous Goods. This alpha-numeric indicator relates to Subsection 4.4 and applies to all the packing groups permitted for the entry concerned, unless the wording of the special provision makes it otherwise apparent.

It must be carefully noted that Special Provisions “A1” and “A2” are, in effect, “approvals” which may be granted by States for the carriage of dangerous goods which are normally forbidden for carriage either on passenger aircraft or on cargo aircraft. These “approvals” are not regarded as “State Exemptions” as described in 1.2.6.1. However, acceptance of dangerous goods under State approvals is at the discretion of the operator(s). Advance arrangements must be made and prior approval obtained before dangerous goods offered under “A1” or “A2”. Special Provisions are presented to operators for transport. See also 1.2.6.4.

4.1.6.14 Column N

ERG Code—Emergency Response Drill Code as found in the International Civil Aviation Organization (ICAO) document “The Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods” (ICAO Doc. 9481-AN/928). The code consists of a combination of letters and numbers, which represents suggested responses to incidents involving the specific dangerous good entry to which the drill code is assigned.

The ERG Code is provided for the benefit of operators so that the ERG Code may be added to the Special Load—Notification to Captain (NOTOC).

4.1.7 State and Operator Variations

Entries in the List of Dangerous Goods are subject to State and/or operator variations which must always be consulted. Variations are indicated in the appropriate locations in these Regulations and described in Subsection 2.8.

4.1.8 Additional IATA Requirements

Differences in Subsection 4.2 of these Regulations which are more restrictive than the *ICAO Technical Instructions* are identified in the Regulations by the symbol “”.

4.2 List of Dangerous Goods

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only			S.P. see 4.4	ERG Code		
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg				
						G	H										
A	B	C	D	E	F	G	H	I	J	K	L	M	N				
	Accellerene, see p-Nitrosodimethylaniline (UN 1369)																
	Accumulators, electric, see Batteries, wet, filled with acid † (UN 2794). Batteries, wet, filled with alkali † (UN 2795), Batteries, wet, non-spillable † (UN 2800)																
	Accumulators, pressurized, hydraulic (containing non-flammable gas), see Articles, pressurized, hydraulic (UN 3164)																
	Accumulators, pressurized, pneumatic (containing non-flammable gas), see Articles, pressurized, pneumatic (UN 3164)																
1088	Acetal	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3H		
1089	Acetaldehyde	3	Flamm. liquid	I	E0	ForbIDDEN				361	30 L	A1			3H		
1841	Acetaldehyde ammonia	9	Miscellaneous	III	E1	ForbIDDEN		956	200 kg	956	200 kg	A48			9L		
2332	Acetaldehyde oxime	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L		
2789	Acetic acid, glacial	8 (3)	Corrosive & Flamm. liquid	II	E2	Y840	0.5 L	851	1 L	855	30 L				8F		
2790	Acetic acid solution more than 10% but less than 50% acid, by weight	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803			8L		
2789	Acetic acid solution more than 80% acid, by weight	8 (3)	Corrosive & Flamm. liquid	II	E2	Y840	0.5 L	851	1 L	855	30 L				8F		
2790	Acetic acid solution not less than 50% but not more than 80% acid, by weight	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L				8L		
1715	Acetic anhydride	8 (3)	Corrosive & Flamm. liquid	II	E2	Y840	0.5 L	851	1 L	855	30 L				8F		
	Acetic oxide, see Acetic anhydride (UN 1715)																
	Acetoin, see Acetyl methyl carbinol (UN 2621)																
1090	Acetone	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3H		
1541	Acetone cyanohydrin, stabilized	6.1				ForbIDDEN						ForbIDDEN			A2	6L	
1091	Acetone oils	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3L		
1648	Acetonitrile	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3L		
1716	Acetyl bromide	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L				8L		
1717	Acetyl chloride	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L				3C		
	Acetyl cyclohexanesulphonyl peroxide, more than 82%, wetted with less than 12% water					ForbIDDEN						ForbIDDEN					
	Acetylene dichloride, see 1,2-Dichloroethylene (UN 1150)																
1001	Acetylene, dissolved	2.1	Flamm. gas		E0	ForbIDDEN						200	15 kg	A1	10L		
	Acetylene (liquefied)					ForbIDDEN											
	Acetylene silver nitrate					ForbIDDEN											
3374	Acetylene, solvent free	2.1	Flamm. gas		E0	ForbIDDEN						200	15 kg	A1	10L		
	Acetylene tetrabromide, see Tetrabromoethane (UN 2504)																



Dangerous Goods Regulations

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
	Acetylene tetrachloride, see 1,1,2,2-Tetrachloroethane (UN 1702)														
1898	Acetyl iodide	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L			8L	
2621	Acetyl methyl carbinol Acetyl oxide, see Acetic anhydride (UN 1715) Acid butyl phosphate, see Butyl acid phosphate (UN 1718) Acid, liquid, n.o.s., see Corrosive liquid, acidic, inorganic, n.o.s. * (UN 3264) or Corrosive liquid, acidic, organic, n.o.s. * (UN 3265) Acid mixture, hydrofluoric and sulphuric, see Hydrofluoric acid and sulphuric acid mixture (UN 1786) Acid mixture, nitrating acid, see Nitrating acid mixture † (UN 1796) Acid mixture, spent, nitrating acid, see Nitrating acid mixture, spent (UN 1826) Acid, picric, see Trinitrophenol (UN 0154) or Picric acid (UN 0154) Acid potassium sulphate, see Potassium hydrogen sulphate (UN 2509) Acid, sludge, see Sludge acid † (UN 1906) Acraldehyde, stabilized, see Acrolein, stabilized (UN 1092)	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L	
2713	Acridine	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg			6L	
2607	Acrolein dimer, stabilized Acrolein dimer, unstabilized	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L	
1092	Acrolein, stabilized Acrolein, unstabilized	6.1 (3)						Forbidden	Forbidden	Forbidden	Forbidden			6H	
2074	Acrylamide, solid	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg			6L	
3426	Acrylamide solution	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L	A3		6L	
2218	Acrylic acid, stabilized Acrylic acid, unstabilized	8 (3)	Corrosive & Flamm. liquid	II	E2	Y840	0.5 L	851	1 L	855	30 L			8F	
1093	Acrylonitrile, stabilized Acrylonitrile, unstabilized Actinolite, see White asbestos † (UN 2590) Activated carbon, see Carbon, activated (UN 1362) Activated charcoal, see Carbon, activated (UN 1362) Actuating cartridge, explosive, see Cartridges, power device † (UN 0275), Cartridges, power device † (UN 0276), Cartridges, power device † (UN 0323), Cartridges, power device † (UN 0381)	3 (6.1)	Flamm. liquid & Toxic	I	E0	Forbidden		Forbidden	Forbidden	361	30 L			3P	
								Forbidden	Forbidden	Forbidden	Forbidden				
1133	Adhesives containing flammable liquid	3	Flamm. liquid	I II III	E3 E2 E1	Forbidden Y341 Y344	1 L 5 L 60 L	351 353 355	1 L 5 L 60 L	361 364 366	30 L 60 L 220 L	A3		3L 3L 3L	

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg				
A	B	C	D	E	F	G	H	I	J	K	L	M	N	S.P. see 4.4	ERG Code	
2205	Adiponitrile	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L			6L		
	Aeroplane flares, see Flares, aerial † (UN 0093), Flares, aerial † (UN 0403), Flares, aerial † (UN 0404), Flares, aerial † (UN 0420), Flares, aerial † (UN 0421)															
1950	Aerosols, flammable	2.1	Flamm. gas		E0	Y203	30 kg G	203	75 kg	203	150 kg	A145 A167 A802		10L		
	Aerosols, flammable, containing substances in Class 8, Packing Group I						Forbidden		Forbidden		Forbidden					
1950	Aerosols, flammable, containing substances in Class 8, Packing Group II	2.1 (8)					Forbidden		Forbidden		Forbidden				10C	
1950	Aerosols, flammable, containing substances in Class 8, Packing Group III	2.1 (8)	Flamm. gas & Corrosive		E0	Y203	30 kg G	203	75 kg	203	150 kg	A145 A167 A802		10C		
	Aerosols, flammable, containing substances in Division 6.1, Packing Group I						Forbidden		Forbidden		Forbidden					
1950	Aerosols, flammable, containing substances in Division 6.1, Packing Group II	2.1 (6.1)					Forbidden		Forbidden		Forbidden				10P	
1950	Aerosols, flammable, containing substances in Division 6.1, Packing Group III	2.1 (6.1)	Flamm. gas & Toxic		E0	Y203	30 kg G	203	75 kg	203	150 kg	A145 A167 A802		10P		
	Aerosols, flammable, containing substances in Division 6.1, Packing Group III and substances in Class 8, Packing Group III						Forbidden		Forbidden		Forbidden					
1950	Aerosols, flammable, containing toxic gas	2.3 (2.1)					Forbidden		Forbidden		Forbidden				10P	
1950	Aerosols, flammable (engine starting fluid)	2.1	Flamm. gas		E0		Forbidden		Forbidden		203	150 kg	A1 A145 A167 A802		10L	
1950	Aerosols, non-flammable	2.2	Non-flamm. gas		E0	Y203	30 kg G	203	75 kg	203	150 kg	A98 A145 A167 A802		2L		
1950	Aerosols, non-flammable (containing biological products or a medicinal preparation which will be deteriorated by a heat test)	2.2	Non-flamm. gas		E0	Y204	30 kg G	204	75 kg	204	150 kg	A98 A145 A167 A802		2L		
1950	Aerosols, non-flammable (tear gas devices)	2.2 (6.1)	Non-flamm. gas & Toxic		E0		Forbidden		Forbidden		212	50 kg	A1 A145 A167 A802		2P	
	Aerosols, non-flammable, containing substances in Class 8, Packing Group I						Forbidden		Forbidden		Forbidden					
1950	Aerosols, non-flammable, containing substances in Class 8, Packing Group II	2.2 (8)					Forbidden		Forbidden		Forbidden				2C	
1950	Aerosols, non-flammable, containing substances in Class 8, Packing Group III	2.2 (8)	Non-flamm. gas & Corrosive		E0	Y203	30 kg G	203	75 kg	203	150 kg	A145 A167 A802		2C		
	Aerosols, non-flammable, containing substances in Division 6.1, Packing Group I						Forbidden		Forbidden		Forbidden					
1950	Aerosols, non-flammable, containing substances in Division 6.1, Packing Group II	2.2 (6.1)					Forbidden		Forbidden		Forbidden				2P	
1950	Aerosols, non-flammable, containing substances in Division 6.1, Packing Group III	2.2 (6.1)	Non-flamm. gas & Toxic		E0	Y203	30 kg G	203	75 kg	203	150 kg	A145 A167 A802		2P		



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UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E	F	G	H	I	J	K	L	M	N		
1950	Aerosols, non-flammable, containing substances in Division 6.1, Packing Group III and substances in Class 8, Packing Group III	2.2 (6.1, 8)	Non-flamm. gas & Toxic & Corrosive	E0	Y203	30 kg G	203	75 kg	203	150 kg	A145 A167 A802	2CP			
1950	Aerosols, non-flammable, containing toxic gas	2.3				Forbidden		Forbidden		Forbidden			2P		
1950	Aerosols, non-flammable, oxidizing	2.2 (5.1)	Non-flamm. gas & Oxidizer	E0	Forbiden		203	75 kg	203	150 kg	A145 A167 A802	2X			
0331	Agent, blasting type B †	1.5D				Forbidden		Forbidden		Forbidden			1L		
0332	Agent, blasting type E †	1.5D				Forbidden		Forbidden		Forbidden			1L		
0503	Air bag inflators †	1.4G	Explosive 1.4	E0	Forbiden			Forbidden		135	75 kg	A32 A56 A802	1L		
3268	Air bag inflators †	9	Miscellaneous	III	E0	Forbiden	961	25 kg	961	100 kg	A32 A115 A119	9L			
0503	Air bag modules †	1.4G	Explosive 1.4	E0	Forbiden			Forbidden		135	75 kg	A32 A56 A802	1L		
3268	Air bag modules †	9	Miscellaneous	III	E0	Forbiden	961	25 kg	961	100 kg	A32 A115 A119	9L			
1002	Air, compressed	2.2	Non-flamm. gas	E1	Forbiden		200	75 kg	200	150 kg	A202	2L			
	Aircraft, see Vehicle, flammable gas powered † (UN 3166) or Vehicle, flammable liquid powered † (UN 3166)														
	Aircraft engines, see Engine, internal combustion, flammable liquid powered † (UN 3166)														
	Aircraft engines (including turbines), see Engine, internal combustion, flammable liquid powered † (UN 3166) or Engine, internal combustion, flammable gas powered † (UN 3166)														
	Aircraft evacuation slides, see Life-saving appliances, self-inflating (UN 2990)														
3165	Aircraft hydraulic power unit fuel tank (containing a mixture of anhydrous hydrazine and methyl hydrazine) (M86 fuel)	3 (6.1, 8)	Flamm. liquid & Toxic & Corrosive	I	E0	Forbiden		Forbidden		372	42 L	A1 A48	3CP		
	Aircraft survival kits, see Life-saving appliances, self-inflating (UN 2990) or Life-saving appliances, not self-inflating (UN 3072)														
1003	Air, refrigerated liquid	2.2 (5.1)	Non-flamm. gas & Oxidizer & Cryogenic liquid	E0	Forbiden			Forbidden		202	150 kg	A1	2X		
3274	Alcoholates solution, n.o.s. ★ in alcohol	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L		3C		
	Alcohol, denatured, see Alcohols, flammable, toxic, n.o.s. ★ (UN 1986) or Alcohols, n.o.s. ★ (UN 1987)														
3065	Alcoholic beverages containing 70% or less but more than 24% of alcohol by volume, in receptacles, each having capacities of more than 5 Litres	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L	A9 A58	3L		
3065	Alcoholic beverages containing more than 70% alcohol by volume	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L		
	Alcoholic beverages, containing 24% or less alcohol by volume					Not Restricted		Not Restricted		Not Restricted					

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
⊗	Alcohol, industrial, see Alcohols, flammable, toxic, n.o.s. ★ (UN 1986) or Alcohols, n.o.s. ★ (UN 1987)															
1987	Alcohols, n.o.s. ★	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3 A180	3L 3L			
⊗	Alcohols, flammable, toxic, n.o.s. ★	3 (6.1)	Flamm. liquid & Toxic	I II III	E0 E2 E1	ForbIDDEN Y341 Y343	1 L 2 L	352 355	1 L 60 L	361 364 366	30 L 60 L 220 L	A3	3HP 3HP 3P			
△	Aldehyde, see Aldehydes, n.o.s. ★ (UN 1989)															
	Aldehyde ammonia, see Acetaldehyde ammonia (UN 1841)															
1989	Aldehydes, n.o.s. ★	3	Flamm. liquid	I II III	E3 E2 E1	ForbIDDEN Y341 Y344	1 L 10 L	351 353 355	1 L 5 L 60 L	361 364 366	30 L 60 L 220 L	A3	3H 3H 3L			
1988	Aldehydes, flammable, toxic, n.o.s. ★	3 (6.1)	Flamm. liquid & Toxic	I II III	E0 E2 E1	ForbIDDEN Y341 Y343	1 L 2 L	352 355	1 L 60 L	361 364 366	30 L 60 L 220 L	A3	3HP 3HP 3P			
2839	Aldol	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L		6L			
3206	Alkali metal alcoholates, self-heating, corrosive, n.o.s. ★	4.2 (8)	Spont. comb. & Corrosive	II III	E2 E1	ForbIDDEN ForbIDDEN		466 468	15 kg 25 kg	470 471	50 kg 100 kg	A3 A84 A803	4C 4C			
1421	Alkali metal alloy, liquid, n.o.s.	4.3	Dang. when wet	I	E0	ForbIDDEN			ForbIDDEN	480	1 L	A84	4W			
1389	Alkali metal amalgam, liquid	4.3	Dang. when wet	I	E0	ForbIDDEN			ForbIDDEN	480	1 L	A84	4W			
3401	Alkali metal amalgam, solid	4.3	Dang. when wet	I	E0	ForbIDDEN			ForbIDDEN	487	15 kg	A84	4W			
1390	Alkali metal amides	4.3	Dang. when wet	II	E2	Y475	5 kg	483	15 kg	489	50 kg	A84	4W			
1391	Alkali metal dispersion	4.3	Dang. when wet	I	E0	ForbIDDEN			ForbIDDEN	480	1 L	A84	4W			
3482	Alkali metal dispersion, flammable	4.3 (3)	Dang. when wet & Flamm. liquid	I	E0	ForbIDDEN			ForbIDDEN	480	1 L	A84	4W			
	Alkaline corrosive battery fluid, see Battery fluid, alkali (UN 2797)															
	Alkaline corrosive liquid, n.o.s., see Caustic alkali liquid, n.o.s. ★ (UN 1719)															
	Alkaline corrosive solid, n.o.s., see Corrosive solid, basic, inorganic, n.o.s. ★ (UN 3262) or Corrosive solid, basic, organic, n.o.s. ★ (UN 3263)															
3205	Alkaline earth metal alcoholates, n.o.s. ★	4.2	Spont. comb.	II III	E2 E1	ForbIDDEN ForbIDDEN		467 469	15 kg 25 kg	470 471	50 kg 100 kg	A3 A85 A803	4L 4L			
1393	Alkaline earth metal alloy, n.o.s.	4.3	Dang. when wet	II	E2	Y475	5 kg	484	15 kg	490	50 kg	A85	4W			
1392	Alkaline earth metal amalgam, liquid	4.3	Dang. when wet	I	E0	ForbIDDEN			ForbIDDEN	480	1 L	A85	4W			
3402	Alkaline earth metal amalgam, solid	4.3	Dang. when wet	I	E0	ForbIDDEN			ForbIDDEN	487	15 kg	A85	4W			
1391	Alkaline earth metal dispersion	4.3	Dang. when wet	I	E0	ForbIDDEN			ForbIDDEN	480	1 L	A85	4W			
3482	Alkaline earth metal dispersion, flammable	4.3 (3)	Dang. when wet & Flamm. liquid	I	E0	ForbIDDEN			ForbIDDEN	480	1 L	A85	4W			
3140	Alkaloid salts, liquid, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	ForbIDDEN Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4 A6 A801	6L 6L 6L 6L			



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					EQ see 2.6	Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
						C	D	E						M	N	
1544	Alkaloid salts, solid, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	Forbidden Y644 Y645	1 kg 10 kg		666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5 A6 A801	6L 6L 6L		
3140	Alkaloids, liquid, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	Forbidden Y641 Y642	1 L 2 L		652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4 A6 A801	6L 6L 6L		
1544	Alkaloids, solid, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	Forbidden Y644 Y645	1 kg 10 kg		666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5 A6 A801	6L 6L 6L		
□	Alkyl aluminium halides, see Organometallic substance, solid, pyrophoric, water-reactive ★ (UN 3393) or Organometallic substance, liquid, pyrophoric, water-reactive ★ (UN 3394)															
3145	Alkylphenols, liquid, n.o.s. (including C ₂ - C ₁₂ homologues)	8	Corrosive	I II III	E0 E2 E1	Forbidden Y840 Y841	0.5 L 1 L		850 851 852	0.5 L 1 L 5 L	854 855 856	2.5 L 30 L 60 L	A3 A803	8L 8L 8L		
2430	Alkylphenols, solid, n.o.s. (including C ₂ - C ₁₂ homologues)	8	Corrosive	I II III	E0 E2 E1	Forbidden Y843 Y845	1 kg 5 kg		858 859 860	1 kg 15 kg 25 kg	862 863 864	25 kg 50 kg 100 kg	A3 A803	8L 8L 8L		
2586	Alkylsulphonic acids, liquid with 5% or less free sulphuric acid	8	Corrosive	III	E1	Y841	1 L		852	5 L	856	60 L	A803	8L		
2584	Alkylsulphonic acids, liquid with more than 5% free sulphuric acid	8	Corrosive	II	E2	Y840	0.5 L		851	1 L	855	30 L		8L		
2585	Alkylsulphonic acids, solid with 5% or less free sulphuric acid	8	Corrosive	III	E1	Y845	5 kg		860	25 kg	864	100 kg	A803	8L		
2583	Alkylsulphonic acids, solid with more than 5% free sulphuric acid	8	Corrosive	II	E2	Y844	5 kg		859	15 kg	863	50 kg		8L		
△	Alkylsulphuric acids	8	Corrosive	II	E2	Y840	0.5 L		851	1 L	855	30 L		8L		
	Allene, see Propadiene, stabilized (UN 2200)															
2333	Allyl acetate	3 (6.1)	Flamm. liquid & Toxic	II	E2	Y341	1 L		352	1 L	364	60 L		3P		
1098	Allyl alcohol	6.1 (3)						Forbidden		Forbidden		Forbidden		6F		
2334	Allylamine	6.1 (3)						Forbidden		Forbidden		Forbidden		6H		
1099	Allyl bromide	3 (6.1)	Flamm. liquid & Toxic	I	E0	Forbidden			Forbidden		361	30 L		3P		
1100	Allyl chloride	3 (6.1)	Flamm. liquid & Toxic	I	E0	Forbidden			Forbidden		361	30 L		3P		
	Allyl chlorocarbonate, see Allyl chloroformate (UN 1722)															
1722	Allyl chloroformate	6.1 (3, 8)						Forbidden		Forbidden		Forbidden		6CF		
2335	Allyl ethyl ether	3 (6.1)	Flamm. liquid & Toxic	II	E2	Y341	1 L		352	1 L	364	60 L		3P		
2336	Allyl formate	3 (6.1)	Flamm. liquid & Toxic	I	E0	Forbidden			Forbidden		361	30 L		3P		
2219	Allyl glycidyl ether	3	Flamm. liquid	III	E1	Y344	10 L		355	60 L	366	220 L		3L		
1723	Allyl iodide	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L		352	1 L	362	5 L		3C		

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						G	H									
1545	Allyl isothiocyanate, stabilized	6.1 (3)	Toxic & Flamm. liquid	II	E0	Forbidden				Forbidden		661	60 L	A1	6F	
	Allyl isothiocyanate, unstabilized						Forbidden			Forbidden						
1724	Allyltrichlorosilane, stabilized	8 (3)	Corrosive & Flamm. liquid	II	E0	Forbidden				Forbidden		876	30 L	A1	8F	
	Allyltrichlorosilane, unstabilized						Forbidden			Forbidden						
<input type="checkbox"/>	Aluminium alkyl halides, liquid, see Organometallic substance, liquid, pyrophoric, water-reactive ★ (UN 3394)															
<input type="checkbox"/>	Aluminium alkyl halides, solid, see Organometallic substance, solid, pyrophoric, water-reactive ★ (UN 3393)															
<input type="checkbox"/>	Aluminium alkyl hydrides, see Organometallic substance, liquid, pyrophoric, water-reactive ★ (UN 3394)															
<input type="checkbox"/>	Aluminium alkyls, see Organometallic substance, liquid, pyrophoric, water-reactive ★ (UN 3394)															
2870	Aluminium borohydride	4.2 (4.3)				Forbidden				Forbidden					4W	
2870	Aluminium borohydride in devices	4.2 (4.3)				Forbidden				Forbidden					4W	
1725	Aluminium bromide, anhydrous	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg				8L	
2580	Aluminium bromide solution	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A3 A803			8L	
1394	Aluminium carbide	4.3	Dang. when wet	II	E2	Y475	5 kg	484	15 kg	489	50 kg				4W	
1726	Aluminium chloride, anhydrous	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg				8L	
2581	Aluminium chloride solution	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A3 A803			8L	
	Aluminium dross, see Aluminium smelting by-products † (UN 3170) or Aluminium remelting by-products † (UN 3170)															
	Aluminium dross, hot						Forbidden			Forbidden						
	Aluminium dross, wet						Forbidden			Forbidden						
1395	Aluminium ferrosilicon powder	4.3 (6.1)	Dang. when wet & Toxic	II	E2	Y474	1 kg	483	15 kg	490	50 kg				4PW	
2463	Aluminium hydride	4.3	Dang. when wet	I	E0	Forbidden				Forbidden		487	15 kg		4W	
	Aluminium liquid, see Paint (UN 1263)															
1438	Aluminium nitrate	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803			5L	
	Aluminium paint, see Paint (UN 1263)															
	Aluminium phosphate solution, see Corrosive liquid, n.o.s. ★ (UN 1760)															
1397	Aluminium phosphide	4.3 (6.1)	Dang. when wet & Toxic	I	E0	Forbidden				Forbidden		487	15 kg		4PW	
3048	Aluminium phosphide pesticide	6.1	Toxic	I	E0	Forbidden				Forbidden		672	15 kg	A128	6W	
1309	Aluminium powder, coated †	4.1	Flamm. solid	II	E2	Y441	5 kg	445	15 kg	448	50 kg	A3 A803			3L	
				III	E1	Y443	10 kg	446	25 kg	449	100 kg				3L	
1396	Aluminium powder, uncoated †	4.3	Dang. when wet	II	E2	Y475	5 kg	484	15 kg	490	50 kg	A3 A803			4W	
				III	E1	Y477	10 kg	486	25 kg	491	100 kg				4W	



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UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
					EQ see 2.6	Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
3170	Aluminium remelting by-products †	4.3	Dang. when wet	II III	E2 E1	Y475 Y477	5 kg 10 kg	484 486	15 kg 25 kg	490 491	50 kg 100 kg	A3 A102 A803	4W 4W			
2715	Aluminium resinate	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L			
	Aluminium silicon powder, coated						Not Restricted		Not Restricted		Not Restricted					
1398	Aluminium silicon powder, uncoated	4.3	Dang. when wet	III	E1	Y477	10 kg	486	25 kg	491	100 kg	A3 A53 A803	4W			
3170	Aluminium smelting by-products †	4.3	Dang. when wet	II III	E2 E1	Y475 Y477	5 kg 10 kg	484 486	15 kg 25 kg	490 491	50 kg 100 kg	A3 A102 A803	4W 4W			
	Amatols, see Explosive, blasting, type B † (UN 0082) or Explosive, blasting, type B † (UN 0331)															
2733	Amines, flammable, corrosive, n.o.s. ★	3 (8)	Flamm. liquid & Corrosive	I II III	E0 E2 E1	ForbIDDEN Y340 Y342	0.5 L 1 L	350 352 354	0.5 L 1 L 5 L	360 363 365	2.5 L 5 L 60 L	A3 A803	3C 3C 3C			
2735	Amines, liquid, corrosive, n.o.s. ★	8	Corrosive	I II III	E0 E2 E1	ForbIDDEN Y840 Y841	0.5 L 1 L	850 851 852	0.5 L 1 L 5 L	854 855 856	2.5 L 30 L 60 L	A3 A803	8L 8L 8L			
2734	Amines, liquid, corrosive, flammable, n.o.s. ★	8 (3)	Corrosive & Flamm. liquid	I II	E0 E2	ForbIDDEN Y840	0.5 L	850 851	0.5 L 1 L	854 855	2.5 L 30 L		8F 8F			
3259	Amines, solid, corrosive, n.o.s. ★	8	Corrosive	I II III	E0 E2 E1	ForbIDDEN Y844 Y845	5 kg 5 kg	858 859 860	1 kg 15 kg 25 kg	862 863 864	25 kg 50 kg 100 kg	A3 A803	8L 8L 8L			
	Aminobenzene, see Aniline (UN 1547)															
	2-Amino benzotrifluoride, see 2-Trifluoromethylaniline (UN 2942)															
	3-Amino benzotrifluoride, see 3-Trifluoromethylaniline (UN 2948)															
	Aminobutane, see n-Butylamine (UN 1125)															
2673	2-Amino-4-chlorophenol	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
2946	2-Amino-5-diethylaminopentane	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L		6L			
3317	2-Amino-4,6-dinitrophenol, wetted with 20% or more water by mass	4.1	Flamm. solid	I	E0	ForbIDDEN		451	1 kg	451	15 kg	A40	3E			
3055	2-(2-Aminoethoxy)ethanol	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803	8L			
2815	N-Aminoethylpiperazine	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803	8L			
	1-Amino-2-nitrobenzene, see Nitroanilines (UN 1661)															
	1-Amino-3-nitrobenzene, see Nitroanilines (UN 1661)															
	1-Amino-4-nitrobenzene, see Nitroanilines (UN 1661)															
2512	Aminophenols (o-, m-, p-)	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg	A113	6L			
	Aminopropylidethanolamine, see Amines, liquid, corrosive, n.o.s. ★ (UN 2735)															
	n-Aminopropylmorpholine, see Amines, liquid, corrosive, n.o.s. ★ (UN 2735)															
2671	Aminopyridines (o-, m-, p-)	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
1005	Ammonia, anhydrous	2.3 (8)					ForbIDDEN		ForbIDDEN		ForbIDDEN	A2	2CP			

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
2073	Ammonia solution relative density (specific gravity) less than 0.880 at 15°C in water, with more than 35% but not more than 50% ammonia	2.2	Non-flamm. gas		E0	Forbidden			Forbidden		200	150 kg	A1	2L	
3318	Ammonia solution relative density (specific gravity) less than 0.880 at 15°C in water, with more than 50% ammonia	2.3 (8)				Forbidden			Forbidden			Forbidden		A2	2CP
2672	Ammonia solution relative density (specific gravity) between 0.880 and 0.957 at 15°C in water, with more than 10% but not more than 35% ammonia	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A64 A803	8L		
1546	Ammonium arsenate Ammonium azide Ammonium bichromate, see Ammonium dichromate (UN 1439) Ammonium bifluoride, solid, see Ammonium hydrogendifluoride, solid (UN 1727) Ammonium bifluoride solution, see Ammonium hydrogendifluoride solution (UN 2817) Ammonium bisulphate, see Ammonium hydrogen sulphate (UN 2506) Ammonium bisulphite solution, see Bisulphites, aqueous solution, n.o.s. * (UN 2693) Ammonium bromate Ammonium chlorate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L
1439	Ammonium dichromate	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg				5L
1843	Ammonium dinitro-o-cresolate, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L
3424	Ammonium dinitro-o-cresolate solution	6.1	Toxic	II III	E4 E1	Y641 Y642	1 L 2 L	654 655	5 L 60 L	662 663	60 L 220 L	A3	6L 6L		
2505	Ammonium fluoride	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg				6L
2854	Ammonium fluorosilicate Ammonium fulminate Ammonium hexafluorosilicate, see Ammonium fluorosilicate (UN 2854) Ammonium hydrate, see Ammonia solution (UN 2073), Ammonia solution (UN 2672), Ammonia solution (UN 3318)	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg				6L
1727	Ammonium hydrogendifluoride, solid	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg				8L
2817	Ammonium hydrogendifluoride solution	8 (6.1)	Corrosive & Toxic	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A3 A803	8P 8P		
2506	Ammonium hydrogen sulphate Ammonium hydrosulphide solution, see Ammonium sulphide solution (UN 2683) Ammonium hydroxide, see Ammonia solution (UN 2073), Ammonia solution (UN 2672), Ammonia solution (UN 3318)	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg				8L
2859	Ammonium metavanadate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L



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UN/ ID no. A	Proper Shipping Name/Description B	Class or Div. (Sub Risk) C	Hazard Label(s) D	PG E	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4 M	ERG Code N		
					EQ see 2.6 F	Ltd Qty		Pkg Inst G	Max Net Qty/Pkg H	Pkg Inst I	Max Net Qty/Pkg J	Pkg Inst K	Max Net Qty/Pkg L			
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	1.1D				Forbidden						Forbidden			1L	
1942	Ammonium nitrate with 0.2% or less combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A64 A803	5L			
2067	Ammonium nitrate based fertilizer	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A64 A79 A89 A803	5L			
2071	Ammonium nitrate based fertilizer	9	Miscellaneous	III	E1	Y958	30 kg G	958	200 kg	958	200 kg	A89 A90	9L			
3375	Ammonium nitrate emulsion intermediate for blasting explosives	5.1				Forbidden						Forbidden			5L	
	Ammonium nitrate explosives, see Explosive, blasting, type B † (UN 0082) or Explosive, blasting, type B † (UN 0331)															
3375	Ammonium nitrate gel intermediate for blasting explosives	5.1				Forbidden						Forbidden			5L	
2426	Ammonium nitrate, liquid (hot concentrated solution)	5.1				Forbidden						Forbidden			A129	5L
3375	Ammonium nitrate suspension intermediate for blasting explosives	5.1				Forbidden						Forbidden			5L	
	Ammonium nitrite					Forbidden						Forbidden				
0402	Ammonium perchlorate	1.1D				Forbidden						Forbidden			A22	1L
1442	Ammonium perchlorate	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg	A22	5L			
	Ammonium permanganate					Forbidden						Forbidden				
1444	Ammonium persulphate	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803	5L			
0004	Ammonium picrate dry or wetted with less than 10% water, by weight	1.1D				Forbidden						Forbidden			1L	
1310	Ammonium picrate, wetted with not less than 10% water, by weight	4.1	Flamm. solid	I	E0	Forbidden		451	0.5 kg	451	0.5 kg	A40	3E			
2818	Ammonium polysulphide solution	8 (6.1)	Corrosive & Toxic	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A3 A803	8P 8P			
2861	Ammonium polyvanadate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
	Ammonium silicofluoride, see Ammonium fluorosilicate (UN 2854)															
2683	Ammonium sulphide solution	8 (3, 6.1)	Corrosive & Flamm. liquid & Toxic	II	E2	Y840	0.5 L	851	1 L	855	30 L		8FP			
	Ammonium tetrachloromercurate, see Mercury ammonium chloride (UN 1630)															
	Ammunition, blank, see Cartridges for weapons, blank † (UN 0014), Cartridges for weapons, blank † (UN 0326), Cartridges for weapons, blank † (UN 0327), Cartridges for weapons, blank † (UN 0338), Cartridges for weapons, blank † (UN 0413)															
	Ammunition, fixed, semi-fixed or separate loading, see Cartridges for weapons † (UN 0005), Cartridges for weapons † (UN 0006), Cartridges for weapons † (UN 0007), Cartridges for weapons † (UN 0321), Cartridges for weapons † (UN 0348), Cartridges for weapons † (UN 0412)															

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
A	B	C	D	E	F	G	H	I	J	K	L	M	N		
0171	Ammunition, illuminating † with or without burster, expelling charge or propelling charge	1.2G					Forbidden		Forbidden		Forbidden				1L
0254	Ammunition, illuminating † with or without burster, expelling charge or propelling charge	1.3G					Forbidden		Forbidden		Forbidden				1L
0297	Ammunition, illuminating † with or without burster, expelling charge or propelling charge	1.4G	Explosive 1.4		E0		Forbidden		Forbidden		130	75 kg	A802		1L
0009	Ammunition, incendiary † with or without burster, expelling charge or propelling charge	1.2G					Forbidden		Forbidden		Forbidden				1L
0010	Ammunition, incendiary † with or without burster, expelling charge or propelling charge	1.3G					Forbidden		Forbidden		Forbidden				1L
0247	Ammunition, incendiary † liquid or gel, with burster, expelling charge or propelling charge	1.3J					Forbidden		Forbidden		Forbidden				1L
0300	Ammunition, incendiary † with or without burster, expelling charge or propelling charge	1.4G	Explosive 1.4		E0		Forbidden		Forbidden		130	75 kg	A802		1L
	Ammunition, incendiary (water-activated contrivances), see Contrivances, water-activated ★ † (UN 0248) or Contrivances, water-activated ★ † (UN 0249)														
0243	Ammunition, incendiary, white phosphorus † with burster, expelling charge or propelling charge	1.2H					Forbidden		Forbidden		Forbidden				1L
0244	Ammunition, incendiary, white phosphorus † with burster, expelling charge or propelling charge	1.3H					Forbidden		Forbidden		Forbidden				1L
	Ammunition, industrial, see Cartridges, power device † (UN 0275), Cartridges, power device † (UN 0276), Cartridges, oil well † (UN 0277), Cartridges, oil well † (UN 0278), Cartridges, power device † (UN 0323), Cartridges, power device † (UN 0381)														
	Ammunition, lacrymatory, see Ammunition, tear-producing † (UN 0018), Ammunition, tear-producing † (UN 0019), Ammunition, tear-producing † (UN 0301)														
0488	Ammunition, practice †	1.3G					Forbidden		Forbidden		Forbidden				1L
0362	Ammunition, practice †	1.4G	Explosive 1.4		E0		Forbidden		Forbidden		130	75 kg	A802		1L
0363	Ammunition, proof †	1.4G	Explosive 1.4		E0		Forbidden		Forbidden		130	75 kg	A802		1L
	Ammunition, rocket, see Warheads, rocket † (UN 0286), Warheads, rocket † (UN 0287), Warheads, rocket † (UN 0369), Warheads, rocket † (UN 0370), Warheads, rocket † (UN 0371)														
	Ammunition, SA (small arms), see Cartridges for weapons, inert projectile † (UN 0012), Cartridges for weapons, inert projectile † (UN 0328), Cartridges for weapons, inert projectile † (UN 0339), Cartridges for weapons, inert projectile † (UN 0417)														
0015	Ammunition, smoke † with or without burster, expelling charge or propelling charge	1.2G					Forbidden		Forbidden		Forbidden			A132	1L
0016	Ammunition, smoke † with or without burster, expelling charge or propelling charge	1.3G					Forbidden		Forbidden		Forbidden			A132	1L
0303	Ammunition, smoke † with or without burster, expelling charge or propelling charge	1.4G	Explosive 1.4		E0		Forbidden		Forbidden		130	75 kg	A132 A802		1L



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UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
	Ammunition, smoke (water-activated contrivances), white phosphorus, with burster, expelling charge or propelling charge, see Contrivances, water-activated ★ † (UN 0248)														
	Ammunition, smoke (water-activated contrivances), without white phosphorus or phosphides, with burster, expelling charge or propelling charge, see Contrivances, water-activated ★ † (UN 0249)														
4	0245 Ammunition, smoke, white phosphorus † with burster, expelling charge or propelling charge	1.2H						Forbidden		Forbidden		Forbidden			1L
A	0246 Ammunition, smoke, white phosphorus † with burster, expelling charge or propelling charge	1.3H						Forbidden		Forbidden		Forbidden			1L
	Ammunition, sporting, see Cartridges for weapons, inert projectile † (UN 0012), Cartridges for weapons, inert projectile † (UN 0328), Cartridges for weapons, inert projectile † (UN 0339), Cartridges for weapons, inert projectile † (UN 0417)														
	0018 Ammunition, tear-producing † with burster, expelling charge or propelling charge	1.2G (6.1, 8)						Forbidden		Forbidden		Forbidden			1CP
	0019 Ammunition, tear-producing † with burster, expelling charge or propelling charge	1.3G (6.1, 8)						Forbidden		Forbidden		Forbidden			1CP
	0301 Ammunition, tear-producing † with burster, expelling charge or propelling charge	1.4G (6.1, 8)	Explosive 1.4 & Toxic & Corrosive	E0		ForbIDDEN		ForbIDDEN		130	75 kg	A802	1CP		
	2017 Ammunition, tear-producing, non-explosive without burster or expelling charge, non-fuzed	6.1 (8)						Forbidden		Forbidden		679	50 kg		
	0020 Ammunition, toxic ★ † with burster, expelling charge or propelling charge	1.2K (6.1)	Toxic & Corrosive	II	E0	ForbIDDEN		ForbIDDEN		ForbIDDEN		679	50 kg	A1	6C
	0021 Ammunition, toxic ★ † with burster, expelling charge or propelling charge	1.3K (6.1)						Forbidden		Forbidden		Forbidden			1P
	2016 Ammunition, toxic, non-explosive without burster or expelling charge, non-fuzed	6.1	Toxic	II	E0	ForbIDDEN		ForbIDDEN		ForbIDDEN		679	75 kg	A1	6L
	Ammunition, toxic (water-activated contrivances), see Contrivances, water-activated ★ † (UN 0248) or Contrivances, water-activated ★ † (UN 0249)														
	Amorces, see Fireworks † (UN 0333), Fireworks † (UN 0336), Fireworks † (UN 0337)														
	Amosite, see Brown asbestos † (UN 2212)														
	1104 Amyl acetates	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
	2819 Amyl acid phosphate	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803	8L		
	Amyl alcohols, see Pentanols (UN 1105)														
	Amyl aldehyde, see Valeraldehyde (UN 2058)														
	1106 Amylamine	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L	A3	3C	A803	3C
	2620 Amyl butyrates	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
	1107 Amyl chloride	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3L
	1108 n-Amylene	3	Flamm. liquid	I	E3	ForbIDDEN		351	1 L	361	30 L				3H
	1109 Amyl formates	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
	1111 Amyl mercaptan	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3L
	1110 n-Amyl methyl ketone	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
C	D	E	F	G	H	I	J	K	L	M	N	A1	8F	A113	6L
1112	Amyl nitrate	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L	
1113	Amyl nitrite tert-Amylperoxy-3,5,5-trimethylhexanoate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H	
1728	Amyltrichlorosilane Anaesthetic ether, see Diethyl ether (UN 1155) Anhydrous ammonia, see Ammonia, anhydrous (UN 1005) Anhydrous hydrazine, see Hydrazine, anhydrous (UN 2029) Anhydrous hydroiodic acid, see Hydrogen iodide, anhydrous (UN 2197) Anhydrous hydrofluoric acid, see Hydrogen fluoride, anhydrous (UN 1052)	8	Corrosive	II	E0	Forbidden	Forbidden	Forbidden	Forbidden	876	30 L	A1			
1547	Aniline Aniline chloride, see Aniline hydrochloride (UN 1548)	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L	A113		6L	
1548	Aniline hydrochloride Aniline oil, see Aniline (UN 1547) Aniline salt, see Aniline hydrochloride (UN 1548)	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg			6L	
2431	Anisidines	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L			6L	
2222	Anisole	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L	
1729	Anisoyl chloride Anthophyllite, see White asbestos † (UN 2590) Anti-freeze liquid, see Flammable liquid, n.o.s. ★ (UN 1993) Anti-knock compound, mixture, see Motor fuel anti-knock mixture † (UN 1649) Antimonious chloride, see Antimony trichloride † (UN 1733)	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L			8L	
3141	Antimony compound, inorganic, liquid, n.o.s. ★	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L	A12		6L	
1549	Antimony compound, inorganic, solid, n.o.s. ★ Antimony hydride, see Stibine (UN 2676) Antimony (III) lactate, see Antimony lactate (UN 1550)	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg	A12		6L	
1550	Antimony lactate Antimony oxide, see Antimony compound, inorganic, solid, n.o.s. ★ (UN 1549)	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg			6L	
1730	Antimony pentachloride, liquid	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L			8L	
1731	Antimony pentachloride solution	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L	A3		8L	
1732	Antimony pentafluoride Antimony pentasulphide, see Antimony compound, inorganic, solid, n.o.s. ★ (UN 1549) Antimony perchloride, liquid, see Antimony pentachloride, liquid (UN 1730)	8 (6.1)	Corrosive & Toxic	II	E0	Forbidden	Forbidden	Forbidden	Forbidden	855	30 L	A1		8P	



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
1551	Antimony potassium tartrate	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg			6L		
2871	Antimony powder	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg			6L		
	Antimony sulphide and a chlorate, mixture of						Forbidden		Forbidden		Forbidden					
	Antimony sulphide, solid, see Antimony compound, inorganic, solid, n.o.s. * (UN 1549)															
1733	Antimony trichloride †	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg			8L		
	Antu, see Naphthylthiourea (UN 1651)															
	Aqua ammonia, see Ammonia solution (UN 2073), Ammonia solution (UN 2672), Ammonia solution (UN 3318)															
1006	Argon, compressed	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg	A69	2L			
1951	Argon, refrigerated liquid	2.2	Non-flamm. gas & Cryogenic liquid		E1	Forbidden		202	50 kg	202	500 kg			2L		
	Aromatic liquids, see Extracts, aromatic, liquid † (UN 1169) or Extracts, flavouring, liquid † (UN 1197)															
	Arsenate of lead, see Lead arsenates (UN 1617)															
	Arsenates, n.o.s., see Arsenic compound, liquid, n.o.s. * (UN 1556) or Arsenic compound, solid, n.o.s. * (UN 1557)															
1558	Arsenic	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg			6L		
1553	Arsenic acid, liquid	6.1	Toxic	I	E5	Forbidden		652	1 L	658	30 L			6L		
1554	Arsenic acid, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg			6L		
1562	Arsenical dust †	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg			6L		
	Arsenical flue dust, see Arsenical dust † (UN 1562)															
2760	Arsenical pesticide, liquid, flammable, toxic, *	3 (6.1)	Flamm. liquid & Toxic	I II	E0 E2	Y341	1 L	352	ForbIDDEN	361	30 L	A4	3P 3P			
2994	Arsenical pesticide, liquid, toxic *	6.1	Toxic	I II III	E5 E4 E1	Y641 Y642 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4 A4	6L 6L 6L			
2993	Arsenical pesticide, liquid, toxic, flammable *	6.1 (3)	Toxic & Flamm. liquid	I II III	E5 E4 E1	Y641 Y642 Y642	1 L 1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4 A4	6F 6F 6F			
2759	Arsenical pesticide, solid, toxic *	6.1	Toxic	I II III	E5 E4 E1	Y644 Y644 Y645	1 kg 1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5 A5	6L 6L 6L			
1555	Arsenic bromide	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg			6L		
	Arsenic (III) bromide, see Arsenic bromide (UN 1555)															
	Arsenic chloride, see Arsenic trichloride (UN 1560)															
1556	Arsenic compound, liquid, n.o.s. *	6.1	Toxic	I II III	E5 E4 E1	Y641 Y642 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4 A6	6L 6L 6L			
1557	Arsenic compound, solid, n.o.s. *	6.1	Toxic	I II III	E5 E4 E1	Y644 Y644 Y645	1 kg 1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5 A6	6L 6L 6L			
	Arsenic, fuming liquid, see Arsenic trichloride (UN 1560)															

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
	Arsenic hydride, see Arsine (UN 2188)														
	Arsenic (III) oxide, see Arsenic trioxide (UN 1561)														
	Arsenic (V) oxide, see Arsenic pentoxide (UN 1559)														
1559	Arsenic pentoxide	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L
	Arsenic sulphide and a chlorate, mixture of						Forbidden		Forbidden		Forbidden				
	Arsenic sulphides, n.o.s., see Arsenic compound, liquid, n.o.s. ★ (UN 1556) or Arsenic compound, solid, n.o.s. ★ (UN 1557)						Forbidden		Forbidden		Forbidden				
1560	Arsenic trichloride	6.1	Toxic	II	E4		Forbidden		Forbidden		Forbidden				6L
1561	Arsenic trioxide	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L
	Arsenious chloride, see Arsenic trichloride (UN 1560)														
	Arsenites, n.o.s., see Arsenic compound, liquid, n.o.s. ★ (UN 1556) or Arsenic compound, solid, n.o.s. ★ (UN 1557)														
	Arsenous and mercuric iodide solution, see Arsenic compound, liquid, n.o.s. ★ (UN 1556)														
	Arsenous chloride, see Arsenic trichloride (UN 1560)														
2188	Arsine	2.3 (2.1)					Forbidden		Forbidden		Forbidden			A2	10P
0486	Articles, EEI †	1.6N					Forbidden		Forbidden		Forbidden			A62	1L
0462	Articles, explosive, n.o.s. ★	1.1C					Forbidden		Forbidden		Forbidden			A62	1L
0463	Articles, explosive, n.o.s. ★	1.1D					Forbidden		Forbidden		Forbidden			A62	1L
0464	Articles, explosive, n.o.s. ★	1.1E					Forbidden		Forbidden		Forbidden			A62	1L
0465	Articles, explosive, n.o.s. ★	1.1F					Forbidden		Forbidden		Forbidden			A62	1L
0354	Articles, explosive, n.o.s. ★	1.1L					Forbidden		Forbidden		Forbidden			A62	1L
0466	Articles, explosive, n.o.s. ★	1.2C					Forbidden		Forbidden		Forbidden			A62	1L
0467	Articles, explosive, n.o.s. ★	1.2D					Forbidden		Forbidden		Forbidden			A62	1L
0468	Articles, explosive, n.o.s. ★	1.2E					Forbidden		Forbidden		Forbidden			A62	1L
0469	Articles, explosive, n.o.s. ★	1.2F					Forbidden		Forbidden		Forbidden			A62	1L
0355	Articles, explosive, n.o.s. ★	1.2L					Forbidden		Forbidden		Forbidden			A62	1L
0470	Articles, explosive, n.o.s. ★	1.3C					Forbidden		Forbidden		Forbidden			A62	1L
0356	Articles, explosive, n.o.s. ★	1.3L					Forbidden		Forbidden		Forbidden			A62	1L
0350	Articles, explosive, n.o.s. ★	1.4B					Forbidden		Forbidden		Forbidden			A62	1L
0351	Articles, explosive, n.o.s. ★	1.4C	Explosive 1.4	E0		Forbidden		Forbidden		101	75 kg	A62 A802		1L	
0352	Articles, explosive, n.o.s. ★	1.4D	Explosive 1.4	E0		Forbidden		Forbidden		101	75 kg	A62 A802		1L	
0471	Articles, explosive, n.o.s. ★	1.4E	Explosive 1.4	E0		Forbidden		Forbidden		101	75 kg	A62 A802		1L	
0472	Articles, explosive, n.o.s. ★	1.4F					Forbidden		Forbidden		Forbidden			A62	1L
0353	Articles, explosive, n.o.s. ★	1.4G	Explosive 1.4	E0		Forbidden		Forbidden		101	75 kg	A62 A802		1L	



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	
A	B	C	D	E		F	G						M	N
0349	Articles, explosive, n.o.s. ★	1.4S	Explosive 1.4		E0	Forbidden			101	25 kg	101	100 kg	A62 A802	3L
0486	Articles, explosive, extremely insensitive †	1.6N				Forbidden			Forbidden		Forbidden		A62	1L
3164	Articles, pressurized, hydraulic containing non-flammable gas	2.2	Non-flamm. gas		E0	Forbidden			208	No limit	208	No limit	A48 A114	2L
3164	Articles, pressurized, pneumatic containing non-flammable gas	2.2	Non-flamm. gas		E0	Forbidden			208	No limit	208	No limit	A48 A114	2L
0380	Articles, pyrophoric †	1.2L				Forbidden			Forbidden		Forbidden			1S
0428	Articles, pyrotechnic † for technical purposes	1.1G				Forbidden			Forbidden		Forbidden			1L
0429	Articles, pyrotechnic † for technical purposes	1.2G				Forbidden			Forbidden		Forbidden			1L
0430	Articles, pyrotechnic † for technical purposes	1.3G				Forbidden			Forbidden		Forbidden			1L
0431	Articles, pyrotechnic † for technical purposes	1.4G	Explosive 1.4		E0	Forbidden			Forbidden		135	75 kg	A802	1L
0432	Articles, pyrotechnic † for technical purposes	1.4S	Explosive 1.4		E0	Forbidden			135	25 kg	135	100 kg	A802	3L
2586	Arylsulphonic acids, liquid with 5% or less free sulphuric acid	8	Corrosive	III	E1	Y841	1 L		852	5 L	856	60 L	A803	8L
2584	Arylsulphonic acids, liquid with more than 5% free sulphuric acid	8	Corrosive	II	E2	Y840	0.5 L		851	1 L	855	30 L		8L
2585	Arylsulphonic acids, solid with 5% or less free sulphuric acid	8	Corrosive	III	E1	Y845	5 kg		860	25 kg	864	100 kg	A803	8L
2583	Arylsulphonic acids, solid with more than 5% free sulphuric acid	8	Corrosive	II	E2	Y844	5 kg		859	15 kg	863	50 kg		8L
	Asbestos, blue, see Blue asbestos † (UN 2212)								Forbidden		Forbidden			
	Asbestos, brown, see Brown asbestos † (UN 2212)								Forbidden		Forbidden			
	Asbestos, white, see White asbestos † (UN 2590)								Forbidden		Forbidden			
	Ascaridole								Forbidden		Forbidden			
	Asphalt, cut back, see Tars, liquid (UN 1999)								Forbidden		Forbidden			
	Automobile, see Engine, internal combustion, flammable gas powered † (UN 3166), Engine, internal combustion, flammable liquid powered † (UN 3166), Vehicle, flammable liquid powered † (UN 3166), Vehicle, flammable gas powered † (UN 3166), Battery-powered vehicle (UN 3171)								Forbidden		Forbidden			
△	Aviation regulated liquid, n.o.s. ★ †	9	Miscellaneous	III	E1	Y964	30 kg G		964	450 L	964	450 L	A27	9A
△	Aviation regulated solid, n.o.s. ★ †	9	Miscellaneous	III	E1	Y956	30 kg G		956	400 kg	956	400 kg	A27	9A
	Azaurolic acid (salt of) (dry)					Forbidden			Forbidden		Forbidden			
	Azidodithiocarbonic acid					Forbidden			Forbidden		Forbidden			
	Azidoethyl nitrate					Forbidden			Forbidden		Forbidden			
	Azido guanidine picrate (dry)					Forbidden			Forbidden		Forbidden			
	5-Azido-1-hydroxy tetrazole					Forbidden			Forbidden		Forbidden			
	Azido hydroxy tetrazole (mercury and silver salts)					Forbidden			Forbidden		Forbidden			
	3-Azido-1,2-propylene glycol dinitrate					Forbidden			Forbidden		Forbidden			

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg				
A	B	C	D	E		F	G						M	N			
	1-Aziridinyl phosphine oxide-(tris), see Tris-(1-aziridinyl) phosphine oxide solution (UN 2501)																
3242	Azodicarbonamide Azodicarbonamide formulation type B, temperature controlled 2,2'-Azodi-(2,4-dimethyl-4-methoxyvaleronitrile), see Self-reactive solid type D, temperature controlled ★ (UN 3236) 2,2'-Azodi-(2,4-dimethylvaleronitrile), see Self-reactive solid type D, temperature controlled ★ (UN 3236) 1,1'-Azodi-(hexahydrobenzonitrile), see Self-reactive solid type D ★ (UN 3226) Azodiisobutyronitrile, see Self-reactive solid type C, temperature controlled ★ (UN 3234) 2,2'-Azodi-(2-methylbutyronitrile), see Self-reactive solid type D, temperature controlled ★ (UN 3236) Azotetrazole (dry) Bag charges, see Charges, propelling, for cannon † (UN 0242), Charges, propelling, for cannon † (UN 0279), Charges, propelling, for cannon † (UN 0414) Ballistite, see Powder, smokeless † (UN 0160) or Powder, smokeless † (UN 0161) Bangalore torpedoes, see Mines † (UN 0136), Mines † (UN 0137), Mines † (UN 0138), Mines † (UN 0294)	4.1					Forbidden		Forbidden		Forbidden			A60	3L		
									Forbidden		Forbidden						
1400	Barium Barium alloys, see Alkaline earth metal alloy, n.o.s. (UN 1393)	4.3	Dang. when wet	II	E2	Y475	5 kg	484	15 kg	490	50 kg					4W	
1854	Barium alloys, pyrophoric	4.2					Forbidden		Forbidden		Forbidden					4W	
0224	Barium azide dry or wetted with less than 50% water, by weight	1.1A (6.1)					Forbidden		Forbidden		Forbidden					1P	
1571	Barium azide, wetted with 50% or more water, by weight	4.1 (6.1)	Flamm. solid & Toxic	I	E0		Forbidden		Forbidden		451	0.5 kg	A40			3EP	
	Barium binoxide, see Barium peroxide (UN 1449)																
2719	Barium bromate	5.1 (6.1)	Oxidizer & Toxic	II	E2	Y543	1 kg	558	5 kg	562	25 kg					5P	
1445	Barium chlorate, solid	5.1 (6.1)	Oxidizer & Toxic	II	E2	Y543	1 kg	558	5 kg	562	25 kg					5P	
3405	Barium chlorate solution	5.1 (6.1)	Oxidizer & Toxic	II	E2	Y540	0.5 L	550	1 L	554	5 L	A3 A803				5P	
1564	Barium compound, n.o.s. ★	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg	A3 A82				6L	
1565	Barium cyanide	6.1	Toxic	I	E5		Forbidden		666	5 kg	673	50 kg					6L
	Barium dioxide, see Barium peroxide (UN 1449)																
2741	Barium hypochlorite with more than 22% available chlorine	5.1 (6.1)	Oxidizer & Toxic	II	E2	Y543	1 kg	558	5 kg	562	25 kg					5P	
1446	Barium nitrate	5.1 (6.1)	Oxidizer & Toxic	II	E2	Y543	1 kg	558	5 kg	562	25 kg					5P	
1884	Barium oxide	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg					6L	



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
A	B	C	D	E		F	G						M	N		
1447	Barium perchlorate, solid	5.1 (6.1)	Oxidizer & Toxic	II	E2	Y543	1 kg	558	5 kg	562	25 kg			5P		
3406	Barium perchlorate solution	5.1 (6.1)	Oxidizer & Toxic	II III	E2 E1	Y540 Y541	0.5 L 1 L	550 551	1 L 2.5 L	554 555	5 L 30 L	A3 A803	5P			
1448	Barium permanganate	5.1 (6.1)	Oxidizer & Toxic	II	E2	Y543	1 kg	558	5 kg	562	25 kg			5P		
1449	Barium peroxide	5.1 (6.1)	Oxidizer & Toxic	II	E2	Y543	1 kg	558	5 kg	562	25 kg			5P		
	Barium selenate, see Selenates ★ (UN 2630)															
	Barium selenite, see Selenites ★ (UN 2630)															
	Barium sulphate							Not Restricted		Not Restricted		Not Restricted				
	Barium superoxide, see Barium peroxide (UN 1449)															
3292	Batteries, containing sodium †	4.3	Dang. when wet	II	E0	Forbidden		Forbidden		492	No limit	A94 A183	4W			
	Batteries, dry †					Not Restricted		Not Restricted		Not Restricted		Not Restricted	A123			
△	3028 Batteries, dry, containing potassium hydroxide, solid † electric storage	8	Corrosive		E0	ForbIDDEN		871	25 kg	871	230 kg	A183 A184 A802	8L			
△	Batteries, lithium, see Lithium metal batteries † (UN 3090) or Lithium ion batteries † (UN 3480)															
△	2794 Batteries, wet, filled with acid † electric storage	8	Corrosive		E0	ForbIDDEN		870	30 kg	870	No limit	A51 A164 A183 A802	8L			
△	2795 Batteries, wet, filled with alkali † electric storage	8	Corrosive		E0	ForbIDDEN		870	30 kg	870	No limit	A51 A164 A183 A802	8L			
	2800 Batteries, wet, non-spillable † electric storage	8	Corrosive		E0	ForbIDDEN		872	No limit	872	No limit	A48 A67 A164 A183	8L			
	Batteries, wet, without electrolyte, and fully discharged †					Not Restricted		Not Restricted		Not Restricted		Not Restricted				
2796	Battery fluid, acid	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L		8L			
2797	Battery fluid, alkali	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L		8L			
3171	Battery-powered equipment	9	Miscellaneous		E0	ForbIDDEN		952	No limit	952	No limit	A21 A67 A87 A94 A164 A182	9L			
3171	Battery-powered vehicle	9	Miscellaneous		E0	ForbIDDEN		952	No limit	952	No limit	A21 A67 A87 A94 A164	9L			
	Benzal chloride, see Benzylidene chloride (UN 1886)															
1990	Benzaldehyde	9	Miscellaneous	III	E1	Y964	30 kg G	964	100 L	964	220 L		9N			
1114	Benzene	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3H			
	Benzene diazonium chloride (dry)					ForbIDDEN		ForbIDDEN		ForbIDDEN		ForbIDDEN				
	Benzene diazonium nitrate (dry)					ForbIDDEN		ForbIDDEN		ForbIDDEN		ForbIDDEN				

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
A	B	C	D	E		F	G						M	N		
	Benzene-1,3-disulphonyl hydrazide, less than 52% as a paste, see Self-reactive solid type D ★ (UN 3226)															
	Benzene-1,3-disulphonyl hydrazide, more than 52% as a paste															
	Benzene phosphorus dichloride, see Phenylphosphorus dichloride (UN 2798)															
	Benzene phosphorus thiodichloride, see Phenylphosphorus thiodichloride (UN 2799)															
2225	Benzenesulphonyl chloride	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803	8L			
	Benzenesulphonyl hydrazide, see Self-reactive solid type D ★ (UN 3226)															
	Benzanethiol, see Phenyl mercaptan (UN 2337)															
	Benzene trizonide															
1885	Benzidine	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
	Benzol, see Benzene (UN 1114)															
	Benzolene, see Petroleum distillates, n.o.s. (UN 1268)															
2224	Benzonitrile	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L		6L			
2587	Benzoquinone	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
	Benzosulphochloride, see Benzenesulphonyl chloride (UN 2225)															
2226	Benzotrichloride	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L		8L			
2338	Benzotrifluoride	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L			
	Benzoxidiazoles (dry)															
	Benzoyl azide															
1736	Benzoyl chloride	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L		8W			
1737	Benzyl bromide	6.1 (8)	Toxic & Corrosive	II	E4		Forbidden	653	1 L	660	30 L		6C			
1738	Benzyl chloride	6.1 (8)	Toxic & Corrosive	II	E4		Forbidden	653	1 L	660	30 L		6C			
	Benzyl chlorocarbonate, see Benzyl chloroformate (UN 1739)															
1739	Benzyl chloroformate	8	Corrosive	I	E0		Forbidden			854	2.5 L	A1	8L			
	Benzyl cyanide, see Phenylacetonitrile, liquid (UN 2470)															
2619	Benzylidimethylamine	8 (3)	Corrosive & Flamm. liquid	II	E2	Y840	0.5 L	851	1 L	855	30 L		8F			
	4-(Benzyl(ethyl)amino)-3-ethoxybenzenediazonium zinc chloride, see Self-reactive solid type D ★ (UN 3226)															
1886	Benzylidene chloride	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L		6L			
2653	Benzyl iodide	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L		6L			
	4-(Benzyl(methyl)amino)-3-ethoxybenzenediazonium zinc chloride, see Self-reactive solid type D, temperature controlled ★ (UN 3236)															
1566	Beryllium compound, n.o.s. *	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg	A3	6L			
					III	E1	Y645	10 kg	670	100 kg	677	200 kg		6L		
2464	Beryllium nitrate	5.1 (6.1)	Oxidizer & Toxic	II	E2	Y543	1 kg	558	5 kg	562	25 kg		5P			



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					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
1567	Beryllium powder Beverage extract (concentrate), see Corrosive liquid, acidic, inorganic, n.o.s. ★ (UN 3264)	6.1 (4.1)	Toxic & Flamm. solid	II	E4	Y644	1 kg	668	15 kg	675	50 kg			6F		
2251	Bicyclo[2.2.1]hepta-2-5-diene, stabilized Bifluorides, solid, n.o.s., see Hydrogendifluorides, solid, n.o.s. (UN 1740) Bifluorides solution, n.o.s., see Hydrogendifluorides, solution, n.o.s. (UN 3471) Biological products † known or reasonably believed to contain infectious substances and which meet the criteria for inclusion in Category A or Category B and which do not meet the criteria of 3.6.2.3.1(a), see Infectious substance, affecting humans ★ (UN 2814), Infectious substance, affecting animals ★ (UN 2900), Biological substance, Category B (UN 3373) Biological products † manufactured and packaged in accordance with the requirements of national governmental health authorities and transported for the purposes of final packaging or distribution, and use for personal health care by medical professionals or individuals.	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L		
3373	Biological substance, Category B	6.2			E0	Forbidden		See 650		See 650				11L		
3291	Biomedical waste, n.o.s. Biphenyl triozonide	6.2	Infectious subst.	II	E0	Forbidden		622	No limit	622	No limit	A117		11L		
2782	Bipyridilium pesticide, liquid, flammable, toxic, ★ flash point less than 23°C	3 (6.1)	Flamm. liquid & Toxic	I II	E0 E2	Forbiden Y341	1 L	352	1 L	361	30 L 60 L	A4		3P 3P		
3016	Bipyridilium pesticide, liquid, toxic ★	6.1	Toxic	I II III	E5 E4 E1	Forbiden Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4		6L 6L 6L		
3015	Bipyridilium pesticide, liquid, toxic, flammable, ★ flash point 23°C or more	6.1 (3)	Toxic & Flamm. liquid	I II III	E5 E4 E1	Forbiden Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4		6F 6F 6F		
2781	Bipyridilium pesticide, solid, toxic ★	6.1	Toxic	I II III	E5 E4 E1	Forbiden Y644 Y645	1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5		6L 6L 6L		
2837	Bisulphates, aqueous solution	8	Corrosive	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A3 A803		8L 8L		
2693	Bisulphites, aqueous solution, n.o.s. ★	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803		8L		
0027	Black powder † granular or as a meal	1.1D				Forbidden			Forbidden		Forbidden				1L	
0028	Black powder, compressed †	1.1D				Forbidden			Forbidden		Forbidden				1L	
0028	Black powder in pellets † Blasting cap assemblies, see Detonator assemblies, non-electric † (UN 0360), Detonator assemblies, non-electric † (UN 0361), Detonator assemblies, non-electric † (UN 0500) Blasting caps, electric, see Detonators, electric † (UN 0030), Detonators, electric † (UN 0255), Detonators, electric † (UN 0456) Blasting caps, non-electric, see Detonators, non-electric † (UN 0029), Detonators, non-electric † (UN 0267), Detonators, non-electric † (UN 0455)	1.1D			Forbidden			Forbidden		Forbidden				1L		

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
	Bleach, Bleach liquor, or Bleach solutions, see Hypochlorite solution † (UN 1791)														
	Bleaching powder, see Calcium hypochlorite mixture, dry (UN 1748) or Calcium hypochlorite mixture, dry (UN 2208)														
2212	Blue asbestos † (crocidolite)	9						Forbidden		Forbidden		Forbidden		A61	9L
0034	Bombs † with bursting charge	1.1D						Forbidden		Forbidden		Forbidden			1L
0033	Bombs † with bursting charge	1.1F						Forbidden		Forbidden		Forbidden			1L
0035	Bombs † with bursting charge	1.2D						Forbidden		Forbidden		Forbidden			1L
0291	Bombs † with bursting charge	1.2F						Forbidden		Forbidden		Forbidden			1L
	Bombs, illuminating, see Ammunition, illuminating † (UN 0171), Ammunition, illuminating † (UN 0254), Ammunition, illuminating † (UN 0297)														
0038	Bombs, photo-flash †	1.1D						Forbidden		Forbidden		Forbidden			1L
0037	Bombs, photo-flash †	1.1F						Forbidden		Forbidden		Forbidden			1L
0039	Bombs, photo-flash †	1.2G						Forbidden		Forbidden		Forbidden			1L
0299	Bombs, photo-flash †	1.3G						Forbidden		Forbidden		Forbidden			1L
2028	Bombs, smoke, non-explosive with corrosive liquid, without initiating device	8	Corrosive	II	E0			Forbidden		Forbidden		866	50 kg		8L
	Bombs, target identification, see Ammunition, illuminating † (UN 0171), Ammunition, illuminating † (UN 0254), Ammunition, illuminating † (UN 0297)														
0399	Bombs with flammable liquid † with bursting charge	1.1J						Forbidden		Forbidden		Forbidden			1L
0400	Bombs with flammable liquid † with bursting charge	1.2J						Forbidden		Forbidden		Forbidden			1L
0042	Boosters † without detonator	1.1D						Forbidden		Forbidden		Forbidden			1L
0283	Boosters † without detonator	1.2D						Forbidden		Forbidden		Forbidden			1L
0225	Boosters with detonator †	1.1B						Forbidden		Forbidden		Forbidden			1L
0268	Boosters with detonator †	1.2B						Forbidden		Forbidden		Forbidden			1L
	Borate and chlorate mixture, see Chlorate and borate mixture (UN 1458)														
1312	Borneol	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L		
2692	Boron tribromide	8						Forbidden		Forbidden		Forbidden		A2	8L
1741	Boron trichloride	2.3 (8)						Forbidden		Forbidden		Forbidden		A2	2CP
1008	Boron trifluoride	2.3 (8)						Forbidden		Forbidden		Forbidden		A2 A190	2CP
1742	Boron trifluoride acetic acid complex, liquid	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L				8L
3419	Boron trifluoride acetic acid complex, solid	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg				8L
2604	Boron trifluoride diethyl etherate	8 (3)	Corrosive & Flamm. liquid	I	E0	Forbidden		850	0.5 L	854	2.5 L				8F



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
2851	Boron trifluoride dihydrate	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L			8L		
2965	Boron trifluoride dimethyl etherate	4.3 (3, 8)	Dang. when wet & Flamm. liquid & Corrosive	I	E0	Forbidden		Forbidden		480	1 L			4FW		
1743	Boron trifluoride propionic acid complex, liquid	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L			8L		
3420	Boron trifluoride propionic acid complex, solid	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg			8L		
1450	Bromates, inorganic, n.o.s. ★	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg	A170		5L		
3213	Bromates, inorganic, aqueous solution, n.o.s. ★	5.1	Oxidizer	II III	E2 E1	Y540 Y541	0.5 L 1 L	550 551	1 L 2.5 L	554 555	5 L 30 L	A3 A170 A803		5L 5L		
1744	Bromine	8 (6.1)				Forbidden		Forbidden		Forbidden		A2		8P		
	Bromine azide					Forbidden		Forbidden		Forbidden						
2901	Bromine chloride	2.3 (5.1, 8)				Forbidden		Forbidden		Forbidden		A2		2PX		
1745	Bromine pentafluoride	5.1 (6.1, 8)				Forbidden		Forbidden		Forbidden		A2		5CP		
1744	Bromine solution	8 (6.1)				Forbidden		Forbidden		Forbidden		A2		8P		
1746	Bromine trifluoride	5.1 (6.1, 8)				Forbidden		Forbidden		Forbidden		A2		5CP		
3425	Bromoacetic acid, solid	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg			8L		
1938	Bromoacetic acid, solution	8	Corrosive	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A3 A803		8L 8L		
1569	Bromoacetone	6.1 (3)				Forbidden		Forbidden		Forbidden		A2		6F		
	omega-Bromoacetophenone, see Phenacyl bromide (UN 2645)															
2513	Bromoacetyl bromide	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L			8L		
2514	Bromobenzene	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L		
	p-Bromobenzyl cyanide					Not Restricted		Not Restricted		Not Restricted						
1694	Bromobenzyl cyanides, liquid	6.1	Toxic	I	E0	Forbidden		Forbidden		658	30 L	A1 A29		6i		
3449	Bromobenzyl cyanides, solid	6.1	Toxic	I	E0	Forbidden		Forbidden		673	50 kg	A1 A29		6L		
1126	1-Bromobutane	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L		
2339	2-Bromobutane	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L		
1887	Bromochloromethane	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L			6L		
2688	1-Bromo-3-chloropropane	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L			6L		
	4-Bromo-1,2-dinitrobenzene					Forbidden		Forbidden		Forbidden						
	1-Bromo-2,3-epoxypropane, see Epibromohydrin (UN 2558)															
	Bromoethane, see Ethyl bromide (UN 1891)															
2340	2-Bromoethyl ethyl ether	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L		
2515	Bromoform	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L			6L		
	Bromomethane, see Methyl bromide (UN 1062)															

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
A	B	C	D	E		F	G						M	N		
2341	1-Bromo-3-methylbutane	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L		
2342	Bromomethylpropanes	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L		
3241	2-Bromo-2-nitropropane-1,3-diol	4.1	Flamm. solid & Keep away from heat	III	E1	Y457	10 kg	457	25 kg	457	50 kg	A20 A803		3L		
2343	2-Bromopentane	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L		
2344	Bromopropanes	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3		3L 3L		
2345	3-Bromopropyne	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L		
	Bromosilane						Forbidden									
	Bromotoluene-alpha, see Benzyl bromide (UN 1737)															
2419	Bromotrifluoroethylene	2.1	Flamm. gas		E0		Forbidden			ForbIDDEN		200	150 kg	A1	10L	
1009	Bromotrifluoromethane	2.2	Non-flamm. gas		E1		Forbidden		200	75 kg	200	150 kg			2L	
2212	Brown asbestos † (amosite, myosomite)	9					Forbidden			ForbIDDEN				A61	9L	
1570	Brucine	6.1	Toxic	I	E5		Forbidden		666	5 kg	673	50 kg	A6	6L		
0043	Bursters † explosive	1.1D					Forbidden			ForbIDDEN					1L	
1010	Butadienes and hydrocarbon mixture, stabilized containing more than 40% butadienes	2.1	Flamm. gas		E0		Forbidden			ForbIDDEN		200	150 kg	A1	10L	
1010	Butadienes, stabilized	2.1	Flamm. gas		E0		Forbidden			ForbIDDEN		200	150 kg	A1	10L	
	Butadienes, unstabilized									ForbIDDEN						
1011	Butane	2.1	Flamm. gas		E0		Forbidden			ForbIDDEN		200	150 kg	A1	10L	
	Butane, butane mixtures and mixtures having similar properties in cartridges each not exceeding 500 grams, see Receptacles, small, containing gas (UN 2037)															
2346	Butanedione	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L		
	Butane-1-thiol, see Butyl mercaptan (UN 2347)															
	1,2,4-Butanetriol trinitrate						Forbidden			ForbIDDEN						
	Butan-2-ol, see Butanols (UN 1120)															
	1-Butanol, see Butanols (UN 1120)															
1120	Butanols	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3		3L 3L		
	Butanol, secondary, see Butanols (UN 1120)															
	Butanol, tertiary, see Butanols (UN 1120)															
	Butanone, see Ethyl methyl ketone (UN 1193)															
	2-Butenal, see Crotonaldehyde, stabilized (UN 1143) or Crotonaldehyde (UN 1143)															
	Butene, see Butylene (UN 1012)															
	But-1-ene-3-one, see Methyl vinyl ketone, stabilized (UN 1251)															
	1,2-Buteneoxide, see 1,2-Butylene oxide, stabilized (UN 3022)															



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UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
	2-Buten-1-ol, see Methallyl alcohol (UN 2614)														
	tert-Butoxycarbonyl azide														
	Butter of antimony, see Antimony trichloride † (UN 1733)														
	Butter of arsenic, see Arsenic trichloride (UN 1560)														
	Butyl acetate, iso, see Isobutyl acetate (UN 1213)														
1123	Butyl acetates	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3	3L 3L		
	Butyl acetate, secondary, see Butyl acetates (UN 1123)														
1718	Butyl acid phosphate	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803	8L		
2348	Butyl acrylates, stabilized	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L		
	Butyl alcohols, see Butanols (UN 1120)														
	Butyl alcohol, secondary, see Butanols (UN 1120)														
	Butyl alcohol, tertiary, see Butanols (UN 1120)														
1125	n-Butylamine	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L		3C		
2738	N-Butylaniline	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L		6L		
	sec-Butylbenzene, see Butylbenzenes (UN 2709)														
2709	Butylbenzenes	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L		
	n-Butyl bromide, see 1-Bromobutane (UN 1126)														
	n-Butyl chloride, see Chlorobutanes (UN 1127)														
2743	n-Butyl chloroformate	6.1 (3, 8)												6CF	
2747	tert-Butylcyclohexyl chloroformate	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L		6L		
1012	Butylene	2.1	Flamm. gas	II	E0	ForbIDDEN						200	150 kg	A1	10L
3022	1,2-Butylene oxide, stabilized	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3H		
	Butyl ethers, see Dibutyl ethers (UN 1149)														
	Butyl ethyl ether, see Ethyl butyl ether (UN 1179)														
1128	n-Butyl formate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L		
	tert-Butyl hydroperoxide, more than 90% with water														
3255	tert-Butyl hypochlorite	4.2 (8)												4C	
2690	N,n-Butylimidazole	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L		6L		
	N-n-Butyl imidazole, see N,n-Butylimidazole (UN 2690)														
2485	n-Butyl isocyanate	6.1 (3)												A2	6F
2484	tert-Butyl isocyanate	6.1 (3)													6F
	Butyl lithium, see Organometallic substance, liquid, pyrophoric, water-reactive ★ (UN 3394)														
2347	Butyl mercaptan	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L		
2227	n-Butyl methacrylate, stabilized	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L		

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
A	B	C	D	E		F	G						M	N		
2350	Butyl methyl ether tert-Butyl monoperoxymaleate, more than 52% tert-Butyl monoperoxyphthalate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L		
							Forbidden		Forbidden		Forbidden					
							Forbidden		Forbidden		Forbidden					
2351	Butyl nitrites tert-Butyl peroxyacetate, > 52% and < 77%, when with > 23% diluent Type B tert-Butyl peroxyisobutyrate, > 52% and ≤ 77%, when with ≥ 23% diluent Type B Butylphenols, liquid, see Alkylphenols, liquid, n.o.s. (UN 3145) Butylphenols, solid, see Alkylphenols, solid, n.o.s. (UN 2430) Butyl phosphoric acid, see Butyl acid phosphate (UN 1718)	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L		A3	3L 3L		
							Forbidden		Forbidden		Forbidden					
							Forbidden		Forbidden		Forbidden					
1914	Butyl propionates p-tert-Butyl-toluene, see Butyltoluenes (UN 2667)	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L		
2667	Butyltoluenes	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L			6L		
1747	Butyltrichlorosilane	8 (3)	Corrosive & Flamm. liquid	II	E0		Forbidden		Forbidden		876	30 L	A1	8F		
2956	5-tert-Butyl-2,4,6-trinitro-m-xylene	4.1					Forbidden		Forbidden					3E		
2352	Butyl vinyl ether, stabilized Butyl vinyl ether, unstabilized But-1-yne, see Ethylacetylene, stabilized (UN 2452) 2-Butyne-1,4,-diol, see 1,4-Butynediol (UN 2716)	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L		
							Forbidden		Forbidden		Forbidden					
2716	1,4-Butynediol	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg			6L		
1129	Butyraldehyde	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L		
2840	Butyraldoxime	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L		
2820	Butyric acid	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803	8L			
2739	Butyric anhydride Butyrone, see Dipropyl ketone (UN 2710)	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803	8L			
2411	Butyronitrile Butyroyl chloride, see Butyryl chloride (UN 2353)	3 (6.1)	Flamm. liquid & Toxic	II	E2	Y341	1 L	352	1 L	364	60 L			3P		
2353	Butyryl chloride Cable cutters, explosive, see Cutters, cable, explosive † (UN 0070)	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L			3C		
1572	Cacodylic acid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg			6L		
2570	Cadmium compound ★	6.1	Toxic	I II III	E5 E4 E1	Y644 Y645	1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5	6L 6L 6L			
1407	Caesium	4.3	Dang. when wet	I	E0		Forbidden		Forbidden		487	15 kg			4W	

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						F	G									
2682	Caesium hydroxide	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg				8L	
2681	Caesium hydroxide solution	8	Corrosive	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A3 A803	8L 8L			
1451	Caesium nitrate	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803	5L			
	Caffeine, see Alkaloids, solid, n.o.s. ★ (UN 1544) or Alkaloids, liquid, n.o.s. ★ (UN 3140)															
	Cajeputene, see Dipentene (UN 2052)															
4	1401 Calcium	4.3	Dang. when wet	II	E2	Y475	5 kg	484	15 kg	490	50 kg				4W	
C	Calcium alloys, see Alkaline earth metal alloy, n.o.s. (UN 1393)															
	1855 Calcium alloys, pyrophoric	4.2					Forbidden		Forbidden		Forbidden				4W	
	1573 Calcium arsenate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L	
	1574 Calcium arsenate and calcium arsenite mixture, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L	
	Calcium bisulphite solution, see Bisulphites, aqueous solution, n.o.s. ★ (UN 2693)															
	1402 Calcium carbide	4.3	Dang. when wet	I II	E0 E2	Y475	5 kg	484	15 kg	487 489	15 kg 50 kg				4W 4W	
	1452 Calcium chlorate	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg				5L	
	2429 Calcium chlorate, aqueous solution	5.1	Oxidizer	II III	E2 E1	Y540 Y541	0.5 L 1 L	550 551	1 L 2.5 L	554 555	5 L 30 L	A3 A803	5L 5L			
	1453 Calcium chlorite	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg				5L	
	1403 Calcium cyanamide with more than 0.1% calcium carbide	4.3	Dang. when wet	III	E1	Y477	10 kg	486	25 kg	491	100 kg	A71 A803	4W			
	Calcium cyanamide with 0.1% or less calcium carbide						Not Restricted		Not Restricted		Not Restricted					
	1575 Calcium cyanide	6.1	Toxic	I	E5	ForbIDDEN		666	5 kg	673	50 kg				6L	
	1923 Calcium dithionite	4.2	Spont. comb.	II	E2	ForbIDDEN		467	15 kg	470	50 kg				4L	
	1404 Calcium hydride	4.3	Dang. when wet	I	E0	ForbIDDEN			Forbidden	487	15 kg				4W	
	1923 Calcium hydrosulphite	4.2	Spont. comb.	II	E2	ForbIDDEN		467	15 kg	470	50 kg				4L	
	1748 Calcium hypochlorite, dry	5.1	Oxidizer	II III	E2 E1	Y544 Y546	2.5 kg 10 kg	558 559	5 kg 25 kg	562 563	25 kg 100 kg	A136 A803	5L 5L			
	3485 Calcium hypochlorite, dry, corrosive with > 39% available chlorine (8.8% available oxygen)	5.1 (8)	Oxidizer & Corrosive	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg	A136	5C			
	2880 Calcium hypochlorite, hydrated with ≥ 5.5% but ≤ 16% water	5.1	Oxidizer	II III	E2 E1	Y544 Y546	2.5 kg 10 kg	558 559	5 kg 25 kg	562 563	25 kg 100 kg	A3 A8 A136 A803	5L 5L			
	3487 Calcium hypochlorite, hydrated, corrosive with ≥ 5.5% but ≤ 16% water	5.1 (8)	Oxidizer & Corrosive	II III	E2 E1	Y544 Y545	2.5 kg 5 kg	558 559	5 kg 25 kg	562 563	25 kg 100 kg	A136 A803	5C 5C			
	2880 Calcium hypochlorite, hydrated mixture with ≥ 5.5% but ≤ 16% water	5.1	Oxidizer	II III	E2 E1	Y544 Y546	2.5 kg 10 kg	558 559	5 kg 25 kg	562 563	25 kg 100 kg	A3 A8 A136 A803	5L 5L			
	3487 Calcium hypochlorite, hydrated mixture, corrosive with ≥ 5.5% but ≤ 16% water	5.1 (8)	Oxidizer & Corrosive	II III	E2 E1	Y544 Y545	2.5 kg 5 kg	558 559	5 kg 25 kg	562 563	25 kg 100 kg	A136 A803	5C 5C			
	2208 Calcium hypochlorite mixture, dry with > 10% but ≤ 39% available chlorine	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A136 A803	5L			

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						F	G									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
1748	Calcium hypochlorite mixture, dry with > 39% available chlorine (8.8% available oxygen)	5.1	Oxidizer	II III	E2 E1	Y544 Y546	2.5 kg 10 kg	558 559	5 kg 25 kg	562 563	25 kg 100 kg	A138 A803	5L 5L			
3486	Calcium hypochlorite mixture, dry, corrosive with > 10% but ≤ 39% available chlorine	5.1 (8)	Oxidizer & Corrosive	III	E1	Y545	5 kg	559	25 kg	563	100 kg	A136 A803	5C			
3485	Calcium hypochlorite mixture, dry, corrosive with > 39% available chlorine (8.8% available oxygen)	5.1 (8)	Oxidizer & Corrosive	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg	A136	5C			
2844	Calcium manganese silicon	4.3	Dang. when wet	III	E1	Y477	10 kg	486	25 kg	491	100 kg	A803	4W			
1454	Calcium nitrate	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A83 A803	5L			
1910	Calcium oxide	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A803	8L			
1455	Calcium perchlorate	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg		5L			
1456	Calcium permanganate	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg		5L			
1457	Calcium peroxide	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg		5L			
1360	Calcium phosphide	4.3 (6.1)	Dang. when wet & Toxic	I	E0	Forbidden		Forbidden		487	15 kg		4PW			
1855	Calcium, pyrophoric	4.2				Forbidden		Forbidden		Forbidden			4W			
1313	Calcium resinate	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L			
1314	Calcium resinate, fused	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L			
	Calcium selenate, see Selenates ★ (UN 2630)															
	Calcium selenite, see Selenites ★ (UN 2630)															
1405	Calcium silicide	4.3	Dang. when wet	II III	E2 E1	Y475 Y477	5 kg 10 kg	484 486	15 kg 25 kg	490 491	50 kg 100 kg	A3 A803	4W 4W			
	Calcium silicon, see Calcium silicide (UN 1405)															
	Calcium superoxide, see Calcium peroxide (UN 1457)															
	Calor gas †, see Hydrocarbon gas mixture, compressed, n.o.s. ★ † (UN 1964) or Hydrocarbon gas mixture, liquefied, n.o.s. ★ † (UN 1965)															
	Camphanone, see Camphor (UN 2717)															
2717	Camphor synthetic	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L			
1130	Camphor oil	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L			
	Camping gas, see Receptacles, small, containing gas (UN 2037)															
	Candles, gas, see Lighters (UN 1057)															
	Cannon primers, see Primers, tubular † (UN 0319), Primers, tubular † (UN 0320), Primers, tubular † (UN 0376)															
3499	Capacitor electric double layer (with an energy storage capacity greater than 0.3 Wh)	9	Miscellaneous		E0	Forbidden		971	No limit	971	No limit	A186	9L			
2829	Caproic acid	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803	8L			
	Caps, blasting, see Detonators, electric † (UN 0030), Detonators, electric † (UN 0255), Detonators, electric † (UN 0456)															
	Caps, primer, see Primers, cap type † (UN 0044), Primers, cap type † (UN 0377), Primers, cap type † (UN 0378)															



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					Ltd Qty			Pkg Inst G	Max Net Qty/Pkg H	Pkg Inst I	Max Net Qty/Pkg J	Pkg Inst K	Max Net Qty/Pkg L			
					EQ see 2.6 II	Pkg Inst E2	Max Net Qty/Pkg Y341									
	Caps, toy †, see Fireworks † (UN 0333), Fireworks † (UN 0336), Fireworks † (UN 0337)															
2758	Carbamate pesticide, liquid, flammable, toxic ★ flash point less than 23°C	3 (6.1)	Flamm. liquid & Toxic	I II	E0 E2	Forbidden Y341	1 L	352	1 L	361 364	30 L 60 L			A4	3P 3P	
2992	Carbamate pesticide, liquid, toxic ★	6.1	Toxic	I II III	E5 E4 E1	Forbidden Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L			A3 A4	6L 6L 6L	
2991	Carbamate pesticide, liquid, toxic, flammable, ★ flash point 23°C or more	6.1 (3)	Toxic & Flamm. liquid	I II III	E5 E4 E1	Forbidden Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L			A3 A4	6F 6F 6F	
2757	Carbamate pesticide, solid, toxic ★	6.1	Toxic	I II III	E5 E4 E1	Forbidden Y644 Y645	1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg			A3 A5	6L 6L 6L	
	Carbolic acid, see Phenol, solid (UN 1671) or Phenol, molten (UN 2312)															
	Carbolic acid solution, see Phenol solution (UN 2821)															
1361	Carbon animal or vegetable origin	4.2				Forbidden			Forbidden		Forbidden			A2 A3	4L	
1362	Carbon, activated	4.2	Spont. comb.	III	E1	Forbidden		472	0.5 kg	472	0.5 kg			A3	4L	
	Carbon bisulphide, see Carbon disulphide (UN 1131)															
	Carbon black (animal or vegetable origin), see Carbon (UN 1361)															
1013	Carbon dioxide †	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg				2L	
	Carbon dioxide and ethylene oxide mixture, see Ethylene oxide and carbon dioxide mixture (UN 1041), Ethylene oxide and carbon dioxide mixture (UN 1952), Ethylene oxide and carbon dioxide mixture (UN 3300)															
2187	Carbon dioxide, refrigerated liquid	2.2	Non-flamm. gas & Cryogenic liquid		E1	Forbidden		202	50 kg	202	500 kg				2L	
1845	Carbon dioxide, solid †	9	Miscellaneous		E0	Forbidden		954	200 kg	954	200 kg			A48 A151 A805	9L	
1131	Carbon disulphide	3 (6.1)				Forbidden			Forbidden		Forbidden				3HP	
	Carbonic anhydride, see Carbon dioxide † (UN 1013)															
1016	Carbon monoxide, compressed	2.3 (2.1)				Forbidden			Forbidden		Forbidden			A2	10P	
	Carbon, non-activated, mineral origin								Not Restricted		Not Restricted					
	Carbon oxysulphide, see Carbonyl sulphide (UN 2204)															
	Carbon paper, see Paper, unsaturated oil treated (UN 1379)															
2516	Carbon tetrabromide	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg				6L	
1846	Carbon tetrachloride	6.1	Toxic	II	E4	Y641	1 L	654	5 L	661	60 L				6L	
	Carbonyl chloride, see Phosgene (UN 1076)															
2417	Carbonyl fluoride	2.3 (8)				Forbidden			Forbidden		Forbidden			A2	2CP	

UN/ ID no.	Proper Shipping Name/Description A	Class or Div. (Sub Risk) C	Hazard Label(s) D	PG E	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P. see 4.4 M	ERG Code N		
					Ltd Qty		Pkg Inst G	Max Net Qty/Pkg H	Pkg Inst I	Max Net Qty/Pkg J	Pkg Inst K	Max Net Qty/Pkg L			
					EQ see 2.6	Pkg Inst									
2204	Carbonyl sulphide Cartridge cases, empty, primed, see Cases, cartridge, empty, with primer † (UN 0055) or Cases, cartridge, empty, with primer † (UN 0379) Cartridges, actuating, for aircraft ejector seat catapult, fire extinguisher, canopy removal or apparatus, see Cartridges, power device † (UN 0275), Cartridges, power device † (UN 0276), Cartridges, power device † (UN 0323), Cartridges, power device † (UN 0381) Cartridges, explosive, see Charges, demolition † (UN 0048)	2.3 (2.1)				Forbidden			Forbidden		Forbidden		A2	10P	
0049	Cartridges, flash †	1.1G			E0	Forbidden			Forbidden		Forbidden			1L	
0050	Cartridges, flash †	1.3G	Explosive		E0	Forbidden			Forbidden	135	75 kg	A802	1L		
0014	Cartridges for tools, blank †	1.4S	Explosive 1.4		E0	Forbidden	130	25 kg	130	100 kg	A802	3L			
0006	Cartridges for weapons † with bursting charge	1.1E				Forbidden			Forbidden		Forbidden			1L	
0005	Cartridges for weapons † with bursting charge	1.1F				Forbidden			Forbidden		Forbidden			1L	
0321	Cartridges for weapons † with bursting charge	1.2E				Forbidden			Forbidden		Forbidden			1L	
0007	Cartridges for weapons † with bursting charge	1.2F				Forbidden			Forbidden		Forbidden			1L	
0412	Cartridges for weapons † with bursting charge	1.4E	Explosive 1.4		E0	Forbidden			Forbidden	130	75 kg	A802	1L		
0348	Cartridges for weapons † with bursting charge	1.4F				Forbidden			Forbidden		Forbidden			1L	
0326	Cartridges for weapons, blank †	1.1C				Forbidden			Forbidden		Forbidden			1L	
0413	Cartridges for weapons, blank †	1.2C				Forbidden			Forbidden		Forbidden			1L	
0327	Cartridges for weapons, blank †	1.3C				Forbidden			Forbidden		Forbidden			1L	
0338	Cartridges for weapons, blank †	1.4C	Explosive 1.4		E0	Forbidden			Forbidden	130	75 kg	A802	1L		
0014	Cartridges for weapons, blank †	1.4S	Explosive 1.4		E0	Forbidden	130	25 kg	130	100 kg	A802	3L			
0328	Cartridges for weapons, inert projectile †	1.2C				Forbidden			Forbidden		Forbidden			1L	
0417	Cartridges for weapons, inert projectile †	1.3C				Forbidden			Forbidden		Forbidden			1L	
0339	Cartridges for weapons, inert projectile †	1.4C	Explosive 1.4		E0	Forbidden			Forbidden	130	75 kg	A802	1L		
0012	Cartridges for weapons, inert projectile † Cartridges, illuminating, see Ammunition, illuminating † (UN 0171), Ammunition, illuminating † (UN 0254), Ammunition, illuminating † (UN 0297)	1.4S	Explosive 1.4		E0	Forbidden	130	25 kg	130	100 kg	A802	3L			
0277	Cartridges, oil well †	1.3C				Forbidden			Forbidden		Forbidden			1L	
0278	Cartridges, oil well †	1.4C	Explosive 1.4		E0	Forbidden			Forbidden	134	75 kg	A802	1L		
0381	Cartridges, power device †	1.2C				Forbidden			Forbidden		Forbidden			1L	
0275	Cartridges, power device †	1.3C	Explosive		E0	Forbidden			Forbidden	134	75 kg	A802	1L		
0276	Cartridges, power device †	1.4C	Explosive 1.4		E0	Forbidden			Forbidden	134	75 kg	A802	1L		



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UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	
A	B	C	D	E		F	G						M	N
0323	Cartridges, power device †	1.4S	Explosive 1.4		E0	Forbidden			134	25 kg	134	100 kg	A165 A802	3L
	Cartridges, safety, see Cartridges for weapons, inert projectile † (UN 0012)													
	Cartridges, safety, blank, see Cartridges for weapons, blank † (UN 0014)													
0054	Cartridges, signal †	1.3G	Explosive		E0	Forbidden			ForbIDDEN		135	75 kg	A802	1L
0312	Cartridges, signal †	1.4G	Explosive 1.4		E0	Forbidden			ForbIDDEN		135	75 kg	A802	1L
0405	Cartridges, signal †	1.4S	Explosive 1.4		E0	Forbidden			135	25 kg	135	100 kg	A802	3L
0417	Cartridges, small arms †	1.3C				Forbidden			ForbIDDEN			ForbIDDEN		1L
0339	Cartridges, small arms †	1.4C	Explosive 1.4		E0	Forbidden			ForbIDDEN		130	75 kg	A802	1L
0012	Cartridges, small arms †	1.4S	Explosive 1.4		E0	Forbidden			130	25 kg	130	100 kg	A802	3L
0327	Cartridges, small arms, blank †	1.3C				Forbidden			ForbIDDEN			ForbIDDEN		1L
0338	Cartridges, small arms, blank †	1.4C	Explosive 1.4		E0	Forbidden			ForbIDDEN		130	75 kg	A802	1L
0014	Cartridges, small arms, blank †	1.4S	Explosive 1.4		E0	Forbidden			130	25 kg	130	100 kg	A802	3L
	Cartridges, sporting, see Cartridges for weapons, inert projectile † (UN 0012)													
	Cartridges, starter, jet engine, see Cartridges, power device † (UN 0275), Cartridges, power device † (UN 0276), Cartridges, power device † (UN 0323), Cartridges, power device † (UN 0381)													
	Case oil, see Motor spirit (UN 1203) or Petroleum distillates, n.o.s. (UN 1268)													
0379	Cases, cartridge, empty, with primer †	1.4C	Explosive 1.4		E0	Forbidden			ForbIDDEN		136	75 kg		1L
0055	Cases, cartridge, empty, with primer †	1.4S	Explosive 1.4		E0	Forbidden			136	25 kg	136	100 kg	A802	3L
0447	Cases, combustible, empty, without primer †	1.3C				Forbidden			ForbIDDEN			ForbIDDEN		1L
0446	Cases, combustible, empty, without primer †	1.4C	Explosive 1.4		E0	Forbidden			ForbIDDEN		136	75 kg	A802	1L
△	Casinghead gasoline, see Motor spirit (UN 1203), Gasoline (UN 1203), Petrol (UN 1203)													
2969	Castor beans †	9	Miscellaneous	II	E2	Forbidden			956	No limit	956	No limit	A31 A48	9L
2969	Castor flake †	9	Miscellaneous	II	E2	Forbidden			956	No limit	956	No limit	A31 A48	9L
2969	Castor meal †	9	Miscellaneous	II	E2	Forbidden			956	No limit	956	No limit	A31 A48	9L
2969	Castor pomace †	9	Miscellaneous	II	E2	Forbidden			956	No limit	956	No limit	A31 A48	9L
1719	Caustic alkali liquid, n.o.s. ★	8	Corrosive	II III	E2 E1	Y840 Y841	0.5 L 1 L		851 852	1 L 5 L	855 856	30 L 60 L	A3 A803	8L 8L
	Caustic antimony, see Antimony trichloride † (UN 1733)													
	Caustic arsenic chloride, see Arsenic trichloride (UN 1560)													
	Caustic oil of arsenic, see Arsenic trichloride (UN 1560)													
	Caustic potash, see Potassium hydroxide solution (UN 1814)													

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
	Caustic soda, see Sodium hydroxide, solid (UN 1823) or Sodium hydroxide solution (UN 1824)														
	Caustic soda liquor, see Sodium hydroxide solution (UN 1824)														
	Cellosolve, see Ethylene glycol monoethyl ether (UN 1171)														
	Cellosolve acetate, see Ethylene glycol monoethyl ether acetate (UN 1172)														
△ 3292	Cells, containing sodium †	4.3	Dang. when wet	II	E0	Forbidden		492	25 kg	492	No limit	A94	4W		
2000	Celluloid in blocks, rods, rolls, sheets, tubes, etc. (except scrap)	4.1	Flamm. solid	III	E1	Forbidden		456	25 kg	456	100 kg	A3 A48	3L		
2002	Celluloid, scrap	4.2				Forbidden		Forbidden		Forbidden		A2 A3	4L		
	Cement, flammable †, see Adhesives (UN 1133)														
1333	Cerium slabs, ingots or rods	4.1	Flamm. solid	II	E2	Y441	5 kg	445	15 kg	448	50 kg		3L		
3078	Cerium turnings or gritty powder	4.3	Dang. when wet	II	E2	Y475	5 kg	484	15 kg	490	50 kg		4W		
	Cer Mischmetall, see Ferrocerium (UN 1323)														
	Cesium, see Caesium (UN 1407)														
	Charcoal, activated, see Carbon, activated (UN 1362)														
	Charcoal, non-activated, see Carbon (UN 1361)														
	Charcoal screenings, wet					Forbidden		Forbidden		Forbidden					
	Charcoal, wet					Forbidden		Forbidden		Forbidden					
0457	Charges, bursting, plastics bonded †	1.1D				Forbidden		Forbidden		Forbidden			1L		
0458	Charges, bursting, plastics bonded †	1.2D				Forbidden		Forbidden		Forbidden			1L		
0459	Charges, bursting, plastics bonded †	1.4D	Explosive 1.4		E0	Forbidden		Forbidden		130	75 kg	A802	1L		
0460	Charges, bursting, plastics bonded †	1.4S	Explosive 1.4		E0	Forbidden		130	25 kg	130	100 kg	A165 A802	3L		
0048	Charges, demolition †	1.1D				Forbidden		Forbidden		Forbidden			1L		
0056	Charges, depth †	1.1D				Forbidden		Forbidden		Forbidden			1L		
	Charges, expelling, explosive, for fire extinguishers, see Cartridges, power device † (UN 0275), Cartridges, power device † (UN 0276), Cartridges, power device † (UN 0323), Cartridges, power device † (UN 0381)														
0442	Charges, explosive, commercial † without detonator	1.1D				Forbidden		Forbidden		Forbidden			1L		
0443	Charges, explosive, commercial † without detonator	1.2D				Forbidden		Forbidden		Forbidden			1L		
0444	Charges, explosive, commercial † without detonator	1.4D	Explosive 1.4		E0	Forbidden		Forbidden		137	75 kg	A802	1L		
0445	Charges, explosive, commercial † without detonator	1.4S	Explosive 1.4		E0	Forbidden		137	25 kg	137	100 kg	A165 A802	3L		
0271	Charges, propelling †	1.1C				Forbidden		Forbidden		Forbidden			1L		
0415	Charges, propelling †	1.2C				Forbidden		Forbidden		Forbidden			1L		
0272	Charges, propelling †	1.3C				Forbidden		Forbidden		Forbidden			1L		

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					Ltd Qty		Pkg Inst G	Max Net Qty/Pkg H	Pkg Inst I	Max Net Qty/Pkg J	Pkg Inst K	Max Net Qty/Pkg L			
0491	Charges, propelling †	1.4C	Explosive 1.4	E0	Forbidden				Forbidden		143	75 kg	A802	1L	
0279	Charges, propelling, for cannon †	1.1C			Forbidden				Forbidden			Forbidden		1L	
0414	Charges, propelling, for cannon †	1.2C			Forbidden				Forbidden			Forbidden		1L	
0242	Charges, propelling, for cannon †	1.3C			Forbidden				Forbidden			Forbidden		1L	
0059	Charges, shaped † without detonator	1.1D			Forbidden				Forbidden			Forbidden	A2	1L	
0439	Charges, shaped † without detonator	1.2D			Forbidden				Forbidden			Forbidden		1L	
0440	Charges, shaped † without detonator	1.4D	Explosive 1.4	E0	Forbidden				Forbidden		137	75 kg	A1 A802	1L	
0441	Charges, shaped † without detonator	1.4S	Explosive 1.4	E0	Forbidden				137	25 kg	137	100 kg	A165 A802	3L	
0288	Charges, shaped, flexible, linear †	1.1D			Forbidden				Forbidden			Forbidden		1L	
0237	Charges, shaped, flexible, linear †	1.4D	Explosive 1.4	E0	Forbidden				Forbidden		138	75 kg	A802	1L	
0060	Charges, supplementary, explosive †	1.1D			Forbidden				Forbidden			Forbidden		1L	
3316	Chemical kit †	9	Miscellaneous	E0	Y960	1 kg	960	10 kg	960	10 kg			A44 A163	9L	
3315	Chemical sample, toxic †	6.1			Forbidden				Forbidden			Forbidden		A106	6L
□ 3500	Chemical under pressure, n.o.s. ★	2.2	Non-flamm. gas	E0	Forbidden		218	75 kg	218	150 kg			A187	2L	
□ 3503	Chemical under pressure, corrosive, n.o.s. ★	2.2 (8)	Non-flamm. gas & Corrosive	E0	Forbidden				Forbidden		218	100 kg	A1 A187	2C	
□ 3501	Chemical under pressure, flammable, n.o.s. ★	2.1	Flamm. gas	E0	Forbidden				Forbidden		218	75 kg	A1 A187	10L	
□ 3505	Chemical under pressure, flammable, corrosive, n.o.s. ★	2.1 (8)	Flamm. gas & Corrosive	E0	Forbidden				Forbidden		218	75 kg	A1 A187	10C	
□ 3504	Chemical under pressure, flammable, toxic, n.o.s. ★	2.1 (6.1)	Flamm. gas & Toxic	E0	Forbidden				Forbidden		218	75 kg	A1 A187	10P	
□ 3502	Chemical under pressure, toxic, n.o.s. ★	2.2 (6.1)	Non-flamm. gas & Toxic	E0	Forbidden				Forbidden		218	100 kg	A1 A187	2P	
	Chile saltpetre, see Sodium nitrate (UN 1498)														
2075	Chloral, anhydrous, stabilized	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L			6L	
	Chloral, anhydrous, unstabilized						Forbidden		Forbidden						
1458	Chlorate and borate mixture	5.1	Oxidizer	II III	E2 E1	Y544 Y546	2.5 kg 10 kg	558 559	5 kg 25 kg	562 563	25 kg 100 kg	A3 A803	5L 5L		
1459	Chlorate and magnesium chloride mixture, solid	5.1	Oxidizer	II III	E2 E1	Y544 Y546	2.5 kg 10 kg	558 559	5 kg 25 kg	562 563	25 kg 100 kg	A3 A803	5L 5L		
3407	Chlorate and magnesium chloride mixture solution	5.1	Oxidizer	II III	E2 E1	Y540 Y541	0.5 L 1 L	550 551	1 L 2.5 L	554 555	5 L 30 L	A3 A803	5L 5L		
	Chlorate of potash, see Potassium chlorate (UN 1485)														
	Chlorate of soda, see Sodium chlorate (UN 1495)														
1461	Chlorates, inorganic, n.o.s. ★	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg	A171	5L		
3210	Chlorates, inorganic, aqueous solution, n.o.s. ★	5.1	Oxidizer	II III	E2 E1	Y540 Y541	0.5 L 1 L	550 551	1 L 2.5 L	554 555	5 L 30 L	A3 A171 A803	5L 5L		

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						G	H									
2626	Chloric acid, aqueous solution with 10% or less chloric acid	5.1					Forbidden			Forbidden			Forbidden		A2	5L
	Chloric acid, aqueous solution with more than 10% chloric acid						Forbidden			Forbidden			Forbidden			
	Chloride of phosphorus, see Phosphorus trichloride (UN 1809)															
	Chloride of sulphur, see Sulphur chlorides (UN 1828)															
	Chlorinated lime, see Calcium hypochlorite, dry (UN 1748) or Calcium hypochlorite, hydrated (UN 2880)															
1017	Chlorine	2.3 (5.1, 8)					Forbidden			Forbidden			Forbidden		A2	2CP
	Chlorine azide						Forbidden			Forbidden			Forbidden			
	Chlorine dioxide						Forbidden			Forbidden			Forbidden			
2548	Chlorine pentafluoride	2.3 (5.1, 8)					Forbidden			Forbidden			Forbidden		A2	2PX
1749	Chlorine trifluoride	2.3 (5.1, 8)					Forbidden			Forbidden			Forbidden		A2	2PX
1462	Chlorites, inorganic, n.o.s. ★	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg				A172	5L
1908	Chlorite solution	8	Corrosive	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L				A3 A803	8L 8L
	Chloroacetaldehyde, see 2-Chloroethanal (UN 2232)															
3250	Chloroacetic acid, molten	6.1 (8)			E0		Forbidden			Forbidden			Forbidden			6C
1751	Chloroacetic acid, solid	6.1 (8)	Toxic & Corrosive	II	E4	Y644	1 kg	668	15 kg	675	50 kg					6C
1750	Chloroacetic acid solution	6.1 (8)	Toxic & Corrosive	II	E4	Y640	0.5 L	653	1 L	660	30 L					6C
1695	Chloroacetone, stabilized	6.1 (3, 8)					Forbidden			Forbidden			Forbidden			6Fi
	Chloroacetone, unstabilized						Forbidden			Forbidden			Forbidden			
2668	Chloroacetonitrile	6.1 (3)					Forbidden			Forbidden			Forbidden			6F
3416	Chloroacetophenone, liquid	6.1	Toxic	II	E0		Forbidden			Forbidden					A1	6i
1697	Chloroacetophenone, solid	6.1	Toxic	II	E0		Forbidden			Forbidden					A1	6i
1752	Chloroacetyl chloride	6.1 (8)					Forbidden			Forbidden			Forbidden		A2	6Ci
2019	Chloroanilines, liquid	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L					6L
2018	Chloroanilines, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg					6L
2233	Chloroanisidines	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg					6L
1134	Chlorobenzene	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L					3L
	Chlorobenzol, see Chlorobenzene (UN 1134)															
2234	Chlorobenzotrifluorides	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L					3L
2235	Chlorobenzyl chlorides, liquid	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L					6L
3427	Chlorobenzyl chlorides, solid	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg					6L
	Chlorobromomethane, see Bromochloromethane (UN 1887)															
	1-Chloro-3-bromopropane, see 1-Bromo-3-chloropropane (UN 2688)															



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					EQ see 2.6 F	Ltd Qty		Pkg Inst G	Max Net Qty/Pkg H	Pkg Inst I	Max Net Qty/Pkg J	Pkg Inst K	Max Net Qty/Pkg L			
	2-Chlorobutane, see Chlorobutanes (UN 1127)															
	1-Chlorobutane, see Chlorobutanes (UN 1127)															
1127	Chlorobutanes	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3L	
3437	Chlorocresols, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L	
2669	Chlorocresols solution	6.1	Toxic	II III	E4 E1	Y641 Y642	1 L 2 L	654 655	5 L 60 L	662 663	60 L 220 L	A3			6L 6L	
	3-Chloro-4-diethylaminobenzenediazonium zinc chloride, see Self-reactive solid type D * (UN 3226)															
1974	Chlorodifluorobromomethane	2.2	Non-flamm. gas		E1	ForbIDDEN		200	75 kg	200	150 kg				2L	
2517	1-Chloro-1,1-difluoroethane	2.1	Flamm. gas		E0	ForbIDDEN			ForbIDDEN	200	150 kg	A1			10L	
1018	Chlorodifluoromethane	2.2	Non-flamm. gas		E1	ForbIDDEN		200	75 kg	200	150 kg				2L	
1973	Chlorodifluoromethane and chloropentafluoroethane mixture with fixed boiling point, with approximately 49% chlorodifluoromethane	2.2	Non-flamm. gas		E1	ForbIDDEN		200	75 kg	200	150 kg				2L	
	3-Chloro-1,2-dihydroxypropane, see Glycerol alpha-monochlorohydrin (UN 2689)															
	Chlorodimethyl ether, see Methyl chloromethyl ether (UN 1239)															
1577	Chlorodinitrobenzenes, liquid	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L	A113			6L	
3441	Chlorodinitrobenzenes, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg	A113			6L	
	Chlorodinitrobenzol, see Chlorodinitrobenzenes, liquid (UN 1577) or Chlorodinitrobenzenes, solid (UN 3441)															
2232	2-Chloroethanal	6.1					ForbIDDEN		ForbIDDEN		ForbIDDEN				6L	
	Chloroethane, see Ethyl chloride (UN 1037)															
	Chloroethane nitrile, see Chloroacetonitrile (UN 2668)															
	2-Chloroethanol, see Ethylene chlorohydrin (UN 1135)															
1888	Chloroform	6.1	Toxic	III	E1	Y680	2 L	680	60 L	680	220 L				6A	
3277	Chloroformates, toxic, corrosive, n.o.s. *	6.1 (8)	Toxic & Corrosive	II	E4	Y640	0.5 L	653	1 L	660	30 L				6C	
2742	Chloroformates, toxic, corrosive, flammable, n.o.s. *	6.1 (3, 8)	Toxic & Flamm. liquid & Corrosive	II	E4	Y640	0.5 L	653	1 L	660	30 L				6CF	
	Chloromethane, see Methyl chloride (UN 1063)															
	1-Chloro-3-methylbutane, see Amyl chloride (UN 1107)															
	2-Chloro-2-methylbutane, see Amyl chloride (UN 1107)															
2745	Chloromethyl chloroformate	6.1 (8)	Toxic & Corrosive	II	E4	Y640	0.5 L	653	1 L	660	30 L				6C	
	Chloromethyl cyanide, see Chloroacetonitrile (UN 2668)															
2354	Chloromethyl ethyl ether	3 (6.1)	Flamm. liquid & Toxic	II	E2	Y341	1 L	352	1 L	364	60 L				3P	
	Chloromethyl methyl ether, see Methyl chloromethyl ether (UN 1239)															
2236	3-Chloro-4-methylphenyl isocyanate, liquid	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L				6L	

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						F	G									
A	B	C	D	E												
3428	3-Chloro-4-methylphenyl isocyanate, solid 2-Chloro-2-methylpropane, see Chlorobutanes (UN 1127) 1-Chloro-2-methylpropane, see Chlorobutanes (UN 1127) 3-Chloro-2-methylprop-1-ene, see Methylallyl chloride (UN 2554)	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L	
2237	Chloronitroanilines	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg				6L	
3409	Chloronitrobenzenes, liquid	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L	A113			6L	
1578	Chloronitrobenzenes, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg	A113			6L	
2433	Chloronitrotoluenes, liquid	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L				6L	
3457	Chloronitrotoluenes, solid	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg				6L	
1020	Chloropentafluoroethane 3-Chloroperoxybenzoic acid, > 57% and < 86%, when with ≥ 14% inert solid	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg				2L	
						Forbidden			Forbidden		Forbidden					
2904	Chlorophenolates, liquid	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803			8L	
2905	Chlorophenolates, solid	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A803			8L	
2021	Chlorophenols, liquid	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L				6L	
2020	Chlorophenols, solid	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg	A25			6L	
1753	Chlorophenyltrichlorosilane	8	Corrosive	II	E0	Forbidden			Forbidden		876	30 L	A1			8L
1580	Chloropicrin	6.1				Forbidden			Forbidden			Forbidden				6L
1581	Chloropicrin and methyl bromide mixture, with more than 2% chloropicrin	2.3				Forbidden			Forbidden			Forbidden				2P
1582	Chloropicrin and methyl chloride mixture	2.3				Forbidden			Forbidden			Forbidden				2P
1583	Chloropicrin mixture, n.o.s. *	6.1				Forbidden			Forbidden			Forbidden				A2 A3 A137 6L
2507	Chloroplatinic acid, solid	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A803			8L	
1991	Chloroprene, stabilized Chloroprene, unstabilized	3 (6.1)	Flamm. liquid & Toxic	I	E0	Forbidden			Forbidden		361	30 L				3HP
						Forbidden			Forbidden			Forbidden				
1278	1-Chloropropane	3	Flamm. liquid	II	E0	Forbidden			Forbidden		364	60 L	A1			3H
2356	2-Chloropropane 3-Chloropropanediol-1,2, see Glycerol alpha-monochlorohydrin (UN 2689)	3	Flamm. liquid	I	E3	Forbidden		351	1 L	361	30 L				3H	
2849	3-Chloropropanol-1 3-Chloroprop-1-ene, see Allyl chloride (UN 1100) 3-Chloropropene, see Allyl chloride (UN 1100)	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L				6L	
2456	2-Chloropropene	3	Flamm. liquid	I	E3	Forbidden		351	1 L	361	30 L				3H	
2511	2-Chloropropionic acid	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A3 A803			8L	
2822	2-Chloropyridine	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L				6L	
2987	Chlorosilanes, corrosive, n.o.s.	8	Corrosive	II	E0	Forbidden			Forbidden		876	30 L	A1			8L



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						G	H									
2986	Chlorosilanes, corrosive, flammable, n.o.s.	8 (3)	Corrosive & Flamm. liquid	II	E0	ForbIDDEN					ForbIDDEN		876	30 L	A1	8F
2985	Chlorosilanes, flammable, corrosive, n.o.s.	3 (8)	Flamm. liquid & Corrosive	II	E0		ForbIDDEN				ForbIDDEN		377	5 L		3C
3361	Chlorosilanes, toxic, corrosive, n.o.s. ★	6.1 (8)	Toxic & Corrosive	II	E0			ForbIDDEN			ForbIDDEN		681	30 L		6C
3362	Chlorosilanes, toxic, corrosive, flammable, n.o.s. ★	6.1 (3, 8)	Toxic & Flamm. liquid & Corrosive	II	E0		ForbIDDEN			ForbIDDEN		681	30 L		6CF	
2988	Chlorosilanes, water-reactive, flammable, corrosive, n.o.s.	4.3 (3, 8)	Dang. when wet & Flamm. liquid & Corrosive	I	E0		ForbIDDEN			ForbIDDEN		480	1 L		4FW	
1754	Chlorosulphonic acid (with or without sulphur trioxide)	8						ForbIDDEN			ForbIDDEN					8W
1021	1-Chloro-1,2,2,2-tetrafluoroethane	2.2	Non-flamm. gas		E1		ForbIDDEN		200	75 kg	200	150 kg				2L
2238	Chlorotoluenes	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L					3L
1579	4-Chloro-o-toluidine hydrochloride, solid	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg					6L
3410	4-Chloro-o-toluidine hydrochloride solution	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L	A3				6L
3429	Chlorotoluidines, liquid	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L					6L
2239	Chlorotoluidines, solid	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg					6L
1983	1-Chloro-2,2,2-trifluoroethane	2.2	Non-flamm. gas		E1		ForbIDDEN		200	75 kg	200	150 kg				2L
	Chlorotrifluoroethylene, see Trifluorochloroethylene, stabilized (UN 1082)															
1022	Chlorotrifluoromethane	2.2	Non-flamm. gas		E1		ForbIDDEN		200	75 kg	200	150 kg				2L
2599	Chlorotrifluoromethane and trifluoromethane azeotropic mixture with approximately 60% chlorotrifluoromethane	2.2	Non-flamm. gas		E1		ForbIDDEN		200	75 kg	200	150 kg				2L
	Chromic acid, solid, see Chromium trioxide, anhydrous (UN 1463)															
1755	Chromic acid solution	8	Corrosive	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A3 A803				8L 8L
	Chromic anhydride, solid, see Chromium trioxide, anhydrous (UN 1463)															
1756	Chromic fluoride, solid	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg					8L
1757	Chromic fluoride solution	8	Corrosive	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A3 A803				8L 8L
	Chromic nitrate, see Chromium nitrate (UN 2720)															
	Chromic trioxide, see Chromium trioxide, anhydrous (UN 1463)															
	Chromium (III) fluoride, solid, see Chromic fluoride, solid (UN 1756)															
	Chromium (III) nitrate, see Chromium nitrate (UN 2720)															
2720	Chromium nitrate	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803				5L
1758	Chromium oxychloride	8	Corrosive	I	E0		ForbIDDEN		850	0.5 L	854	2.5 L				8W
1463	Chromium trioxide, anhydrous	5.1 (6.1, 8)	Oxidizer & Toxic & Corrosive	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg					5CP
	Chromium (VI) dichloride dioxide, see Chromium oxychloride (UN 1758)															

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
2240	Chromosulphuric acid Chromyl chloride, see Chromium oxychloride (UN 1758) Chrysotile, see White asbestos † (UN 2590) Cigar and cigarette lighter fluid, see Flammable liquid, n.o.s. ★ (UN 1993) Cigar and cigarette lighters, charged with fuel, see Lighters (UN 1057) Cinene, see Dipentene (UN 2052) Cinnabar Cinnamene, see Styrene monomer, stabilized (UN 2055) Cinnamol, see Styrene monomer, stabilized (UN 2055) Cleaning fluid or liquid, see Flammable liquid, toxic, n.o.s. ★ (UN 1992), Flammable liquid, n.o.s. ★ (UN 1993), Flammable liquid, corrosive, n.o.s. ★ (UN 2924)	8	Corrosive	I	E0	Forbidden		850	0.5 L	854	2.5 L				8L
									Not Restricted		Not Restricted		Not Restricted		
3291	Clinical waste, unspecified, n.o.s. Coal briquettes, hot	6.2	Infectious subst.	II	E0	Forbidden		622	No limit	622	No limit	A117	11L		
						Forbidden			Forbidden		Forbidden				
1023	Coal gas, compressed † Coal tar, crude and solvent, see Petroleum products, n.o.s. (UN 1268)	2.3 (2.1)				Forbidden			Forbidden		Forbidden	A2	10P		
						Forbidden			Forbidden		Forbidden				
1136	Coal tar distillates, flammable Coal tar dye, corrosive, liquid, n.o.s., see Dye, liquid, corrosive, n.o.s. ★ † (UN 2801) or Dye intermediate, liquid, corrosive, n.o.s. ★ † (UN 2801) Coal tar naphtha, see Petroleum distillates, n.o.s. (UN 1268) or Petroleum products, n.o.s. (UN 1268) Coal tar oil, see Coal tar distillates, flammable (UN 1136)	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3	3L 3L		
						Forbidden			351	1 L	361	30 L			
						Y341 Y344			353	5 L	364	60 L			
						1 L 10 L			355	60 L	366	220 L			
1139	Coating solution † (includes surface treatments or coatings used for industrial or other purposes such as vehicle undercoating, drum or barrel lining) Cobalt catalyst, see Metal catalyst, wetted ★ † (UN 1378) or Metal catalyst, dry ★ (UN 2881)	3	Flamm. liquid	I II III	E3 E2 E1	Forbidden		351	1 L	361	30 L	A3	3L 3L 3L		
						Y341 Y344			353	5 L	364	60 L			
						1 L 10 L			355	60 L	366	220 L			
2001	Cobalt naphthenates, powder	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L		
1318	Cobalt resinate, precipitated Cocculus †, see Toxins, extracted from living sources, liquid, n.o.s. ★ (UN 3172) or Toxins, extracted from living sources, solid, n.o.s. ★ (UN 3462) Coir, see Fabrics, vegetable, n.o.s. (UN 1373) or Fibres, vegetable, n.o.s. (UN 1373) Coke, hot Collodion cottons, see Nitrocellulose (UN 0340), Nitrocellulose mixture with plasticizer, with pigment (UN 2557), Nitrocellulose mixture with plasticizer, without pigment (UN 2557), Nitrocellulose mixture without plasticizer, with pigment (UN 2557) Cologne spirits, see Perfumery products (UN 1266)	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L		
						Forbidden			Forbidden		Forbidden				



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
A	B	C	D	E		F	G						M	N		
0461	Components, explosive train, n.o.s. ★ †	1.1B					Forbidden			Forbidden			Forbidden		1L	
0382	Components, explosive train, n.o.s. ★ †	1.2B					Forbidden			Forbidden			Forbidden		1L	
0383	Components, explosive train, n.o.s. ★ †	1.4B	Explosive 1.4		E0		Forbidden			Forbidden		101	75 kg	A62 A802	1L	
0384	Components, explosive train, n.o.s. ★ †	1.4S	Explosive 1.4		E0		Forbidden		101	25 kg	101	100 kg		A62 A802	3L	
	Composition B, see Hexolite (UN 0118) or Hexitol (UN 0118)															
	Compound, anti-freeze liquid, see Flammable liquid, n.o.s. ★ (UN 1993)															
	Compound, cleaning liquid, corrosive, see Corrosive liquid, n.o.s. ★ (UN 1760)															
	Compound, cleaning liquid, flammable, see Flammable liquid, n.o.s. ★ (UN 1993)															
	Compound, enamel, see Paint (UN 1263)															
1956	Compressed gas, n.o.s. ★	2.2	Non-flamm. gas		E1		Forbidden		200	75 kg	200	150 kg			2L	
	Compressed gas and hexaethyl tetraphosphate mixture, see Hexaethyl tetraphosphate and compressed gas mixture (UN 1612)															
1954	Compressed gas, flammable, n.o.s. ★	2.1	Flamm. gas		E0		Forbidden			Forbidden	200	150 kg		A1	10L	
3156	Compressed gas, oxidizing, n.o.s. ★	2.2 (5.1)	Non-flamm. gas & Oxidizer		E0		Forbidden		200	75 kg	200	150 kg			2X	
1955	Compressed gas, toxic, n.o.s. ★	2.3					Forbidden			Forbidden			Forbidden		A2	2P
3304	Compressed gas, toxic, corrosive, n.o.s. ★	2.3 (8)					Forbidden			Forbidden			Forbidden		A2	2CP
1953	Compressed gas, toxic, flammable, n.o.s. ★	2.3 (2.1)					Forbidden			Forbidden			Forbidden		A2	10P
3305	Compressed gas, toxic, flammable, corrosive, n.o.s. ★	2.3 (2.1, 8)					Forbidden			Forbidden			Forbidden		A2	10C
3303	Compressed gas, toxic, oxidizing, n.o.s. ★	2.3 (5.1)					Forbidden			Forbidden			Forbidden		A2	2X
3306	Compressed gas, toxic, oxidizing, corrosive, n.o.s. ★	2.3 (5.1, 8)					Forbidden			Forbidden			Forbidden		A2	2CX
8000	Consumer commodity †	9	Miscellaneous		E0	Y963	30 kg G		Y963	30 kg G	Y963	30 kg G		A112	9L	
	Containers, empty or re-used, not containing dangerous goods residue						Not Restricted			Not Restricted			Not Restricted			
0248	Contrivances, water-activated ★ † with burster, expelling charge or propelling charge	1.2L					Forbidden			Forbidden			Forbidden			1L
0249	Contrivances, water-activated ★ † with burster, expelling charge or propelling charge	1.3L					Forbidden			Forbidden			Forbidden			1L
1585	Copper acetoarsenite	6.1	Toxic	II	E4	Y644	1 kg		669	25 kg	676	100 kg			6L	
	Copper acetylide						Forbidden			Forbidden			Forbidden			
	Copper amine azide						Forbidden			Forbidden			Forbidden			
1586	Copper arsenite	6.1	Toxic	II	E4	Y644	1 kg		669	25 kg	676	100 kg			6L	
2776	Copper based pesticide, liquid, flammable, toxic, ★ flash point less than 23°C	3 (6.1)	Flamm. liquid & Toxic	I II	E0 E2	Forbiden Y341	1 L		352	Forbidden 1 L	361 364	30 L 60 L		A4	3P 3P	

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
3010	Copper based pesticide, liquid, toxic ★	6.1	Toxic	I II III	E5 E4 E1	ForbIDDEN Y641 Y642	1 L 5 L 60 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4	6L 6L 6L			
3009	Copper based pesticide, liquid, toxic, flammable, ★ flash point 23°C or more	6.1 (3)	Toxic & Flamm. liquid	I II III	E5 E4 E1	ForbIDDEN Y641 Y642	1 L 5 L 60 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4	6F 6F 6F			
2775	Copper based pesticide, solid, toxic ★	6.1	Toxic	I II III	E5 E4 E1	ForbIDDEN Y644 Y645	1 kg 25 kg 100 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5	6L 6L 6L			
2721	Copper chlorate	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg		5L			
2802	Copper chloride	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A803	8L			
1587	Copper cyanide	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
	Copper (II) arsenite, see Copper arsenite (UN 1586)															
	Copper (II) chlorate, see Copper chlorate (UN 2721)															
	Copper orthoarsenite, see Copper arsenite (UN 1586)															
	Copper selenate, see Selenates ★ (UN 2630)															
	Copper selenite, see Selenites ★ (UN 2630)															
	Copper tetramine nitrate															
1363	Copra †	4.2					ForbIDDEN		ForbIDDEN		ForbIDDEN		A2	4L		
0065	Cord, detonating, † flexible	1.1D					ForbIDDEN		ForbIDDEN		ForbIDDEN		A2	1L		
0289	Cord, detonating, † flexible	1.4D	Explosive 1.4	E0		ForbIDDEN			ForbIDDEN		139	75 kg	A1 A802	1L		
0290	Cord, detonating, † metal clad	1.1D					ForbIDDEN		ForbIDDEN		ForbIDDEN			1L		
0102	Cord, detonating, † metal clad	1.2D					ForbIDDEN		ForbIDDEN		ForbIDDEN			1L		
0104	Cord, detonating, mild effect, † metal clad	1.4D	Explosive 1.4	E0		ForbIDDEN			ForbIDDEN		139	75 kg	A802	1L		
	Cordeau detonant fuse, see Cord, detonating, † (UN 0102) or Cord, detonating, † (UN 0290)															
0066	Cord, igniter †	1.4G	Explosive 1.4	E0		ForbIDDEN			ForbIDDEN		140	75 kg	A1 A802	1L		
	Cordite, see Powder, smokeless † (UN 0160) or Powder, smokeless † (UN 0161)															
	Corrosive battery fluid, see Battery fluid, acid (UN 2796) or Battery fluid, alkali (UN 2797)															
1760	Corrosive liquid, n.o.s. ★	8	Corrosive	I II III	E0 E2 E1	ForbIDDEN Y840 Y841	0.5 L 1 L	850 851 852	0.5 L 1 L 5 L	854 855 856	2.5 L 30 L 60 L	A3 A803	8L 8L 8L			
3264	Corrosive liquid, acidic, inorganic, n.o.s. ★	8	Corrosive	I II III	E0 E2 E1	ForbIDDEN Y840 Y841	0.5 L 1 L	850 851 852	0.5 L 1 L 5 L	854 855 856	2.5 L 30 L 60 L	A3 A803	8L 8L 8L			
3265	Corrosive liquid, acidic, organic, n.o.s. ★	8	Corrosive	I II III	E0 E2 E1	ForbIDDEN Y840 Y841	0.5 L 1 L	850 851 852	0.5 L 1 L 5 L	854 855 856	2.5 L 30 L 60 L	A3 A803	8L 8L 8L			
3266	Corrosive liquid, basic, inorganic, n.o.s. ★	8	Corrosive	I II III	E0 E2 E1	ForbIDDEN Y840 Y841	0.5 L 1 L	850 851 852	0.5 L 1 L 5 L	854 855 856	2.5 L 30 L 60 L	A3 A803	8L 8L 8L			



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					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
					EQ see 2.6	Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
3267	Corrosive liquid, basic, organic, n.o.s. ★	8	Corrosive	I	E0	Forbidden		850	0.5 L	854	2.5 L	A3	8L			
				II	E2	Y840	0.5 L	851	1 L	855	30 L					
				III	E1	Y841	1 L	852	5 L	856	60 L					
2920	Corrosive liquid, flammable, n.o.s. ★	8 (3)	Corrosive & Flamm. liquid	I	E0	Forbidden		850	0.5 L	854	2.5 L		8F			
				II	E2	Y840	0.5 L	851	1 L	855	30 L					
3093	Corrosive liquid, oxidizing, n.o.s. ★	8 (5.1)	Corrosive & Oxidizer	I	E0	Forbidden			Forbidden	854	2.5 L			8X		
				II	E2	Y840	0.5 L	851	1 L	855	30 L					
3301	Corrosive liquid, self-heating, n.o.s. ★	8 (4.2)	Corrosive & Spont. comb.	I	E0	Forbidden		850	0.5 L	854	2.5 L			8L		
				II	E2	Forbidden		851	1 L	855	30 L					
2922	Corrosive liquid, toxic, n.o.s. ★	8 (6.1)	Corrosive & Toxic	I	E0	Forbidden		850	0.5 L	854	2.5 L	A3	8P			
				II	E2	Y840	0.5 L	851	1 L	855	30 L					
				III	E1	Y841	1 L	852	5 L	856	60 L					
3094	Corrosive liquid, water-reactive, n.o.s. ★	8 (4.3)	Corrosive & Dang. when wet	I	E0	Forbidden			Forbidden	855	30 L	A2	8W			
				II	E1	Forbidden		851	1 L							
1759	Corrosive solid, n.o.s. ★	8	Corrosive	I	E0	Forbidden		858	1 kg	862	25 kg	A3	8L			
				II	E2	Y844	5 kg	859	15 kg	863	50 kg					
				III	E1	Y845	5 kg	860	25 kg	864	100 kg					
3260	Corrosive solid, acidic, inorganic, n.o.s. ★	8	Corrosive	I	E0	Forbidden		858	1 kg	862	25 kg	A3	8L			
				II	E2	Y844	5 kg	859	15 kg	863	50 kg					
				III	E1	Y845	5 kg	860	25 kg	864	100 kg					
3261	Corrosive solid, acidic, organic, n.o.s. ★	8	Corrosive	I	E0	Forbidden		858	1 kg	862	25 kg	A3	8L			
				II	E2	Y844	5 kg	859	15 kg	863	50 kg					
				III	E1	Y845	5 kg	860	25 kg	864	100 kg					
3262	Corrosive solid, basic, inorganic, n.o.s. ★	8	Corrosive	I	E0	Forbidden		858	1 kg	862	25 kg	A3	8L			
				II	E2	Y844	5 kg	859	15 kg	863	50 kg					
				III	E1	Y845	5 kg	860	25 kg	864	100 kg					
3263	Corrosive solid, basic, organic, n.o.s. ★	8	Corrosive	I	E0	Forbidden		858	1 kg	862	25 kg	A3	8L			
				II	E2	Y844	5 kg	859	15 kg	863	50 kg					
				III	E1	Y845	5 kg	860	25 kg	864	100 kg					
2921	Corrosive solid, flammable, n.o.s. ★	8 (4.1)	Corrosive & Flamm. solid	I	E0	Forbidden		858	1 kg	862	25 kg		8S			
				II	E2	Y844	5 kg	859	15 kg	863	50 kg					
3084	Corrosive solid, oxidizing, n.o.s. ★	8 (5.1)	Corrosive & Oxidizer	I	E0	Forbidden		858	1 kg	862	25 kg		8X			
				II	E2	Y844	5 kg	859	15 kg	863	50 kg					
3095	Corrosive solid, self-heating, n.o.s. ★	8 (4.2)	Corrosive & Spont. comb.	I	E0	Forbidden		858	1 kg	862	25 kg		8S			
				II	E2	Forbidden		859	15 kg	863	50 kg					
2923	Corrosive solid, toxic, n.o.s. ★	8 (6.1)	Corrosive & Toxic	I	E0	Forbidden		858	1 kg	862	25 kg	A3	8P			
				II	E2	Y844	5 kg	859	15 kg	863	50 kg					
				III	E1	Y845	5 kg	860	25 kg	864	100 kg					
3096	Corrosive solid, water-reactive, n.o.s. ★	8 (4.3)	Corrosive & Dang. when wet	I	E0	Forbidden		858	1 kg	862	25 kg		8W			
				II	E2	Y844	5 kg	859	15 kg	863	50 kg					
	Cosmetics, corrosive, liquid, n.o.s., see Corrosive liquid, n.o.s. ★ (UN 1760)															
	Cosmetics, corrosive, solid, n.o.s., see Corrosive solid, n.o.s. ★ (UN 1759)															
	Cosmetics, flammable, liquid, n.o.s., see Perfumery products (UN 1266) or Flammable liquid, n.o.s. ★ (UN 1993)															
	Cosmetics, flammable, solid, n.o.s., see Flammable solid, organic, n.o.s. ★ (UN 1325) or Flammable solid, inorganic, n.o.s. ★ (UN 3178)															

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
	Cosmetics, n.o.s., in small inner packagings containing flammable aerosol and/or non-flammable aerosol and/or flammable liquid, n.o.s., see Consumer commodity (UN 8000)														
	Cosmetics, oxidizing material, liquid, n.o.s., see Oxidizing liquid, n.o.s. * (UN 3139)														
	Cosmetics, oxidizing material, solid, n.o.s., see Oxidizing solid, n.o.s. * (UN 1479)														
	Cotton seed, cut linters, hull fibres, pulp, waste, and shavings, with animal or vegetable oil, see Fabrics, vegetable, n.o.s. (UN 1373) or Fibres, vegetable, n.o.s. (UN 1373)														
1364	Cotton waste, oily	4.2						Forbidden		Forbidden		Forbidden		A2	4L
1365	Cotton, wet	4.2						Forbidden		Forbidden		Forbidden		A2	4L
3024	Coumarin derivative pesticide, liquid, flammable, toxic * flashpoint less than 23°C	3 (6.1)	Flamm. liquid & Toxic	I II	E0 E2	Y341	1 L	Forbidden	352	1 L	361 364	30 L 60 L	A4	3P 3P	
3026	Coumarin derivative pesticide, liquid, toxic *	6.1	Toxic	I II III	E5 E4 E1	Y641 Y642	1 L 2 L	Forbidden	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4	6L 6L 6L	
3025	Coumarin derivative pesticide, liquid, toxic, flammable * flashpoint 23°C or more	6.1 (3)	Toxic & Flamm. liquid	I II III	E5 E4 E1	Y641 Y642	1 L 2 L	Forbidden	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4	6F 6F 6F	
3027	Coumarin derivative pesticide, solid, toxic *	6.1	Toxic	I II III	E5 E4 E1	Y644 Y645	1 kg 10 kg	Forbidden	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5	6L 6L 6L	
	Creosote, see Toxic liquid, organic, n.o.s. * (UN 2810)														
	Creosote salts, see Naphthalene, crude (UN 1334) or Naphthalene, refined (UN 1334)														
2076	Cresols, liquid	6.1 (8)	Toxic & Corrosive	II	E4	Y640	0.5 L	Forbidden	653	1 L	660	30 L		6C	
3455	Cresols, solid	6.1 (8)	Toxic & Corrosive	II	E4	Y644	1 kg	Forbidden	668	15 kg	675	50 kg		6C	
2022	Cresylic acid	6.1 (8)	Toxic & Corrosive	II	E4	Y640	0.5 L	Forbidden	653	1 L	660	30 L		6C	
	Crocidolite, see Blue asbestos † (UN 2212)														
1143	Crotonaldehyde	6.1 (3)						Forbidden		Forbidden		Forbidden		A2	6Fi
1143	Crotonaldehyde, stabilized	6.1 (3)						Forbidden		Forbidden		Forbidden		A2	6Fi
	Crotonaldehyde, unstabilized							Forbidden		Forbidden		Forbidden			
3472	Crotonic acid, liquid	8	Corrosive	III	E1	Y841	1 L	Forbidden	852	5 L	856	60 L	A803	8L	
2823	Crotonic acid, solid	8	Corrosive	III	E1	Y845	5 kg	Forbidden	860	25 kg	864	100 kg	A803	8L	
	Crotonic aldehyde, stabilized, see Crotonaldehyde, stabilized (UN 1143) or Crotonaldehyde (UN 1143)														
1144	Crotonylene	3	Flamm. liquid	I	E3			Forbidden	351	1 L	361	30 L		3H	
	Crude naphtha, see Petroleum distillates, n.o.s. (UN 1268)														
	Cryogenic liquid, see entry for specific gas †														
	Cumene, see Isopropylbenzene (UN 1918)														
	Cupric chlorate, see Copper chlorate (UN 2721)														
	Cupric cyanide, see Copper cyanide (UN 1587)														

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UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
					EQ see 2.6	Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
1761	Cupriethylenediamine solution	8 (6.1)	Corrosive & Toxic	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A3 A803	8P 8P			
0070	Cutters, cable, explosive †	1.4S	Explosive 1.4		E0	ForbIDDEN		134	25 kg	134	100 kg	A802	3L			
	Cyanide of calcium, see Calcium cyanide (UN 1575)															
	Cyanide of potassium, see Potassium cyanide, solid (UN 1680) or Potassium cyanide solution (UN 3413)															
	Cyanide of sodium, see Sodium cyanide, solid (UN 1689) or Sodium cyanide solution (UN 3414)															
	Cyanide or cyanide mixture, dry, see Cyanides, inorganic, solid, n.o.s. ★ (UN 1588)															
1588	Cyanides, inorganic, solid, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	Y644 Y645	Forbidden 1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A13	6L 6L 6L			
1935	Cyanide solution, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	Y641 Y642	Forbidden 1 L 2 L	652 654 655	1 L 5 L 60 L	658 661 663	30 L 60 L 220 L	A3	6L 6L 6L			
	Cyanides, organic, flammable, toxic, n.o.s., see Nitriles, flammable, toxic, n.o.s. ★ (UN 3273)															
	Cyanides, organic, toxic, n.o.s., see Nitriles, liquid, toxic, n.o.s. ★ (UN 3276) or Nitriles, solid, toxic, n.o.s. ★ (UN 3439)															
	Cyanides, organic, toxic, flammable, n.o.s., see Nitriles, toxic, flammable, n.o.s. ★ (UN 3275)															
	Cyanoacetonitrile, see Malononitrile (UN 2647)															
1026	Cyanogen	2.3 (2.1)					Forbidden		Forbidden		Forbidden	A2	10P			
1889	Cyanogen bromide	6.1 (8)					Forbidden		Forbidden		Forbidden	A2	6C			
1589	Cyanogen chloride, stabilized	2.3 (8)					Forbidden		Forbidden		Forbidden	A2	2CP			
	Cyanogen chloride, unstabilized						Forbidden		Forbidden		Forbidden					
2670	Cyanuric chloride	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg		8L			
	Cyanuric triazide						Forbidden		Forbidden		Forbidden					
2601	Cyclobutane	2.1	Flamm. gas		E0	ForbIDDEN						200	150 kg	A1	10L	
2744	Cyclobutyl chloroformate	6.1 (3, 8)	Toxic & Flamm. liquid & Corrosive	II	E4	Y640	0.5 L	653	1 L	660	30 L		6CF			
2518	1,5,9-Cyclododecatriene	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L		6L			
2241	Cycloheptane	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L			
	1,3,5-Cycloheptatriene, see Cycloheptatriene (UN 2603)															
2603	Cycloheptatriene	3 (6.1)	Flamm. liquid & Toxic	II	E2	Y341	1 L	352	1 L	364	60 L		3P			
2242	Cycloheptene	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L			
	1,4-Cyclohexadienedione, see Benzoquinone (UN 2587)															
1145	Cyclohexane	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3H			
	Cyclohexanethiol, see Cyclohexyl mercaptan (UN 3054)															
1915	Cyclohexanone	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L			
2256	Cyclohexene	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3H			

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code			
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg				
						F	G										
A	B	C	D	E													
1762	Cyclohexenyltrichlorosilane	8	Corrosive	II	E0	Forbidden							876	30 L	A1	8L	
2243	Cyclohexyl acetate	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L					3L	
2357	Cyclohexylamine	8 (3)	Corrosive & Flamm. liquid	II	E2	Y840	0.5 L	851	1 L	855	30 L					8F	
2488	Cyclohexyl isocyanate	6.1 (3)				Forbidden			Forbidden			Forbidden				6F	
3054	Cyclohexyl mercaptan	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L					3L	
1763	Cyclohexyltrichlorosilane	8	Corrosive	II	E0	Forbidden			Forbidden			Forbidden				A1	8L
0391	Cyclonite and cyclotetramethylenetrinitramine mixture, desensitized with not less than 10% phlegmatizer, by weight	1.1D				Forbidden			Forbidden			Forbidden				1L	
0391	Cyclonite and cyclotetramethylenetrinitramine mixture, wetted with not less than 15% water, by weight	1.1D				Forbidden			Forbidden			Forbidden				1L	
0483	Cyclonite, desensitized	1.1D				Forbidden			Forbidden			Forbidden				1L	
0072	Cyclonite, wetted with not less than 15% water, by weight	1.1D				Forbidden			Forbidden			Forbidden				1L	
2940	Cyclooctadiene phosphines	4.2	Spont. comb.	II	E2	Forbidden		467	15 kg	470	50 kg					4L	
2520	Cyclooctadienes	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L					3L	
2358	Cyclooctatetraene	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L					3L	
1146	Cyclopentane Cyclopentane, methyl, see Methylcyclopentane (UN 2298)	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L					3H	
2244	Cyclopentanol	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L					3L	
2245	Cyclopentanone	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L					3L	
2246	Cyclopentene	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L					3H	
1027	Cyclopropane	2.1	Flamm. gas		E0	Forbidden			Forbidden			200	150 kg			A1	10A
0484	Cyclotetramethylenetrinitramine, desensitized Cyclotetramethylenetrinitramine (dry or unphlegmatized)(HMX)	1.1D				Forbidden			Forbidden			Forbidden				1L	
0226	Cyclotetramethylenetrinitramine, wetted with 15% or more water, by weight	1.1D				Forbidden			Forbidden			Forbidden				1L	
0391	Cyclotrimethylenetrinitramine and cyclotetramethylenetrinitramine mixture, desensitized with not less than 10% phlegmatiser, by weight	1.1D				Forbidden			Forbidden			Forbidden				1L	
0391	Cyclotrimethylenetrinitramine and cyclotetramethylenetrinitramine mixture, wetted with 15% or more water, by weight	1.1D				Forbidden			Forbidden			Forbidden				1L	
0483	Cyclotrimethylenetrinitramine, desensitized	1.1D				Forbidden			Forbidden			Forbidden				1L	
0072	Cyclotrimethylenetrinitramine, wetted with 15% or more water, by weight	1.1D				Forbidden			Forbidden			Forbidden				1L	
2046	Cymenes Cymol, see Cymenes (UN 2046)	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L					3L	



Dangerous Goods Regulations

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
					EQ see 2.6	Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
3363	Dangerous goods in apparatus	9	Miscellaneous		E0	Forbidden			See 962		See 962		A48 A107	9L		
	Dangerous goods in excepted quantities, see 2.7															
3363	Dangerous goods in machinery	9	Miscellaneous		E0	Forbidden			See 962		See 962		A48 A107	9L		
	Dead oil, see Tars, liquid (UN 1999)															
	Deanol, see 2-Dimethylaminoethanol (UN 2051)															
1868	Decaborane	4.1 (6.1)	Flamm. solid & Toxic	II	E0	Forbidden			Forbidden	448	50 kg	A1	3P			
1147	Decahydronaphthalene	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L			
	Decalin, see Decahydronaphthalene (UN 1147)															
2247	n-Decane	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L			
0132	Deflagrating metal salts of aromatic nitroderivatives, n.o.s.	1.3C				Forbidden			Forbidden		Forbidden			1L		
	De-icing fluid †, see Flammable liquid, n.o.s. ★ (UN 1993)															
	Delay electric igniter, see Igniters † (UN 0121), Igniters † (UN 0314), Igniters † (UN 0315), Igniters † (UN 0325), Igniters † (UN 0454)															
	Depth charges, see Charges, depth † (UN 0056)															
3379	Desensitized explosive, liquid, n.o.s. ★	3				Forbidden			Forbidden		Forbidden		A133	3E		
3380	Desensitized explosive, solid, n.o.s. ★	4.1				Forbidden			Forbidden		Forbidden		A133	3E		
	Detonating relays, see Detonators, non-electric † (UN 0029), Detonators, non-electric † (UN 0267), Detonator assemblies, non-electric † (UN 0360), Detonator assemblies, non-electric † (UN 0361), Detonators, non-electric † (UN 0455), Detonator assemblies, non-electric † (UN 0500)															
0360	Detonator assemblies, non-electric † for blasting	1.1B				Forbidden			Forbidden		Forbidden			1L		
0361	Detonator assemblies, non-electric † for blasting	1.4B	Explosive 1.4		E0	Forbidden			Forbidden	131	75 kg	A802	1L			
0500	Detonator assemblies, non-electric † for blasting	1.4S	Explosive 1.4		E0	Forbidden		131	25 kg	131	100 kg	A165 A802	3L			
0030	Detonators, electric † for blasting	1.1B				Forbidden			Forbidden		Forbidden			1L		
0255	Detonators, electric † for blasting	1.4B	Explosive 1.4		E0	Forbidden			Forbidden	131	75 kg	A802	1L			
0456	Detonators, electric † for blasting	1.4S	Explosive 1.4		E0	Forbidden		131	25 kg	131	100 kg	A165 A802	3L			
0073	Detonators for ammunition †	1.1B				Forbidden			Forbidden		Forbidden			1L		
0364	Detonators for ammunition †	1.2B				Forbidden			Forbidden		Forbidden			1L		
0365	Detonators for ammunition †	1.4B	Explosive 1.4		E0	Forbidden			Forbidden	133	75 kg	A802	1L			
0366	Detonators for ammunition †	1.4S	Explosive 1.4		E0	Forbidden		133	25 kg	133	100 kg	A165 A802	3L			
0029	Detonators, non-electric † for blasting	1.1B				Forbidden			Forbidden		Forbidden			1L		
0267	Detonators, non-electric † for blasting	1.4B	Explosive 1.4		E0	Forbidden			Forbidden	131	75 kg	A802	1L			

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
0455	Detonators, non-electric † for blasting	1.4S	Explosive 1.4		E0	Forbidden		131	25 kg	131	100 kg	A165 A802	3L			
1957	Deuterium, compressed	2.1	Flamm. gas		E0	Forbidden			Forbidden	200	150 kg	A1	10L			
3150	Devices, small, hydrocarbon gas powered with release device	2.1	Flamm. gas		E0	Forbidden		201	1 kg	201	15 kg	A802	10L			
1148	Diacetone alcohol	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3	3L 3L			
	Diacetone alcohol peroxides, > 57% in solution with > 9% hydrogen peroxide, < 26% diacetone alcohol and < 9% water; total active oxygen content > 10% by weight					Forbidden			Forbidden		Forbidden					
2359	Diallylamine	3 (6.1, 8)	Flamm. liquid & Toxic & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L		3CP			
2360	Diallyl ether	3 (6.1)	Flamm. liquid & Toxic	II	E2	Y341	1 L	352	1 L	364	60 L		3P			
	m-Diaminobenzene, see Phenylenediamines (UN 1673)															
2651	4,4'-Diaminodiphenylmethane	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg		6L			
	1,2-Diaminoethane, see Ethylenediamine (UN 1604)															
	Diaminopropylamine, see 3,3'-Iminodipropylamine (UN 2269)															
	Di-(aminopropyl)-piperazine, see Amines, liquid, corrosive, n.o.s. ★ (UN 2735)															
2841	Di-n-amylamine	3 (6.1)	Flamm. liquid & Toxic	III	E1	Y343	2 L	355	60 L	366	220 L		3P			
	p-Diazidobenzene					Forbidden			Forbidden		Forbidden					
	1,2-Diazidoethane					Forbidden			Forbidden		Forbidden					
	1,1'-Diazoaminonaphthalene					Forbidden			Forbidden		Forbidden					
	Diazoaminotetrazole (dry)					Forbidden			Forbidden		Forbidden					
	Diazodinitrophenol (dry)					Forbidden			Forbidden		Forbidden					
0074	Diazodinitrophenol, wetted with not less than 40% water or mixture of alcohol and water, by weight	1.1A				Forbidden			Forbidden		Forbidden		1L			
	Diazodiphenylmethane					Forbidden			Forbidden		Forbidden					
	2-Diazo-1-naphthal sulphonic acid ester mixture, Type D, see Self-reactive solid type D ★ (UN 3226)					Forbidden			Forbidden		Forbidden					
	2-Diazo-1-naphtol-4-sulphonyl chloride					Forbidden			Forbidden		Forbidden					
	2-Diazo-1-naphtol-5-sulphonyl chloride					Forbidden			Forbidden		Forbidden					
	Diazonium nitrates (dry)					Forbidden			Forbidden		Forbidden					
	Diazonium perchlorates (dry)					Forbidden			Forbidden		Forbidden					
	1,3-Diazopropane					Forbidden			Forbidden		Forbidden					
	Dibenzopyridine, see Acridine (UN 2713)					Forbidden			Forbidden		Forbidden					
	Dibenzoyl peroxide, > 51%, when with ≤ 48% inert solid					Forbidden			Forbidden		Forbidden					
	Dibenzoyl peroxide, > 77% and < 94%, when with ≥ 6% water					Forbidden			Forbidden		Forbidden					

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						G	H									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
2434	Dibenzylchlorosilane Dibenzyl peroxydicarbonate, more than 87% with water Dibenzyl peroxydicarbonate, not more than than 87% when with 13% or more water	8	Corrosive	II	E0	Forbidden	Forbidden	Forbidden	Forbidden	876	30 L	A1	8L			
1911	Diborane Dibromoacetylene	2.3 (2.1)			E4	Forbidden	Forbidden	Forbidden	Forbidden			A2	10P			
2648	1,2-Dibromobutan-3-one 1,2-Dibromo-3-chloropropane, see Dibromochloropropanes (UN 2872)	6.1	Toxic	II	Y641	1 L	654	5 L	662	60 L			6L			
2872	Dibromochloropropanes	6.1	Toxic	II III	E4 E1	Y641 Y642	1 L 2 L	654 655	5 L 60 L	662 663	60 L 220 L	A3	6L 6L			
1941	Dibromodifluoromethane 1,2-Dibromoethane, see Ethylene dibromide (UN 1605)	9	Miscellaneous	III	E1	Y964	30 kg G	964	100 L	964	220 L		9L			
2664	Dibromomethane Dibromotetrafluoroethane 2,5-Dibutoxy-4 (4-morpholinyl)-benzenediazonium, tetrachlorozincote (2:1), see Self-reactive solid type E * (UN 3228)	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L		6L			
2248	Di-n-butylamine 2-Dibutylaminoethanol, see Dibutylaminoethanol (UN 2873) N,N-Di-n-butylaminoethanol, see Dibutylaminoethanol (UN 2873)	8 (3)	Corrosive & Flamm. liquid	II	E2	Y840	0.5 L	851	1 L	855	30 L		8F			
2873	Dibutylaminoethanol	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L		6L			
1149	Dibutyl ethers 2,2-Di-(tert-butylperoxy) butane, more than 55% in solution 1,1-Di-(tert-butylperoxy)cyclohexane, more than 80% Di-n-butyl peroxydicarbonate, more than 52% in solution Di-(tert-butylperoxy) phthalate, more than 55% in solution 1,1-Di-(tert-butylperoxy)-3,3,5-trimethylcyclo hexane, more than 90% N,N'-Dichlorazodicarbonamide (salts of) (dry)	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L			
1764	Dichloroacetic acid	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L		8i			
2649	1,3-Dichloroacetone	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6i			
1765	Dichloroacetyl chloride Dichloroacetylene	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L		8i			
1590	Dichloroanilines, liquid	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L	A113	6L			
3442	Dichloroanilines, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg	A113	6L			
1591	o-Dichlorobenzene Di-4-chlorobenzoyl peroxide, ≤ 77%, when with ≥ 23% water	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L	A113	6L			

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						F	G									
1916	2,2'-Dichlorodiethyl ether	6.1 (3)	Toxic & Flamm. liquid	II	E4	Y641	1 L	654	5 L	661	60 L			6F		
1028	Dichlorodifluoromethane	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L		
2602	Dichlorodifluoromethane and difluoroethane azeotropic mixture with approximately 74% dichlorodifluoromethane	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L		
	Dichlorodifluoromethane and ethylene oxide mixtures, see Ethylene oxide and dichlorodifluoromethane mixture (UN 3070)					Forbidden										
2249	Dichlorodimethyl ether, symmetrical	6.1 (3)				Forbidden								6L		
	1,2-Dichloroethane, see Ethylene dichloride (UN 1184)					Forbidden										
2362	1,1-Dichloroethane	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L		
1150	1,2-Dichloroethylene	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L		
	Di(2-chloroethyl) ether, see 2,2'-Dichlorodiethyl ether (UN 1916)					Forbidden										
	Dichloroethyl sulphide					Not Restricted										
	1,1-Dichloro-1-fluoroethane (R141b)					Not Restricted										
1029	Dichlorofluoromethane	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L		
	alpha-Dichlorohydrin, see 1,3-Dichloropropanol-2 (UN 2750)					Not Restricted										
	Dichloroisocyanuric acid, as dehydrated sodium salt					Not Restricted										
2465	Dichloroisocyanuric acid, dry	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg	A28	5L			
2465	Dichloroisocyanuric acid, salts	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg	A28	5L			
2490	Dichloroisopropyl ether	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L			6L		
1593	Dichloromethane	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L			6L		
2650	1,1-Dichloro-1-nitroethane	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L			6L		
1152	Dichloropentanes	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L		
	Dichlorophenols, see Chlorophenols, solid (UN 2020) or Chlorophenols, liquid (UN 2021)					Forbidden										
2250	Dichlorophenyl isocyanates	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg			6L		
1766	Dichlorophenyltrichlorosilane	8	Corrosive	II	E0	Forbidden						876	30 L	A1	8L	
1279	1,2-Dichloropropane	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L		
2750	1,3-Dichloropropanol-2	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L			6L		
	1,3-Dichloro-2-propanone, see 1,3-Dichloroacetone (UN 2649)					Not Restricted										
2047	Dichloropropenes	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L	A3	3L			
				III	E1	Y344	10 L	355	60 L	366	220 L			3L		
2189	Dichlorosilane	2.3 (2.1, 8)				Forbidden								A2	10P	
	Dichloro-s-triazine-2,4,6-trione, see Dichloroisocyanuric acid, dry (UN 2465) or Dichloroisocyanuric acid, salts (UN 2465)					Not Restricted										
1958	1,2-Dichloro-1,1,2,2-tetrafluoroethane	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L		
	Dichlorovinylchloroarsine					Forbidden										



Dangerous Goods Regulations

UN/ ID no. A	Proper Shipping Name/Description B	Class or Div. (Sub Risk) C	Hazard Label(s) D	PG E	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4 M	ERG Code N	
					EQ see 2.6 F	Ltd Qty		Pkg Inst G	Max Net Qty/Pkg H	Pkg Inst I	Max Net Qty/Pkg J	Pkg Inst K	Max Net Qty/Pkg L		
	1,4-Dicyanobutane, see Adiponitrile (UN 2205)														
	Dicycloheptadiene, see Bicyclo[2.2.1]hepta-2-5-diene, stabilized (UN 2251) or 2,5-Norbornadiene, stabilized (UN 2251)														
2565	Dicyclohexylamine	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803	8L		
	Dicyclohexylamine nitrite, see Dicyclohexylammonium nitrite (UN 2687)														
2687	Dicyclohexylammonium nitrite	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L		
	Dicyclohexyl peroxydicarbonate, more than 91%						Forbidden								
2048	Dicyclopentadiene	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L		
	2,2-Di-(4,4-di-tert-butylperoxy)cyclohexyl propane, more than 42% with inert solid						Forbidden								
	Di-2,4-dichlorobenzoyl peroxide, less than 77%, when with 23% or more water						Forbidden								
2372	1,2-Di-(dimethylamino) ethane	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L		
1465	Didymium nitrate	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803	5L		
1202	Diesel fuel	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L	A3	3L		
	Diethanol nitrosamine dinitrate (dry)						Forbidden								
	1,1-Diethoxyethane, see Acetal (UN 1088)														
	1,2-Diethoxyethane, see Ethylene glycol diethyl ether (UN 1153)														
2373	Diethoxymethane	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3H		
	2,5-Diethoxy-4-morpholinobenzenediazonium zinc chloride, see Self-reactive solid type D, temperature controlled * (UN 3236)														
	2,5-Diethoxy-4-(4-morpholinyl)-benzenediazonium sulphate, see Self-reactive solid type D * (UN 3226)														
2374	3,3-Diethoxypropene	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L		
	Diethyl acetal, see Acetal (UN 1088)														
1154	Diethylamine	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L		3CH		
	Diethylaminoethanol, see 2-Diethylaminoethanol (UN 2686)														
2686	2-Diethylaminoethanol	8 (3)	Corrosive & Flamm. liquid	II	E2	Y840	0.5 L	851	1 L	855	30 L		8F		
2684	3-Diethylaminopropylamine	3 (8)	Flamm. liquid & Corrosive	III	E1	Y342	1 L	354	5 L	365	60 L	A803	3C		
2432	N,N-Diethylaniline	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L	A113	6L		
2049	Diethylbenzene	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L		
	Diethylcarbinol, see Pentanols (UN 1105)														
2366	Diethyl carbonate	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L		
	Diethyl cellosolve, see Ethylene glycol diethyl ether (UN 1153)														

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	
A	B	C	D	E		F	G						M	N
1767	Diethyldichlorosilane Diethylidimethyl lead mixture, see Motor fuel anti-knock mixture † (UN 1649) Diethylenediamine, see Piperazine (UN 2579)	8 (3)	Corrosive & Flamm. liquid	II	E0	Forbidden			Forbidden		876	30 L	A1	8F
0075	Diethyleneglycol dinitrate, desensitized with 25% or more non-volatile, water insoluble phlegmatiser, by weight Diethyleneglycol dinitrate, desensitized, with less than 25% phlegmatiser Diethyleneglycol dinitrate (dry) Diethylene oxide, see Dioxane (UN 1165)	1.1D					Forbidden		Forbidden					1L
2079	Diethylenetriamine N,N-Diethylethanolamine, see 2-Diethylaminoethanol (UN 2686)	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L			8L
1155	Diethyl ether	3	Flamm. liquid	I	E3	Forbidden		351	1 L	361	30 L			3AH
2685	N,N-Diethylenediamine Diethylgold bromide Di-(2-ethylhexyl) phosphoric acid, see Diisooctyl acid phosphate (UN 1902)	8 (3)	Corrosive & Flamm. liquid	II	E2	Y840	0.5 L	851	1 L	855	30 L			8F
1156	Diethyl ketone Diethyl peroxydicarbonate, more than 27% in solution	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L
1594	Diethyl sulphate	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L			6L
2375	Diethyl sulphide	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L
2751	Diethylthiophosphoryl chloride Diethylzinc, see Organometallic substance, liquid, pyrophoric, water-reactive ★ (UN 3394) 2,4-Difluoroaniline, see Fluoroanilines (UN 2941) Difluorochloroethane, see 1-Chloro-1,1-difluoroethane (UN 2517)	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L			8L
1030	1,1-Difluoroethane	2.1	Flamm. gas		E0	Forbidden			Forbidden		200	150 kg	A1	10L
1959	1,1-Difluoroethylene	2.1	Flamm. gas		E0	Forbidden			Forbidden		200	150 kg	A1	10L
3252	Difluoromethane Difluoromethane, pentafluoroethane and 1,1,1,2-tetrafluoroethane azeotropic mixture with approximately 10% difluoromethane and 70% pentafluoroethane, see Refrigerant gas R 407B (UN 3339) Difluoromethane, pentafluoroethane and 1,1,1,2-tetrafluoroethane azeotropic mixture with approximately 20% difluoromethane and 40% pentafluoroethane, see Refrigerant gas R 407A (UN 3338) Difluoromethane, pentafluoroethane and 1,1,1,2-tetrafluoroethane azeotropic mixture with approximately 23% difluoromethane and 25% pentafluoroethane, see Refrigerant gas R 407C (UN 3340)	2.1	Flamm. gas		E0	Forbidden			Forbidden		200	150 kg	A1	10L

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
1768	Difluorophosphoric acid, anhydrous 2,2-Dihydroperoxypropane, not more than 27% when with 73% or more inert solid	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L			8L	
2376	2,3-Dihydropyran 1,8-Dihydroxy-2,4,5,7-tetranitroanthraquinone (chrysamminic acid) Di-(1-hydroxytetrazole) (dry) Diiodoacetylene	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H	
2361	Diisobutylamine alpha-Diisobutylene, see Diisobutylene, isomeric compounds (UN 2050) beta-Diisobutylene, see Diisobutylene, isomeric compounds (UN 2050)	3 (8)	Flamm. liquid & Corrosive	III	E1	Y342	1 L	354	5 L	365	60 L	A803		3C	
2050	Diisobutylene, isomeric compounds	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
1157	Diisobutyl ketone Diisobutyl peroxide, more than 32% and less than 52%, when with 48% or more diluent Type A or B	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L	
1902	Diisoctyl acid phosphate	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803		8L	
1158	Diisopropylamine	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L			3CH	
1159	Diisopropyl ether Diisopropyl oxide, see Diisopropyl ether (UN 1159) Diisopropyl peroxydicarbonate, more than 52%	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H	
2521	Diketene, stabilized Diketene, unstabilized	6.1 (3)						ForbIDDEN		ForbIDDEN		ForbIDDEN		ForbIDDEN	6F
2377	1,1-Dimethoxyethane	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
2252	1,2-Dimethoxyethane Dimethoxymethane, see Methylal (UN 1234) Dimethoxystyrchnine, see Brucine (UN 1570)	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
1032	Dimethylamine, anhydrous	2.1	Flamm. gas		E0		ForbIDDEN		ForbIDDEN		200	150 kg	A1	10L	
1160	Dimethylamine, aqueous solution	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L			3C	
2378	2-Dimethylaminoacetonitrile 4-(Dimethylamino)-benzenediazonium trichlorozincate (-1), see Self-reactive solid type E ★ (UN 3228) 4-Dimethylamino-6-(2-dimethylaminoethoxy) toluene-2-diazonium zinc chloride, see Self-reactive solid type D, temperature controlled ★ (UN 3236)	3 (6.1)	Flamm. liquid & Toxic	II	E2	Y341	1 L	352	1 L	364	60 L			3P	
2051	2-Dimethylaminoethanol	8 (3)	Corrosive & Flamm. liquid	II	E2	Y840	0.5 L	851	1 L	855	30 L			8F	
3302	2-Dimethylaminoethyl acrylate	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L			6L	
2522	2-Dimethylaminoethyl methacrylate	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L			6L	

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
2253	N,N-Dimethylaniline Dimethylarsenic acid, see Cacodylic acid (UN 1572) Dimethyl benzene, see Xylenes (UN 1307) Di-(2-methylbenzol) peroxide, not more than 87% when with 13% or more water N,N-Dimethylbenzylamine, see Benzylidimethylamine (UN 2619)	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L			6L	
								ForbIDDEN		ForbIDDEN		ForbIDDEN			
2457	2,3-Dimethylbutane	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H	
2379	1,3-Dimethylbutylamine	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L			3C	
2262	Dimethylcarbamoyl chloride	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L			8L	
1161	Dimethyl carbonate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
2263	Dimethylcyclohexanes	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
2264	N,N-Dimethylcyclohexylamine 2,5-Dimethyl-2,5-di-(benzoylperoxy)hexane, more than 82% 2,5-Dimethyl-2,5-di(tert-butylperoxy)hexyne-3 more than 86%	8 (3)	Corrosive & Flamm. liquid	II	E2	Y840	0.5 L	851	1 L	855	30 L			8F	
								ForbIDDEN		ForbIDDEN		ForbIDDEN			
								ForbIDDEN		ForbIDDEN		ForbIDDEN			
△ 1162	Dimethyldichlorosilane	3 (8)	Flamm. liquid & Corrosive	II	E0			ForbIDDEN		ForbIDDEN		377	5 L		3C
2380	Dimethyldioethoxysilane 2,5-Dimethyl-2,5-dihydroperoxy hexane, more than 82% with water 2,5-Dimethyl-1,4-dioxane, see Dimethyldioxanes (UN 2707) 4,4-Dimethyldioxane-1,3, see Dimethyldioxanes (UN 2707)	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
								ForbIDDEN		ForbIDDEN		ForbIDDEN			
△ 2707	Dimethyldioxanes	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			A3	3L
2381	Dimethyl disulphide Dimethylethanolamine, see 2-Dimethylaminoethanol (UN 2051)	3 (6.1)		II	E0			ForbIDDEN		ForbIDDEN		ForbIDDEN			3P
1033	Dimethyl ether	2.1	Flamm. gas	III	E0			ForbIDDEN		ForbIDDEN		200	150 kg	A1	10L
2265	N,N-Dimethylformamide Dimethylhexane dihydroperoxide, more than 82% with water 1,1-Dimethylhydrazine, see Dimethylhydrazine, unsymmetrical (UN 1163)	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L	
								ForbIDDEN		ForbIDDEN		ForbIDDEN			
2382	Dimethylhydrazine, symmetrical	6.1 (3)						ForbIDDEN		ForbIDDEN		ForbIDDEN			6F
1163	Dimethylhydrazine, unsymmetrical N,N-Dimethyl-4-nitrosoaniline, see p-Nitrosodimethylamine (UN 1369)	6.1 (3, 8)						ForbIDDEN		ForbIDDEN		ForbIDDEN			6CH
2044	2,2-Dimethylpropane	2.1	Flamm. gas		E0			ForbIDDEN		ForbIDDEN		200	150 kg	A1	10L

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
2266	Dimethyl-N-propylamine	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L			3C	
1595	Dimethyl sulphate	6.1 (8)					Forbidden								6C
1164	Dimethyl sulphide	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H	
2267	Dimethyl thiophosphoryl chloride	6.1 (8)	Toxic & Corrosive	II	E4	Y640	0.5 L	653	1 L	660	30 L			6C	
	Dimethylzinc, see Organometallic substance, liquid, pyrophoric, water-reactive ★ (UN 3394)						Forbidden								
	Di-(1-naphthoyl) peroxide						Forbidden								
0489	DINGU	1.1D					Forbidden								1L
1596	Dinitroanilines	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg			6L	
1597	Dinitrobenzenes, liquid	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L			6L	
					E1	Y642	2 L	655	60 L	663	220 L			6L	
3443	Dinitrobenzenes, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg			6L	
	Dinitrochlorobenzenes, see Chlorodinitrobenzenes, liquid (UN 1577) or Chlorodinitrobenzenes, solid (UN 3441)														
	Dinitrocresol, see Dinitro-o-cresol (UN 1598)														
1598	Dinitro-o-cresol	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg	A6		6L	
	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								
1067	Dinitrogen tetroxide	2.3 (5.1, 8)					Forbidden							A2	2PX
0489	Dinitroglycoluril	1.1D					Forbidden								1L
	Dinitromethane						Forbidden								
0076	Dinitrophenol dry or wetted with less than 15% water, by weight	1.1D (6.1)					Forbidden								1P
0077	Dinitrophenolates alkali metals, dry or wetted with less than 15% water, by weight	1.3C (6.1)					Forbidden								1P
1321	Dinitrophenolates, wetted with 15% or more water, by weight	4.1 (6.1)	Flamm. solid & Toxic	I	E0		Forbidden	451	1 kg	451	15 kg	A40		3EP	
1599	Dinitrophenol solution	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L	A3		6L	
				III	E1	Y642	2 L	655	60 L	663	220 L			6L	
1320	Dinitrophenol, wetted with 15% or more water, by weight	4.1 (6.1)	Flamm. solid & Toxic	I	E0		Forbidden	451	1 kg	451	15 kg	A40		3EP	
	Dinitropropylene glycol						Forbidden								
0078	Dinitroresorcinol dry or wetted with less than 15% water, by weight	1.1D					Forbidden								1L
	2,4-Dinitroresorcinol (heavy metal salts of) (dry)						Forbidden								
	4,6-Dinitroresorcinol (heavy metal salts of) (dry)						Forbidden								

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
1322	Dinitroresorcinol, wetted with 15% or more water, by weight	4.1	Flamm. solid	I	E0	Forbidden		451	1 kg	451	15 kg	A40	3E		
	3,5-Dinitrosalicylic acid (lead salt) (dry)					Forbidden			Forbidden		Forbidden		Forbidden		
0406	Dinitrobenzene	1.3C				Forbidden			Forbidden		Forbidden		Forbidden		1L
	Dinitrosobenzylamine and salts of (dry)					Forbidden			Forbidden		Forbidden		Forbidden		
	N,N'-Dinitroso-N,N'-dimethyl terephthalamide, 72% or less as a paste, see Self-reactive solid type C ★ (UN 3224)														
	N,N'-Dinitrosopentamethylene tetramine, 82% or less with phlegmatizer, see Self-reactive solid type C ★ (UN 3224)					Forbidden			Forbidden		Forbidden				
	2,2-Dinitrostilbene						Forbidden						Forbidden		
	1,4-Dinitro-1,1,4,4-tetramethylbutane tetranitrate (dry)					Forbidden			Forbidden		Forbidden		Forbidden		
	Dinitrotoluene mixed with sodium chlorate, see Explosive, blasting, type C † (UN 0083)														
2038	Dinitrotoluenes, liquid	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L		6L		
1600	Dinitrotoluenes, molten	6.1			E0	Forbidden			Forbidden		Forbidden			6L	
3454	Dinitrotoluenes, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L		
	2,4-Dinitro-1,3,5-trimethylbenzene					Forbidden			Forbidden		Forbidden				
	Di-(beta-nitroxyethyl) ammonium nitrate					Forbidden			Forbidden		Forbidden				
	a,a-Di-(nitroxy) methylether					Forbidden			Forbidden		Forbidden				
	1,9-Dinitroxy pentamethylene-2,4,6,8-tetramine (dry)					Forbidden			Forbidden		Forbidden				
1165	Dioxane	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L		
1166	Dioxolane	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L		
2052	Dipentene	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L		
	Di-(2-phenoxyethyl) peroxydicarbonate, more than 85%					Forbidden			Forbidden		Forbidden				
1698	Diphenylamine chloroarsine	6.1				Forbidden			Forbidden		Forbidden			6i	
1699	Diphenylchloroarsine, liquid	6.1				Forbidden			Forbidden		Forbidden			6i	
3450	Diphenylchloroarsine, solid	6.1	Toxic	I	E0	Forbidden			Forbidden		673	50 kg		6L	
1769	Diphenyldichlorosilane	8	Corrosive	II	E0	Forbidden			Forbidden		876	30 L	A1	8L	
	Diphenylmethane-4,4'-diisocyanate, liquid					Not Restricted			Not Restricted		Not Restricted				
	Diphenylmethane-4-4'-diisocyanate, solid					Not Restricted			Not Restricted		Not Restricted				
1770	Diphenylmethyl bromide	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg		8L		
	Diphenyloxide-4,4'-disulphonyl hydrazide, see Self-reactive solid type D ★ (UN 3226)														
0079	Dipicrylamine	1.1D				Forbidden			Forbidden		Forbidden			1L	
0401	Dipicryl sulphide	1.1D				Forbidden			Forbidden		Forbidden			1L	
	dry or wetted with less than 10% water, by weight														
2852	Dipicryl sulphide, wetted	4.1	Flamm. solid	I	E0	Forbidden			Forbidden		451	0.5 kg	A40	3E	
	with 10% or more water, by weight					Forbidden			Forbidden		Forbidden				
	Dipropionyl peroxide, more than 28% in solution														



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					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
					EQ see 2.6	Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
2383	Dipropylamine	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L			3C		
	4-Dipropylaminobenzene diazonium zinc chloride, see Self-reactive solid type D ★ (UN 3226)															
	Dipropylene triamine, see 3,3'-Iminodipropylamine (UN 2269)															
2384	Di-n-propyl ether	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H		
2710	Dipropyl ketone	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L		
1903	Disinfectant, liquid, corrosive, n.o.s. ★	8	Corrosive	I	E0	Forbidden		850	0.5 L	854	2.5 L	A3	A803	8L		
				II	E2	Y840	0.5 L	851	1 L	855	30 L			8L		
				III	E1	Y841	1 L	852	5 L	856	60 L			8L		
3142	Disinfectant, liquid, toxic, n.o.s. ★	6.1	Toxic	I	E5	Forbidden		652	1 L	658	30 L	A3	A4	6L		
				II	E4	Y641	1 L	654	5 L	662	60 L			6L		
				III	E1	Y642	2 L	655	60 L	663	220 L			6L		
1601	Disinfectant, solid, toxic, n.o.s. ★	6.1	Toxic	I	E5	Forbidden		666	5 kg	673	50 kg	A3	A5	6L		
				II	E4	Y644	1 kg	669	25 kg	676	100 kg			6L		
				III	E1	Y645	10 kg	670	100 kg	677	200 kg			6L		
3253	Disodium trioxsilicate	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A803		8L		
	Dispersant gas, see Compressed gas, toxic, flammable, n.o.s. ★ (UN 1953), Compressed gas, flammable, n.o.s. ★ (UN 1954), Compressed gas, toxic, n.o.s. ★ (UN 1955), Compressed gas, n.o.s. ★ (UN 1956), Compressed gas, oxidizing, n.o.s. ★ (UN 3156), Liquefied gas, oxidizing, n.o.s. ★ (UN 3157); Liquefied gas, toxic, flammable, n.o.s. ★ (UN 3160), Liquefied gas, flammable, n.o.s. ★ (UN 3161), Liquefied gas, toxic, n.o.s. ★ (UN 3162), Liquefied gas, n.o.s. ★ (UN 3163), Compressed gas, toxic, oxidizing, n.o.s. ★ (UN 3303), Compressed gas, toxic, corrosive, n.o.s. ★ (UN 3304), Compressed gas, toxic, flammable, corrosive, n.o.s. ★ (UN 3305), Compressed gas, toxic, oxidizing, corrosive, n.o.s. ★ (UN 3306), Liquefied gas, toxic, oxidizing, n.o.s. ★ (UN 3307), Liquefied gas, toxic, corrosive, n.o.s. ★ (UN 3308), Liquefied gas, toxic, flammable, corrosive, n.o.s. ★ (UN 3309), Liquefied gas, toxic, oxidizing, corrosive, n.o.s. ★ (UN 3310)															
	Disuccinic acid peroxide 72% or more							Forbidden		Forbidden		Forbidden				
	Dithiocarbamate pesticide, etc., see Thiocarbamate pesticide, solid, toxic ★ (UN 2771), Thiocarbamate pesticide, liquid, flammable, toxic, ★ (UN 2772), Thiocarbamate pesticide, liquid, toxic, flammable, ★ (UN 3005), Thiocarbamate pesticide, liquid, toxic ★ (UN 3006)															
1167	Divinyl ether, stabilized	3	Flamm. liquid	I	E2	Forbidden		351	1 L	361	30 L			3AH		
	Divinyl ether, unstabilized					Forbidden			Forbidden		Forbidden					
	DNOC, see Dinitro-o-cresol (UN 1598)															
1771	Dodecyltrichlorosilane	8	Corrosive	II	E0	Forbidden			Forbidden		876	30 L	A1		8L	
	Dressing, leather †, see Flammable liquid, n.o.s. ★ (UN 1993)															
	Driers, paint or varnish, liquid, n.o.s., see Flammable liquid, n.o.s. ★ (UN 1993)															
	Driers, paint or varnish, solid, n.o.s., see Flammable solid, organic, n.o.s. ★ (UN 1325) or Flammable solid, inorganic, n.o.s. ★ (UN 3178)															
	Drugs, corrosive, liquid, n.o.s., see Corrosive liquid, n.o.s. ★ (UN 1760)															

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
	Drugs, corrosive, solid, n.o.s., see Corrosive solid, n.o.s. ★ (UN 1759)														
	Drugs, flammable, liquid, n.o.s., see Flammable liquid, n.o.s. ★ (UN 1993)														
	Drugs, flammable, solid, n.o.s., see Flammable solid, organic, n.o.s. ★ (UN 1325) or Flammable solid, inorganic, n.o.s. ★ (UN 3178)														
	Drugs, n.o.s., in small inner packagings containing flammable aerosol and/or non-flammable aerosol and/or flammable liquid and/or toxic substance, n.o.s., see Consumer commodity (UN 8000)														
	Drugs, oxidizing, liquid, n.o.s., see Oxidizing liquid, n.o.s. ★ (UN 3139)														
	Drugs, oxidizing, solid, n.o.s., see Oxidizing solid, n.o.s. ★ (UN 1479)														
	Drugs, toxic, liquid, n.o.s., see Toxic liquid, organic, n.o.s. ★ (UN 2810)														
	Drugs, toxic, solid, n.o.s., see Toxic solid, organic, n.o.s. ★ (UN 2811)														
1845	Dry ice †	9	Miscellaneous	E0	Forbidden		954	200 kg	954	200 kg	A48 A151 A805	9L			
	Dye and dye intermediate, n.o.s., flammable liquid, n.o.s., see Flammable liquid, n.o.s. ★ (UN 1993)														
2801	Dye intermediate, liquid, corrosive, n.o.s. ★ †	8	Corrosive	I II III	E0 E2 E1	ForbIDDEN Y840 Y841	0.5 L 1 L	850 851 852	0.5 L 1 L 5 L	854 855 856	2.5 L 30 L 60 L	A3 A803	8L 8L 8L		
1602	Dye intermediate, liquid, toxic, n.o.s. ★ †	6.1	Toxic	I II III	E5 E4 E1	ForbIDDEN Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4	6L 6L 6L		
3147	Dye intermediate, solid, corrosive, n.o.s. ★ †	8	Corrosive	I II III	E0 E2 E1	ForbIDDEN Y844 Y845	5 kg 5 kg	858 859 860	1 kg 15 kg 25 kg	862 863 864	25 kg 50 kg 100 kg	A3 A803	8L 8L 8L		
3143	Dye intermediate, solid, toxic, n.o.s. ★ †	6.1	Toxic	I II III	E5 E4 E1	ForbIDDEN Y644 Y645	1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5	6L 6L 6L		
2801	Dye, liquid, corrosive, n.o.s. ★ †	8	Corrosive	I II III	E0 E2 E1	ForbIDDEN Y840 Y841	0.5 L 1 L	850 851 852	0.5 L 1 L 5 L	854 855 856	2.5 L 30 L 60 L	A3 A803	8L 8L 8L		
1602	Dye, liquid, toxic, n.o.s. ★ †	6.1	Toxic	I II III	E5 E4 E1	ForbIDDEN Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4	6L 6L 6L		
3147	Dye, solid, corrosive, n.o.s. ★ †	8	Corrosive	I II III	E0 E2 E1	ForbIDDEN Y844 Y845	5 kg 5 kg	858 859 860	1 kg 15 kg 25 kg	862 863 864	25 kg 50 kg 100 kg	A3 A803	8L 8L 8L		
3143	Dye, solid, toxic, n.o.s. ★ †	6.1	Toxic	I II III	E5 E4 E1	ForbIDDEN Y644 Y645	1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5	6L 6L 6L		
	Dynamite, see Explosive, blasting, type A † (UN 0081)														
	Electric squibs, see Igniters † (UN 0325) or Igniters (UN 0454)														
	Electric storage batteries, see Batteries, wet, filled with acid † (UN 2794), Batteries, wet, filled with alkali † (UN 2795), Batteries, wet, non-spillable † (UN 2800), Batteries, dry, containing potassium hydroxide, solid † (UN 3028)														



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					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E	F	G	H	I	J	K	L	M	N		
	Electrolyte (acid) for batteries, †, see Battery fluid, acid (UN 2796)														
	Electrolyte (alkali) for batteries, †, see Battery fluid, alkali (UN 2797)														
	Electron tubes containing mercury, see Mercury contained in manufactured articles (UN 3506)														
3257	Elevated temperature liquid, n.o.s. ★ at or above 100°C and below its flash point (including molten metals, molten salts, etc.)	9		E0	Forbidden			Forbidden		Forbidden					9L
3256	Elevated temperature liquid, flammable, n.o.s. ★ with flash point above 60°C, at or above its flash point	3		E0	Forbidden			Forbidden		Forbidden					3L
3258	Elevated temperature solid, n.o.s. ★ at or above 240°C	9		E0	Forbidden			Forbidden		Forbidden					9L
	Enamel, see Paint (UN 1263)														
3166	Engine, fuel cell, flammable gas powered †	9	Miscellaneous	E0	Forbidden			Forbidden		951	No limit	A67 A70 A87 A134 A176		9L	
3166	Engine, fuel cell, flammable liquid powered †	9	Miscellaneous	E0	Forbidden	950	No limit	950	No limit	A67 A70 A87 A134 A176				9L	
3166	Engine, internal combustion, flammable gas powered	9	Miscellaneous	E0	Forbidden			Forbidden		951	No limit	A67 A70 A87 A134		9L	
3166	Engine, internal combustion, flammable liquid powered	9	Miscellaneous	E0	Forbidden	950	No limit	950	No limit	A67 A70 A87 A134				9L	
	Engines, rocket, see Rocket motors † (UN 0186), Rocket motors with hypergolic liquids † (UN 0250), Rocket motors † (UN 0280), Rocket motors † (UN 0281), Rocket motors with hypergolic liquids † (UN 0322), Rocket motors, liquid fuelled † (UN 0395), Rocket motors, liquid fuelled † (UN 0396)														
3082	Environmentally hazardous substance, liquid, n.o.s. ★	9	Miscellaneous	III	E1	Y964	30 kg G	964	450 L	964	450 L	A97 A158		9L	
3077	Environmentally hazardous substance, solid, n.o.s. ★	9	Miscellaneous	III	E1	Y956	30 kg G	956	400 kg	956	400 kg	A97 A158 A179		9L	
2558	Epibromohydrin	6.1 (3)				Forbidden		Forbidden		Forbidden					6F
2023	Epichlorohydrin	6.1 (3)	Toxic & Flamm. liquid	II	E4	Y641	1 L	654	5 L	662	60 L	A113		6F	
	1,2-Epoxybutane, stabilized, see 1,2-Butylene oxide, stabilized (UN 3022)														
	Epoxyethane, see Ethylene oxide (UN 1040)														
2752	1,2-Epoxy-3-ethoxypropane	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
	2,3-Epoxy-1-propanal, see Glycidaldehyde (UN 2622)														
	2,3-Epoxypropyl ethyl ether, see 1,2-Epoxy-3-ethoxypropane (UN 2752)														
3272	Esters, n.o.s. ★	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3	3L 3L		

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						F	G									
A	B	C	D	E												
1035	Ethane	2.1	Flamm. gas		E0	Forbidden			Forbidden			200	150 kg	A1	10L	
1961	Ethane, refrigerated liquid	2.1				Forbidden			Forbidden			Forbidden				
	Ethanethiol, see Ethyl mercaptan (UN 2363)															
1170	Ethanol	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3 A58 A180	3L 3L			
2491	Ethanolamine	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A3 A803	8L			
	Ethanol amine dinitrate					Forbidden			Forbidden			Forbidden				
2491	Ethanolamine solution	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A3 A803	8L			
3475	Ethanol and gasoline mixture with more than 10% ethanol	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L	A156	3L			
3475	Ethanol and motor spirit mixture with more than 10% ethanol	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L	A156	3L			
3475	Ethanol and petrol mixture with more than 10% ethanol	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L	A156	3L			
	Ethanol aqueous solutions containing 24% or less alcohol by volume					Not Restricted			Not Restricted			Not Restricted				
1170	Ethanol solution	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3 A58 A180	3L 3L			
	Ether, see Diethyl ether (UN 1155)															
	Ether acetate, see Ethylene glycol monoethyl ether acetate (UN 1172)															
	Ether, ethyl, see Diethyl ether (UN 1155)															
3271	Ethers, n.o.s. *	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3	3L 3L			
	2-Ethoxyethanol, see Ethylene glycol monoethyl ether (UN 1171)															
	2-Ethoxyethyl acetate, see Ethylene glycol monoethyl ether acetate (UN 1172)															
	Ethoxypropane-1, see Ethyl propyl ether (UN 2615)															
1173	Ethyl acetate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L			
2452	Ethylacetylene, stabilized	2.1	Flamm. gas		E0	Forbidden			Forbidden			200	150 kg	A1	10L	
	Ethylacetylene, unstabilized					Forbidden			Forbidden			Forbidden				
1917	Ethyl acrylate, stabilized	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3i			
	Ethyl acrylate, unstabilized					Forbidden			Forbidden			Forbidden				
1170	Ethyl alcohol	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3 A58 A180	3L 3L			
1170	Ethyl alcohol solution	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3 A58 A180	3L 3L			
	Ethyl aldehyde, see Acetaldehyde (UN 1089)															
1036	Ethylamine	2.1	Flamm. gas		E0	Forbidden			Forbidden			200	150 kg	A1	10L	



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
2270	Ethylamine, aqueous solution with 50% or more but not more than 70% ethylamine	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L				3CH
2271	Ethyl amylo ketone	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
2273	2-Ethylaniline	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L				6L
2272	N-Ethylaniline	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L				6L
1175	Ethylbenzene	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3L
2274	N-Ethyl-N-benzylaniline	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L				6L
2753	N-Ethylbenzyltoluidines, liquid	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L				6L
3460	N-Ethylbenzyltoluidines, solid	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg				6L
1176	Ethyl borate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3L
1891	Ethyl bromide	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L				6L
1603	Ethyl bromoacetate	6.1 (3)					Forbidden			Forbidden		Forbidden		A2	6F
2275	2-Ethylbutanol	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
1177	2-Ethylbutyl acetate	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
1179	Ethyl butyl ether	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3L
1178	2-Ethylbutyraldehyde	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3L
1180	Ethyl butyrate	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
1037	Ethyl chloride (ampoules in boxes)	2.1	Flamm. gas		E0		Forbidden			Forbidden		200	0.3 kg	A1	10A
1037	Ethyl chloride (cylinders)	2.1	Flamm. gas		E0		Forbidden			Forbidden		200	150 kg	A1	10A
1181	Ethyl chloroacetate	6.1 (3)	Toxic & Flamm. liquid	II	E4	Y641	1 L	654	5 L	662	60 L				6F
	Ethyl chlorocarbonate, see Ethyl chloroformate (UN 1182)														
1182	Ethyl chloroformate	6.1 (3, 8)					Forbidden			Forbidden			Forbidden		6CF
	Ethyl-alpha-chloropropionate, see Ethyl 2-chloropropionate (UN 2935)														
2935	Ethyl 2-chloropropionate	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
2826	Ethyl chlorothioformate	8 (3)					Forbidden			Forbidden			Forbidden		8F
1862	Ethyl crotonate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3L
1892	Ethyldichloroarsine	6.1					Forbidden			Forbidden			Forbidden		6i
1183	Ethyldichlorosilane	4.3 (3, 8)	Dang. when wet & Flamm. liquid & Corrosive	I	E0		Forbidden			Forbidden		480	1 L		4HW
1962	Ethylene	2.1	Flamm. gas		E0		Forbidden			Forbidden		200	150 kg	A1	10A
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	2.1					Forbidden			Forbidden			Forbidden		10L
1135	Ethylene chlorohydrin	6.1 (3)					Forbidden			Forbidden			Forbidden		6F

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
					EQ see 2.6	Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
1604	Ethylenediamine	8 (3)	Corrosive & Flamm. liquid	II	E2	Y840	0.5 L	851	1 L	855	30 L			8F		
	Ethylene diamine diperchlorate						Forbidden		Forbidden		Forbidden					
1605	Ethylene dibromide	6.1					Forbidden		Forbidden		Forbidden			6L		
	Ethylene dibromide and methyl bromide liquid mixture, see Methyl bromide and ethylene dibromide mixture, liquid (UN 1647)															
1184	Ethylene dichloride	3 (6.1)	Flamm. liquid & Toxic	II	E2	Y341	1 L	352	1 L	364	60 L			3P		
1153	Ethylene glycol diethyl ether	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L	366	220 L	3L	3L	
	Ethylene glycol dinitrate				E1	Y344	10 L	355	60 L	366	220 L					
1171	Ethylene glycol monoethyl ether	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L		
1172	Ethylene glycol monoethyl ether acetate	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L		
1188	Ethylene glycol monomethyl ether	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L		
1189	Ethylene glycol monomethyl ether acetate	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L		
1185	Ethyleneimine, stabilized	6.1 (3)					Forbidden		Forbidden		Forbidden			6FH		
	Ethyleneimine, unstabilized						Forbidden		Forbidden		Forbidden					
1040	Ethylene oxide	2.3 (2.1)					Forbidden		Forbidden		Forbidden			A2 A131	10P	
1041	Ethylene oxide and carbon dioxide mixture with more than 9% but not more than 87% ethylene oxide	2.1	Flamm. gas		E0		Forbidden		Forbidden		200	25 kg		A1	10L	
1952	Ethylene oxide and carbon dioxide mixture with not more than 9% ethylene oxide	2.2	Non-flamm. gas		E1		Forbidden		200	75 kg	200	150 kg			2L	
3300	Ethylene oxide and carbon dioxide mixture with more than 87% ethylene oxide	2.3 (2.1)					Forbidden		Forbidden		Forbidden			A2	10P	
3297	Ethylene oxide and chlorotetrafluoroethane mixture with not more than 8.8% ethylene oxide	2.2	Non-flamm. gas		E1		Forbidden		200	75 kg	200	150 kg			2L	
3070	Ethylene oxide and dichlorodifluoromethane mixture with not more than 12.5% ethylene oxide	2.2	Non-flamm. gas		E1		Forbidden		200	75 kg	200	150 kg			2L	
3298	Ethylene oxide and pentafluoroethane mixture with not more than 7.9% ethylene oxide	2.2	Non-flamm. gas		E1		Forbidden		200	75 kg	200	150 kg			2L	
2983	Ethylene oxide and propylene oxide mixture 30% or less ethylene oxide	3 (6.1)	Flamm. liquid & Toxic	I	E0		Forbidden		Forbidden		361	30 L			3P	
	Ethylene oxide and propylene oxide mixture, more than 30% ethylene oxide						Forbidden		Forbidden		Forbidden					
3299	Ethylene oxide and tetrafluoroethane mixture with not more than 5.6% ethylene oxide	2.2	Non-flamm. gas		E1		Forbidden		200	75 kg	200	150 kg			2L	
1040	Ethylene oxide with nitrogen up to a total pressure of 1 MPa at 50°C	2.3 (2.1)					Forbidden		Forbidden		Forbidden			A2	10P	
1038	Ethylene, refrigerated liquid	2.1					Forbidden		Forbidden		Forbidden				10A	
1155	Ethyl ether	3	Flamm. liquid	I	E3		Forbidden		351	1 L	361	30 L			3AH	
	Ethyl fluid, see Motor fuel anti-knock mixture † (UN 1649)															
2453	Ethyl fluoride	2.1	Flamm. gas		E0		Forbidden		Forbidden		200	150 kg	A1	10L		
1190	Ethyl formate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H		

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
2276	2-Ethylhexylamine	3 (8)	Flamm. liquid & Corrosive	III	E1	Y342	1 L	354	5 L	365	60 L	A803	3C		
2748	2-Ethylhexyl chloroformate	6.1 (8)	Toxic & Corrosive	II	E4	Y640	0.5 L	653	1 L	660	30 L		6C		
	Ethyl hydroperoxide						Forbidden		Forbidden		Forbidden				
	Ethyldene chloride, see 1,1-Dichloroethane (UN 2362)														
2385	Ethyl isobutyrate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L		
2481	Ethyl isocyanate	6.1 (3)					Forbidden		Forbidden		Forbidden	A174	6F		
1192	Ethyl lactate	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L		
2363	Ethyl mercaptan	3	Flamm. liquid	I	E0		Forbidden		Forbidden	361	30 L	A1	3N		
2277	Ethyl methacrylate, stabilized	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L		
1039	Ethyl methyl ether	2.1	Flamm. gas		E0		Forbidden		Forbidden	200	150 kg	A1	10L		
1193	Ethyl methyl ketone	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L		
	Ethyl nitrate						Forbidden		Forbidden		Forbidden				
	Ethyl nitrite						Forbidden		Forbidden		Forbidden				
1194	Ethyl nitrite solution	3 (6.1)					Forbidden		Forbidden		Forbidden	A2	3P		
2524	Ethyl orthoformate	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L		
2525	Ethyl oxalate	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L		6L		
	Ethyl perchlorate						Forbidden		Forbidden		Forbidden				
2435	Ethylphenyldichlorosilane	8	Corrosive	II	E0		Forbidden		Forbidden	876	30 L	A1	8L		
	Ethyl phosphorous dichloride, anhydrous, see Pyrophoric liquid, organic, n.o.s. ★ † (UN 2845)														
2386	1-Ethylpiperidine	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L		3C		
1195	Ethyl propionate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L		
2615	Ethyl propyl ether	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3H		
	Ethyl silicate, see Tetraethyl silicate (UN 1292)														
	Ethyl sulphate, see Diethyl sulphate (UN 1594)														
	Ethylsulphuric acid, see Alkylsulphuric acids (UN 2571)														
2754	N-Ethyltoluidines	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L		6L		
1196	Ethyltrichlorosilane	3 (8)	Flamm. liquid & Corrosive	II	E0		Forbidden		Forbidden	377	5 L		3C		
	Ethyl trimethyl lead mixture, see Motor fuel anti-knock mixture † (UN 1649)														
	Etiologic agent, see Infectious substance, affecting humans ★ (UN 2814) or Infectious substance, affecting animals ★ (UN 2900)														
	Excepted quantity of dangerous goods, see 2.7														
	Exempt animal specimen, see 3.6.2.2.3.6														
	Exempt human specimen, see 3.6.2.2.3.6														

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
	Explosive articles, see Articles, explosive, n.o.s. ★ (UN 0349), Articles, explosive, n.o.s. ★ (UN 0350), Articles, explosive, n.o.s. ★ (UN 0351), Articles, explosive, n.o.s. ★ (UN 0352), Articles, explosive, n.o.s. ★ (UN 0353), Articles, explosive, n.o.s. ★ (UN 0354), Articles, explosive, n.o.s. ★ (UN 0355), Articles, explosive, n.o.s. ★ (UN 0356), Articles, explosive, n.o.s. ★ (UN 0462), Articles, explosive, n.o.s. ★ (UN 0463), Articles, explosive, n.o.s. ★ (UN 0464), Articles, explosive, n.o.s. ★ (UN 0465), Articles, explosive, n.o.s. ★ (UN 0466), Articles, explosive, n.o.s. ★ (UN 0467), Articles, explosive, n.o.s. ★ (UN 0468), Articles, explosive, n.o.s. ★ (UN 0469), Articles, explosive, n.o.s. ★ (UN 0470), Articles, explosive, n.o.s. ★ (UN 0471), Articles, explosive, n.o.s. ★ (UN 0472)														
0081	Explosive, blasting, type A †	1.1D						Forbidden		Forbidden		Forbidden			1L
0082	Explosive, blasting, type B †	1.1D						Forbidden		Forbidden		Forbidden			1L
0331	Explosive, blasting, type B †	1.5D						Forbidden		Forbidden		Forbidden			1L
0083	Explosive, blasting, type C †	1.1D						Forbidden		Forbidden		Forbidden			1L
0084	Explosive, blasting, type D †	1.1D						Forbidden		Forbidden		Forbidden			1L
0241	Explosive, blasting, type E †	1.1D						Forbidden		Forbidden		Forbidden			1L
0332	Explosive, blasting, type E †	1.5D						Forbidden		Forbidden		Forbidden			1L
	Explosive, emulsion, see Explosive, blasting, type E † (UN 0241) or Explosive, blasting, type E † (UN 0332)														
	Explosive, seismic, see Explosive, blasting, type A † (UN 0081), Explosive, blasting, type B † (UN 0082), Explosive, blasting, type C † (UN 0083), Explosive, blasting, type B † (UN 0331)														
	Explosive, slurry, see Explosive, blasting, type E † (UN 0241) or Explosive, blasting, type E † (UN 0332)														
	Explosive substances, see Substances, explosive, n.o.s. ★ (UN 0357), Substances, explosive, n.o.s. ★ (UN 0358), Substances, explosive, n.o.s. ★ (UN 0359), Substances, explosive, n.o.s. ★ (UN 0473), Substances, explosive, n.o.s. ★ (UN 0474), Substances, explosive, n.o.s. ★ (UN 0475), Substances, explosive, n.o.s. ★ (UN 0476), Substances, explosive, n.o.s. ★ (UN 0477), Substances, explosive, n.o.s. ★ (UN 0478), Substances, explosive, n.o.s. ★ (UN 0479), Substances, explosive, n.o.s. ★ (UN 0480), Substances, explosive, n.o.s. ★ (UN 0481), Substances, explosive, n.o.s. ★ (UN 0485)														
	Explosive, water gel, see Explosive, blasting, type E † (UN 0241) or Explosive, blasting, type E † (UN 0332)														
	Extract, aromatic or flavouring, not falling under the definitions of Classes 1 - 8, see Aviation regulated liquid, n.o.s. ★ † (UN 3334) or Aviation regulated solid, n.o.s. ★ † (UN 3335)														
1169	Extracts, aromatic, liquid †	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3	3L 3L		
1197	Extracts, flavouring, liquid †	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3	3L 3L		
1373	Fabrics, animal, n.o.s. with oil	4.2					Forbidden		Forbidden		Forbidden	A2	4L		
1353	Fabrics impregnated with weakly nitrated nitrocellulose, n.o.s.	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L		
1373	Fabrics, synthetic, n.o.s. with oil	4.2					Forbidden		Forbidden		Forbidden	A2	4L		

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		G	H						M	N	
1373	Fabrics, vegetable, n.o.s. with oil	4.2				Forbidden		Forbidden		Forbidden		Forbidden		A2	4L
1606	Ferric arsenate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L
1607	Ferric arsenite	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L
1773	Ferric chloride, anhydrous	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A803			8L
2582	Ferric chloride solution	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A3	A803		8L
1466	Ferric nitrate Ferricyanides	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803			5L
1323	Ferrocerium Ferrocyanides	4.1	Flamm. solid	II	E2	Y441	5 kg	445	15 kg	448	50 kg	A42			3L
1408	Ferrosilicon with 30% or more but less than 90% silicon Ferrosilicon, with less than 30% or more than 90% silicon	4.3 (6.1)	Dang. when wet & Toxic	III	E1	Y477	10 kg	485	25 kg	491	100 kg	A3	A10	A803	4PW
						Not Restricted		Not Restricted		Not Restricted		Not Restricted			
1608	Ferrous arsenate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L
2793	Ferrous metal borings in a form liable to self-heating	4.2	Spont. comb.	III	E1	Forbidden		469	25 kg	471	100 kg	A3	A803		4L
2793	Ferrous metal cuttings in a form liable to self-heating	4.2	Spont. comb.	III	E1	Forbidden		469	25 kg	471	100 kg	A3	A803		4L
2793	Ferrous metal shavings in a form liable to self-heating	4.2	Spont. comb.	III	E1	Forbidden		469	25 kg	471	100 kg	A3	A803		4L
2793	Ferrous metal turnings in a form liable to self-heating	4.2	Spont. comb.	III	E1	Forbidden		469	25 kg	471	100 kg	A3	A803		4L
1043	Fertilizer ammoniating solution with free ammonia Fertilizer with ammonium nitrate, n.o.s., see Ammonium nitrate based fertilizer (UN 2067) or Ammonium nitrate based fertilizer (UN 2071) Fiberglass repair kit, see Polyester resin kit † (UN 3269)	2.2	Non-flamm. gas		E0	Forbidden		Forbidden		200	150 kg	A1			2L
1373	Fibres, animal, n.o.s. with oil	4.2				Forbidden		Forbidden		Forbidden		A2			4L
1353	Fibres impregnated with weakly nitrated nitrocellulose, n.o.s.	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803			3L
1373	Fibres, synthetic, n.o.s. with oil	4.2				Forbidden		Forbidden		Forbidden		A2			4L
1373	Fibres, vegetable, n.o.s. with oil Filler, liquid, see Paint (UN 1263) Film scrap, see Celluloid, scrap (UN 2002)	4.2				Forbidden		Forbidden		Forbidden		A2			4L
1324	Films, nitrocellulose base † gelatin coated, except scrap Films, nitrocellulose base, from which gelatin has been removed †, see Celluloid, scrap (UN 2002)	4.1	Flamm. solid	III	E1	Y454	10 kg	454	25 kg	454	100 kg	A803			3L

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					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E	F	G	H	I	J	K	L	M	N		
1774	Fire extinguisher charges † corrosive liquid	8	Corrosive	II	E0	Y840	0.5 L	851	1 L	855	30 L			8L	
	Fire extinguisher charges, expelling, explosive, see Cartridges, power device † (UN 0275), Cartridges, power device † (UN 0276), Cartridges, power device † (UN 0323), Cartridges, power device † (UN 0381)														
1044	Fire extinguishers † with compressed or liquefied gas	2.2	Non-flamm. gas	III	E0	Forbidden		213	75 kg	213	150 kg	A19	2L		
2623	Firelighters, solid † with flammable liquid	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L		
0333	Fireworks †	1.1G				Forbidden			Forbidden					1L	
0334	Fireworks †	1.2G				Forbidden			Forbidden					1L	
0335	Fireworks †	1.3G				Forbidden			Forbidden					1L	
0336	Fireworks †	1.4G	Explosive 1.4		E0	Forbidden			Forbidden			135	75 kg	A802	1L
0337	Fireworks †	1.4S	Explosive 1.4		E0	Forbidden		135	25 kg	135	100 kg	A802	3L		
3316	First aid kit †	9	Miscellaneous		E0	Y960	1 kg	960	10 kg	960	10 kg	A44 A163	9L		
	Flammable gas, see Compressed gas, flammable, n.o.s. ★ (UN 1954) or Liquefied gas, flammable, n.o.s. ★ (UN 3161)														
	Flammable gas in lighters, see Lighters (UN 1057)														
	Flammable gas (small receptacles not fitted with a dispersion device, not refillable), see Receptacles, small, containing gas (UN 2037)														
1993	Flammable liquid, n.o.s. ★	3	Flamm. liquid	I II III	E3 E2 E1	ForbIDDEN Y341 Y344	1 L 10 L	351 353 355	1 L 5 L 60 L	361 364 366	30 L 60 L 220 L	A3	3H 3H 3L		
2924	Flammable liquid, corrosive, n.o.s. ★	3 (8)	Flamm. liquid & Corrosive	I II III	E0 E2 E1	ForbIDDEN Y340 Y342	0.5 L 1 L	350 352 354	0.5 L 1 L 5 L	360 363 365	2.5 L 5 L 60 L	A3 A803	3CH 3CH 3C		
	Flammable liquid preparations, n.o.s., see Flammable liquid, n.o.s. ★ (UN 1993)														
1992	Flammable liquid, toxic, n.o.s. ★	3 (6.1)	Flamm. liquid & Toxic	I II III	E0 E2 E1	ForbIDDEN Y341 Y343	1 L 2 L	352 355	1 L 60 L	361 364 366	30 L 60 L 220 L	A3	3HP 3HP 3P		
3286	Flammable liquid, toxic, corrosive, n.o.s. ★	3 (6.1, 8)	Flamm. liquid & Toxic & Corrosive	I II	E0 E2	ForbIDDEN Y340	0.5 L	352	1 L	360 363	2.5 L 5 L		3CP 3CP		
3180	Flammable solid, corrosive, inorganic, n.o.s. ★	4.1 (8)	Flamm. solid & Corrosive	II III	E2 E1	Y441 Y442	5 kg 5 kg	445 446	15 kg 25 kg	448 449	50 kg 100 kg	A3 A803	3C 3C		
2925	Flammable solid, corrosive, organic, n.o.s. ★	4.1 (8)	Flamm. solid & Corrosive	II III	E2 E1	Y441 Y442	5 kg 5 kg	445 446	15 kg 25 kg	448 449	50 kg 100 kg	A3 A803	3C 3C		
3178	Flammable solid, inorganic, n.o.s. ★	4.1	Flamm. solid	II III	E2 E1	Y441 Y443	5 kg 10 kg	445 446	15 kg 25 kg	448 449	50 kg 100 kg	A3 A803	3L 3L		
1325	Flammable solid, organic, n.o.s. ★	4.1	Flamm. solid	II III	E2 E1	Y441 Y443	5 kg 10 kg	445 446	15 kg 25 kg	448 449	50 kg 100 kg	A3 A803	3L 3L		
3176	Flammable solid, organic, molten, n.o.s. ★	4.1				Forbidden			Forbidden					A3	3L
3097	Flammable solid, oxidizing, n.o.s. ★	4.1 (5.1)				Forbidden			Forbidden					A3	3X
3179	Flammable solid, toxic, inorganic, n.o.s. ★	4.1 (6.1)	Flamm. solid & Toxic	II III	E2 E1	Y440 Y443	1 kg 10 kg	445 446	15 kg 25 kg	448 449	50 kg 100 kg	A3 A803	3P 3P		



Dangerous Goods Regulations

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
					EQ see 2.6	Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
2926	Flammable solid, toxic, organic, n.o.s. *	4.1 (6.1)	Flamm. solid & Toxic	II III	E2 E1	Y440 Y443	1 kg 10 kg	445 446	15 kg 25 kg	448 449	50 kg 100 kg	A3 A803	3P 3P			
0420	Flares, aerial †	1.1G					Forbidden		Forbidden		Forbidden			1L		
0421	Flares, aerial †	1.2G					Forbidden		Forbidden		Forbidden			1L		
0093	Flares, aerial †	1.3G	Explosive		E0		Forbidden		Forbidden			135	75 kg	A802	1L	
0403	Flares, aerial †	1.4G	Explosive 1.4		E0		Forbidden		Forbidden			135	75 kg	A802	1L	
4	0404 Flares, aerial †	1.4S	Explosive 1.4		E0		Forbidden		135	25 kg	135	100 kg	A802	3L		
F	Flares, aeroplane, see Flares, aerial † (UN 0093), Flares, aerial † (UN 0403), Flares, aerial † (UN 0404), Flares, aerial † (UN 0420), Flares, aerial † (UN 0421)															
	Flares, distress, small, see Signal devices, hand † (UN 0191) or Signal devices, hand † (UN 0373)															
	Flares, highway or railway, see Signal devices, hand † (UN 0191) or Signal devices, hand † (UN 0373)															
0418	Flares, surface †	1.1G					Forbidden		Forbidden		Forbidden			1L		
0419	Flares, surface †	1.2G					Forbidden		Forbidden		Forbidden			1L		
0092	Flares, surface †	1.3G	Explosive		E0		Forbidden		Forbidden			135	75 kg	A802	1L	
	Flares, water-activated, see Contrivances, water-activated * † (UN 0248) or Contrivances, water-activated * † (UN 0249)															
0094	Flash powder †	1.1G					Forbidden		Forbidden		Forbidden			1L		
0305	Flash powder †	1.3G					Forbidden		Forbidden		Forbidden			1L		
	Flavouring liquids, see Extracts, flavouring, liquid † (UN 1197)															
	Flue dusts, toxic, see Arsenical dust † (UN 1562)															
	Fluoric acid, see Hydrofluoric acid (UN 1790)															
1045	Fluorine, compressed	2.3 (5.1, 8)					Forbidden		Forbidden		Forbidden			A2	2PX	
2642	Fluoroacetic acid	6.1	Toxic	I	E5		Forbidden		665	1 kg	672	15 kg			6L	
	o-Fluoroaniline, see Fluoroanilines (UN 2941)															
	p-Fluoroaniline, see Fluoroanilines (UN 2941)															
	4-Fluoroaniline, see Fluoroanilines (UN 2941)															
	2-Fluoroaniline, see Fluoroanilines (UN 2941)															
2941	Fluoroanilines	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L			6L		
2387	Fluorobenzene	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L		
1775	Fluoroboric acid	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L			8L		
	Fluoroethane, see Ethyl fluoride (UN 2453)															
	Fluoroform, see Trifluoromethane (UN 1984)															
	Fluoromethane, see Methyl fluoride (UN 2454)															
1776	Fluorophosphoric acid, anhydrous	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L			8L		
2856	Fluorosilicates, n.o.s. *	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg			6L		

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
1778	Fluorosilicic acid	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L			8L	
1777	Fluorosulphonic acid	8	Corrosive	I	E0	ForbIDDEN		850	0.5 L	854	2.5 L			8W	
2388	Fluorotoluenes	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
2209	Formaldehyde solution with not less than 25% formaldehyde	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803		8i	
1198	Formaldehyde solution, flammable	3 (8)	Flamm. liquid & Corrosive	III	E1	Y342	1 L	354	5 L	365	60 L	A180 A803		3Ci	
	Formaldehyde solution with < 25% formaldehyde, see Aviation regulated liquid, n.o.s. ★ † (UN 3334)														A189
	Formalin, see Formaldehyde solution, flammable (UN 1198) or Formaldehyde solution (UN 2209)														
	Formamidine sulphonic acid, see Thiourea dioxide (UN 3341)														
3412	Formic acid with ≥ 10% but ≤ 85% acid by weight	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L			8L	
3412	Formic acid with ≥ 5% but < 10% acid by weight	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803		8L	
1779	Formic acid with more than 85% acid by weight	8 (3)	Corrosive & Flamm. liquid	II	E2	Y840	0.5 L	851	1 L	855	30 L			8F	
	Formic aldehyde, see Formaldehyde solution, flammable (UN 1198) or Formaldehyde solution (UN 2209)														
	Formic ether, see Ethyl formate (UN 1190)														
	2-Formyl-3,4-dihydro-2H-pyran, see Acrolein dimer, stabilized (UN 2607)														
0099	Fracturing devices, explosive, † without detonator for oil wells	1.1D				ForbIDDEN			ForbIDDEN		ForbIDDEN		A2	1L	
	Freon, see appropriate chemical name or see listing under the appropriate "Refrigerant gas" proper shipping name														
1863	Fuel, aviation, turbine engine	3	Flamm. liquid	I II III	E3 E2 E1	ForbIDDEN Y341 Y344	1 L 10 L	351 353 355	1 L 5 L 60 L	361 364 366	30 L 60 L 220 L	A3	3L 3L 3L		
3479	Fuel cell cartridges † containing hydrogen in metal hydride	2.1	Flamm. gas		E0	Y215	0.5 kg	215	1 kg	215	15 kg	A146 A162 A802		10L	
3478	Fuel cell cartridges † containing liquefied flammable gas	2.1	Flamm. gas		E0	Y215	0.5 kg	215	1 kg	215	15 kg	A146 A161 A802		10L	
3473	Fuel cell cartridges † containing flammable liquids	3	Flamm. liquid		E0	Y374	2.5 kg	374	5 kg	374	50 kg	A146 A802		3L	
3476	Fuel cell cartridges † containing water reactive substances	4.3	Dang. when wet		E0	Y495	2.5 kg	495	5 kg	495	50 kg	A146 A157 A802		4W	
3477	Fuel cell cartridges † containing corrosive substances	8	Corrosive		E0	Y873	2.5 kg	873	5 kg	873	50 kg	A146 A157 A802		8L	
3479	Fuel cell cartridges contained in equipment † containing hydrogen in metal hydride	2.1	Flamm. gas		E0	ForbIDDEN		216	1 kg	216	15 kg	A146 A162		10L	
3478	Fuel cell cartridges contained in equipment † containing liquefied flammable gas	2.1	Flamm. gas		E0	ForbIDDEN		216	1 kg	216	15 kg	A146 A161		10L	
3473	Fuel cell cartridges contained in equipment † containing flammable liquids	3	Flamm. liquid		E0	ForbIDDEN		375	5 kg	375	50 kg	A146		3L	

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
3476	Fuel cell cartridges contained in equipment † containing water reactive substances	4.3	Dang. when wet		E0	Forbidden		496	5 kg	496	50 kg	A146 A157	4W		
3477	Fuel cell cartridges contained in equipment † containing corrosive substances	8	Corrosive		E0	Forbidden		874	5 kg	874	50 kg	A146 A157	8L		
3479	Fuel cell cartridges packed with equipment † containing hydrogen in metal hydride	2.1	Flamm. gas		E0	Forbidden		217	1 kg	217	15 kg	A146 A162	10L		
3478	Fuel cell cartridges packed with equipment † containing liquefied flammable gas	2.1	Flamm. gas		E0	Forbidden		217	1 kg	217	15 kg	A146 A161	10L		
3473	Fuel cell cartridges packed with equipment † containing flammable liquids	3	Flamm. liquid		E0	Forbidden		376	5 kg	376	50 kg	A146	3L		
3476	Fuel cell cartridges packed with equipment † containing water reactive substances	4.3	Dang. when wet		E0	Forbidden		497	5 kg	497	50 kg	A146 A157	4W		
3477	Fuel cell cartridges packed with equipment † containing corrosive substances	8	Corrosive		E0	Forbidden		875	5 kg	875	50 kg	A146 A157	8L		
	Fuel oil, see Gas oil (UN 1202)														
	Fuel system components (including fuel control units (FCU), carburetors, fuel lines, fuel pumps), see Dangerous goods in apparatus (UN 3363) or Dangerous goods in machinery (UN 3363)														
	Fulminate of mercury (dry)						Forbidden			Forbidden		Forbidden			
	Fulminate of mercury, wet, see Mercury fulminate, wetted (UN 0135)						Forbidden			Forbidden		Forbidden			
	Fulminating gold						Forbidden			Forbidden		Forbidden			
	Fulminating mercury						Forbidden			Forbidden		Forbidden			
	Fulminating platinum						Forbidden			Forbidden		Forbidden			
	Fulminating silver						Forbidden			Forbidden		Forbidden			
	Fulminic acid						Forbidden			Forbidden		Forbidden			
	Fumaroyl dichloride, see Fumaryl chloride (UN 1780)														
1780	Fumaryl chloride	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L		8L		
	Fumigant, see appropriate pesticide														
	Fuming liquid arsenic, see Arsenic trichloride (UN 1560)														
	Fungicide, see appropriate pesticide														
1199	Furaldehydes	6.1 (3)	Toxic & Flamm. liquid	II	E4	Y641	1 L	654	5 L	662	60 L		6F		
2389	Furan	3					Forbidden			Forbidden		Forbidden		3H	
2874	Furfuryl alcohol	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L		6L		
2526	Furfurylamine	3 (8)	Flamm. liquid & Corrosive	III	E1	Y342	1 L	354	5 L	365	60 L	A803	3C		
	Furyl carbinol, see Furfuryl alcohol (UN 2874)														
0290	Fuse, detonating † metal clad	1.1D					Forbidden			Forbidden		Forbidden		1L	
0102	Fuse, detonating † metal clad	1.2D					Forbidden			Forbidden		Forbidden		1L	

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
A	B	C	D	E	F	G	H	I	J	K	L	M	N	S.P. see 4.4	ERG Code
0104	Fuse, detonating, mild effect † metal clad	1.4D	Explosive 1.4		E0	Forbidden			Forbidden	139	75 kg	A802	1L		
	Fusee, matches, see Matches, fusee † (UN 2254)														
	Fusees, railway or highway, explosive, see Signal devices, hand † (UN 0191) or Signal devices, hand † (UN 0373)														
0103	Fuse, igniter † tubular, metal clad	1.4G	Explosive 1.4		E0	Forbidden			Forbidden	140	75 kg	A802	1L		
1201	Fusel oil	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3	3L 3L		
0101	Fuse, non-detonating †	1.3G				Forbidden			Forbidden		Forbidden			1L	
0105	Fuse, safety †	1.4S	Explosive 1.4		E0	Forbidden			140	25 kg	140	100 kg	A802	3L	
	Fuses, tracer, see Tracers for ammunition † (UN 0212) or Tracers for ammunition † (UN 0306)														
	Fuzes, combination, percussion or time, see Fuzes, detonating † (UN 0257), Fuzes, igniting † (UN 0317), Fuzes, detonating † (UN 0367), Fuzes, igniting † (UN 0368)														
0106	Fuzes, detonating †	1.1B				Forbidden			Forbidden		Forbidden			1L	
0107	Fuzes, detonating †	1.2B				Forbidden			Forbidden		Forbidden			1L	
0257	Fuzes, detonating †	1.4B	Explosive 1.4		E0	Forbidden			Forbidden	141	75 kg	A802	1L		
0367	Fuzes, detonating †	1.4S	Explosive 1.4		E0	Forbidden			141	25 kg	141	100 kg	A802	3L	
0408	Fuzes, detonating † with protective features	1.1D				Forbidden			Forbidden		Forbidden			1L	
0409	Fuzes, detonating † with protective features	1.2D				Forbidden			Forbidden		Forbidden			1L	
0410	Fuzes, detonating † with protective features	1.4D	Explosive 1.4		E0	Forbidden			Forbidden	141	75 kg	A802	1L		
0316	Fuzes, igniting †	1.3G				Forbidden			Forbidden		Forbidden			1L	
0317	Fuzes, igniting †	1.4G	Explosive 1.4		E0	Forbidden			Forbidden	141	75 kg	A802	1L		
0368	Fuzes, igniting †	1.4S	Explosive 1.4		E0	Forbidden			141	25 kg	141	100 kg	A802	3L	
	Galactan trinitrate					Forbidden			Forbidden		Forbidden				
2803	Gallium †	8	Corrosive	III	E0	Forbidden			867	20 kg	867	20 kg	A69 A804	8L	
	Gas candles, charged with flammable gas, see Devices, small, hydrocarbon gas powered (UN 3150)														
2037	Gas cartridges (flammable) without a release device, non-refillable	2.1	Flamm. gas		E0	Y203	1 kg	203	1 kg	203	15 kg	A167 A802	10L		
2037	Gas cartridges (non-flammable) without a release device, non-refillable	2.2	Non-flamm. gas		E0	Y203	1 kg	203	1 kg	203	15 kg	A98 A167 A802	2L		
2037	Gas cartridges (oxidizing) without a release device, non-refillable	2.2 (5.1)	Non-flamm. gas & Oxidizer		E0	Forbidden		203	1 kg	203	15 kg	A167 A802	2X		
2037	Gas cartridges (toxic and corrosive) without a release device, non-refillable	2.3 (8)				Forbidden			Forbidden		Forbidden		A2	2CP	
2037	Gas cartridges (toxic and flammable) without a release device, non-refillable	2.3 (2.1)				Forbidden			Forbidden		Forbidden		A2	10P	



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
2037	Gas cartridges (toxic and oxidizing) without a release device, non-refillable	2.3 (5.1)						Forbidden		Forbidden		Forbidden		A2	2X
2037	Gas cartridges (toxic, flammable and corrosive) without a release device, non refillable	2.3 (2.1, 8)						Forbidden		Forbidden		Forbidden		A2	10C
2037	Gas cartridges (toxic, oxidizing and corrosive) without a release device, non-refillable	2.3 (5.1, 8)						Forbidden		Forbidden		Forbidden		A2	2PX
2037	Gas cartridges (toxic) without a release device, non-refillable	2.3						Forbidden		Forbidden		Forbidden		A2	2P
	Gas, compressed, see Compressed gas, toxic, flammable, n.o.s. ★ (UN 1953), Compressed gas, flammable, n.o.s. ★ (UN 1954), Compressed gas, toxic, n.o.s. ★ (UN 1955), Compressed gas, n.o.s. ★ (UN 1956), Compressed gas, oxidizing, n.o.s. ★ (UN 3156), Compressed gas, toxic, oxidizing, n.o.s. ★ (UN 3303), Compressed gas, toxic, corrosive, n.o.s. ★ (UN 3304), Compressed gas, toxic, flammable, corrosive, n.o.s. ★ (UN 3305), Compressed gas, toxic, oxidizing, corrosive, n.o.s. ★ (UN 3306)														
	Gas drips, hydrocarbon †, see Hydrocarbons, liquid, n.o.s. (UN 3295)														
	Gas liquefied, see Liquefied gas, oxidizing, n.o.s. ★ (UN 3157), Liquefied gas, toxic, flammable, n.o.s. ★ (UN 3160), Liquefied gas, flammable, n.o.s. ★ (UN 3161), Liquefied gas, toxic, n.o.s. ★ (UN 3162), Liquefied gas, n.o.s. ★ (UN 3163), Liquefied gas, toxic, oxidizing, n.o.s. ★ (UN 3307), Liquefied gas, toxic, corrosive, n.o.s. ★ (UN 3308), Liquefied gas, toxic, flammable, corrosive, n.o.s. ★ (UN 3309), Liquefied gas, toxic, oxidizing, corrosive, n.o.s. ★ (UN 3310)														
1202	Gas oil	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L	A3	3L		
1203	Gasoline	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L	A100	3H		
△	Gasoline, casinghead, see Petrol (UN 1203), Motor spirit (UN 1203), Gasoline (UN 1203)														
3158	Gas, refrigerated liquid, n.o.s. ★	2.2	Non-flamm. gas & Cryogenic liquid		E1		Forbidden	202	50 kg	202	500 kg		2L		
3312	Gas, refrigerated liquid, flammable, n.o.s. ★	2.1					Forbidden		Forbidden		Forbidden		10L		
3311	Gas, refrigerated liquid, oxidizing, n.o.s. ★	2.2 (5.1)					Forbidden		Forbidden		Forbidden		A2	2X	
3167	Gas sample, non-pressurized, flammable, n.o.s. not refrigerated liquid	2.1	Flamm. gas	E0		Forbidden	206	1 L	206	5 L	A802	10L			
3169	Gas sample, non-pressurized, toxic, n.o.s. not refrigerated liquid	2.3	Toxic gas	E0		Forbidden		Forbidden	206	1 L	A1 A802	2P			
3168	Gas sample, non-pressurized, toxic, flammable, n.o.s. not refrigerated liquid	2.3 (2.1)	Toxic gas & Flamm. gas	E0		Forbidden		Forbidden	206	1 L	A1 A802	10P			
	Gas turbine engines †, see Engine, internal combustion, flammable gas powered † (UN 3166)														
	Gelatin, blasting, see Explosive, blasting, type A † (UN 0081)														
	Gelatin dynamites, see Explosive, blasting, type A † (UN 0081)														
3245	Genetically modified micro-organisms	9			E0		Forbidden	959	No limit	959	No limit	A47	9L		
3245	Genetically modified organisms	9			E0		Forbidden	959	No limit	959	No limit	A47	9L		

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
2192	Germane Germanium hydride, see Germane (UN 2192) Glycerol-1,3-dichlorohydrin, see 1,3-Dichloropropanol-2 (UN 2750) Glycerol-1,3-dinitrate Glycerol gluconate trinitrate Glycerol lactate trinitrate	2.3 (2.1)						Forbidden		Forbidden		Forbidden		A2	10P
2689	Glycerol alpha-monochlorohydrin Glyceryl trinitrate, see Nitroglycerin, desensitized (UN 0143)	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L				6L
2622	Glycidaldehyde	3 (6.1)	Flamm. liquid & Toxic	II	E2	Y341	1 L	352	1 L	364	60 L				3P
0284	Grenades † hand or rifle, with bursting charge	1.1D					Forbidden		Forbidden		Forbidden				1L
0292	Grenades † hand or rifle, with bursting charge	1.1F					Forbidden		Forbidden		Forbidden				1L
0285	Grenades † hand or rifle, with bursting charge	1.2D					Forbidden		Forbidden		Forbidden				1L
0293	Grenades † hand or rifle, with bursting charge Grenades, illuminating, see Ammunition, illuminating † (UN 0171), Ammunition, illuminating † (UN 0254), Ammunition, illuminating † (UN 0297)	1.2F					Forbidden		Forbidden		Forbidden				1L
0372	Grenades, practice † hand or rifle	1.2G					Forbidden		Forbidden		Forbidden				1L
0318	Grenades, practice † hand or rifle	1.3G					Forbidden		Forbidden		Forbidden				1L
0452	Grenades, practice † hand or rifle	1.4G	Explosive 1.4		E0		Forbidden		Forbidden		141	75 kg	A802		1L
0110	Grenades, practice † hand or rifle Grenades, smoke, see Ammunition, smoke † (UN 0015), Ammunition, smoke † (UN 0016), Ammunition, smoke † (UN 0303)	1.4S	Explosive 1.4		E0		Forbidden	141	25 kg	141	100 kg	A802			3L
1467	Guanidine nitrate Guanyl nitrosaminoguanylidene hydrazine (dry)	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803			5L
0113	Guanyl nitrosaminoguanylidene hydrazine, wetted with 30% or more water, by weight Guanyl nitrosaminoguanylidene hydrazine, wetted with less than 30% water Guanyl nitrosaminoguanyltetrazene (dry)	1.1A					Forbidden		Forbidden		Forbidden				1L
0114	Guanyl nitrosaminoguanyltetrazene, wetted with 30% or more water or mixture of alcohol and water, by weight Guanyl nitrosaminoguanyltetrazene, wetted with less than 30% water or mixture of alcohol and water	1.1A					Forbidden		Forbidden		Forbidden				1L
0027	Gunpowder † granular or as a meal	1.1D					Forbidden		Forbidden		Forbidden				1L



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UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
A	B	C	D	E		G	H						M	N		
0028	Gunpowder, compressed †	1.1D				Forbidden			Forbidden		Forbidden				1L	
0028	Gunpowder in pellets †	1.1D				Forbidden			Forbidden		Forbidden				1L	
	Gutta percha solution, see Rubber solution (UN 1287)															
2545	Hafnium powder, dry	4.2	Spont. comb.	I II III	E2 E1	Forbidden			Forbidden	467 469	15 kg 25 kg		Forbidden	470 471	50 kg 100 kg	
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	4.1	Flamm. solid	II	E2	Y441	5 kg	445	15 kg	448	50 kg		A3 A803	4L 4L 4L	A35	3L
	Hafnium powder, wetted with not less than 25% water (a visible excess of water must be present) (a) mechanically produced: particle size more than 53 microns; (b) chemically produced: particle size more than 840 microns					Not Restricted			Not Restricted		Not Restricted					
	Hair, wet, see Fibres, vegetable, n.o.s. (UN 1373), Fibres, animal, n.o.s. (UN 1373), Fibres, synthetic, n.o.s. (UN 1373)															
	Hand signal device, see Signal devices, hand † (UN 0191) or Signal devices, hand † (UN 0373)															
1202	Heating oil, light	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		A3	3L		
	Heat producing article battery operated equipment, such as underwater torches or soldering equipment, which, if accidentally activated, will generate extreme heat and can cause fire	9				Forbidden			Forbidden		Forbidden		A93			
	Heavy hydrogen, see Deuterium, compressed (UN 1957)															
1046	Helium, compressed	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg		A69	2L		
	Helium, liquid, non-pressurized					Forbidden			Forbidden		Forbidden					
	Helium-oxygen mixture															
1963	Helium, refrigerated liquid	2.2	Non-flamm. gas & Cryogenic liquid		E1	Forbidden		202	50 kg	202	500 kg			2L		
3296	Heptafluoropropane	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L		
3056	n-Heptaldehyde	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L		
	n-Heptanal, see n-Heptaldehyde (UN 3056)															
1206	Heptanes	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H		
	4-Heptanone, see Dipropyl ketone (UN 2710)															
2278	n-Heptene	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L		
2661	Hexachloroacetone	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L			6L		
2729	Hexachlorobenzene	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg			6L		
	Hexachloro-1,3-butadiene, see Hexachlorobutadiene (UN 2279)															
2279	Hexachlorobutadiene	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L			6L		
2646	Hexachlorocyclopentadiene	6.1				Forbidden			Forbidden		Forbidden				6L	
2875	Hexachlorophene	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg			6L		
	Hexachloro-2-propanone, see Hexachloroacetone (UN 2661)															

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
1781	Hexadecyltrichlorosilane	8	Corrosive	II	E0	Forbidden			Forbidden			876	30 L	A1	8L
2458	Hexadiene	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3H
1611	Hexaethyl tetraphosphate	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L				6L
1612	Hexaethyl tetraphosphate and compressed gas mixture	2.3				Forbidden			Forbidden		Forbidden			A2	2P
2420	Hexafluoroacetone	2.3 (8)				Forbidden			Forbidden		Forbidden			A2	2CP
2552	Hexafluoroacetone hydrate, liquid	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L				6L
3436	Hexafluoroacetone hydrate, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L
2193	Hexafluoroethane	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg				2L
1782	Hexafluorophosphoric acid	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L				8L
1858	Hexafluoropropylene	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg				2L
	Hexahydrobenzene, see Cyclohexane (UN 1145)														
	Hexahydrocresol, see Methylcyclohexanols (UN 2617)														
	Hexahydromethyl phenol, see Methylcyclohexanols (UN 2617)														
	Hexahydrotoluene, see Methylcyclohexane (UN 2296)														
1207	Hexaldehyde	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
	Hexamethylene, see Cyclohexane (UN 1145)														
2280	Hexamethylenediamine, solid	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A803	8L		
1783	Hexamethylenediamine solution	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L	A3	8L	A803	8L
				III	E1	Y841	1 L	852	5 L	856	60 L				
2281	Hexamethylene diisocyanate	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L				6L
2493	Hexamethyleneimine	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L				3C
1328	Hexamethylenetetramine	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L		
	Hexamethylene triperoxide diamine (dry)					Forbidden			Forbidden		Forbidden				
	Hexamethylol benzene hexanitrate					Forbidden			Forbidden		Forbidden				
	3,3,6,6,9,9-Hexamethyl-1,2,4,5-tetraoxacyclononane, more than 52%					Forbidden			Forbidden		Forbidden				
	Hexamine, see Hexamethylenetetramine (UN 1328)														
1208	Hexanes	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3H
	Hexanitroazoxy benzene					Forbidden			Forbidden		Forbidden				
	2,2',4,4',6,6'-Hexanitro-3,3'-dihydroxyazobenzene (dry)					Forbidden			Forbidden		Forbidden				
0079	Hexanitrodiphenylamine	1.1D													1L
	2,3',4,4',6,6'-Hexanitrodiphenylether					Forbidden			Forbidden		Forbidden				
	N,N'-(Hexanitrodiphenyl) ethylene dinitramine (dry)					Forbidden			Forbidden		Forbidden				
	Hexanitrodiphenyl urea					Forbidden			Forbidden		Forbidden				
	Hexanitroethane					Forbidden			Forbidden		Forbidden				
	Hexanitrooxanilide					Forbidden			Forbidden		Forbidden				



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
0392	Hexanitrostilbene Hexanoic acid, see Caproic acid (UN 2829)	1.1D						Forbidden		Forbidden		Forbidden			1L
2282	Hexanols	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
2370	1-Hexene	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3H
0391	Hexogen and cyclotetramethylenetrinitramine mixture, desensitized with not less than 10% phlegmatizer, by weight	1.1D						Forbidden		Forbidden		Forbidden			1L
0391	Hexogen and cyclotetramethylenetrinitramine mixture, wetted with not less than 15% water, by weight	1.1D						Forbidden		Forbidden		Forbidden			1L
0483	Hexogen, desensitized	1.1D						Forbidden		Forbidden		Forbidden			1L
0072	Hexogen, wetted with not less than 15% water, by weight	1.1D						Forbidden		Forbidden		Forbidden			1L
0118	Hexolite dry or wetted with less than 15% water, by weight	1.1D						Forbidden		Forbidden		Forbidden			1L
0118	Hexitol dry or wetted with less than 15% water, by weight	1.1D						Forbidden		Forbidden		Forbidden			1L
0393	Hexontal	1.1D						Forbidden		Forbidden		Forbidden			1L
0079	Hexyl	1.1D						Forbidden		Forbidden		Forbidden			1L
1784	Hexyltrichlorosilane High explosives, see individual explosives' entries	8	Corrosive	II	E0			Forbidden		Forbidden		876	30 L	A1	8L
0484	HMX, desensitized HMX (dry or unphlegmatized)	1.1D						Forbidden		Forbidden		Forbidden			1L
0226	HMX, wetted with not less than 15% water, by weight	1.1D						Forbidden		Forbidden		Forbidden			1L
2029	Hydrazine, anhydrous	8 (3, 6.1)	Corrosive & Flamm. liquid & Toxic	I	E0			Forbidden		Forbidden		854	2.5 L		8FP
3293	Hydrazine, aqueous solution with 37% or less hydrazine, by weight	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L	A3	6L		
2030	Hydrazine, aqueous solution with more than 37% hydrazine by weight	8 (6.1)	Corrosive & Toxic	I II III	E0 E0 E1	Y841	1 L	ForbIDDEN	ForbIDDEN	854	2.5 L	A1	8P	855	30 L
3484	Hydrazine aqueous solution, flammable with more than 37% hydrazine, by weight	8 (3, 6.1)	Corrosive & Flamm. liquid & Toxic	I	E0			Forbidden		Forbidden		854	2.5 L	A1	8FP
	Hydrazine azide							Forbidden		Forbidden					
	Hydrazine chlorate							Forbidden		Forbidden					
	Hydrazine dicarbonic acid diazide							Forbidden		Forbidden					
	Hydrazine perchlorate							Forbidden		Forbidden					
	Hydrazine selenate							Forbidden		Forbidden					
	Hydrides, metal, water-reactive, n.o.s., see Metal hydrides, water-reactive, n.o.s. * (UN 1409)														
1787	Hydriodic acid	8	Corrosive	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A3 A803	8L 8L		
	Hydriodic acid, anhydrous, see Hydrogen iodide, anhydrous (UN 2197)														

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					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
					EQ see 2.6	Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
1788	Hydrobromic acid 49% or less strength	8	Corrosive	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A3 A803	8L 8L			
1788	Hydrobromic acid more than 49% strength	8					Forbidden			Forbidden				A2	8L	
	Hydrobromic acid, anhydrous, see Hydrogen bromide, anhydrous (UN 1048)															
	Hydrobromic ether, see Ethyl bromide (UN 1891)															
1964	Hydrocarbon gas mixture, compressed, n.o.s. ★†	2.1	Flamm. gas		E0		Forbidden			Forbidden	200	150 kg	A1	10L		
1965	Hydrocarbon gas mixture, liquefied, n.o.s. ★†	2.1	Flamm. gas		E0		Forbidden			Forbidden	200	150 kg	A1	10L		
	Hydrocarbon gas-powered small devices, see Devices, small, hydrocarbon gas powered (UN 3150)															
3150	Hydrocarbon gas refills for small devices with release device	2.1	Flamm. gas		E0		Forbidden			201	1 kg	201	15 kg	A802	10L	
3295	Hydrocarbons, liquid, n.o.s.	3	Flamm. liquid	I II III	E3 E2 E1	Y341 Y344	1 L 10 L	351 353 355	1 L 5 L 60 L	361 364 366	30 L 60 L 220 L	A3 A224	3H 3H 3L			
1789	Hydrochloric acid	8	Corrosive	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A3 A803	8L 8L			
	Hydrochloric acid, anhydrous, see Hydrogen chloride, anhydrous (UN 1050)															
	Hydrocyanic acid, anhydrous, see Hydrogen cyanide, stabilized (UN 1051) or Hydrogen cyanide, stabilized (UN 1614)															
1613	Hydrocyanic acid, aqueous solution with 20% or less hydrogen cyanide	6.1					Forbidden			Forbidden					6L	
	Hydrocyanic acid, aqueous solution, more than 20% hydrogen cyanide						Forbidden			Forbidden						
	Hydrofluoboric acid, see Fluoroboric acid (UN 1775)															
1790	Hydrofluoric acid 60% or less strength	8 (6.1)	Corrosive & Toxic	II	E2	Y840	0.5 L	851	1 L	855	30 L				8P	
1790	Hydrofluoric acid more than 60% strength	8 (6.1)	Corrosive & Toxic	I	E0		Forbidden			850	0.5 L	854	2.5 L		8P	
1786	Hydrofluoric acid and sulphuric acid mixture	8 (6.1)	Corrosive & Toxic	I	E0		Forbidden			Forbidden		854	2.5 L	A1	8P	
	Hydrofluoric acid, anhydrous, see Hydrogen fluoride, anhydrous (UN 1052)															
	Hydrofluosilicic acid, see Fluorosilicic acid (UN 1778)															
2034	Hydrogen and methane mixture, compressed	2.1	Flamm. gas		E0		Forbidden			Forbidden	200	150 kg	A1	10L		
	Hydrogen arsenide, see Arsine (UN 2188)															
1048	Hydrogen bromide, anhydrous	2.3 (8)					Forbidden			Forbidden					2CP	
	Hydrogen bromide solution, see Hydrobromic acid (UN 1788)															
1050	Hydrogen chloride, anhydrous	2.3 (8)					Forbidden			Forbidden					2CP	
2186	Hydrogen chloride, refrigerated liquid	2.3 (8)					Forbidden			Forbidden					2CP	
1049	Hydrogen, compressed	2.1	Flamm. gas		E0		Forbidden			Forbidden	200	150 kg	A1	10L		
1613	Hydrogen cyanide, aqueous solution with not more than 20% hydrogen cyanide	6.1					Forbidden			Forbidden					6L	

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		G	H						M	N	
3294	Hydrogen cyanide, solution in alcohol with not more than 45% hydrogen cyanide	6.1 (3)						Forbidden		Forbidden		Forbidden			6F
1051	Hydrogen cyanide, stabilized containing less than 3% water	6.1 (3)						Forbidden		Forbidden		Forbidden			6H
1614	Hydrogen cyanide, stabilized containing less than 3% water and absorbed in a porous inert material	6.1						Forbidden		Forbidden		Forbidden			6L
	Hydrogen cyanide, unstabilized							Forbidden		Forbidden		Forbidden			
1740	Hydrogendifluorides, solid, n.o.s.	8	Corrosive	II III	E2 E1	Y844 Y845	5 kg 5 kg	859 860	15 kg 25 kg	863 864	50 kg 100 kg	A3 A803		8L 8L	
3471	Hydrogendifluorides, solution, n.o.s.	8 (6.1)	Corrosive & Toxic	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A803		8P 8P	
1052	Hydrogen fluoride, anhydrous	8 (6.1)						Forbidden		Forbidden		Forbidden		A2	8P
	Hydrogen fluoride solution, see Hydrofluoric acid (UN 1790)														
△ 3468	Hydrogen in a metal hydride storage system	2.1	Flamm. gas		E0			Forbidden		Forbidden		214	100 kg	A1 A143 A176	10L
△ 3468	Hydrogen in a metal hydride storage system contained in equipment	2.1	Flamm. gas		E0			Forbidden		Forbidden		214	100 kg	A1 A143 A176	10L
△ 3468	Hydrogen in a metal hydride storage system packed with equipment	2.1	Flamm. gas		E0			Forbidden		Forbidden		214	100 kg	A1 A143 A176	10L
2197	Hydrogen iodide, anhydrous	2.3 (8)						Forbidden		Forbidden		Forbidden		A2	2CP
	Hydrogen iodide solution, see Hydriodic acid (UN 1787)														
	Hydrogen, liquid, see Hydrogen, refrigerated liquid (UN 1966)														
3149	Hydrogen peroxide and peroxyacetic acid mixture stabilized with acid(s), water and not more than 5% peroxyacetic acid	5.1 (8)	Oxidizer & Corrosive	II	E2	Y540	0.5 L	550	1 L	554	5 L	A96		5C	
2014	Hydrogen peroxide, aqueous solution with 20% or more but 40% or less hydrogen peroxide (stabilized as necessary)	5.1 (8)	Oxidizer & Corrosive	II	E2	Y540	0.5 L	550	1 L	554	5 L			5C	
2984	Hydrogen peroxide, aqueous solution with 8% or more but less than 20% hydrogen peroxide (stabilized as necessary)	5.1	Oxidizer	III	E1	Y541	1 L	551	2.5 L	555	30 L	A803		5L	
2014	Hydrogen peroxide, aqueous solution with more than 40% but 60% or less hydrogen peroxide (stabilized as necessary)	5.1 (8)						Forbidden		Forbidden		Forbidden		A2 A75	5C
2015	Hydrogen peroxide, aqueous solution, stabilized with more than 60% hydrogen peroxide	5.1 (8)						Forbidden		Forbidden		Forbidden			5C
	Hydrogen peroxide, aqueous solution with less than 8% hydrogen peroxide (stabilized as necessary)							Not Restricted		Not Restricted		Not Restricted			
2015	Hydrogen peroxide, stabilized	5.1 (8)						Forbidden		Forbidden		Forbidden			5C
	Hydrogen phosphide, see Phosphine (UN 2199)														
1966	Hydrogen, refrigerated liquid	2.1						Forbidden		Forbidden		Forbidden			10L
2202	Hydrogen selenide, anhydrous	2.3 (2.1)						Forbidden		Forbidden		Forbidden		A2	10P
	Hydrogen silicide, see Silane (UN 2203)														
	Hydrogen sulphate, see Sulphuric acid (UN 1830)														

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						G	H									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
1053	Hydrogen sulphide Hydroselenic acid, see Hydrogen selenide, anhydrous (UN 2202) Hydrosilicofluoric acid, see Fluorosilicic acid (UN 1778) Hydroxybenzene, see Phenol, solid (UN 1671)	2.3 (2.1)						Forbidden		Forbidden		Forbidden		A2	10P	
0508	1-Hydroxybenzotriazole, anhydrous dry or wetted with less than 20% water, by weight	1.3C						Forbidden		Forbidden		Forbidden			1L	
3474	1-Hydroxybenzotriazole monohydrate 3-Hydroxybutan-2-one, see Acetyl methyl carbinol (UN 2621) 3-(2-Hydroxyethoxy(-4-pyrrolidin-1-ylbenzenediazonium zinc chloride, see Self-reactive solid type D, temperature controlled ★ (UN 3236) Hydroxyl amine iodide	4.1	Flamm. solid	I	E0		Forbidden		451	0.5 kg	451	0.5 kg			3E	
2865	Hydroxylamine sulphate 1-Hydroxy-3-methyl-2-penten-4-yne, see 1-Pentol (UN 2705) 3-Hydroxyphenol, see Resorcinol (UN 2876)	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A803	8L			
3212	Hypochlorites, inorganic, n.o.s. ★	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg	A169	5L			
1791	Hypochlorite solution † Hyponitrous acid Igniter fuse, metal clad, see Fuse, igniter † (UN 0103)	8	Corrosive	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A3 A803	8L 8L			
0121	Igniters †	1.1G					Forbidden		Forbidden		Forbidden				1L	
0314	Igniters †	1.2G					Forbidden		Forbidden		Forbidden				1L	
0315	Igniters †	1.3G					Forbidden		Forbidden		Forbidden				1L	
0325	Igniters †	1.4G	Explosive 1.4		E0		Forbidden		Forbidden		142	75 kg	A802	1L		
0454	Igniters †	1.4S	Explosive 1.4		E0		Forbidden		Forbidden		142	100 kg	A802	3L		
	Ignition element for lighter, containing pyrophoric liquid						Forbidden		Forbidden							
2269	3,3'-Iminodipropylamine Indiarubber, see Rubber solution (UN 1287)	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803	8L			
2900	Infectious substance, affecting animals ★ only (liquid)	6.2	Infectious subst.		E0		Forbidden		620	50 mL	620	4 L	A81 A140	11Y		
2900	Infectious substance, affecting animals ★ only (solid)	6.2	Infectious subst.		E0		Forbidden		620	50 g	620	4 kg	A81 A140	11Y		
2814	Infectious substance, affecting humans ★ (liquid)	6.2	Infectious subst.		E0		Forbidden		620	50 mL	620	4 L	A81 A140	11Y		
2814	Infectious substance, affecting humans ★ (solid) Inflammable, see Flammable, etc.	6.2	Infectious subst.		E0		Forbidden		620	50 g	620	4 kg	A81 A140	11Y		
	Ink, printer's, flammable, see Printing ink (UN 1210) Inositol hexanitrate (dry)						Forbidden		Forbidden		Forbidden					



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
1968	Insecticide gas, n.o.s. ★	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L	
3354	Insecticide gas, flammable, n.o.s. ★	2.1	Flamm. gas		E0	Forbidden			Forbidden	200	150 kg	A1	10L		
1967	Insecticide gas, toxic, n.o.s. ★	2.3				Forbidden			Forbidden		Forbidden	A2	2P		
3355	Insecticide gas, toxic, flammable, n.o.s. ★	2.3 (2.1)				Forbidden			Forbidden		Forbidden	A2	10P		
	Insecticide, solid or liquid, see 3.6.1.8														
	Inulin trinitrate (dry)					Forbidden			Forbidden		Forbidden				
3495	Iodine	8 (6.1)	Corrosive & Toxic	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A113 A803	8P		
	Iodine azide (dry)					Forbidden			Forbidden		Forbidden				
3498	Iodine monochloride, liquid	8	Corrosive		E0	Forbidden			Forbidden	855	30 L	A1	8L		
1792	Iodine monochloride, solid	8	Corrosive	II	E0	Forbidden			Forbidden	863	50 kg	A1	8L		
2495	Iodine pentafluoride	5.1 (6.1, 8)				Forbidden			Forbidden		Forbidden		5CP		
2390	2-Iodobutane	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L		
	Iodomethane, see Methyl iodide (UN 2644)														
2391	Iodomethylpropanes	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L		
2392	Iodopropanes	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L		
	alpha-Iodotoluene, see Benzyl iodide (UN 2653)					Forbidden			Forbidden		Forbidden				
	Iodoxy compounds (dry)														
	IPDI, see Isophorone diisocyanate (UN 2290)														
	Iridium nitratopentamine iridium nitrate														
	Iron arsenate, see Ferrous arsenate (UN 1608)														
	Iron chloride, anhydrous, see Ferric chloride, anhydrous (UN 1773)														
	Iron chloride solution, see Ferric chloride solution (UN 2582)														
	Iron (III) chloride, anhydrous, see Ferric chloride, anhydrous (UN 1773)														
1376	Iron oxide, spent † (obtained from coal gas purification)	4.2				Forbidden			Forbidden		Forbidden	A2 A3	4L		
1994	Iron pentacarbonyl	6.1 (3)				Forbidden			Forbidden		Forbidden		6H		
	Iron perchloride, anhydrous, see Ferric chloride, anhydrous (UN 1773)														
	Iron powder, pyrophoric, see Pyrophoric alloy, n.o.s. ★ (UN 1383) or Pyrophoric metal, n.o.s. ★ (UN 1383)														
	Iron sesquichloride, anhydrous, see Ferric chloride, anhydrous (UN 1773)														
1376	Iron sponge, spent † (obtained from coal gas purification)	4.2				Forbidden			Forbidden		Forbidden	A2 A3	4L		
	Iron swarf, see Ferrous metal turnings (UN 2793), Ferrous metal borings (UN 2793), Ferrous metal shavings (UN 2793), Ferrous metal cuttings (UN 2793)														

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
	Irritating agents, see Tear gas substance, liquid, n.o.s. ★ (UN 1693) or Tear gas substance, solid, n.o.s. ★ (UN 3448)														
1969	Isobutane	2.1	Flamm. gas	III	E0	Forbidden						200	150 kg	A1	10L
1212	Isobutanol	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
	Isobutene, see Isobutylene (UN 1055)														
1213	Isobutyl acetate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3L
2527	Isobutyl acrylate, stabilized	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
1212	Isobutyl alcohol	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
2045	Isobutyl aldehyde	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3H
1214	Isobutylamine	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L				3CH
1055	Isobutylene	2.1	Flamm. gas	III	E0	Forbidden						200	150 kg	A1	10L
2393	Isobutyl formate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3L
2528	Isobutyl isobutyrate	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
2486	Isobutyl isocyanate	6.1 (3)				Forbidden								A174	6F
2283	Isobutyl methacrylate, stabilized	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
2394	Isobutyl propionate	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
2045	Isobutyraldehyde	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3H
2529	Isobutyric acid	3 (8)	Flamm. liquid & Corrosive	III	E1	Y342	1 L	354	5 L	365	60 L			A803	3C
2284	Isobutylonitrile	3 (6.1)	Flamm. liquid & Toxic	II	E2	Y341	1 L	352	1 L	364	60 L				3P
2395	Isobutyl chloride	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L				3C
	Isocrotonic acid, see Crotonic acid, liquid (UN 3472)														
2478	Isocyanates, flammable, toxic, n.o.s. ★ †	3 (6.1)	Flamm. liquid & Toxic	II	E2	Y341	1 L	352	1 L	364	60 L			A3	3P 3P
2478	Isocyanate solution, flammable, toxic, n.o.s. ★ †	3 (6.1)	Flamm. liquid & Toxic	III	E1	Y343	2 L	355	60 L	366	220 L			A3	3P 3P
2206	Isocyanate solution, toxic, n.o.s. ★ †	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L			A3	6L 6L
3080	Isocyanate solution, toxic, flammable, n.o.s. ★ †	6.1 (3)	Toxic & Flamm. liquid	II	E4	Y641	1 L	654	5 L	662	60 L				6F
2206	Isocyanates, toxic, n.o.s. ★ †	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L			A3	6L 6L
3080	Isocyanates, toxic, flammable, n.o.s. ★ †	6.1 (3)	Toxic & Flamm. liquid	II	E4	Y641	1 L	654	5 L	662	60 L				6F
2285	Isocyanatobenzotrifluorides	6.1 (3)	Toxic & Flamm. liquid	II	E4	Y641	1 L	654	5 L	662	60 L				6F
	3-Isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate, see Isophorone diisocyanate (UN 2290)														
	Isododecane, see Pentamethylheptane (UN 2286)														
2287	Isoheptene	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3H



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
2288	Isohexene Isooctane, see Octanes (UN 1262)	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H	
1216	Isooctene Isopentane, see Pentanes (UN 1265) Isopentanoic acid, see Corrosive liquid, n.o.s. ★ (UN 1760)	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H	
2371	Isopentenes Isopentylamine, see Amylamine (UN 1106) Isopentyl nitrite, see Amyl nitrite (UN 1113)	3	Flamm. liquid	I	E3	Forbidden		351	1 L	361	30 L			3H	
2289	Isophoronediamine	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803	8L		
2290	Isophorone diisocyanate	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L		6L		
1218	Isoprene, stabilized Isoprene, unstabilized	3	Flamm. liquid	I	E3	Forbidden		351	1 L	361	30 L			3H	
1219	Isopropanol	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L	A180	3L		
2403	Isopropenyl acetate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L		
2303	Isopropenylbenzene	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L		
1220	Isopropyl acetate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L		
1793	Isopropyl acid phosphate	8	Corrosive	III	E1	Y841	1 L	852	5 L	855	60 L	A803	8L		
1219	Isopropyl alcohol	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L	A180	3L		
1221	Isopropylamine	3 (8)	Flamm. liquid & Corrosive	I	E0	Forbidden		350	0.5 L	360	2.5 L		3CH		
1918	Isopropylbenzene 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%	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L		
						Forbidden			Forbidden						
2405	Isopropyl butyrate Isopropyl chloride, see 2-Chloropropane (UN 2356)	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L		
2947	Isopropyl chloroacetate	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L		
2407	Isopropyl chloroformate Isopropyl-alpha-chloropropionate, see Isopropyl 2-chloropropionate (UN 2934)	6.1 (3, 8)	Flamm. liquid	III	E1	Forbidden			Forbidden				Forbidden	A2	6CF
2934	Isopropyl 2-chloropropionate Isopropylcumyl hydroperoxide, more than 72% in solution Isopropyl ether, see Diisopropyl ether (UN 1159) Isopropylethylene, see 3-Methyl-1-butene (UN 2561) Isopropyl formate, see Propyl formates (UN 1281)	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L		
						Forbidden			Forbidden				Forbidden		
2406	Isopropyl isobutyrate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L		

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
A	B	C	D	E		F	G						M	N		
2483	Isopropyl isocyanate Isopropyl mercaptan, see Propanethiols (UN 2402)	6.1 (3)						Forbidden			Forbidden			Forbidden	A174	6H
1222	Isopropyl nitrate Isopropyl phosphoric acid, see Isopropyl acid phosphate (UN 1793)	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L					3L
2409	Isopropyl propionate Isopropyltoluene, see Cymenes (UN 2046)	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L					3L
2907	Isosorbide dinitrate mixture † with 60% or more lactose, mannose, starch or calcium hydrogen phosphate Isosorbide dinitrate mixture with less than 60% lactose, mannose, starch or calcium hydrogen phosphate †	4.1	Flamm. solid	II	E0	Forbidden		445	15 kg	448	50 kg	A49				3L
3251	Isosorbide-5-mononitrate Isothiocyanic acid Isovaleraldehyde, see Valeraldehyde (UN 2058)	4.1						Forbidden		Forbidden				Forbidden	A110	3L
	Jet fuel, see Fuel, aviation, turbine engine (UN 1863)							Forbidden		Forbidden				Forbidden		
0124	Jet perforating guns, charged, † oil well, without detonator	1.1D						Forbidden		Forbidden				Forbidden		1L
0494	Jet perforating guns, charged, † oil well, without detonator Jet perforators, see Charges, shaped † (UN 0059), Charges, shaped † (UN 0439), Charges, shaped † (UN 0440), Charges, shaped † (UN 0441) Jet tappers, without detonator, see Charges, shaped † (UN 0059), Charges, shaped † (UN 0439), Charges, shaped † (UN 0440), Charges, shaped † (UN 0441) Jet thrust igniters, for rocket motors or Jato, see Igniters † (UN 0121), Igniters † (UN 0314), Igniters † (UN 0315), Igniters † (UN 0325), Igniters † (UN 0454) Jet thrust unit (Jato), see Rocket motors † (UN 0186), Rocket motors † (UN 0280), Rocket motors † (UN 0281) Jute, see Fibres, animal, n.o.s. (UN 1373)	1.4D	Explosive 1.4		E0	Forbidden		Forbidden		Forbidden	101	300 kg	A24 A802		1L	
	Kapok, see Fibres, animal, n.o.s. (UN 1373)															
1223	Kerosene Ketone oils, see Acetone oils (UN 1091)	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L	A224				3L
1224	Ketones, liquid, n.o.s. ★	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3				3L 3L
1056	Krypton, compressed	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg	A69				2L
1970	Krypton, refrigerated liquid Lacquer base or lacquer chips, nitrocellulose, dry, †, see Nitrocellulose mixture with plasticizer, without pigment (UN 2557), Nitrocellulose mixture without plasticizer, with pigment (UN 2557), Nitrocellulose mixture with plasticizer, with pigment (UN 2557)	2.2	Non-flamm. gas & Cryogenic liquid		E1	Forbidden		202	50 kg	202	500 kg					2L



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					EQ see 2.6 F	Ltd Qty		Pkg Inst G	Max Net Qty/Pkg H	Pkg Inst I	Max Net Qty/Pkg J	Pkg Inst K	Max Net Qty/Pkg L		
	Lacquer base or lacquer chips, plastic, wet with alcohol or solvent, see Paint (UN 1263), Nitrocellulose solution, flammable (UN 2059), Nitrocellulose with water (UN 2555), Nitrocellulose with alcohol (UN 2556)														
	Lacquer, liquid, see Paint (UN 1263), Nitrocellulose solution, flammable (UN 2059), Nitrocellulose with water (UN 2555), Nitrocellulose with alcohol (UN 2556), Paint (UN 3066)														
	Lamp black, see Carbon (UN 1361)														
1616	Lead acetate	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg				6L
1617	Lead arsenates	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L
1618	Lead arsenites	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L
	Lead azide (dry)						Forbidden		Forbidden		Forbidden				
0129	Lead azide, wetted with 20% or more water or mixture of alcohol and water, by weight	1.1A					Forbidden		Forbidden		Forbidden				1L
	Lead azide, wetted with less than 20% water or mixture of alcohol and water						Forbidden		Forbidden		Forbidden				
	Lead chloride, solid, see Lead compound, soluble, n.o.s.★ (UN 2291)														
2291	Lead compound, soluble, n.o.s.★	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg	A92			6L
1620	Lead cyanide	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L
1872	Lead dioxide	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803			5L
	Lead (II) acetate, see Lead acetate (UN 1616)														
	Lead (II) cyanide, see Lead cyanide (UN 1620)														
	Lead (II) nitrate, see Lead nitrate (UN 1469)														
	Lead (II) perchlorate, see Lead perchlorate, solid (UN 1470) or Lead perchlorate solution (UN 3408)														
1469	Lead nitrate	5.1 (6.1)	Oxidizer & Toxic	II	E2	Y543	1 kg	558	5 kg	562	25 kg				5P
	Lead nitroresorcinate (dry)						Forbidden		Forbidden		Forbidden				
1470	Lead perchlorate, solid	5.1 (6.1)	Oxidizer & Toxic	II	E2	Y543	1 kg	558	5 kg	562	25 kg				5P
3408	Lead perchlorate solution	5.1 (6.1)	Oxidizer & Toxic	II III	E2 E1	Y540 Y541	0.5 L 1 L	550 551	1 L 2.5 L	554 555	5 L 30 L	A3 A803			5P 5P
	Lead peroxide, see Lead dioxide (UN 1872)														
2989	Lead phosphite, dibasic	4.1	Flamm. solid	II III	E2 E1	Y441 Y443	5 kg 10 kg	445 446	15 kg 25 kg	448 449	50 kg 100 kg	A3 A803			3L 3L
	Lead picrate (dry)						Forbidden		Forbidden		Forbidden				
	Lead stypnate (dry)						Forbidden		Forbidden		Forbidden				
0130	Lead stypnate, wetted with 20% or more water or mixture of alcohol and water, by weight	1.1A					Forbidden		Forbidden		Forbidden				1L
	Lead stypnate, wetted with less than 20% water or mixture of alcohol and water						Forbidden		Forbidden		Forbidden				

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
1794	Lead sulphate with more than 3% free acid Lead sulphate with less than 3% free acid Lead tetraethyl, see Motor fuel anti-knock mixture † (UN 1649) Lead tetramethyl, see Motor fuel anti-knock mixture † (UN 1649) Lead trinitroresorcinate (dry)	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg				8L
							Not Restricted					Not Restricted			
0130	Lead trinitroresorcinate, wetted with 20% or more water, or mixture of alcohol and water, by weight Leather bleach or dressing, see Flammable liquid, toxic, n.o.s. ★ (UN 1992), Flammable liquid, n.o.s. ★ (UN 1993), Flammable liquid, corrosive, n.o.s. ★ (UN 2924) Life-rafts, see Life-saving appliances, self-inflating (UN 2990)	1.1A					Forbidden					Forbidden			1L
							Forbidden					Forbidden			
3072	Life-saving appliances, not self-inflating containing dangerous goods as equipment	9	Miscellaneous	E0		Forbiden		955	No limit	955	No limit	A48	A87		9L
2990	Life-saving appliances, self-inflating Lighter flints, see Ferrocium (UN 1323) Lighter fluid, see Flammable liquid, n.o.s. ★ (UN 1993)	9	Miscellaneous	E0		Forbiden		955	No limit	955	No limit	A48	A87		9L
1057	Lighter refills containing flammable gas	2.1	Flamm. gas	E0		Forbiden		201	1 kg	201	15 kg	A802			10L
1057	Lighters containing flammable gas Lighters (cigarettes), containing pyrophoric liquid Lighters (cigarettes), with lighter fluids	2.1	Flamm. gas	E0		Forbiden		201	1 kg	201	15 kg	A802			10L
							Forbiden					Forbidden			
0131	Lighters, fuse † Lime-nitrogen, see Calcium cyanamide (UN 1403) Lime, unslaked, see Calcium oxide (UN 1910) Limonene, inactive, see Dipentene (UN 2052) Linoleates, see Flammable liquid, n.o.s. ★ (UN 1993)	1.4S	Explosive 1.4	E0		Forbiden		142	25 kg	142	100 kg	A802			3L
							Forbiden								
3163	Liquefied gas, n.o.s. ★	2.2	Non-flamm. gas	E1		Forbiden		200	75 kg	200	150 kg				2L
1058	Liquefied gases non-flammable charged with nitrogen, carbon dioxide, or air	2.2	Non-flamm. gas	E1		Forbiden		200	75 kg	200	150 kg				2L
3161	Liquefied gas, flammable, n.o.s. ★	2.1	Flamm. gas	E0		Forbiden			Forbidden	200	150 kg	A1			10L
3157	Liquefied gas, oxidizing, n.o.s. ★	2.2 (5.1)	Non-flamm. gas & Oxidizer	E0		Forbiden		200	75 kg	200	150 kg				2X
3162	Liquefied gas, toxic, n.o.s. ★	2.3				Forbiden			Forbidden		Forbidden	A2			2P
3308	Liquefied gas, toxic, corrosive, n.o.s. ★	2.3 (8)				Forbiden			Forbidden		Forbidden	A2			2CP
3160	Liquefied gas, toxic, flammable, n.o.s. ★	2.3 (2.1)				Forbiden			Forbidden		Forbidden	A2			10P
3309	Liquefied gas, toxic, flammable, corrosive, n.o.s. ★	2.3 (2.1, 8)				Forbiden			Forbidden		Forbidden	A2			10C



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
A	B	C	D	E		F	G						M	N		
3307	Liquefied gas, toxic, oxidizing, n.o.s. ★	2.3 (5.1)						Forbidden			Forbidden			Forbidden	A2	2X
3310	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. ★	2.3 (5.1, 8)						Forbidden			Forbidden			Forbidden	A2	2CX
	Liquefied natural gas, see Methane, refrigerated liquid (UN 1972) or Natural gas, refrigerated liquid (UN 1972)															
	Liquefied petroleum gas, see Petroleum gases, liquefied (UN 1075)															
	Liquids, other than those classified as flammable, corrosive, or toxic, charged with nitrogen, carbon dioxide or air, see Compressed gas, n.o.s. ★ (UN 1956)															
	Liquor, see Alcoholic beverages (UN 3065)															
1415	Lithium	4.3	Dang. when wet	I	E0		Forbidden			Forbidden		487	15 kg	A1	4W	
	Lithium acetylide ethylenediamine complex, see Water-reactive solid, n.o.s. ★ (UN 2813)															
□	Lithium alkyls, liquid, see Organometallic substance, liquid, pyrophoric, water-reactive ★ (UN 3394)															
□	Lithium alkyls, solid, see Organometallic substance, solid, pyrophoric, water-reactive ★ (UN 3393)															
1410	Lithium aluminium hydride	4.3	Dang. when wet	I	E0		Forbidden			Forbidden		487	15 kg		4W	
1411	Lithium aluminium hydride, ethereal	4.3 (3)	Dang. when wet & Flamm. liquid	I	E0		Forbidden			Forbidden		480	1 L		4HW	
	Lithium amide, see Alkali metal amides (UN 1390)															
1413	Lithium borohydride	4.3	Dang. when wet	I	E0		Forbidden			Forbidden		487	15 kg		4W	
2830	Lithium ferrosilicon	4.3	Dang. when wet	II	E2	Y475	5 kg	484	15 kg	490	50 kg				4W	
1414	Lithium hydride	4.3	Dang. when wet	I	E0		Forbidden			Forbidden		487	15 kg		4W	
2805	Lithium hydride, fused solid	4.3	Dang. when wet	II	E2	Y475	5 kg	483	15 kg	489	50 kg				4W	
2680	Lithium hydroxide	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg				8L	
2679	Lithium hydroxide solution	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L	A3	8L	A803	8L	
				III	E1	Y841	1 L	852	5 L	856	60 L					
1471	Lithium hypochlorite, dry	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg	A3	5L	A803	5L	
				III	E1	Y546	10 kg	559	25 kg	563	100 kg					
1471	Lithium hypochlorite mixture	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg	A3	5L	A803	5L	
				III	E1	Y546	10 kg	559	25 kg	563	100 kg					
	Lithium in cartouches, see Lithium (UN 1415)															
△	Lithium ion batteries † (including lithium polymer batteries)	9	Miscellaneous	II	E0		Forbidden			See 965			See 965		A51 A88 A99 A154 A164 A183	9FZ
△	Lithium ion batteries contained in equipment † (including lithium polymer batteries)	9	Miscellaneous	II	E0		Forbidden			967	5 kg	967	35 kg	A48 A99 A154 A164 A181 A185	9FZ	

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	
A	B	C	D	E		F	G						M	N
3481	Lithium ion batteries packed with equipment † (including lithium polymer batteries)	9	Miscellaneous	II	E0	Forbidden		966	5 kg	966	35 kg	A88 A99 A154 A164 A181 A185	9FZ	
3090	Lithium metal batteries † (including lithium alloy batteries)	9	Miscellaneous	II	E0	Forbidden		See 968		See 968		A88 A99 A154 A164 A183	9FZ	
3091	Lithium metal batteries contained in equipment † (including lithium alloy batteries)	9	Miscellaneous	II	E0	Forbidden		970	5 kg	970	35 kg	A48 A99 A154 A164 A181 A185	9FZ	
3091	Lithium metal batteries packed with equipment † (including lithium alloy batteries)	9	Miscellaneous	II	E0	Forbidden		969	5 kg	969	35 kg	A99 A154 A164 A181 A185	9FZ	
2722	Lithium nitrate	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803	5L	
2806	Lithium nitride	4.3	Dang. when wet	I	E0	Forbidden		Forbidden		488	15 kg		4W	
1472	Lithium peroxide	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg		5L	
	Lithium silicide, see Lithium silicon † (UN 1417)													
1417	Lithium silicon †	4.3	Dang. when wet	II	E2	Y475	5 kg	483	15 kg	489	50 kg		4W	
	LNG, see Methane, refrigerated liquid (UN 1972) or Natural gas, refrigerated liquid (UN 1972)													
1621	London Purple	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg	A6	6L	
	LPG, see Petroleum gases, liquefied (UN 1075)													
	Lye solid, see Sodium hydroxide, solid (UN 1823)													
	Lye solution, see Sodium hydroxide solution (UN 1824)													
	Lythene, see Petroleum distillates, n.o.s. (UN 1268)													
1869	Magnesium in pellets, turnings or ribbons	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A15 A803	3L	
	Magnesium alkyls, see Organometallic substance, liquid, pyrophoric, water-reactive ★ (UN 3394)													
1869	Magnesium alloys with more than 50% magnesium in pellets, turnings or ribbons	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A15 A803	3L	
1418	Magnesium alloys powder	4.3 (4.2)	Dang. when wet & Spont. comb.	I II III	E0 E2 E1	Forbidden Forbidden Forbidden		483 486	15 kg 25 kg	488 490 491	15 kg 50 kg 100 kg	A3 A803	4SW 4SW 4SW	
	Magnesium alloys with 50% or less magnesium in pellets, turnings or ribbons					Not Restricted		Not Restricted		Not Restricted				
1419	Magnesium aluminium phosphide	4.3 (6.1)	Dang. when wet & Toxic	I	E0	Forbidden		Forbidden		487	15 kg		4PW	
1622	Magnesium arsenate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L	
	Magnesium bisulphite solution, see Bisulphites, aqueous solution, n.o.s. ★ (UN 2693)													
1473	Magnesium bromate	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg		5L	



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UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
2723	Magnesium chlorate Magnesium chloride and chlorate mixture, see Chlorate and magnesium chloride mixture, solid (UN 1459) or Chlorate and magnesium chloride mixture solution (UN 3407)	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg			5L	
2004	Magnesium diamide Magnesium diphenyl, see Organometallic substance, solid, pyrophoric, water-reactive ★ (UN 3393) Magnesium dross, hot Magnesium dross, wet	4.2	Spont. comb.	II	E2	Forbidden		467	15 kg	470	50 kg			4W	
2853	Magnesium fluorosilicate	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg			6L	
2950	Magnesium granules, coated particle size not less than 149 microns	4.3	Dang. when wet	III	E1	Y477	10 kg	486	25 kg	491	100 kg	A803		4W	
2010	Magnesium hydride	4.3	Dang. when wet	I	E0	Forbidden			Forbidden	487	15 kg			4W	
1474	Magnesium nitrate	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A155 A803		5L	
1475	Magnesium perchlorate	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg			5L	
1476	Magnesium peroxide	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg			5L	
2011	Magnesium phosphide	4.3 (6.1)	Dang. when wet & Toxic	I	E0	Forbidden			Forbidden	487	15 kg			4PW	
1418	Magnesium powder Magnesium scrap †, see Magnesium (UN 1869) or Magnesium alloys (UN 1869)	4.3 (4.2)	Dang. when wet & Spont. comb.	I	E0	Forbidden			Forbidden	488	15 kg	A3	4SW 4SW 4SW		
				II	E2	Forbidden		483	15 kg	490	50 kg				
				III	E1	Forbidden		486	25 kg	491	100 kg				
2624	Magnesium silicide Magnesium silicofluoride, see Magnesium fluorosilicate (UN 2853)	4.3	Dang. when wet	II	E2	Y475	5 kg	483	15 kg	489	50 kg			4W	
2807	Magnetized material †	9	Magnetized material		E0	Forbidden		953	No limit	953	No limit			9M	
2215	Maleic anhydride	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A803		8L	
2215	Maleic anhydride, molten Malonic dinitrile, see Malononitrile (UN 2647) Malonodinitrile, see Malononitrile (UN 2647)	8			E0	Forbidden			Forbidden		Forbidden			8L	
2647	Malononitrile	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg			6L	
2210	Maneb	4.2 (4.3)	Spont. comb. & Dang. when wet	III	E1	Forbidden		468	25 kg	471	100 kg	A30 A803		4SW	
2210	Maneb preparation with not less than 60% maneb	4.2 (4.3)	Spont. comb. & Dang. when wet	III	E1	Forbidden		468	25 kg	471	100 kg	A30 A803		4SW	
2968	Maneb preparation, stabilized against self-heating	4.3	Dang. when wet	III	E1	Y477	10 kg	486	25 kg	491	100 kg	A3 A803		4W	
2968	Maneb, stabilized against self-heating Manganese ethylene-1,2-di-dithiocarbamate, see Maneb preparation (UN 2210), Maneb (UN 2210), Maneb, stabilized (UN 2968), Maneb preparation, stabilized (UN 2968)	4.3	Dang. when wet	III	E1	Y477	10 kg	486	25 kg	491	100 kg	A3 A803		4W	

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
C	D	E	F	G	H	I	J	K	L	M	N				
	Manganese ethylene-di-dithiocarbamate, see Maneb (UN 2210), Maneb preparation (UN 2210), Maneb preparation, stabilized (UN 2968), Maneb, stabilized (UN 2968)														
	Manganese (II) nitrate, see Manganese nitrate (UN 2724)														
2724	Manganese nitrate	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803	5L		
1330	Manganese resinate	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L		
	Manganous nitrate, see Manganese nitrate (UN 2724)					Forbidden		Forbidden		Forbidden					
	Mannitan tetrinitrate					Forbidden		Forbidden		Forbidden					
	Mannitol hexanitrate (dry)					Forbidden		Forbidden		Forbidden					
0133	Mannitol hexanitrate, wetted with 40% or more water or mixture of alcohol and water, by weight	1.1D				Forbidden		Forbidden		Forbidden				1L	
	Mannitol hexanitrate, wetted with less than 40% water or mixture of alcohol and water					Forbidden		Forbidden		Forbidden					
2254	Matches, fusee †	4.1				Forbidden		Forbidden		Forbidden			A2	3L	
1944	Matches, safety † (book, card or strike on box)	4.1	Flamm. solid	III	E1	Y455	10 kg	455	25 kg	455	100 kg	A125	3L		
1331	Matches, strike anywhere †	4.1				Forbidden		Forbidden		Forbidden			A2	3L	
	Matches, trick, see Fireworks † (UN 0333), Fireworks † (UN 0334), Fireworks † (UN 0335), Fireworks † (UN 0336), Fireworks † (UN 0337)														
1945	Matches, wax vesta	4.1	Flamm. solid	III	E1	Y455	10 kg	455	25 kg	455	100 kg	A125	3L		
3291	Medical waste, n.o.s.	6.2	Infectious subst.	II	E0	Forbidden		622	No limit	622	No limit	A117	11L		
	Medicine, n.o.s., in small inner packagings containing flammable aerosol and/or non-flammable aerosol and/or flammable liquid and/or toxic substance, n.o.s., see Consumer commodity (UN 8000)														
3248	Medicine, liquid, flammable, toxic, n.o.s.	3 (6.1)	Flamm. liquid & Toxic	II	E2	Y341	1 L	352	1 L	364	60 L	A3	3P	3P	
1851	Medicine, liquid, toxic, n.o.s.	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L	A3	6L	6L	
3249	Medicine, solid, toxic, n.o.s.	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg	A3	6L	6L	
	p-Mentha-1,8-diene, see Dipentene (UN 2052)					Y642	10 kg	670	100 kg	677	200 kg				
3336	Mercaptan mixture, liquid, flammable, n.o.s. ★	3	Flamm. liquid	I	E3	Forbidden		Forbidden		361	30 L	A3	3H	3H	
				II	E2	Y341	1 L	353	5 L	364	60 L				
				III	E1	Y344	10 L	355	60 L	366	220 L				
1228	Mercaptan mixture, liquid, flammable, toxic, n.o.s. ★	3 (6.1)	Flamm. liquid & Toxic	II	E0	Forbidden		Forbidden		373	60 L	A1	3P	3P	
				III	E1	Y373	1 L	373	5 L	373	220 L	A3			
3071	Mercaptan mixture, liquid, toxic, flammable, n.o.s. ★	6.1 (3)	Toxic & Flamm. liquid	II	E4	Y641	1 L	654	5 L	661	60 L		6F		
3336	Mercaptans, liquid, flammable, n.o.s. ★	3	Flamm. liquid	I	E3	Forbidden		Forbidden		361	30 L	A3	3H	3H	
				II	E2	Y341	1 L	353	5 L	364	60 L				
				III	E1	Y344	10 L	355	60 L	366	220 L				
1228	Mercaptans, liquid, flammable, toxic, n.o.s. ★	3 (6.1)	Flamm. liquid & Toxic	II	E0	Forbidden		Forbidden		373	60 L	A1	3P	3P	
				III	E1	Y373	1 L	373	5 L	373	220 L	A3			

UN/ ID no. A	Proper Shipping Name/Description B	Class or Div. (Sub Risk) C	Hazard Label(s) D	PG E	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4 M	ERG Code N		
					Ltd Qty			Pkg Inst F	Max Net Qty/Pkg G	Pkg Inst H	Max Net Qty/Pkg I	Pkg Inst J	Max Net Qty/Pkg K	Pkg Inst L		
					EQ see 2.6	Pkg Inst	Max Net Qty/Pkg									
3071	Mercaptans, liquid, toxic, flammable, n.o.s. ★ 2-Mercaptoethanol, see Thioglycol (UN 2966) 2-Mercaptopropionic acid, see Thiolactic acid (UN 2936)	6.1 (3)	Toxic & Flamm. liquid	II	E4	Y641	1 L	654	5 L	661	60 L				6F	
0448	5-Mercaptotetrazol-1-acetic acid	1.4C	Explosive 1.4	II	E0	ForbIDDEN			ForbIDDEN	114	75 kg	A802	1L			
1623	Mercuric arsenate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
1624	Mercuric chloride	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
	Mercuric compound, see Mercury compound, liquid, n.o.s. ★ (UN 2024) or Mercury compound, solid, n.o.s. ★ (UN 2025)															
1625	Mercuric nitrate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
1626	Mercuric potassium cyanide	6.1	Toxic	I	E5	ForbIDDEN		666	5 kg	673	50 kg		6L			
	Mercuric salt, see Mercury compound, liquid, n.o.s. ★ (UN 2024) or Mercury compound, solid, n.o.s. ★ (UN 2025)															
	Mercuric sulphate, see Mercury sulphate (UN 1645)															
	Mercurol, see Mercury nucleate (UN 1639)															
	Mercurous azide						ForbIDDEN		ForbIDDEN		ForbIDDEN					
	Mercurous bisulphate, see Mercury sulphate (UN 1645)															
	Mercurous chloride							Not Restricted	Not Restricted	Not Restricted	Not Restricted					
	Mercurous compound, see Mercury compound, liquid, n.o.s. ★ (UN 2024) or Mercury compound, solid, n.o.s. ★ (UN 2025)															
1627	Mercurous nitrate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
	Mercurous sulphate, see Mercury sulphate (UN 1645)															
2809	Mercury	8 (6.1)	Corrosive & Toxic	III	E0	ForbIDDEN		868	35 kg	868	35 kg	A804	8P			
1629	Mercury acetate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
	Mercury acetylide						ForbIDDEN		ForbIDDEN		ForbIDDEN					
1630	Mercury ammonium chloride	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
2778	Mercury based pesticide, liquid, flammable, toxic, ★ flash point less than 23°C	3 (6.1)	Flamm. liquid & Toxic	I	E0	ForbIDDEN		352	1 L	361	30 L	A4	3P			
				II	E2	Y341	1 L			364	60 L		3P			
3012	Mercury based pesticide, liquid, toxic ★	6.1	Toxic	I	E5	ForbIDDEN		652	1 L	658	30 L	A3	6L			
				II	E4	Y641	1 L	654	5 L	662	60 L	A4	6L			
				III	E1	Y642	2 L	655	60 L	663	220 L		6L			
3011	Mercury based pesticide, liquid, toxic, flammable, ★ flash point 23°C or more	6.1 (3)	Toxic & Flamm. liquid	I	E5	ForbIDDEN		652	1 L	658	30 L	A3	6F			
				II	E4	Y641	1 L	654	5 L	662	60 L	A4	6F			
				III	E1	Y642	2 L	655	60 L	663	220 L		6F			
2777	Mercury based pesticide, solid, toxic ★	6.1	Toxic	I	E5	ForbIDDEN		666	5 kg	673	50 kg	A3	6L			
				II	E4	Y644	1 kg	669	25 kg	676	100 kg	A5	6L			
				III	E1	Y645	10 kg	670	100 kg	677	200 kg		6L			
1631	Mercury benzoate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
	Mercury bichloride, see Mercuric chloride (UN 1624)															
	Mercury bisulphate, see Mercury sulphate (UN 1645)															
1634	Mercury bromides	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					EQ see 2.6	Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
						C	D	E						M	N	
2024	Mercury compound, liquid, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	ForbIDDEN Y641 1 L	652 654 655	1 L 5 L 60 L	658 661 663	30 L 60 L 220 L	A3 A4 A6 A18	6L				
2025	Mercury compound, solid, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	ForbIDDEN Y644 1 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5 A6 A18	6L				
△ 3506	Mercury contained in manufactured articles	8 (6.1)	Corrosive & Toxic	III	E0	ForbIDDEN	869	No limit	869	No limit	A48 A69 A191	8L				
⊗ 1636	Mercury cyanide	6.1	Toxic	II	E4	Y644 1 kg	669	25 kg	676	100 kg		6L				
0135	Mercury fulminate, wetted with 20% or more water or mixture of alcohol and water, by weight	1.1A				ForbIDDEN		ForbIDDEN		ForbIDDEN		1L				
	Mercury fulminate, wetted with less than 20% water or mixture of alcohol and water					ForbIDDEN		ForbIDDEN		ForbIDDEN						
1637	Mercury gluconate	6.1	Toxic	II	E4	Y644 1 kg	669	25 kg	676	100 kg		6L				
1638	Mercury iodide	6.1	Toxic	II	E4	Y644 1 kg	669	25 kg	676	100 kg		6L				
	Mercury iodide aquabasic ammonobasic (Iodide of Millon's base)					ForbIDDEN		ForbIDDEN		ForbIDDEN						
	Mercury nitride					ForbIDDEN		ForbIDDEN		ForbIDDEN						
1639	Mercury nucleate	6.1	Toxic	II	E4	Y644 1 kg	669	25 kg	676	100 kg		6L				
1640	Mercury oleate	6.1	Toxic	II	E4	Y644 1 kg	669	25 kg	676	100 kg		6L				
1641	Mercury oxide	6.1	Toxic	II	E4	Y644 1 kg	669	25 kg	676	100 kg		6L				
1642	Mercury oxycyanide, desensitized	6.1	Toxic	II	E4	Y644 1 kg	669	25 kg	676	100 kg		6L				
	Mercury oxycyanide, not desensitized					ForbIDDEN		ForbIDDEN		ForbIDDEN						
1643	Mercury potassium iodide	6.1	Toxic	II	E4	Y644 1 kg	669	25 kg	676	100 kg		6L				
1644	Mercury salicylate	6.1	Toxic	II	E4	Y644 1 kg	669	25 kg	676	100 kg		6L				
1645	Mercury sulphate	6.1	Toxic	II	E4	Y644 1 kg	669	25 kg	676	100 kg		6L				
1646	Mercury thiocyanate	6.1	Toxic	II	E4	Y644 1 kg	669	25 kg	676	100 kg		6L				
⊗ △	Mercury vapour tubes, see Mercury contained in manufactured articles (UN 3506)															
	Mesitylene, see 1,3,5-Trimethylbenzene (UN 2325)															
1229	Mesityl oxide	3	Flamm. liquid	III	E1	Y344 10 L	355	60 L	366	220 L		3L				
3281	Metal carbonyls, liquid, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	ForbIDDEN Y641 1 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4 A137	6L				
3466	Metal carbonyls, solid, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	ForbIDDEN Y644 1 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5 A137	6L				
2881	Metal catalyst, dry ★	4.2	Spont. comb.	I II III	E0 E1	ForbIDDEN ForbIDDEN ForbIDDEN	473 473 473	25 kg	473 473	50 kg 100 kg	A3 A36	4L				

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
A	B	C	D	E		F	G						M	N		
1378	Metal catalyst, wetted ★ † with a visible excess of liquid	4.2	Spont. comb.	II	E0	Forbidden		Forbidden		473	50 kg	A1	4L			
	Metal catalyst, wetted without a visible excess of liquid †					Forbidden		Forbidden		Forbidden						
1332	Metaldehyde	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L			
3182	Metal hydrides, flammable, n.o.s. ★	4.1	Flamm. solid	II	E2	Y441	5 kg	445	15 kg	448	50 kg	A3	3L			
				III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L			
1409	Metal hydrides, water-reactive, n.o.s. ★	4.3	Dang. when wet	I	E0	Forbidden		Forbidden		487	15 kg		4W			
				II	E2	Y475	5 kg	484	15 kg	490	50 kg		4W			
3208	Metallic substance, water-reactive, n.o.s. ★	4.3	Dang. when wet	I	E0	Forbidden		Forbidden		487	15 kg	A3	4W			
				II	E2	Y475	5 kg	483	15 kg	489	50 kg	A803	4W			
				III	E1	Y477	10 kg	485	25 kg	491	100 kg		4W			
3209	Metallic substance, water-reactive, self-heating, n.o.s. ★	4.3 (4.2)	Dang. when wet & Spont. comb.	I	E0	Forbidden		Forbidden		487	15 kg	A3	4SW			
				II	E2	Forbidden		Forbidden		489	50 kg	A803	4SW			
				III	E1	Forbidden		Forbidden		491	100 kg		4SW			
3089	Metal powder, flammable, n.o.s.	4.1	Flamm. solid	II	E2	Y441	5 kg	445	15 kg	448	50 kg	A3	3L			
				III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L			
3189	Metal powder, self-heating, n.o.s. ★	4.2	Spont. comb.	II	E2	Forbidden		467	15 kg	470	50 kg	A3	4L			
				III	E1	Forbidden		469	25 kg	471	100 kg	A803	4L			
3181	Metal salts of organic compounds, flammable, n.o.s. ★	4.1	Flamm. solid	II	E2	Y441	5 kg	445	15 kg	448	50 kg	A3	3L			
				III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L			
2396	Methacrylaldehyde, stabilized	3 (6.1)	Flamm. liquid & Toxic	II	E2	Y341	1 L	352	1 L	364	60 L		3P			
2531	Methacrylic acid, stabilized	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L		8L			
	Methacrylic acid, unstabilized					Forbidden		Forbidden		Forbidden						
3079	Methacrylonitrile, stabilized	6.1 (3)				Forbidden		Forbidden		Forbidden		A174	6F			
2614	Methylal alcohol	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L			
	Methanal, see Formaldehyde solution, flammable (UN 1198) or Formaldehyde solution (UN 2209)					Forbidden		Forbidden		Forbidden						
	Methane and hydrogen, mixture, see Hydrogen and methane mixture, compressed (UN 2034)					Forbidden		Forbidden		Forbidden						
1971	Methane, compressed	2.1	Flamm. gas		E0	Forbidden		Forbidden		200	150 kg	A1	10L			
1972	Methane, refrigerated liquid with high methane content	2.1				Forbidden		Forbidden		Forbidden			10L			
3246	Methanesulphonyl chloride	6.1 (8)				Forbidden		Forbidden		Forbidden			6C			
1230	Methanol	3 (6.1)	Flamm. liquid	II	E2	Y341	1 L	352	1 L	364	60 L	A104 A113	3L			
	Methanoic acid					Forbidden		Forbidden		Forbidden						
	2-Methoxyethyl acetate, see Ethylene glycol monomethyl ether acetate (UN 1189)					Forbidden		Forbidden		Forbidden						
2605	Methoxymethyl isocyanate	6.1 (3)				Forbidden		Forbidden		Forbidden		A174	6F			
2293	4-Methoxy-4-methylpentan-2-one	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L			
	1-Methoxy-2-nitrobenzene, see Nitroanisoles, liquid (UN 2730) or Nitroanisoles, solid (UN 3458)					Forbidden		Forbidden		Forbidden						
	1-Methoxy-3-nitrobenzene, see Nitroanisoles, liquid (UN 2730) or Nitroanisoles, solid (UN 3458)					Forbidden		Forbidden		Forbidden						
	1-Methoxy-4-nitrobenzene, see Nitroanisoles, liquid (UN 2730) or Nitroanisoles, solid (UN 3458)					Forbidden		Forbidden		Forbidden						

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
3092	1-Methoxy-2-propanol	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L	
1231	Methyl acetate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H	
	Methylacetylene and propadiene mixture, non-stabilized						Forbidden								
1060	Methylacetylene and propadiene mixture, stabilized †	2.1	Flamm. gas		E0		Forbidden					200	150 kg	A1	10L
	beta-Methyl acrolein, see Crotonaldehyde (UN 1143) or Crotonaldehyde, stabilized (UN 1143)														
1919	Methyl acrylate, stabilized	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H/	
	Methyl acrylate, unstabilized						Forbidden								
1234	Methylal	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H	
	Methyl alcohol, see Methanol (UN 1230)														
	Methylallyl alcohol, see Methylallyl alcohol (UN 2614)														
2554	Methylallyl chloride	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H	
1061	Methylamine, anhydrous	2.1	Flamm. gas		E0		Forbidden					200	150 kg	A1	10L
1235	Methylamine, aqueous solution	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L			3CH	
	Methylamine dinitramine and dry salts thereof						Forbidden								
	Methylamine nitroform						Forbidden								
	Methylamine perchlorate (dry)						Forbidden								
1233	Methylamyl acetate	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L	
	Methyl amyl alcohol, see Methyl isobutyl carbinol (UN 2053)														
	Methyl amyl ketone, see n-Amyl methyl ketone (UN 1110)														
2294	N-Methylaniline	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L			6L	
	Methylated spirit, see Alcohols, flammable, toxic, n.o.s. ★ (UN 1986) or Alcohols, n.o.s. ★ (UN 1987)														
2937	alpha-Methylbenzyl alcohol, liquid	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L			6L	
3438	alpha-Methylbenzyl alcohol, solid	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg			6L	
1062	Methyl bromide with not more than 2% chloropicrin	2.3					Forbidden							A2	2P
	Methyl bromide and chloropicrin mixture, see Chloropicrin and methyl bromide mixture , (UN 1581)														
1647	Methyl bromide and ethylene dibromide mixture, liquid	6.1					Forbidden								6L
2643	Methyl bromoacetate	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L			6i	
3371	2-Methylbutanal	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
2397	3-Methylbutan-2-one	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
2561	3-Methyl-1-butene	3	Flamm. liquid	I	E3		Forbidden			351	1 L	361	30 L		3H
2459	2-Methyl-1-butene	3	Flamm. liquid	I	E3		Forbidden			351	1 L	361	30 L		3H
2460	2-Methyl-2-butene	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H	
2945	N-Methylbutylamine	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L			3C	



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
2398	Methyl tert-butyl ether	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
1237	Methyl butyrate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
1063	Methyl chloride	2.1	Flamm. gas		E0	Forbidden			Forbidden		200	100 kg	A1	10L	
	Methyl chloride and chloropicrin mixture, see Chloropicrin and methyl chloride mixture (UN 1582)														
1912	Methyl chloride and methylene chloride mixture	2.1	Flamm. gas		E0	Forbidden			Forbidden		200	150 kg	A1 A52	10L	
2295	Methyl chloroacetate	6.1 (3)				Forbidden			Forbidden					6F	
	Methyl chlorocarbonate, see Methyl chloroformate (UN 1238)														
	Methyl chloroform, see 1,1,1-Trichloroethane (UN 2831)														
1238	Methyl chloroformate	6.1 (3, 8)				Forbidden			Forbidden					6F	
1239	Methyl chloromethyl ether	6.1 (3)				Forbidden			Forbidden					6F	
	Methyl-alpha-chloropropionate, see Methyl 2-chloropropionate (UN 2933)														
2933	Methyl 2-chloropropionate	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L	
2534	Methylchlorosilane	2.3 (2.1, 8)				Forbidden			Forbidden				A2	10P	
	Methyl cyanide, see Acetonitrile (UN 1648)														
2296	Methylcyclohexane	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H	
2617	Methylcyclohexanols flammable	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L	
	Methylcyclohexanols, flash point more than 60°C					Not Restricted			Not Restricted			Not Restricted			
2297	Methylcyclohexanone	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L	
2298	Methylcyclopentane	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H	
2299	Methyl dichloroacetate	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L			6L	
	Methyldichloroarsine					Forbidden			Forbidden			Forbidden			
1242	Methyldichlorosilane	4.3 (3, 8)	Dang. when wet & Flamm. liquid & Corrosive	I	E0	Forbidden			Forbidden			480	1 L		4HW
	Methylene bromide, see Dibromomethane (UN 2664)														
	Methylene chloride, see Dichloromethane (UN 1593)														
	Methylene chloride and methyl chloride mixture, see Methyl chloride and methylene chloride mixture (UN 1912)														
	Methylene cyanide, see Malononitrile (UN 2647)														
	p,p'-Methylene dianiline, see 4,4'-Diaminodiphenylmethane (UN 2651)														
	Methylene dibromide, see Dibromomethane (UN 2664)														
	2,2-Methylene-di-(3,4,6-trichlorophenol), see Hexachlorophene (UN 2875)														
	Methylene glycol dinitrate														
	Methyl ethyl ether, see Ethyl methyl ether (UN 1039)														

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
1193	Methyl ethyl ketone	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
	Methyl ethyl ketone peroxide(s), 48% or more if available oxygen above 10% and not more than 10.7% with or without water						Forbidden		Forbidden		Forbidden				
	Methyl ethyl ketone peroxide(s), not more than 52% when with 48% or more diluent type A						Forbidden		Forbidden		Forbidden				
2300	2-Methyl-5-ethylpyridine	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L			6L	
2454	Methyl fluoride	2.1	Flamm. gas		E0		Forbidden		Forbidden		200	150 kg	A1	10L	
1243	Methyl formate	3	Flamm. liquid	I	E3		Forbidden	351	1 L	361	30 L			3H	
2301	2-Methylfuran	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H	
	a-Methylglucoside tetranitrate						Forbidden		Forbidden		Forbidden				
	a-Methylglycerol trinitrate						Forbidden		Forbidden		Forbidden				
	Methyl glycol, see Ethylene glycol monomethyl ether (UN 1188)														
	Methyl glycol acetate, see Ethylene glycol monomethyl ether acetate (UN 1189)														
3023	2-Methyl-2-heptanethiol	6.1 (3)					Forbidden		Forbidden		Forbidden			6F	
2302	5-Methylhexan-2-one	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L	
	Methyl hydrate, see Methanol (UN 1230)														
1244	Methylhydrazine	6.1 (3, 8)					Forbidden		Forbidden		Forbidden			6F	
	Methyl hydroxide, see Methanol (UN 1230)														
	1-Methylimidazole, see Corrosive liquid, n.o.s. ★ (UN 1760)														
2644	Methyl iodide	6.1					Forbidden		Forbidden		Forbidden			6L	
	Methyl isoamyl ketone, see 5-Methylhexan-2-one (UN 2302)														
2053	Methyl isobutyl carbinol	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L	
1245	Methyl isobutyl ketone	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
2480	Methyl isocyanate	6.1 (3)					Forbidden		Forbidden		Forbidden			6H	
1246	Methyl isopropenyl ketone, stabilized	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
	Methyl isopropenyl ketone, unstabilized						Forbidden		Forbidden		Forbidden				
2477	Methyl isothiocyanate	6.1 (3)					Forbidden		Forbidden		Forbidden			6F	
2400	Methyl isovalerate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
1928	Methyl magnesium bromide in ethyl ether	4.3 (3)	Dang. when wet & Flamm. liquid	I	E0		Forbidden		Forbidden		480	1 L		4HW	
1064	Methyl mercaptan	2.3 (2.1)					Forbidden		Forbidden		Forbidden			A2	10P
	Methyl mercaptopropionaldehyde, see 4-Thiapentanal (UN 2785)														
1247	Methyl methacrylate monomer, stabilized	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
	Methyl methacrylate monomer, unstabilized						Forbidden		Forbidden		Forbidden				



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
A	B	C	D	E		F	G						M	N		
2535	4-Methylmorpholine	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L			3C		
2535	N-Methylmorpholine	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L			3C		
	Methyl nitramine (dry), metal salts of						Forbidden									
	Methyl nitrate						Forbidden									
	Methyl nitrite						Forbidden									
2606	Methyl orthosilicate	6.1 (3)					Forbidden								6F	
	Methyl oxide, see Dimethyl ether (UN 1033)						Forbidden									
2461	Methylpentadiene	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H		
	Methylpentanes, see Hexanes (UN 1208)															
	4-Methylpentan-2-ol, see Methyl isobutyl carbinol (UN 2053)															
2560	2-Methylpentan-2-ol	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L		
	3-Methyl-2-penten-4-one-ol, see 1-Pentol (UN 2705)															
2437	Methylphenyldichlorosilane	8	Corrosive	II	E0	ForbIDDEN			ForbIDDEN		876	30 L	A1	8L		
	2-Methyl-2-phenylpropane, see Butylbenzenes (UN 2709)															
	Methyl phosphorous dichloride, see Pyrophoric liquid, organic, n.o.s. ★ † (UN 2845)															
	Methyl picric acid (heavy metal salts of)						ForbIDDEN		ForbIDDEN							
2399	1-Methylpiperidine	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L			3C		
	2-Methyl-2-propanol, see Butanols (UN 1120)															
1248	Methyl propionate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H		
	Methylpropylbenzene, see Cymenes (UN 2046)															
2612	Methyl propyl ether	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3AH		
1249	Methyl propyl ketone	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L		
	Methyl pyridines, see Picolines (UN 2313)															
	alpha-Methylstyrene, see Isopropenylbenzene (UN 2303)															
	Methylstyrene, stabilized, see Vinyltoluenes, stabilized (UN 2618)															
	Methyl sulphate, see Dimethyl sulphate (UN 1595)															
	Methyl sulphide, see Dimethyl sulphide (UN 1164)															
2536	Methyltetrahydrofuran	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H		
2533	Methyl trichloroacetate	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L			6L		
1250	Methyltrichlorosilane	3 (8)	Flamm. liquid & Corrosive	II	E0	ForbIDDEN			ForbIDDEN		377	5 L			3C	
	Methyl trimethylol methane trinitrate															
2367	alpha-Methylvaleraldehyde	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L		
	Methyl vinyl benzene, stabilized, see Vinyltoluenes, Stabilized (UN 2618)															

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
1251	Methyl vinyl ketone, stabilized Metramine, see Hexamethylenetetramine (UN 1328) MIBC, see Methyl isobutyl carbinol (UN 2053) Mine rescue equipment containing carbon dioxide, see Carbon dioxide † (UN 1013)	6.1 (3, 8)						Forbidden			Forbidden				6CH
0137	Mines † with bursting charge	1.1D						Forbidden			Forbidden				1L
0136	Mines † with bursting charge	1.1F						Forbidden			Forbidden				1L
0138	Mines † with bursting charge	1.2D						Forbidden			Forbidden				1L
0294	Mines † with bursting charge Mirbane oil, see Nitrobenzene (UN 1662)	1.2F						Forbidden			Forbidden				1L
	Missiles, guided, see Rockets † (UN 0180), Rockets † (UN 0181), Rockets † (UN 0182), Rockets † (UN 0183), Rockets † (UN 0295), Rockets, liquid fuelled † (UN 0397), Rockets, liquid fuelled † (UN 0398), Rockets † (UN 0436), Rockets † (UN 0437), Rockets † (UN 0438) Mobility aids, see Battery-powered vehicle (UN 3171) or Battery-powered equipment (UN 3171)														
2508	Molybdenum pentachloride Monochloroacetic acid, see Chloroacetic acid solution (UN 1750) or Chloroacetic acid, solid (UN 1751) Monochlorobenzene, see Chlorobenzene (UN 1134) Monochlorodifluoromethane, see Chlorodifluoromethane (UN 1018) Monochlorodifluoromethane and monochloropentafluoroethane mixture (R502), see Chlorodifluoromethane and chloropentafluoroethane mixture (UN 1973) Monochlorodifluoromonobromomethane (R12B1), see Chlorodifluorobromomethane (UN 1974) Monochloropentafluoroethane and monochlorodifluoromethane mixture, see Chlorodifluoromethane and chloropentafluoroethane mixture (UN 1973) Monoethylamine, see Ethylamine (UN 1036) Monopropylamine, see Propylamine (UN 1277)	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A803		8L	
2054	Morpholine Motorcycle, see Vehicle, flammable gas powered † (UN 3166) or Vehicle, flammable liquid powered † (UN 3166)	8 (3)	Corrosive & Flamm. liquid	I	E0		Forbidden			850	0.5 L	854	2.5 L		8F
1649	Motor fuel anti-knock mixture †	6.1	Toxic	I	E0		Forbidden				Forbidden	658	30 L	A1	6L
3483	Motor fuel anti-knock mixture, flammable	6.1 (3)		E0			Forbidden				Forbidden		Forbidden	A2	6F
1203	Motor spirit Muriatic acid, see Hydrochloric acid (UN 1789)	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L	A100		3H	



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
A	B	C	D	E		F	G						M	N		
2956	Musk xylene Mysorite, see Brown asbestos † (UN 2212) Naphtha, see Petroleum distillates, n.o.s. (UN 1268)	4.1						Forbidden			Forbidden				3E	
1334	Naphthalene, crude Naphthalene diazonide	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L			
2304	Naphthalene, molten	4.1						Forbidden		Forbidden					3L	
1334	Naphthalene, refined Naphtha petroleum, see Petroleum distillates, n.o.s. (UN 1268) Naphtha solvent, see Petroleum products, n.o.s. (UN 1268) Naphthenates, see Flammable liquid, n.o.s. ★ (UN 1993) Naphthene, see Cyclohexane (UN 1145)	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L			
2077	alpha-Naphthylamine Naphthyl amineperchlorate	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg				6L	
1650	beta-Naphthylamine, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L	
3411	beta-Naphthylamine solution 1-Naphthylthiourea, see Naphthylthiourea (UN 1651)	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L	A3	6L	6L		
				III	E1	Y642	2 L	655	60 L	663	220 L					
1651	Naphthylthiourea	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg	A6	6L			
1652	Naphthylurea	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L	
1971	Natural gas, compressed with high methane content Natural gasoline, see Motor spirit (UN 1203), Petrol (UN 1203), Gasoline (UN 1203)	2.1	Flamm. gas		E0		Forbidden		Forbidden	200	150 kg	A1	10L			
1972	Natural gas, refrigerated liquid with high methane content Neohexane, see Hexanes (UN 1208)	2.1					Forbidden		Forbidden		Forbidden				10L	
1065	Neon, compressed Neon, liquid, non-pressurized	2.2	Non-flamm. gas		E1		Forbidden		200	75 kg	200	150 kg	A69	2L		
1913	Neon, refrigerated liquid Neopentane, see 2,2-Dimethylpropane (UN 2044) Neothyl, see Methyl propyl ether (UN 2612) Nickel arsenate, solid, see Arsenic compound, solid, n.o.s. ★ (UN 1557)	2.2	Non-flamm. gas & Cryogenic liquid		E1		Forbidden		202	50 kg	202	500 kg		2L		
1259	Nickel carbonyl Nickel catalyst, see Metal catalyst, wetted ★ † (UN 1378) or Metal catalyst, dry ★ (UN 2881)	6.1 (3)					Forbidden		Forbidden		Forbidden				6H	
1653	Nickel cyanide Nickel (II) cyanide, see Nickel cyanide (UN 1653)	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L	

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
	Nickel (II) nitrate, see Nickel nitrate (UN 2725)														
	Nickel (II) nitrite, see Nickel nitrite (UN 2726)														
2725	Nickel nitrate	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803	5L		
2726	Nickel nitrite	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803	5L		
	Nickelous nitrate, see Nickel nitrate (UN 2725)														
	Nickelous nitrite, see Nickel nitrite (UN 2726)														
	Nickel picrate						Forbidden		Forbidden		Forbidden				
	Nickel tetracarbonyl, see Nickel carbonyl (UN 1259)														
1654	Nicotine	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L		6L		
3144	Nicotine compound, liquid, n.o.s. ★	6.1	Toxic	I	E5	Forbidden		652	1 L	658	30 L	A3	6L		
				II	E4	Y641	1 L	654	5 L	662	60 L	A4	6L		
				III	E1	Y642	2 L	655	60 L	663	220 L	A6	6L		
1655	Nicotine compound, solid, n.o.s. ★	6.1	Toxic	I	E5	Forbidden		666	5 kg	673	50 kg	A3	6L		
				II	E4	Y644	1 kg	669	25 kg	676	100 kg	A5	6L		
				III	E1	Y645	10 kg	670	100 kg	677	200 kg	A6	6L		
1656	Nicotine hydrochloride, liquid	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L	A3	6L		
				III	E1	Y642	2 L	655	60 L	663	220 L	A6	6L		
3444	Nicotine hydrochloride, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg	A6	6L		
1656	Nicotine hydrochloride, solution	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L	A3	6L		
				III	E1	Y642	2 L	655	60 L	663	220 L	A6	6L		
3144	Nicotine preparation, liquid, n.o.s. ★	6.1	Toxic	I	E5	Forbidden		652	1 L	658	30 L	A3	6L		
				II	E4	Y641	1 L	654	5 L	662	60 L	A4	6L		
				III	E1	Y642	2 L	655	60 L	663	220 L	A6	6L		
1655	Nicotine preparation, solid, n.o.s. ★	6.1	Toxic	I	E5	Forbidden		666	5 kg	673	50 kg	A3	6L		
				II	E4	Y644	1 kg	669	25 kg	676	100 kg	A5	6L		
				III	E1	Y645	10 kg	670	100 kg	677	200 kg	A6	6L		
1657	Nicotine salicylate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L		
3445	Nicotine sulphate, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg	A3	6L		
1658	Nicotine sulphate solution	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L	A3	6L		
				III	E1	Y642	2 L	655	60 L	663	220 L		6L		
1659	Nicotine tartrate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L		
1477	Nitrates, inorganic, n.o.s.	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg	A3	5L		
				III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803	5L		
3218	Nitrates, inorganic, aqueous solution, n.o.s.	5.1	Oxidizer	II	E2	Y540	0.5 L	550	1 L	554	5 L	A3	5L		
				III	E1	Y541	1 L	551	2.5 L	555	30 L	A65	5L		
	Nitrates of diazonium compounds						Forbidden		Forbidden		Forbidden				
1796	Nitrating acid mixture † with 50% or less nitric acid	8	Corrosive	II	E0	Forbidden		Forbidden		Forbidden		855	30 L	A1	8L
1796	Nitrating acid mixture † with more than 50% nitric acid	8 (5.1)	Corrosive & Oxidizer	I	E0	Forbidden		Forbidden		Forbidden		854	2.5 L		8X
1826	Nitrating acid mixture, spent with 50% or less nitric acid	8	Corrosive	II	E0	Forbidden		Forbidden		Forbidden		855	30 L	A1 A34	8L
1826	Nitrating acid mixture, spent with more than 50% nitric acid	8 (5.1)	Corrosive & Oxidizer	I	E0	Forbidden		Forbidden		Forbidden		854	2.5 L	A34	8X
	Nitrating acid mixture, spent, all concentrations, unstable						Forbidden		Forbidden		Forbidden				

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	
A	B	C	D	E		F	G						M	N
2031	Nitric acid other than red fuming, with > 20% but < 65% nitric acid	8	Corrosive	II	E0	Forbidden		Forbidden		855	30 L			8L
2031	Nitric acid other than red fuming, with 20% or less nitric acid	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L			8L
2031	Nitric acid other than red fuming, with ≥ 65% but ≤ 70% nitric acid	8 (5.1)	Corrosive & Oxidizer	II	E0	Forbidden		Forbidden		855	30 L	A1		8L
2031	Nitric acid other than red fuming, with more than 70% nitric acid	8 (5.1)	Corrosive & Oxidizer	I	E0	Forbidden		Forbidden		854	2.5 L			8X
2032	Nitric acid, red fuming	8 (5.1, 6.1)				Forbidden		Forbidden		Forbidden				8PX
1975	Nitric oxide and dinitrogen tetroxide mixture	2.3 (5.1, 8)				Forbidden		Forbidden		Forbidden		A2		2PX
1975	Nitric oxide and nitrogen dioxide mixture	2.3 (5.1, 8)				Forbidden		Forbidden		Forbidden		A2		2PX
1660	Nitric oxide, compressed	2.3 (5.1, 8)				Forbidden		Forbidden		Forbidden		A2		2PX
3273	Nitriles, flammable, toxic, n.o.s. ★	3 (6.1)	Flamm. liquid & Toxic	I	E0	Forbidden		Forbidden		361	30 L			3HP
				II	E2	Y341	1 L	352	1 L	364	60 L			3HP
△	3276 Nitriles, liquid, toxic, n.o.s. ★	6.1	Toxic	I	E5	Forbidden		652	1 L	658	30 L	A3		6L
				II	E4	Y641	1 L	654	5 L	662	60 L	A4		6L
				III	E1	Y642	2 L	655	60 L	663	220 L	A137		6L
△	3439 Nitriles, solid, toxic, n.o.s. ★	6.1	Toxic	I	E5	Forbidden		666	5 kg	673	50 kg	A3		6L
				II	E4	Y644	1 kg	669	25 kg	676	100 kg	A5		6L
				III	E1	Y645	10 kg	670	100 kg	677	200 kg			6L
3275	Nitriles, toxic, flammable, n.o.s. ★	6.1 (3)	Toxic & Flamm. liquid	I	E5	Forbidden		652	1 L	658	30 L	A4		6F
				II	E4	Y641	1 L	654	5 L	662	60 L	A137		6F
2627	Nitrites, inorganic, n.o.s. ★	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg	A33		5L
3219	Nitrites, inorganic, aqueous solution, n.o.s. ★	5.1	Oxidizer	II	E2	Y540	0.5 L	550	1 L	554	5 L	A3		5L
	N-Nitroaniline			III	E1	Y541	1 L	551	2.5 L	555	30 L	A33		5L
						Forbidden		Forbidden		Forbidden				
1661	Nitroanilines (o-, m-, p-)	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg	A113		6L
2730	Nitroanisoles, liquid	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L	A113		6L
3458	Nitroanisoles, solid	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg	A113		6L
1662	Nitrobenzene	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L	A113		6L
	Nitrobenzene bromide, see Nitrobromobenzenes, liquid (UN 2732) or Nitrobromobenzenes, solid (UN 3459)					Forbidden		Forbidden		Forbidden				
	m-Nitrobenzene diazonium perchlorate					Forbidden		Forbidden		Forbidden				
2305	Nitrobenzenesulphonic acid	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L			8L
	Nitrobenzol, see Nitrobenzene (UN 1662)					Forbidden		Forbidden		Forbidden				
0385	5-Nitrobenzotriazol	1.1D				Forbidden		Forbidden		Forbidden				1L
2306	Nitrobenzotrifluorides, liquid	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L			6L
3431	Nitrobenzotrifluorides, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg			6L
2732	Nitrobromobenzenes, liquid	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L			6L
3459	Nitrobromobenzenes, solid	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg			6L

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
0340	Nitrocellulose dry or wetted with less than 25% water (or alcohol), by weight	1.1D						Forbidden		Forbidden		Forbidden			1L
0341	Nitrocellulose unmodified or plasticized with less than 18% plasticizing substance, by weight	1.1D						Forbidden		Forbidden		Forbidden			1L
3270	Nitrocellulose membrane filters with less than 12.6% nitrogen, by dry weight	4.1	Flamm. solid	II	E2	Y458	1 kg	458	1 kg	458	15 kg	A57 A73 A122		3L	
2557	Nitrocellulose mixture without plasticizer, without pigment with 12.6% or less nitrogen, by dry mass	4.1	Flamm. solid	II	E0		Forbidden	452	1 kg	453	15 kg	A57 A86		3L	
2557	Nitrocellulose mixture without plasticizer, with pigment with 12.6% or less nitrogen, by dry weight	4.1	Flamm. solid	II	E0		Forbidden	452	1 kg	453	15 kg	A57 A86		3L	
2557	Nitrocellulose mixture with plasticizer, without pigment with 12.6% or less nitrogen by dry weight	4.1	Flamm. solid	II	E0		Forbidden	452	1 kg	453	15 kg	A57 A86		3L	
2557	Nitrocellulose mixture with plasticizer, with pigment with 12.6% or less nitrogen, by dry weight	4.1	Flamm. solid	II	E0		Forbidden	452	1 kg	453	15 kg	A57 A86		3L	
0343	Nitrocellulose, plasticized with 18% or more plasticizing substance, by weight	1.3C						Forbidden		Forbidden		Forbidden			1L
2059	Nitrocellulose solution, flammable with 12.6% or less nitrogen, by dry weight, and 55% or less nitrocellulose	3	Flamm. liquid	I	E0	Forbidden		351	1 L	361	30 L	A3 A91	3H 3L		
				II	E0	Y341	1 L	353	5 L	364	60 L				
				III	E0	Y344	10 L	355	60 L	366	220 L				
0342	Nitrocellulose, wetted with 25% or more alcohol, by weight	1.3C						Forbidden		Forbidden		Forbidden			1L
2556	Nitrocellulose with alcohol 25% or more alcohol by dry weight and 12.6% or less nitrogen, by dry weight	4.1	Flamm. solid	II	E0		Forbidden	452	1 kg	453	15 kg	A57		3L	
2555	Nitrocellulose with water 25% or more water, by weight	4.1	Flamm. solid	II	E0		Forbidden	452	15 kg	453	50 kg	A57		3E	
	Nitrochlorobenzene, see Chloronitrobenzenes, solid (UN 1578) or Chloronitrobenzenes, liquid (UN 3409)														
2307	3-Nitro-4-chlorobenzotrifluoride	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L			6L	
	Nitrochloroform, see Chloropicrin (UN 1580)														
3434	Nitrocresols, liquid	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L			6L	
2446	Nitrocresols, solid	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg			6L	
	6-Nitro-4-diazotoluene-3-sulphonic acid (dry)							Forbidden		Forbidden		Forbidden			
2842	Nitroethane	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L	
	Nitroethylene polymer							Forbidden		Forbidden		Forbidden			
	Nitroethyl nitrate							Forbidden		Forbidden		Forbidden			
1066	Nitrogen, compressed	2.2	Non-flamm. gas		E1		Forbidden	200	75 kg	200	150 kg	A69	2L		
1067	Nitrogen dioxide	2.3 (5.1, 8)					Forbidden		Forbidden		Forbidden	A2	2PX		
	Nitrogen monoxide, see Nitrous oxide (UN 1070)														
1977	Nitrogen, refrigerated liquid	2.2	Non-flamm. gas & Cryogenic liquid		E1		Forbidden	202	50 kg	202	500 kg	A152	2L		
	Nitrogen trichloride							Forbidden		Forbidden		Forbidden			



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					Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E	F	G	H	I	J	K	L	M	N	
2451	Nitrogen trifluoride	2.2 (5.1)	Non-flamm. gas & Oxidizer		E0	Forbidden		200	75 kg	200	150 kg		2X	
	Nitrogen triiodide					Forbidden		Forbidden		Forbidden		Forbidden		
	Nitrogen triiodide monoamine					Forbidden		Forbidden		Forbidden		Forbidden		
2421	Nitrogen trioxide	2.3 (5.1, 8)				Forbidden		Forbidden		Forbidden		Forbidden		A2 2PX
0143	Nitroglycerin, desensitized with 40% or more non-volatile water-insoluble phlegmatizer, by weight	1.1D (6.1)				Forbidden		Forbidden		Forbidden		Forbidden		1P
	Nitroglycerin, desensitized, with less than 40% phlegmatizer, by weight					Forbidden		Forbidden		Forbidden		Forbidden		
	Nitroglycerin, liquid, not desensitized					Forbidden		Forbidden		Forbidden		Forbidden		
3357	Nitroglycerin mixture, desensitized, liquid, n.o.s. * with 30% or less nitroglycerin, by weight	3				Forbidden		Forbidden		Forbidden		Forbidden		A17 3L
3343	Nitroglycerin mixture, desensitized, liquid, flammable, n.o.s. * with 30% or less nitroglycerin, by weight	3				Forbidden		Forbidden		Forbidden		Forbidden		3E
3319	Nitroglycerin mixture desensitized, solid, n.o.s. * with more than 2% but not more than 10% nitroglycerin, by weight	4.1	Flamm. solid	II	E0	Forbidden		Forbidden		499	0.5 kg			3L
0144	Nitroglycerin solution in alcohol with 10% or less but more than 1% nitroglycerin	1.1D				Forbidden		Forbidden		Forbidden		Forbidden		1L
1204	Nitroglycerin solution in alcohol with 1% or less nitroglycerin	3	Flamm. liquid	II	E0	Y341	1 L	371	5 L	371	60 L			3L
3064	Nitroglycerin solution in alcohol with 5% or less but more than 1% nitroglycerin	3	Flamm. liquid	II	E0	Forbidden		Forbidden		371	5 L			A188 3L
0282	Nitroguanidine dry or wetted with less than 20% water, by weight	1.1D				Forbidden		Forbidden		Forbidden		Forbidden		1L
	Nitroguanidine nitrate					Forbidden		Forbidden		Forbidden		Forbidden		
1336	Nitroguanidine, wetted with 20% or more water, by weight	4.1	Flamm. solid	I	E0	Forbidden		451	1 kg	451	15 kg			A40 3E
	1-Nitro hydantoin					Forbidden		Forbidden		Forbidden		Forbidden		
1798	Nitrohydrochloric acid	8	Corrosive	I	E0	Forbidden		Forbidden		854	2.5 L			A1 8L
	Nitro isobutane triol trinitrate					Forbidden		Forbidden		Forbidden		Forbidden		
	Nitromannite (dry)					Forbidden		Forbidden		Forbidden		Forbidden		
0133	Nitromannite, wetted with 40% or more water, or mixture of alcohol and water, by weight	1.1D				Forbidden		Forbidden		Forbidden		Forbidden		1L
1261	Nitromethane	3	Flamm. liquid	II	E0	Forbidden		Forbidden		364	60 L			A1 A39 3L
	N-Nitro-N-methylglycolamide nitrate					Forbidden		Forbidden		Forbidden		Forbidden		
	2-Nitro-2-methylpropanol nitrate					Forbidden		Forbidden		Forbidden		Forbidden		
	Nitromuriatic acid, see Nitrohydrochloric acid (UN 1798)					Forbidden		Forbidden		Forbidden		Forbidden		
2538	Nitronaphthalene	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg			A803 3L
1663	Nitrophenols (o-, m-, p-)	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg			A113 6L
	m-Nitrophenyldinitro methane					Forbidden		Forbidden		Forbidden		Forbidden		

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
3376	4-Nitrophenylhydrazine with 30% or more water, by mass	4.1			Forbidden		Forbidden		Forbidden		Forbidden		A2	3L	
2608	Nitropropanes	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
1369	p-Nitrosodimethylaniline	4.2	Spont. comb.	II	E2	Forbidden		467	15 kg	470	50 kg				4L
0146	Nitrostarch dry or wetted with less than 20% water, by weight	1.1D			Forbidden		Forbidden		Forbidden		Forbidden			1L	
1337	Nitrostarch, wetted with 20% or more water, by weight	4.1	Flamm. solid	I	E0	Forbidden		451	1 kg	451	15 kg	A40		3E	
	Nitrosugars (dry)					Forbidden		Forbidden		Forbidden					
1069	Nitrosyl chloride	2.3 (8)			Forbidden		Forbidden		Forbidden		Forbidden		A2	2CP	
2308	Nitrosylsulphuric acid, liquid	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L				8L
3456	Nitrosylsulphuric acid, solid	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg				8L
1664	Nitrotoluenes, liquid	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L				6L
3446	Nitrotoluenes, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L
2660	Nitrotolidines (mono)	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg				6L
0490	Nitrotriazolone	1.1D			Forbidden		Forbidden		Forbidden		Forbidden			1L	
	Nitrotrichloromethane, see Chloropicrin (UN 1580)														
0147	Nitro urea	1.1D			Forbidden		Forbidden		Forbidden		Forbidden			1L	
	Nitrous ether, see Ethyl nitrite solution (UN 1194)														
1070	Nitrous oxide	2.2 (5.1)	Non-flamm. gas & Oxidizer		E0	Forbidden		200	75 kg	200	150 kg				2AX
2201	Nitrous oxide, refrigerated liquid	2.2 (5.1)				Forbidden		Forbidden		Forbidden		A2		2AX	
	Tri-(b-nitroxyethyl) ammonium nitrate					Forbidden		Forbidden		Forbidden					
1665	Nitroxlenes, liquid	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L				6L
3447	Nitroxlenes, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L
	Non-activated carbon, see Carbon (UN 1361)														
	Non-activated charcoal, see Carbon (UN 1361)														
1920	Nonanes	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
	Non-flammable gas, n.o.s., see Compressed gas, toxic, n.o.s.★ (UN 1955) or Liquefied gas, toxic, n.o.s.★ (UN 3162)														
	Non-liquefied gas, see Compressed gas, toxic, flammable, n.o.s.★ (UN 1953), Compressed gas, flammable, n.o.s.★ (UN 1954), Compressed gas, toxic, n.o.s.★ (UN 1955), Compressed gas, n.o.s.★ (UN 1956), Compressed gas, oxidizing, n.o.s.★ (UN 3156), Compressed gas, toxic, oxidizing, n.o.s.★ (UN 3303), Compressed gas, toxic, corrosive, n.o.s.★ (UN 3304), Compressed gas, toxic, flammable, corrosive, n.o.s.★ (UN 3305), Compressed gas, toxic, oxidizing, corrosive, n.o.s.★ (UN 3306)														
	Non-liquefied hydrocarbon gas, see Hydrocarbon gas mixture, compressed, n.o.s.★† (UN 1964)														
1799	Nonyltrichlorosilane	8	Corrosive	II	E0	Forbidden		Forbidden		Forbidden		876	30 L	A1	8L



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					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E	F	G	H	I	J	K	L	M	N		
2251	2,5-Norbornadiene, stabilized Nordhausen acid, see Sulphuric acid, fuming † (UN 1831) Normal propyl alcohol, see Propyl alcohol, normal (UN 1274)	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
0490	NTO	1.1D					Forbidden		Forbidden		Forbidden			1L	
1800	Octadecyltrichlorosilane	8	Corrosive	II	E0		Forbidden		Forbidden	876	30 L	A1	8L		
2309	Octadiene 1,7-Octadiene-3,5-diyne-1,8-dimethoxy-9-octadecenoic acid	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
2422	Octafluorobut-2-ene	2.2	Non-flamm. gas		E1		Forbidden	200	75 kg	200	150 kg			2L	
1976	Octafluorocyclobutane	2.2	Non-flamm. gas		E1		Forbidden	200	75 kg	200	150 kg			2L	
2424	Octafluoropropane	2.2	Non-flamm. gas		E1		Forbidden	200	75 kg	200	150 kg			2L	
1262	Octanes	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H	
0484	Octogen, desensitized Octogen (dry or unphlegmatized)	1.1D					Forbidden		Forbidden		Forbidden			1L	
0226	Octogen, wetted with not less than 15% water, by weight	1.1D					Forbidden		Forbidden		Forbidden			1L	
0266	Octol dry or wetted with < 15% water, by weight	1.1D					Forbidden		Forbidden		Forbidden			1L	
0266	Ocotlite dry or wetted with < 15% water, by weight	1.1D					Forbidden		Forbidden		Forbidden			1L	
0496	Octonal	1.1D					Forbidden		Forbidden		Forbidden			1L	
1191	Octyl aldehydes tert-Octyl mercaptan, see 2-Methyl-2-heptanethiol (UN 3023)	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L	
1801	Octyltrichlorosilane Oenanthal, see n-Heptaldehyde (UN 3056)	8	Corrosive	II	E0		Forbidden		Forbidden	876	30 L	A1	8L		
1071	Oil gas, compressed † Oil well sampling device, charged, see Compressed gas, flammable, n.o.s. * (UN 1954) or Liquefied gas, flammable, n.o.s. * (UN 3161) Oleum, see Sulphuric acid, fuming † (UN 1831) Organic peroxide type B, liquid † Organic peroxide type B, liquid, temperature controlled † Organic peroxide type B, solid † Organic peroxide type B, solid, temperature controlled †	2.3 (2.1)	Toxic gas & Flamm. gas		E0		Forbidden		Forbidden	200	25 kg	A1	10P		
3103	Organic peroxide type C, liquid ★ †	5.2	Organic peroxide & Keep away from heat		E0		Forbidden	570	5 L	570	10 L	A20 A150 A802	5L		
3113	Organic peroxide type C, liquid, temperature controlled ★ †	5.2					Forbidden		Forbidden		Forbidden	A2	5S		

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
					EQ see 2.6	Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
3104	Organic peroxide type C, solid ★ †	5.2	Organic peroxide & Keep away from heat	E0	Forbidden	570	5 kg	570	10 kg	A20 A150 A802	5L					
3114	Organic peroxide type C, solid, temperature controlled ★ †	5.2			Forbidden			Forbidden		Forbidden		A2	5S			
3105	Organic peroxide type D, liquid ★ †	5.2	Organic peroxide & Keep away from heat	E0	Forbidden	570	5 L	570	10 L	A20 A150 A802	5L					
3115	Organic peroxide type D, liquid, temperature controlled ★ †	5.2			Forbidden			Forbidden		Forbidden		A2 A150	5S			
3106	Organic peroxide type D, solid ★ †	5.2	Organic peroxide & Keep away from heat	E0	Forbidden	570	5 kg	570	10 kg	A20 A802	5L					
3116	Organic peroxide type D, solid, temperature controlled ★ †	5.2			Forbidden			Forbidden		Forbidden		A2	5S			
3107	Organic peroxide type E, liquid ★ †	5.2	Organic peroxide & Keep away from heat	E0	Forbidden	570	10 L	570	25 L	A20 A150 A802	5L					
3117	Organic peroxide type E, liquid, temperature controlled ★ †	5.2			Forbidden			Forbidden		Forbidden		A2	5S			
3108	Organic peroxide type E, solid ★ †	5.2	Organic peroxide & Keep away from heat	E0	Forbidden	570	10 kg	570	25 kg	A20 A802	5L					
3118	Organic peroxide type E, solid, temperature controlled ★ †	5.2			Forbidden			Forbidden		Forbidden		A2	5S			
3109	Organic peroxide type F, liquid ★ †	5.2	Organic peroxide & Keep away from heat	E0	Forbidden	570	10 L	570	25 L	A20 A150 A802	5L					
3119	Organic peroxide type F, liquid, temperature controlled ★ †	5.2			Forbidden			Forbidden		Forbidden		A2 A150	5S			
3110	Organic peroxide type F, solid ★ †	5.2	Organic peroxide & Keep away from heat	E0	Forbidden	570	10 kg	570	25 kg	A20 A802	5L					
3120	Organic peroxide type F, solid, temperature controlled ★ †	5.2			Forbidden			Forbidden		Forbidden		A2	5S			
3313	Organic pigments, self-heating	4.2	Spont. comb.	II III	E2 E1	Forbidden Forbidden	467 469	15 kg 25 kg	470 471	50 kg 100 kg	A3 A803	4L 4L				
3280	Organoarsenic compound, liquid, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	Forbidden Y641 Y642	1 L 1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4 A137	6L 6L 6L			
3465	Organoarsenic compound, solid, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	Forbidden Y644 Y645	1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5	6L 6L 6L			
2762	Organochlorine pesticide, liquid, flammable, toxic, ★ flash point less than 23°C	3 (6.1)	Flamm. liquid & Toxic	I II	E0 E2	Forbidden Y341	1 L	352	1 L	361 364	30 L 60 L	A4	3P 3P			
2996	Organochlorine pesticide, liquid, toxic ★	6.1	Toxic	I II III	E5 E4 E1	Forbidden Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4	6L 6L 6L			
2995	Organochlorine pesticide, liquid, toxic, flammable, ★ flash point 23°C or more	6.1 (3)	Toxic & Flamm. liquid	I II III	E5 E4 E1	Forbidden Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4	6F 6F 6F			
2761	Organochlorine pesticide, solid, toxic ★	6.1	Toxic	I II III	E5 E4 E1	Forbidden Y644 Y645	1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5	6L 6L 6L			

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					EQ see 2.6	Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
						C	D	E						M	N	
3282	Organometallic compound, liquid, toxic, n.o.s. ★	6.1	Toxic		I	E5	Forbidden		652	1 L	658	30 L	A3	6L		
					II	E4	Y641	1 L	654	5 L	662	60 L	A4	6L		
					III	E1	Y642	2 L	655	60 L	663	220 L		6L		
3467	Organometallic compound, solid, toxic, n.o.s. ★	6.1	Toxic		I	E5	Forbidden		666	5 kg	673	50 kg	A3	6L		
					II	E4	Y644	1 kg	669	25 kg	676	100 kg	A5	6L		
					III	E1	Y645	10 kg	670	100 kg	677	200 kg		6L		
3392	Organometallic substance, liquid, pyrophoric ★	4.2					Forbidden			Forbidden		Forbidden			4L	
3394	Organometallic substance, liquid, pyrophoric, water-reactive ★	4.2 (4.3)					Forbidden			Forbidden		Forbidden			4W	
3398	Organometallic substance, liquid, water-reactive ★	4.3	Dang. when wet		I	E0	Forbidden			Forbidden		480	1 L	A3	4W	
					II	E2	Forbidden		478	1 L	481	5 L	A803	4W		
					III	E1	Forbidden		479	5 L	482	60 L		4W		
3399	Organometallic substance, liquid, water-reactive, flammable ★	4.3 (3)	Dang. when wet & Flamm. liquid		I	E0	Forbidden			Forbidden		494	1 L	A3	4FW	
					II	E2	Forbidden		493	1 L	494	5 L	A803	4FW		
					III	E1	Forbidden		493	5 L	494	60 L		4FW		
3391	Organometallic substance, solid, pyrophoric ★	4.2					Forbidden			Forbidden		Forbidden			4L	
3393	Organometallic substance, solid, pyrophoric, water-reactive ★	4.2 (4.3)					Forbidden			Forbidden		Forbidden			4W	
3400	Organometallic substance, solid, self-heating ★	4.2	Spont. comb.		II	E2	Forbidden		467	15 kg	470	50 kg	A3	4L		
					III	E1	Forbidden		469	25 kg	471	100 kg	A803	4L		
3395	Organometallic substance, solid, water-reactive ★	4.3	Dang. when wet		I	E0	Forbidden			Forbidden		487	15 kg	A3	4W	
					II	E2	Forbidden		483	15 kg	489	50 kg	A803	4W		
					III	E1	Forbidden		486	25 kg	491	100 kg		4W		
3396	Organometallic substance, solid, water-reactive, flammable ★	4.3 (4.1)	Dang. when wet & Flamm. solid		I	E0	Forbidden			Forbidden		488	15 kg	A3	4W	
					II	E2	Forbidden		483	15 kg	489	50 kg	A803	4W		
					III	E1	Forbidden		486	25 kg	491	100 kg		4W		
3397	Organometallic substance, solid, water-reactive, self-heating ★	4.3 (4.2)	Dang. when wet & Spont. comb.		I	E0	Forbidden			Forbidden		488	15 kg	A3	4W	
					II	E2	Forbidden		483	15 kg	489	50 kg	A803	4W		
					III	E1	Forbidden		486	25 kg	491	100 kg		4W		
3278	Organophosphorus compound, liquid, toxic, n.o.s. ★	6.1	Toxic		I	E5	Forbidden		652	1 L	658	30 L	A3	6L		
					II	E4	Y641	1 L	654	5 L	662	60 L	A4	6L		
					III	E1	Y642	2 L	655	60 L	663	220 L	A6	6L		
3464	Organophosphorus compound, solid, toxic, n.o.s. ★	6.1	Toxic		I	E5	Forbidden		666	5 kg	673	50 kg	A3	6L		
					II	E4	Y644	1 kg	669	25 kg	676	100 kg	A5	6L		
					III	E1	Y645	10 kg	670	100 kg	677	200 kg	A6	6L		
3279	Organophosphorus compound, toxic, flammable, n.o.s. ★	6.1 (3)	Toxic & Flamm. liquid		I	E5	Forbidden		652	1 L	658	30 L	A4	6F		
					II	E4	Y641	1 L	654	5 L	662	60 L	A6	6F		
					III	E1	Y642	2 L	655	60 L	663	220 L	A137			
2784	Organophosphorus pesticide, liquid, flammable, toxic, ★ flash point less than 23°C	3 (6.1)	Flamm. liquid & Toxic		I	E0	Forbidden			Forbidden		361	30 L	A4	3P	
					II	E2	Y341	1 L	352	1 L	364	60 L		3P		
3018	Organophosphorus pesticide, liquid, toxic ★	6.1	Toxic		I	E5	Forbidden		652	1 L	658	30 L	A3	6L		
					II	E4	Y641	1 L	654	5 L	662	60 L	A4	6L		
					III	E1	Y642	2 L	655	60 L	663	220 L		6L		
3017	Organophosphorus pesticide, liquid, toxic, flammable, ★ flash point 23°C or more	6.1 (3)	Toxic & Flamm. liquid		I	E5	Forbidden		652	1 L	658	30 L	A3	6F		
					II	E4	Y641	1 L	654	5 L	662	60 L	A4	6F		
					III	E1	Y642	2 L	655	60 L	663	220 L		6F		
2783	Organophosphorus pesticide, solid, toxic ★	6.1	Toxic		I	E5	Forbidden		666	5 kg	673	50 kg	A3	6L		
					II	E4	Y644	1 kg	669	25 kg	676	100 kg	A5	6L		
					III	E1	Y645	10 kg	670	100 kg	677	200 kg	A6	6L		
2788	Organotin compound, liquid, n.o.s. ★	6.1	Toxic		I	E5	Forbidden		652	1 L	658	30 L	A3	6L		
					II	E4	Y641	1 L	654	5 L	661	60 L	A4	6L		
					III	E1	Y642	2 L	655	60 L	663	220 L	A6	6L		

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
3146	Organotin compound, solid, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	ForbIDDEN Y644 Y645	1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5 A6	6L 6L 6L			
2787	Organotin pesticide, liquid, flammable, toxic ★ flash point less than 23°C	3 (6.1)	Flamm. liquid & Toxic	I II	E0 E2	ForbIDDEN Y341	1 L	352	1 L	361 364	30 L 60 L	A4	3P 3P			
3020	Organotin pesticide, liquid, toxic ★	6.1	Toxic	I II III	E5 E4 E1	ForbIDDEN Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4	6L 6L 6L			
3019	Organotin pesticide, liquid, toxic, flammable ★ flash point 23°C or more	6.1 (3)	Toxic & Flamm. liquid	I II III	E5 E4 E1	ForbIDDEN Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4	6F 6F 6F			
2786	Organotin pesticide, solid, toxic ★	6.1	Toxic	I II III	E5 E4 E1	ForbIDDEN Y644 Y645	1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5	6L 6L 6L			
	Orthophosphoric acid, see Phosphoric acid, solution (UN 1805) or Phosphoric acid, solid (UN 3453)															
	Osmic acid anhydride, see Osmium tetroxide (UN 2471)															
2471	Osmium tetroxide	6.1	Toxic	I	E5	ForbIDDEN		666	5 kg	673	50 kg			6L		
	Other regulated substance, aromatic extracts or aromatic flavourings, (not falling under the definitions of classes 1-8), see Aviation regulated liquid, n.o.s. ★ † (UN 3334) or Aviation regulated solid, n.o.s. ★ † (UN 3335)															
3139	Oxidizing liquid, n.o.s. ★	5.1	Oxidizer	I II III	E0 E2 E1	ForbIDDEN Y540 Y541	0.5 L 1 L	550 551	1 L 2.5 L	553 554 555	2.5 L 5 L 30 L	A3 A803	5L 5L 5L			
3098	Oxidizing liquid, corrosive, n.o.s. ★	5.1 (8)	Oxidizer & Corrosive	I II III	E0 E2 E1	ForbIDDEN Y540 Y541	0.5 L 1 L	550 551	1 L 2.5 L	553 554 555	2.5 L 5 L 30 L	A3 A803	5C 5C 5C			
3099	Oxidizing liquid, toxic, n.o.s. ★	5.1 (6.1)	Oxidizer & Toxic	I II III	E0 E2 E1	ForbIDDEN Y540 Y541	0.5 L 1 L	550 551	1 L 2.5 L	553 554 555	2.5 L 5 L 30 L	A3 A803	5P 5P 5P			
1479	Oxidizing solid, n.o.s. ★	5.1	Oxidizer	I II III	E0 E2 E1	ForbIDDEN Y544 Y546	2.5 kg 10 kg	557 558 559	1 kg 5 kg 25 kg	561 562 563	15 kg 25 kg 100 kg	A3 A803	5L 5L 5L			
3085	Oxidizing solid, corrosive, n.o.s. ★	5.1 (8)	Oxidizer & Corrosive	I II III	E0 E2 E1	ForbIDDEN Y544 Y545	2.5 kg 5 kg	557 558 559	1 kg 5 kg 25 kg	561 562 563	15 kg 25 kg 100 kg	A3 A803	5C 5C 5C			
3137	Oxidizing solid, flammable, n.o.s. ★	5.1 (4.1)				ForbIDDEN			ForbIDDEN		ForbIDDEN			5F		
3100	Oxidizing solid, self-heating, n.o.s. ★	5.1 (4.2)				ForbIDDEN			ForbIDDEN		ForbIDDEN			5S		
3087	Oxidizing solid, toxic, n.o.s. ★	5.1 (6.1)	Oxidizer & Toxic	I II III	E0 E2 E1	ForbIDDEN Y543 Y546	1 kg 10 kg	557 558 559	1 kg 5 kg 25 kg	561 562 563	15 kg 25 kg 100 kg	A3	5P 5P 5P			
3121	Oxidizing solid, water-reactive, n.o.s. ★	5.1 (4.3)				ForbIDDEN			ForbIDDEN		ForbIDDEN			5W		
	Oxirane, see Ethylene oxide (UN 1040)															
1072	Oxygen, compressed	2.2 (5.1)	Non-flamm. gas & Oxidizer	E0	ForbIDDEN			200	75 kg	200	150 kg	A175 A202	2X			
2190	Oxygen difluoride, compressed	2.3 (5.1, 8)			ForbIDDEN				ForbIDDEN		ForbIDDEN		A2	2PX		



Dangerous Goods Regulations

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg				
					EQ see 2.6	Pkg Inst										
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
3356	Oxygen generator, chemical † (including when contained in associated equipment e.g. passenger service units (PSUs), protective breathing equipment (PBE), etc)	5.1	Oxidizer	II	E0	Forbidden		Forbidden		565	25 kg	A1 A111 A116 A144	5L			
1073	Oxygen, refrigerated liquid 1-Oxy-4-nitrobenzene, see Nitrophenols (UN 1663)	2.2 (5.1)				Forbidden		Forbidden		Forbidden		A2	2X			
1263	Paint (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base)	3	Flamm. liquid	I II III	E3 E2 E1	Y341 1 L	ForbIDDEN	351	1 L	361	30 L	A3 A72	3L			
3066	Paint corrosive (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base)	8	Corrosive	II III	E2 E1	Y840 Y841	0.5 L 1 L	851	1 L	855	30 L	A3 A72 A803	8L			
3470	Paint, corrosive, flammable (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) Paint driers, see Flammable solid, organic, n.o.s. ★ (UN 1325), Flammable liquid, n.o.s. ★ (UN 1993), Flammable solid, inorganic, n.o.s. ★ (UN 3178)	8 (3)	Corrosive & Flamm. liquid	II	E2	Y840	0.5 L	851	1 L	855	30 L	A72	8F			
3469	Paint, flammable, corrosive (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base)	3 (8)	Flamm. liquid & Corrosive	I II III	E0 E2 E1	Y340 Y342	0.5 L 1 L	350	0.5 L	360	2.5 L	A3 A72 A803	3CH			
1263	Paint related material (including paint thinning or reducing compounds)	3	Flamm. liquid	I II III	E3 E2 E1	Y341 Y344	ForbIDDEN 1 L 10 L	351	1 L	361	30 L	A3 A72	3L			
3066	Paint related material corrosive (including paint thinning or reducing compounds)	8	Corrosive	II III	E2 E1	Y840 Y841	0.5 L 1 L	851	1 L	855	30 L	A3 A72 A803	8L			
3470	Paint related material, corrosive, flammable (including paint thinning or reducing compound)	8 (3)	Corrosive & Flamm. liquid	II	E2	Y840	0.5 L	851	1 L	855	30 L	A72	8F			
3469	Paint related material, flammable, corrosive (including paint thinning or reducing compound)	3 (8)	Flamm. liquid & Corrosive	I II III	E0 E2 E1	Y340 Y342	0.5 L 1 L	350	0.5 L	360	2.5 L	A3 A72 A803	3CH			
	Paper stock, wet						ForbIDDEN		ForbIDDEN		ForbIDDEN					
1379	Paper, unsaturated oil treated incompletely dried (includes carbon paper)	4.2					ForbIDDEN		ForbIDDEN		ForbIDDEN		A2	4L		
	Paper waste, wet						ForbIDDEN		ForbIDDEN		ForbIDDEN					
	Paraffin, see Kerosene (UN 1223)															
2213	Paraformaldehyde	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L			
1264	Paraldehyde	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L			
	PCBs, see Polychlorinated biphenyls, liquid (UN 2315) or Polychlorinated biphenyls, solid (UN 3432)															
1380	Pentaborane	4.2 (6.1)					ForbIDDEN		ForbIDDEN		ForbIDDEN			4P		
1669	Pentachloroethane	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L		6L			
3155	Pentachlorophenol	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg	A6	6L			
0411	Pentaerythrite tetranitrate with 7% or more wax, by weight	1.1D					ForbIDDEN		ForbIDDEN		ForbIDDEN			1L		
0150	Pentaerythrite tetranitrate, desensitized with 15% or more phlegmatizer, by weight	1.1D					ForbIDDEN		ForbIDDEN		ForbIDDEN			1L		

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code				
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg					
A	B	C	D	E		F	G						M	N				
3344	Pentaerythrite tетranitrate, desensitized with less than 15% phlegmatizer	4.1				Forbidden		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	3E				
	Pentaerythrite tетranitrate (dry)					Forbidden												
0150	Pentaerythrite tетranitrate mixture, desensitized, solid, n.o.s. ★ with > 10% but ≤ 20% PETN, by weight	1.1D				Forbidden		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	1L				
0411	Pentaerythritol tетranitrate with 7% or more wax, by weight	1.1D				Forbidden												
0150	Pentaerythritol tетranitrate, desensitized with 15% or more phlegmatizer, by weight	1.1D				Forbidden		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	1L				
0150	Pentaerythritol tетranitrate (dry)	1.1D				Forbidden												
3344	Pentaerythritol tетranitrate mixture desensitized, solid, n.o.s. ★ with > 10% but ≤ 20% PETN, by weight	4.1				Forbidden		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	3E				
3220	Pentafluoroethane	2.2	Non-flamm. gas	E1	Forbidden		Pkg Inst	Max Net Qty/Pkg	200	75 kg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	2L			
2286	Pentamethylheptane	3	Flamm. liquid	III	E1	Y344	10 L		355	60 L	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	3L			
	Pentanal, see Valeraldehyde (UN 2058)																	
	n-Pentane, see Pentanes (UN 1265)																	
2310	Pentane-2,4-dione	3 (6.1)	Flamm. liquid & Toxic	III	E1	Y343	2 L	Pkg Inst	Max Net Qty/Pkg	355	60 L	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	3P		
	Pentane, methyl, see Hexanes (UN 1208)																	
1265	Pentanes liquid	3	Flamm. liquid	I II	E3 E2	Y341	1 L	Pkg Inst	Max Net Qty/Pkg	351	1 L	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	3H	3H	
	Pentanitroaniline (dry)					Forbidden												
	3-Pentanol, see Pentanols (UN 1105)					Forbidden		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg					
1105	Pentanols	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L			353	5 L	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	A3	3L	
1108	1-Pentene	3	Flamm. liquid	I	E3	Forbidden				351	1 L							
2705	1-Pentol	8	Corrosive	II	E2	Y840	0.5 L	Pkg Inst	Max Net Qty/Pkg	851	1 L	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	8L		
0151	Pentolite dry or wetted with less than 15% water, by weight	1.1D				Forbidden												
	Pentyl nitrite, see Amyl nitrite (UN 1113)					Forbidden		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg					
1481	Perchlorates, inorganic, n.o.s.	5.1	Oxidizer	II III	E2 E1	Y544 Y546	2.5 kg 10 kg			558	5 kg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	A3 A803	5L 5L	
3211	Perchlorates, inorganic, aqueous solution, n.o.s.	5.1	Oxidizer	II III	E2 E1	Y540 Y541	0.5 L 1 L	Pkg Inst	Max Net Qty/Pkg	550	1 L							
1873	Perchloric acid, 72% or less but more than 50% acid, by weight	5.1 (8)	Oxidizer & Corrosive	I	E0	Forbidden												

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code
					Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E	F	G	H	I	J	K	L	M	N	
1802	Perchloric acid, 50% or less acid, by weight	8 (5.1)	Corrosive & Oxidizer	II	E0	Forbidden		Forbidden		855	30 L	A1	8X	
	Perchloric acid, more than 72% acid, by weight					Forbidden		Forbidden			Forbidden			
	Perchlorobenzene, see Hexachlorobenzene (UN 2729)													
	Perchlorocyclopentadiene, see Hexachlorocyclopentadiene (UN 2646)													
	Perchloroethylene, see Tetrachloroethylene (UN 1897)													
1670	Perchloromethyl mercaptan	6.1				Forbidden		Forbidden			Forbidden	A2	6L	
	Perchloryl fluoride					Forbidden		Forbidden			Forbidden			
3083	Percussion caps, see Primers, cap type † (UN 0044), Primers, cap type † (UN 0377), Primers, cap type † (UN 0378)	2.3 (5.1)										A2	2PX	
	Perfluoroacetyl chloride, see Trifluoroacetyl chloride (UN 3057)													
	Perfluoro-2-butene, see Octafluorobut-2-ene (UN 2422)													
3154	Perfluoro (ethyl vinyl ether)	2.1	Flamm. gas		E0	Forbidden		Forbidden		200	150 kg	A1	10L	
3153	Perfluoro (methyl vinyl ether)	2.1	Flamm. gas		E0	Forbidden		Forbidden		200	150 kg	A1	10L	
1266	Perfluoropropane, see Octafluoropropane (UN 2424)											A3 A72	3L 3L	
	Perfumery products with flammable solvents				III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L		
	Perfumery products in small inner packagings, see Consumer commodity (UN 8000)													
1482	Permanganates, inorganic, n.o.s. ★	5.1	Oxidizer	II III	E2 E1	Y544 Y546	2.5 kg 10 kg	558 559	5 kg 25 kg	562 563	25 kg 100 kg	A3 A37 A173 A803	5L 5L	
3214	Permanganates, inorganic, aqueous solution, n.o.s. ★	5.1	Oxidizer	II	E2	Y540	0.5 L	550	1 L	554	5 L	A37 A173	5L	
	Permeation devices, containing dangerous goods, for calibrating air quality monitoring equipment													
1483	Peroxides, inorganic, n.o.s.	5.1	Oxidizer	II III	E2 E1	Y544 Y546	2.5 kg 10 kg	558 559	5 kg 25 kg	562 563	25 kg 100 kg	A3 A803	5L 5L	
	Peroxyacetic acid, more than 43% and with more than 6% hydrogen peroxide							Forbidden		Forbidden				

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
					EQ see 2.6	Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
3215	Persulphates, inorganic, n.o.s.	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803	5L			
3216	Persulphates, inorganic, aqueous solution, n.o.s.	5.1	Oxidizer	III	E1	Y541	1 L	551	2.5 L	555	30 L	A803	5L			
3021	Pesticide, liquid, flammable, toxic, n.o.s. ★ flash point less than 23°C	3 (6.1)	Flamm. liquid & Toxic	I II	E0 E2	Y341	1 L	352	1 L	361	30 L	A4	3P 3P			
2902	Pesticide, liquid, toxic, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4	6L 6L 6L			
2903	Pesticide, liquid, toxic, flammable, n.o.s. ★ flash point 23°C or more	6.1 (3)	Toxic & Flamm. liquid	I II III	E5 E4 E1	Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4	6F 6F 6F			
2588	Pesticide, solid, toxic, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	Y644 Y645	1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5	6L 6L 6L			
	Pesticide, toxic, under compressed gas, n.o.s., see Aerosols, flammable (UN 1950)															
0411	PETN with 7% or more wax, by weight	1.1D					Forbidden		Forbidden		Forbidden			1L		
0150	PETN, desensitized with 15% or more phlegmatizer, by weight	1.1D					Forbidden		Forbidden		Forbidden			1L		
	PETN (dry)						Forbidden		Forbidden		Forbidden					
3344	PETN mixture desensitized, solid, n.o.s. ★ with > 10% but ≤ 20% PETN, by weight	4.1					Forbidden		Forbidden		Forbidden			3E		
	PETN/TNT, see Pentolite (UN 0151)															
0150	PETN, wetted with 25% or more water, by weight	1.1D					Forbidden		Forbidden		Forbidden			1L		
1203	Petrol	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L	A100	3H			
1267	Petroleum crude oil	3	Flamm. liquid	I II III	E3 E2 E1	Y341 Y344 Y344	1 L 10 L	351 353 355	1 L 5 L 60 L	361 364 366	30 L 60 L 220 L	A3 A177	3L 3L 3L			
1268	Petroleum distillates, n.o.s.	3	Flamm. liquid	I II III	E3 E2 E1	Y341 Y344 Y344	1 L 10 L	351 353 355	1 L 5 L 60 L	361 364 366	30 L 60 L 220 L	A3	3H 3H 3L			
	Petroleum ether, see Petroleum distillates, n.o.s. (UN 1268)															
1075	Petroleum gases, liquefied	2.1	Flamm. gas		E0		Forbidden		Forbidden		200	150 kg	A1	10L		
	Petroleum naphtha, see Petroleum distillates, n.o.s. (UN 1268)															
	Petroleum oil, see Petroleum products, n.o.s. (UN 1268)															
1268	Petroleum products, n.o.s.	3	Flamm. liquid	I II III	E3 E2 E1	Y341 Y344 Y344	1 L 10 L	351 353 355	1 L 5 L 60 L	361 364 366	30 L 60 L 220 L	A3	3H 3H 3L			
	Petroleum raffinate, see Petroleum distillates, n.o.s. (UN 1268)															
3494	Petroleum sour crude oil, flammable, toxic	3 (6.1)	Flamm. liquid & Toxic	I II III	E0 E2 E1	Y341 Y343	1 L 2 L	352 355	1 L 60 L	361 364 366	30 L 60 L 220 L	A166	3P 3P 3P			
	Petroleum spirit, see Petroleum distillates, n.o.s. (UN 1268)															
2645	Phenacyl bromide	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6i			

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
						C	D	E	F	G	H	I	J	K	L
2311	Phenetidines	6.1	Toxic	III	E1	Y642	2 L		655	60 L	663	220 L		A113	6L
2904	Phenolates, liquid	8	Corrosive	III	E1	Y841	1 L		852	5 L	856	60 L		A803	8L
2905	Phenolates, solid	8	Corrosive	III	E1	Y845	5 kg		860	25 kg	864	100 kg		A803	8L
2312	Phenol, molten	6.1			E0	Forbidden			Forbidden		Forbidden				6L
1671	Phenol, solid	6.1	Toxic	II	E4	Y644	1 kg		669	25 kg	676	100 kg		A113	6L
2821	Phenol solution	6.1	Toxic	II	E4	Y641	1 L		654	5 L	662	60 L		A3	6L
				III	E1	Y642	2 L		655	60 L	663	220 L			6L
1803	Phenolsulphonic acid, liquid	8	Corrosive	II	E2	Y840	0.5 L		851	1 L	855	30 L			8L
3346	Phenoxyacetic acid derivative pesticide, liquid, flammable, toxic ★ flash point less than 23°C	3 (6.1)	Flamm. liquid & Toxic	I	E0	Forbidden			352	1 L	361	30 L		A4	3P
				II	E2	Y341	1 L				364	60 L			3P
3348	Phenoxyacetic acid derivative pesticide, liquid, toxic ★	6.1	Toxic	I	E5	Forbidden			652	1 L	658	30 L		A3	6L
				II	E4	Y641	1 L		654	5 L	662	60 L		A4	6L
				III	E1	Y642	2 L		655	60 L	663	220 L			6L
3347	Phenoxyacetic acid derivative pesticide, liquid, toxic, flammable ★ flashpoint not less than 23°C	6.1 (3)	Toxic & Flamm. liquid	I	E5	Forbidden			652	1 L	658	30 L		A3	6F
				II	E4	Y641	1 L		654	5 L	662	60 L		A4	6F
				III	E1	Y642	2 L		655	60 L	663	220 L			6F
3345	Phenoxyacetic acid derivative pesticide, solid, toxic ★	6.1	Toxic	I	E5	Forbidden			666	5 kg	673	50 kg		A3	6L
				II	E4	Y644	1 kg		669	25 kg	676	100 kg		A5	6L
				III	E1	Y645	10 kg		670	100 kg	677	200 kg			6L
2470	Phenylacetonitrile, liquid	6.1	Toxic	III	E1	Y642	2 L		655	60 L	663	220 L			6L
2577	Phenylacetyl chloride	8	Corrosive	II	E2	Y840	0.5 L		851	1 L	855	30 L			8i
	Phenylamine, see Aniline (UN 1547)														
	2-Phenylbutane, see Butylbenzenes (UN 2709)														
	1-Phenylbutane, see Butylbenzenes (UN 2709)														
1672	Phenylcarbylamine chloride	6.1				Forbidden			Forbidden		Forbidden				6i
2746	Phenyl chloroformate	6.1 (8)	Toxic & Corrosive	II	E4	Y641	1 L		653	1 L	660	30 L			6C
	Phenyl cyanide, see Benzonitrile (UN 2224)					Forbidden			Forbidden		Forbidden				
	Phenyldichloroarsine					Forbidden			Forbidden		Forbidden				
	m-Phenylene diaminodiphenylchloride (dry)					Forbidden			Forbidden		Forbidden				
1673	Phenylenediamines (o-, m-, p-)	6.1	Toxic	III	E1	Y645	10 kg		670	100 kg	677	200 kg		A113	6L
	Phenylethylenic, see Styrene monomer, stabilized (UN 2055)					Forbidden			Forbidden		Forbidden				
2572	Phenylhydrazine	6.1	Toxic	II	E4	Y641	1 L		654	5 L	662	60 L			6L
2487	Phenyl isocyanate	6.1 (3)				Forbidden			Forbidden		Forbidden				6Fi
	Phenylisocyanodichloride, see Phenylcarbylamine chloride (UN 1672)					Forbidden			Forbidden		Forbidden				
2337	Phenyl mercaptan	6.1 (3)				Forbidden			Forbidden		Forbidden				6F
	1-Phenyl-5-mercapto-tetrazole, see Flammable solid, organic, n.o.s. ★ (UN 1325)					Forbidden			Forbidden		Forbidden				
1674	Phenylmercuric acetate	6.1	Toxic	II	E4	Y644	1 kg		669	25 kg	676	100 kg		A6	6L

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
2026	Phenylmercuric compound, n.o.s. ★	6.1	Toxic	I	E5	Forbidden		666	5 kg	673	50 kg	A3	6L			
				II	E4	Y644	1 kg	669	25 kg	676	100 kg	A5	6L			
				III	E1	Y645	10 kg	670	100 kg	677	200 kg	A6	6L			
1894	Phenylmercuric hydroxide	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
1895	Phenylmercuric nitrate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
2798	Phenylphosphorus dichloride	8	Corrosive	II	E0	Forbidden			Forbidden	855	30 L	A1	8L			
2799	Phenylphosphorus thioldichloride	8	Corrosive	II	E0	Forbidden			Forbidden	855	30 L	A1	8L			
	2-Phenylpropene, see Isopropenylbenzene (UN 2303)															
1804	Phenyltrichlorosilane	8	Corrosive	II	E0	Forbidden			Forbidden	876	30 L	A1	8L			
1076	Phosgene	2.3 (8)				Forbidden			Forbidden		Forbidden	A2	2CP			
2940	9-Phosphabicyclonananes	4.2	Spont. comb.	II	E2	Forbidden		467	15 kg	470	50 kg		4L			
2199	Phosphine	2.3 (2.1)				Forbidden			Forbidden		Forbidden	A2	10P			
	Phosphoretted hydrogen, see Phosphine (UN 2199)															
	Phosphoric acid, anhydrous, see Phosphorus pentoxide (UN 1807)															
3453	Phosphoric acid, solid	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A803	8L			
1805	Phosphoric acid, solution	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A3 A803	8L			
	Phosphoric anhydride, see Phosphorus pentoxide (UN 1807)															
2834	Phosphorous acid	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A803	8L			
1338	Phosphorus, amorphous	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803	3L			
	Phosphorus bromide, see Phosphorus tribromide (UN 1808)															
	Phosphorus chloride, see Phosphorus trichloride (UN 1809)															
1339	Phosphorus heptasulphide free from yellow and white phosphorus	4.1	Flamm. solid	II	E2	Y441	5 kg	445	15 kg	448	50 kg		3L			
	Phosphorus heptasulphide, with yellow and/or white phosphorus					Forbidden			Forbidden		Forbidden					
1939	Phosphorus oxybromide	8	Corrosive	II	E0	Forbidden			Forbidden	863	50 kg	A1	8W			
2576	Phosphorus oxybromide, molten	8			E0	Forbidden			Forbidden		Forbidden		8W			
1810	Phosphorus oxychloride	6.1 (8)				Forbidden			Forbidden		Forbidden	A2	6C			
2691	Phosphorus pentabromide	8	Corrosive	II	E0	Forbidden			Forbidden	863	50 kg	A1	8W			
1806	Phosphorus pentachloride	8	Corrosive	II	E0	Forbidden			Forbidden	863	50 kg	A1	8W			
2198	Phosphorus pentafluoride	2.3 (8)				Forbidden			Forbidden		Forbidden	A2	2CP			
1340	Phosphorus pentasulphide free from yellow and white phosphorus	4.3 (4.1)	Dang. when wet & Flamm. solid	II	E2	Y475	5 kg	483	15 kg	490	50 kg		4FW			
	Phosphorus pentasulphide, with yellow and/or white phosphorus					Forbidden			Forbidden		Forbidden					
1807	Phosphorus pentoxide	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg		8W			
1341	Phosphorus sesquisulphide free from yellow and white phosphorus	4.1	Flamm. solid	II	E2	Y441	5 kg	445	15 kg	448	50 kg		3W			



Dangerous Goods Regulations

UN/ ID no. A	Proper Shipping Name/Description B	Class or Div. (Sub Risk) C	Hazard Label(s) D	PG E	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P. see 4.4 M	ERG Code N		
					EQ see 2.6 F	Ltd Qty		Pkg Inst G	Max Net Qty/Pkg H	Pkg Inst I	Max Net Qty/Pkg J	Pkg Inst K	Max Net Qty/Pkg L		
	Phosphorus sesquisulphide, with yellow and/or white phosphorus					Forbidden				Forbidden					
	Phosphorus sulphochloride, see Thiophosphoryl chloride (UN 1837)														
1808	Phosphorus tribromide	8	Corrosive	II	E0	Forbidden				Forbidden		855	30 L	A1	8W
1809	Phosphorus trichloride	6.1 (8)	Corrosive	III	E1	Forbidden				Forbidden			Forbidden		6CW
2578	Phosphorus trioxide	8	Corrosive	III	E2	Y845	5 kg	860	25 kg	864	100 kg	A803	8L		
1343	Phosphorus trisulphide free from yellow and white phosphorus	4.1	Flamm. solid	II		Y441	5 kg	445	15 kg	448	50 kg				3W
	Phosphorus trisulphide, with yellow and/or white phosphorus					Forbidden				Forbidden					
	Phosphorus (V) sulphide, free from yellow and white phosphorus, see Phosphorus pentasulphide (UN 1340)														
1381	Phosphorus, white, dry	4.2 (6.1)				Forbidden				Forbidden			Forbidden		4P
1381	Phosphorus, white, in solution	4.2 (6.1)				Forbidden				Forbidden			Forbidden		4P
2447	Phosphorus, white, molten	4.2 (6.1)				Forbidden				Forbidden			Forbidden		4P
	Phosphorus (white or red) and a chlorate, mixture of					Forbidden				Forbidden			Forbidden		
1381	Phosphorus, white, under water	4.2 (6.1)				Forbidden				Forbidden			Forbidden		4P
1381	Phosphorus, yellow, dry	4.2 (6.1)				Forbidden				Forbidden			Forbidden		4P
1381	Phosphorus, yellow, in solution	4.2 (6.1)				Forbidden				Forbidden			Forbidden		4P
1381	Phosphorus, yellow, under water	4.2 (6.1)				Forbidden				Forbidden			Forbidden		4P
	Phosphoryl chloride, see Phosphorus oxychloride (UN 1810)														
2214	Phthalic anhydride with more than 0.05% of maleic anhydride	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A74 A803	8L		
2313	Picolines	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
0153	Picramide	1.1D				Forbidden				Forbidden			Forbidden		1L
0154	Picric acid dry or wetted with < 30% water, by weight	1.1D				Forbidden				Forbidden			Forbidden		1L
3364	Picric acid, wetted with 10% or more water, by weight	4.1	Flamm. solid	I	E0	Forbidden		451	0.5 kg	451	0.5 kg	A40	3E		
1344	Picric acid, wetted with ≥ 30% water, by weight	4.1	Flamm. solid	I	E0	Forbidden		451	1 kg	451	15 kg	A40	3E		
0282	Picrite dry or wetted with less than 20% water, by weight	1.1D				Forbidden				Forbidden			Forbidden		1L
1336	Picrite, wetted with 20% or more water, by weight	4.1	Flamm. solid	I	E0	Forbidden		451	1 kg	451	15 kg	A40	3E		
	Picrotoxin, see Toxins, extracted from living sources, liquid, n.o.s. * (UN 3172) or Toxins, extracted from living sources, solid, n.o.s. * (UN 3462)														
0155	Picryl chloride	1.1D				Forbidden				Forbidden			Forbidden		1L

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						G	H									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
3365	Picryl chloride, wetted with 10% or more water, by weight	4.1	Flamm. solid	I	E0	Forbidden		451	0.5 kg	451	0.5 kg	A40	3E			
2368	alpha-Pinene	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L			
1272	Pine oil	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L			
2579	Piperazine	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A803	8L			
2401	Piperidine	8 (3)	Corrosive & Flamm. liquid	I	E0	Forbidden		850	0.5 L	854	2.5 L		8F			
	Pivaloyl chloride, see Trimethylacetyl chloride (UN 2438)															
	Plastic explosives, see Explosive, blasting, type D † (UN 0084)															
3314	Plastics moulding compound in dough, sheet or extruded rope form evolving flammable vapour	9	Miscellaneous	III	E1	Forbidden		957	100 kg	957	200 kg	A38	9L			
2006	Plastics, nitrocellulose-based, self-heating, n.o.s. ★	4.2				Forbidden			Forbidden		Forbidden	A2	4L			
	Plastic solvent, n.o.s. †, see Flammable liquid, n.o.s. ★ (UN 1993)															
	Plutonium nitrate solution, see 10.5															
	Polish, see Paint (UN 1263)															
2733	Polyamines, flammable, corrosive, n.o.s. ★	3 (8)	Flamm. liquid & Corrosive	I II III	E0 E2 E1	Y340 Y342 Y342	0.5 L 1 L	350 352 354	0.5 L 1 L 5 L	360 363 365	2.5 L 5 L 60 L	A3 A803	3C 3C 3C			
2735	Polyamines, liquid, corrosive, n.o.s. ★	8	Corrosive	I II III	E0 E2 E1	Y840 Y840 Y841	0.5 L 0.5 L 1 L	850 851 852	0.5 L 1 L 5 L	854 855 856	2.5 L 30 L 60 L	A3 A803	8L 8L 8L			
2734	Polyamines, liquid, corrosive, flammable, n.o.s. ★	8 (3)	Corrosive & Flamm. liquid	I II	E0 E2	Forbidden		850 851	0.5 L 1 L	854 855	2.5 L 30 L		8F 8F			
3259	Polyamines, solid, corrosive, n.o.s. ★	8	Corrosive	I II III	E0 E2 E1	Y844 Y844 Y845	5 kg 5 kg 5 kg	858 859 860	1 kg 15 kg 25 kg	862 863 864	25 kg 50 kg 100 kg	A3 A803	8L 8L 8L			
2315	Polychlorinated biphenyls, liquid	9	Miscellaneous	II	E2	Forbidden		964	100 L	964	220 L	A11	9L			
3432	Polychlorinated biphenyls, solid	9	Miscellaneous	II	E2	Forbidden		956	100 kg	956	200 kg	A11	9L			
3269	Polyester resin kit †	3	Flamm. liquid	II III	E0 E0	Y370 Y370	1 kg 5 kg	370 370	5 kg 10 kg	370 370	5 kg 10 kg	A66 A163	3L 3L			
3151	Polyhalogenated biphenyls, liquid	9	Miscellaneous	II	E2	Forbidden		964	100 L	964	220 L	A11 A95	9L			
3152	Polyhalogenated biphenyls, solid	9	Miscellaneous	II	E2	Forbidden		956	100 kg	956	200 kg	A11 A95	9L			
3151	Polyhalogenated terphenyls, liquid	9	Miscellaneous	II	E2	Forbidden		964	100 L	964	220 L	A11 A95	9L			
3152	Polyhalogenated terphenyls, solid	9	Miscellaneous	II	E2	Forbidden		956	100 kg	956	200 kg	A11 A95	9L			
2211	Polymeric beads, expandable † evolving flammable vapour	9	Miscellaneous	III	E1	Forbidden		957	100 kg	957	200 kg	A38	9L			
	Polystyrene beads, expandable, etc., see Polymeric beads, expandable † (UN 2211)															
2257	Potassium	4.3	Dang. when wet	I	E0	Forbidden			Forbidden	487	15 kg	A1	4W			
1677	Potassium arsenate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
1678	Potassium arsenite Potassium bifluoride, see Potassium hydrogendifluoride, solid (UN 1811) or Potassium hydrogendifluoride solution (UN 3421) Potassium bisulphate, see Potassium hydrogen sulphate (UN 2509) Potassium bisulphite solution, see Bisulphites, aqueous solution, n.o.s. * (UN 2693)	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg			6L	
1870	Potassium borohydride	4.3	Dang. when wet	I	E0	Forbidden		Forbidden		487	15 kg			4W	
1484	Potassium bromate Potassium carbonyl	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg			5L	
1485	Potassium chlorate	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg			5L	
2427	Potassium chlorate, aqueous solution Potassium chlorate mixed with mineral oil, see Explosive, blasting, type C † (UN 0083)	5.1	Oxidizer	II III	E2 E1	Y540 Y541	0.5 L 1 L	550 551	1 L 2.5 L	554 555	5 L 30 L	A3 A803		5L 5L	
1679	Potassium cuprocyanide	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg			6L	
1680	Potassium cyanide, solid	6.1	Toxic	I	E5	Forbidden		666	5 kg	673	50 kg			6L	
3413	Potassium cyanide solution Potassium dicyanocuprate(I), see Potassium cuprocyanide (UN 1679)	6.1	Toxic	I II III	E5 E4 E1	Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3		6L 6L 6L	
1929	Potassium dithionite	4.2	Spont. comb.	II	E2	Forbidden		467	15 kg	470	50 kg			4L	
1812	Potassium fluoride, solid	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg			6L	
3422	Potassium fluoride solution	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L	A3		6L	
2628	Potassium fluoroacetate	6.1	Toxic	I	E5	Forbidden		666	5 kg	673	50 kg			6L	
2655	Potassium fluorosilicate Potassium hexafluorosilicate, see Potassium fluorosilicate (UN 2655) Potassium hydrate, see Potassium hydroxide, solid (UN 1813)	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg			6L	
1811	Potassium hydrogendifluoride, solid	8 (6.1)	Corrosive & Toxic	II	E2	Y844	5 kg	859	15 kg	863	50 kg			8P	
3421	Potassium hydrogendifluoride solution Potassium hydrogen fluoride, see Potassium hydrogendifluoride, solid (UN 1811) or Potassium hydrogendifluoride solution (UN 3421)	8 (6.1)	Corrosive & Toxic	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A3 A803		8P 8P	
2509	Potassium hydrogen sulphate	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg			8L	
1929	Potassium hydrosulphite Potassium hydroxide, liquid, see Potassium hydroxide solution (UN 1814)	4.2	Spont. comb.	II	E2	Forbidden		467	15 kg	470	50 kg			4L	
1813	Potassium hydroxide, solid	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg			8L	

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					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
					EQ see 2.6	Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
1814	Potassium hydroxide solution	8	Corrosive	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A3 A803	8L 8L			
	Potassium hypochlorite solution, see Hypochlorite solution † (UN 1791)															
1420	Potassium metal alloys, liquid	4.3	Dang. when wet	I	E0	Forbidden		Forbidden		480	1 L	A1	4W			
3403	Potassium metal alloys, solid	4.3	Dang. when wet	I	E0	Forbidden		Forbidden		487	15 kg	A1	4W			
	Potassium metal, liquid alloy †, see Alkali metal alloy, liquid, n.o.s. (UN 1421)															
2864	Potassium metavanadate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
2033	Potassium monoxide	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg		8L			
1486	Potassium nitrate	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803	5L			
	Potassium nitrate and sodium nitrate mixture, see Sodium nitrate and potassium nitrate mixture (UN 1499)															
1487	Potassium nitrate and sodium nitrite mixture	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg		5L			
1488	Potassium nitrite	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg		5L			
1489	Potassium perchlorate	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg		5L			
1490	Potassium permanganate	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg		5L			
1491	Potassium peroxide	5.1	Oxidizer	I	E0	Forbidden		Forbidden		561	15 kg	A1	5L			
1492	Potassium persulphate	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803	5L			
2012	Potassium phosphide	4.3 (6.1)	Dang. when wet & Toxic	I	E0	Forbidden		Forbidden		487	15 kg		4PW			
	Potassium selenate, see Selenates ★ (UN 2630)															
	Potassium selenite, see Selenites ★ (UN 2630)															
	Potassium silicofluoride, see Potassium fluorosilicate (UN 2655)															
1422	Potassium sodium alloys, liquid	4.3	Dang. when wet	I	E0	Forbidden		Forbidden		480	1 L	A1	4W			
3404	Potassium sodium alloys, solid	4.3	Dang. when wet	I	E0	Forbidden		Forbidden		487	15 kg	A1	4W			
1382	Potassium sulphide † with less than 30% water of crystallization	4.2	Spont. comb.	II	E2	Forbidden		467	15 kg	470	50 kg		4L			
1382	Potassium sulphide, anhydrous †	4.2	Spont. comb.	II	E2	Forbidden		467	15 kg	470	50 kg		4L			
1847	Potassium sulphide, hydrated † with 30% or more water of crystallization	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg		8L			
2466	Potassium superoxide	5.1	Oxidizer	I	E0	Forbidden		Forbidden		561	15 kg	A1	5L			
	Potassium tetracyanomercurate (II), see Mercuric potassium cyanide (UN 1626)															
0433	Powder cake, wetted † with 17% or more alcohol, by weight	1.1C				Forbidden		Forbidden		Forbidden			1L			
0159	Powder cake, wetted † with 25% or more water, by weight	1.3C				Forbidden		Forbidden		Forbidden			1L			
0433	Powder paste, wetted † with 17% or more alcohol, by weight	1.1C				Forbidden		Forbidden		Forbidden			1L			
0159	Powder paste, wetted † with 25% or more water, by weight	1.3C				Forbidden		Forbidden		Forbidden			1L			
0160	Powder, smokeless †	1.1C				Forbidden		Forbidden		Forbidden			1L			



Dangerous Goods Regulations

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
A	B	C	D	E		F	G						M	N		
0161	Powder, smokeless †	1.3C					Forbidden			Forbidden			Forbidden		1L	
0509	Powder, smokeless †	1.4C	Explosive 1.4		E0		Forbidden			Forbidden			114	75 kg	A802	1L
	Power device, explosive, see Cartridges, power device † (UN 0275), Cartridges, power device † (UN 0276), Cartridges, power device † (UN 0323), Cartridges, power device † (UN 0381)															
	Pressurized products, see Aerosols, flammable (UN 1950)															
0377	Primers, cap type †	1.1B					Forbidden			Forbidden			Forbidden		1L	
0378	Primers, cap type †	1.4B	Explosive 1.4		E0		Forbidden			Forbidden			133	75 kg	A802	1L
0044	Primers, cap type †	1.4S	Explosive 1.4		E0		Forbidden			133	25 kg		133	100 kg	A802	3L
	Primers, small arms, see Primers, cap type † (UN 0044), Primers, cap type † (UN 0377), Primers, cap type † (UN 0378)															
0319	Primers, tubular †	1.3G					Forbidden			Forbidden			Forbidden		1L	
0320	Primers, tubular †	1.4G	Explosive 1.4		E0		Forbidden			Forbidden			133	75 kg	A802	1L
0376	Primers, tubular †	1.4S	Explosive 1.4		E0		Forbidden			133	25 kg		133	100 kg	A802	3L
1210	Printing ink flammable	3	Flamm. liquid	I II III	E3 E2 E1		Forbidden Y341 Y344	1 L 10 L		351 353 355	1 L 5 L 60 L		361 364 366	30 L 60 L 220 L	A3 A72	3L 3L 3L
1210	Printing ink related material (including printing ink thinning or reducing compound), flammable	3	Flamm. liquid	I II III	E3 E2 E1		Forbidden Y341 Y344	1 L 10 L		351 353 355	1 L 5 L 60 L		361 364 366	30 L 60 L 220 L	A3 A72	3L 3L 3L
	Projectiles, illuminating, see Ammunition, illuminating † (UN 0171), Ammunition, illuminating † (UN 0254), Ammunition, illuminating † (UN 0297)															
0424	Projectiles † inert with tracer	1.3G					Forbidden			Forbidden			Forbidden		1L	
0425	Projectiles † inert with tracer	1.4G	Explosive 1.4		E0		Forbidden			Forbidden			130	75 kg	A802	1L
0345	Projectiles † inert with tracer	1.4S	Explosive 1.4		E0		Forbidden			130	25 kg		130	100 kg	A802	3L
0346	Projectiles † with burster or expelling charge	1.2D					Forbidden			Forbidden			Forbidden		1L	
0426	Projectiles † with burster or expelling charge	1.2F					Forbidden			Forbidden			Forbidden		1L	
0434	Projectiles † with burster or expelling charge	1.2G					Forbidden			Forbidden			Forbidden		1L	
0347	Projectiles † with burster or expelling charge	1.4D	Explosive 1.4		E0		Forbidden			Forbidden			130	75 kg	A802	1L
0427	Projectiles † with burster or expelling charge	1.4F					Forbidden			Forbidden			Forbidden		1L	
0435	Projectiles † with burster or expelling charge	1.4G	Explosive 1.4		E0		Forbidden			Forbidden			130	75 kg	A802	1L
0168	Projectiles † with bursting charge	1.1D					Forbidden			Forbidden			Forbidden		1L	
0167	Projectiles † with bursting charge	1.1F					Forbidden			Forbidden			Forbidden		1L	
0169	Projectiles † with bursting charge	1.2D					Forbidden			Forbidden			Forbidden		1L	

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
A	B	C	D	E		F	G						M	N		
0324	Projectiles † with bursting charge	1.2F													1L	
0344	Projectiles † with bursting charge	1.4D	Explosive 1.4		E0										A802	1L
	Propadiene and methylacetylene mixture, stabilized, see Methylacetylene and propadiene mixture, stabilized † (UN 1060)															
2200	Propadiene, stabilized	2.1	Flamm. gas		E0										A1	10L
1978	Propane	2.1	Flamm. gas		E0										A1	10L
2402	Propanethiols	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3H	
1274	n-Propanol	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L				A3	3L 3L
0497	Propellant, liquid †	1.1C														1L
0495	Propellant, liquid †	1.3C														1L
	Propellant, single, double or triple base, see Powder, smokeless † (UN 0160) or Powder, smokeless † (UN 0161)															
0498	Propellant, solid †	1.1C														1L
0499	Propellant, solid †	1.3C														1L
0501	Propellant, solid †	1.4C														1L
	Propene, see Propylene (UN 1077)															
1275	Propionaldehyde	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3H	
1848	Propionic acid with ≥ 10% but < 90% acid by weight	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803	8L			
3463	Propionic acid with ≥ 90% acid by weight	8 (3)	Corrosive & Flamm. liquid	II	E2	Y840	0.5 L	851	1 L	855	30 L				8F	
2496	Propionic anhydride	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803	8L			
2404	Propionitrile	3 (6.1)	Flamm. liquid & Toxic	II	E0										A1	3P
1815	Propionyl chloride	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L				3C	
1276	n-Propyl acetate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3L	
1274	Propyl alcohol, normal	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3	3L 3L			
	Propyl aldehyde, see Propionaldehyde (UN 1275)															
1277	Propylamine	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L				3CH	
2364	n-Propylbenzene	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L	
	Propyl chloride, see 1-Chloropropane (UN 1278)															
2740	n-Propyl chloroformate	6.1 (3, 8)														6CF
1077	Propylene	2.1	Flamm. gas		E0										A1	10L
2611	Propylene chlorhydrin	6.1 (3)	Toxic & Flamm. liquid	II	E4	Y641	1 L	654	5 L	662	60 L				6F	

UN/ ID no. A	Proper Shipping Name/Description B	Class or Div. (Sub Risk) C	Hazard Label(s) D	PG E	Passenger and Cargo Aircraft						Cargo Aircraft Only			S.P. see 4.4 M	ERG Code N		
					Ltd Qty			Pkg Inst G	Max Net Qty/Pkg H	Pkg Inst I	Max Net Qty/Pkg J	Pkg Inst K	Max Net Qty/Pkg L				
					EQ see 2.6 F	Pkg Inst E0	ForbIDDEN										
2258	1,2-Propylenediamine Propylene dichloride, see 1,2-Dichloropropane (UN 1279)	8 (3)	Corrosive & Flamm. liquid	II	E2	Y840	0.5 L	851	1 L	855	30 L					8F	
1921	Propyleneimine, stabilized Propyleneimine, unstabilized Propylene or liquefied petroleum gas, see Petroleum gases, liquefied (UN 1075)	3 (6.1)	Flamm. liquid & Toxic	I	E0	ForbIDDEN			ForbIDDEN	361	30 L					3HP	
1280	Propylene oxide	3	Flamm. liquid	I	E3	ForbIDDEN		351	1 L	361	30 L					3H	
2850	Propylene tetramer Propylene trimer, see Tripropylene (UN 2057)	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L					3L	
1281	Propyl formates	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L					3H	
2482	n-Propyl isocyanate Propyl mercaptan, see Propanethiols (UN 2402)	6.1 (3)				ForbIDDEN			ForbIDDEN		ForbIDDEN					6F	
1865	n-Propyl nitrate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L					3L	
1816	Propyltrichlorosilane Protective breathing equipment (PBE), see Oxygen generator, chemical † (UN 3356)	8 (3)	Corrosive & Flamm. liquid	II	E0	ForbIDDEN			ForbIDDEN	876	30 L	A1				8F	
	Prussic acid, see Hydrogen cyanide, stabilized (UN 1051), Hydrocyanic acid, aqueous solution (UN 1613), Hydrogen cyanide, stabilized (UN 1614), Hydrogen cyanide, solution in alcohol (UN 3294)																
	Pyrazine hexahydride, see Piperazine (UN 2579)																
3350	Pyrethroid pesticide, liquid, flammable, toxic, ★ flash point less than 23°C	3 (6.1)	Flamm. liquid & Toxic	I II	E0 E2	ForbIDDEN Y341	1 L	352	1 L	361	30 L	364	60 L	A4	3P 3P		
3352	Pyrethroid pesticide, liquid, toxic ★	6.1	Toxic	I II III	E5 E4 E1	ForbIDDEN Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4	6L 6L 6L				
3351	Pyrethroid pesticide, liquid, toxic, flammable ★ flash point not less than 23°C	6.1 (3)	Toxic & Flamm. liquid	I II III	E5 E4 E1	ForbIDDEN Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4	6F 6F 6F				
3349	Pyrethroid pesticide, solid, toxic ★	6.1	Toxic	I II III	E5 E4 E1	ForbIDDEN Y644 Y645	1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5	6L 6L 6L				
1282	Pyridine Pyridine perchlorate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L					3L	
1383	Pyrophoric alloy, n.o.s. ★	4.2				ForbIDDEN			ForbIDDEN		ForbIDDEN					4L	
3194	Pyrophoric liquid, inorganic, n.o.s. ★ †	4.2				ForbIDDEN			ForbIDDEN		ForbIDDEN					4W	
2845	Pyrophoric liquid, organic, n.o.s. ★ †	4.2				ForbIDDEN			ForbIDDEN		ForbIDDEN					4W	
1383	Pyrophoric metal, n.o.s. ★	4.2				ForbIDDEN			ForbIDDEN		ForbIDDEN					4L	
3200	Pyrophoric solid, inorganic, n.o.s. ★ †	4.2				ForbIDDEN			ForbIDDEN		ForbIDDEN					4L	
2846	Pyrophoric solid, organic, n.o.s. ★ †	4.2				ForbIDDEN			ForbIDDEN		ForbIDDEN					4L	
1817	Pyrosulphuryl chloride Pyroxylin cement, see Adhesives (UN 1133)	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L					8W	

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
	Pyroxylin plastic, see Celluloid (UN 2000)														
	Pyroxylin solution †, see Nitrocellulose solution, flammable (UN 2059)														
	Pyroxylin solvent, n.o.s., see Flammable liquid, n.o.s. ★ (UN 1993)														
1922	Pyrrolidine	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L				3C
	Quebrachitol pentanitrate						Forbidden			Forbidden		Forbidden			
	Quicklime, see Calcium oxide (UN 1910)														
	Quickmatch, see Fuse, non-detonating † (UN 0101)														
	Quicksilver, see Mercury (UN 2809)														
2656	Quinoline	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L				6L
	Quinone, see Benzoquinone (UN 2587)							Not Restricted		Not Restricted		Not Restricted			
	R114B2, Dibromotetrafluoromethane							Not Restricted		Not Restricted		Not Restricted			
	R11, Trichlorofluoromethane														
2911	Radioactive material, excepted package—articles	7						Forbidden		See 10.3		See 10.3	A130		7L
2909	Radioactive material, excepted package—articles manufactured from depleted uranium	7						Forbidden		See 10.3		See 10.3	A130		7L
2909	Radioactive material, excepted package—articles manufactured from natural thorium	7						Forbidden		See 10.3		See 10.3	A130		7L
2909	Radioactive material, excepted package—articles manufactured from natural uranium	7						Forbidden		See 10.3		See 10.3	A130		7L
2908	Radioactive material, excepted package—empty packaging	7						Forbidden		See 10.3		See 10.3	A130		7L
2911	Radioactive material, excepted package—instruments	7						Forbidden		See 10.3		See 10.3	A130		7L
2910	Radioactive material, excepted package—limited quantity of material	7						Forbidden		See 10.3		See 10.3	A23 A130		7L
2912	Radioactive material, low specific activity (LSA-I) non-fissile or fissile excepted	7	Radioactive					Forbidden		See 10.3		See 10.3	A23 A78 A139		7L
3321	Radioactive material, low specific activity (LSA-II) non-fissile or fissile excepted	7	Radioactive					Forbidden		See 10.3		See 10.3	A23 A78 A139 A159		7L
3324	Radioactive material, low specific activity (LSA-II) fissile	7	Radioactive & Fissile					Forbidden		See 10.3		See 10.3	A76 A78 A159		7L
3322	Radioactive material, low specific activity (LSA-III) non-fissile or fissile excepted	7	Radioactive					Forbidden		See 10.3		See 10.3	A23 A78 A139 A159		7L
3325	Radioactive material, low specific activity (LSA-III) fissile	7	Radioactive & Fissile					Forbidden		See 10.3		See 10.3	A76 A78 A159		7L
2913	Radioactive material, surface contaminated objects (SCO-I) non-fissile or fissile excepted	7	Radioactive					Forbidden		See 10.3		See 10.3	A78 A139 A159		7L
3326	Radioactive material, surface contaminated objects (SCO-I), fissile	7	Radioactive & Fissile					Forbidden		See 10.3		See 10.3	A76 A78 A159		7L



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	
A	B	C	D	E		F	G						M	N
2913	Radioactive material, surface contaminated objects (SCO-II) non-fissile or fissile excepted	7	Radioactive				Forbidden		See 10.3		See 10.3		A78 A139 A159	7L
3326	Radioactive material, surface contaminated objects (SCO-II), fissile	7	Radioactive & Fissile				Forbidden		See 10.3		See 10.3		A76 A78 A159	7L
2919	Radioactive material, transported under special arrangement non-fissile or fissile excepted	7	Radioactive				Forbidden		See 10.3		See 10.3		A23 A78 A139	7L
3331	Radioactive material, transported under special arrangement, fissile	7	Radioactive & Fissile				Forbidden		See 10.3		See 10.3		A76 A78	7L
2915	Radioactive material, Type A package non-special form, non-fissile or fissile excepted	7	Radioactive				Forbidden		See 10.3		See 10.3		A23 A78 A139	7L
3327	Radioactive material, Type A package, fissile non-special form	7	Radioactive & Fissile				Forbidden		See 10.3		See 10.3		A78	7L
3332	Radioactive material, Type A package, special form non-fissile or fissile excepted	7	Radioactive				Forbidden		See 10.3		See 10.3		A78 A139	7L
3333	Radioactive material, Type A package, special form, fissile	7	Radioactive & Fissile				Forbidden		See 10.3		See 10.3		A78	7L
2917	Radioactive material, Type B(M) package non-fissile or fissile excepted	7	Radioactive				Forbidden		Forbidden		See 10.3		A23 A78 A139 A160	7L
3329	Radioactive material, Type B(M) package, fissile	7	Radioactive & Fissile				Forbidden		Forbidden		See 10.3		A76 A78 A160	7L
2916	Radioactive material, Type B(U) package non-fissile or fissile excepted	7	Radioactive				Forbidden		See 10.3		See 10.3		A23 A78 A139 A160	7L
3328	Radioactive material, Type B(U) package, fissile	7	Radioactive & Fissile				Forbidden		See 10.3		See 10.3		A76 A78 A160	7L
3323	Radioactive material, Type C package non-fissile or fissile excepted	7	Radioactive				Forbidden		See 10.3		See 10.3		A23 A78 A139	7L
3330	Radioactive material, Type C package, fissile	7	Radioactive & Fissile				Forbidden		See 10.3		See 10.3		A76 A78	7L
2978	Radioactive material, uranium hexafluoride non-fissile or fissile excepted	7 (8)	Radioactive & Corrosive				Forbidden		See 10.3		See 10.3		A139	7L
2977	Radioactive material, uranium hexafluoride, fissile Rags, wet, see Cotton, wet (UN 1365) Railway torpedo, see Signals, railway track, explosive † (UN 0192) or Signals, railway track, explosive † (UN 0193)	7 (8)	Radioactive & Corrosive & Fissile				Forbidden		See 10.3		See 10.3			7L
0391	RDX and cyclotetramethylenetrinitramine mixture, desensitized with 10% or more phlegmatizer, by weight	1.1D					Forbidden		Forbidden		Forbidden			1L
0391	RDX and cyclotetramethylenetrinitramine mixture, wetted with 15% or more water, by weight	1.1D					Forbidden		Forbidden		Forbidden			1L
0483	RDX, desensitized	1.1D					Forbidden		Forbidden		Forbidden			1L

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	
A	B	C	D	E		F	G						M	N
0072	RDX, wetted with 15% or more water, by weight	1.1D				Forbidden			Forbidden		Forbidden			1L
2037	Receptacles, small, containing gas (flammable) without a release device, non-refillable	2.1	Flamm. gas		E0	Y203	1 kg	203	1 kg	203	15 kg	A167 A802		10L
2037	Receptacles, small, containing gas (non-flammable) without a release device, non-refillable	2.2	Non-flamm. gas		E0	Y203	1 kg	203	1 kg	203	15 kg	A98 A167 A802		2L
2037	Receptacles, small, containing gas (oxidizing) without a release device, non-refillable	2.2 (5.1)	Non-flamm. gas & Oxidizer		E0	Forbidden		203	1 kg	203	15 kg	A167 A802		2X
2037	Receptacles, small, containing gas (toxic and corrosive) without a release device, non-refillable	2.3 (8)				Forbidden			Forbidden		Forbidden	A2		2CP
2037	Receptacles, small, containing gas (toxic and flammable) without a release device, non-refillable	2.3 (2.1)				Forbidden			Forbidden		Forbidden	A2		10P
2037	Receptacles, small, containing gas (toxic and oxidizing) without a release device, non-refillable	2.3 (5.1)				Forbidden			Forbidden		Forbidden	A2		2X
2037	Receptacles, small, containing gas (toxic, flammable and corrosive) without a release device, non-refillable	2.3 (2.1, 8)				Forbidden			Forbidden		Forbidden	A2		10C
2037	Receptacles, small, containing gas (toxic, oxidizing and corrosive) without a release device, non-refillable	2.3 (5.1, 8)				Forbidden			Forbidden		Forbidden	A2		2PX
2037	Receptacles, small, containing gas (toxic) without a release device, non-refillable	2.3				Forbidden			Forbidden		Forbidden	A2		2P
	Red phosphorus, see Phosphorus, amorphous (UN 1338)													
1078	Refrigerant gas, n.o.s. *	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L
1028	Refrigerant gas R 12	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L
1974	Refrigerant gas R 12B1	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L
1022	Refrigerant gas R 13	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L
1009	Refrigerant gas R 13B1	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L
1982	Refrigerant gas R 14	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2A
1029	Refrigerant gas R 21	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L
1018	Refrigerant gas R 22	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L
1984	Refrigerant gas R 23	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2A
3252	Refrigerant gas R 32	2.1	Flamm. gas		E0	Forbidden			Forbidden	200	150 kg	A1		10L
1063	Refrigerant gas R 40	2.1	Flamm. gas		E0	Forbidden			Forbidden	200	100 kg	A1		10L
2454	Refrigerant gas R 41	2.1	Flamm. gas		E0	Forbidden			Forbidden	200	150 kg	A1		10L
1958	Refrigerant gas R 114	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L
1020	Refrigerant gas R 115	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L
2193	Refrigerant gas R 116	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L
1021	Refrigerant gas R 124	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L
3220	Refrigerant gas R 125	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L
1983	Refrigerant gas R 133a	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L
3159	Refrigerant gas R 134a	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg			2L



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					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
					EQ see 2.6	Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
2517	Refrigerant gas R 142b	2.1	Flamm. gas		E0	Forbidden			Forbidden	200	150 kg	A1	10L			
2035	Refrigerant gas R 143a	2.1	Flamm. gas		E0	Forbidden			Forbidden	200	150 kg	A1	10L			
1030	Refrigerant gas R 152a	2.1	Flamm. gas		E0	Forbidden			Forbidden	200	150 kg	A1	10L			
2453	Refrigerant gas R 161	2.1	Flamm. gas		E0	Forbidden			Forbidden	200	150 kg	A1	10L			
2424	Refrigerant gas R 218	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg		2L			
3296	Refrigerant gas R 227	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg		2L			
1976	Refrigerant gas R C318	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg		2L			
3337	Refrigerant gas R 404A	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg		2L			
3338	Refrigerant gas R 407A	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg		2L			
3339	Refrigerant gas R 407B	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg		2L			
3340	Refrigerant gas R 407C	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg		2L			
2602	Refrigerant gas R 500	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg		2L			
1973	Refrigerant gas R 502	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg		2L			
2599	Refrigerant gas R 503	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg		2L			
1959	Refrigerant gas R 1132a	2.1	Flamm. gas		E0	Forbidden			Forbidden	200	150 kg	A1	10L			
1858	Refrigerant gas R 1216	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg		2L			
2422	Refrigerant gas R 1318	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg		2L			
3358	Refrigerating machines containing flammable, non-toxic, liquefied gas	2.1				Forbidden			Forbidden		Forbidden	A103	10L			
2857	Refrigerating machines containing non-flammable, non-toxic, liquefied gas or ammonia solutions (UN 2672)	2.2	Non-flamm. gas		E0	Forbidden			See 211		See 211	A26	2L			
	Refrigerating machines containing toxic liquefied gas or ammonia solution with more than 50% ammonia					Forbidden			Forbidden		Forbidden					
	Refrigerating machines with less than 12 kg non-flammable, non-toxic, liquefied gas or containing less than 12 L ammonia solution with 35% or less ammonia					Not Restricted			Not Restricted		Not Restricted					
3291	Regulated medical waste, n.o.s.	6.2	Infectious subst.	II	E0	Forbidden		622	No limit	622	No limit	A117	11L			
0173	Release devices, explosive †	1.4S	Explosive 1.4		E0	Forbidden		134	25 kg	134	100 kg	A802	3L			
	Resinate of cobalt, precipitated, see Cobalt resinate, precipitated (UN 1318)															
	Resinates, liquid, see Flammable liquid, n.o.s. ★ (UN 1993)															
	Resinates, solid, see Flammable solid, organic, n.o.s. ★ (UN 1325)															
1866	Resin solution flammable	3	Flamm. liquid	I II III	E3 E2 E1	Forbidden Y341 Y344	1 L 5 L 60 L	351 353 355	1 L 5 L 60 L	361 364 366	30 L 60 L 220 L	A3	3L 3L 3L			
	Resorcin, see Resorcinol (UN 2876)															
2876	Resorcinol	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg		6L			
	Rifle grenade, see Grenades † (UN 0284), Grenades † (UN 0285), Grenades † (UN 0292), Grenades † (UN 0293)															

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					EQ see 2.6 F	Ltd Qty		Pkg Inst G	Max Net Qty/Pkg H	Pkg Inst I	Max Net Qty/Pkg J	Pkg Inst K	Max Net Qty/Pkg L		
	Rifle powder, see Powder, smokeless † (UN 0160) or Powder, smokeless † (UN 0161)														
0174	Rivets, explosive	1.4S	Explosive 1.4		E0	Forbidden			134	25 kg	134	100 kg	A802	3L	
	Road asphalt or tar liquid, see Tars, liquid (UN 1999)														
0280	Rocket motors †	1.1C				Forbidden			Forbidden		Forbidden			1L	
0281	Rocket motors †	1.2C				Forbidden			Forbidden		Forbidden			1L	
0186	Rocket motors †	1.3C	Explosive		E0	Forbidden			Forbidden		130	220 kg	A802	1L	
0395	Rocket motors, liquid fuelled †	1.2J				Forbidden			Forbidden		Forbidden			1L	
0396	Rocket motors, liquid fuelled †	1.3J				Forbidden			Forbidden		Forbidden			1L	
0322	Rocket motors with hypergolic liquids † with or without expelling charge	1.2L				Forbidden			Forbidden		Forbidden			1L	
0250	Rocket motors with hypergolic liquids † with or without expelling charge	1.3L				Forbidden			Forbidden		Forbidden			1L	
0238	Rockets, line-throwing †	1.2G				Forbidden			Forbidden		Forbidden			1L	
0240	Rockets, line-throwing †	1.3G	Explosive		E0	Forbidden			Forbidden		130	75 kg	A802	1L	
0453	Rockets, line-throwing †	1.4G	Explosive 1.4		E0	Forbidden			Forbidden		130	75 kg	A802	1L	
0397	Rockets, liquid fuelled † with bursting charge	1.1J				Forbidden			Forbidden		Forbidden			1L	
0398	Rockets, liquid fuelled † with bursting charge	1.2J				Forbidden			Forbidden		Forbidden			1L	
0181	Rockets † with bursting charge	1.1E				Forbidden			Forbidden		Forbidden			1L	
0180	Rockets † with bursting charge	1.1F				Forbidden			Forbidden		Forbidden			1L	
0182	Rockets † with bursting charge	1.2E				Forbidden			Forbidden		Forbidden			1L	
0295	Rockets † with bursting charge	1.2F				Forbidden			Forbidden		Forbidden			1L	
0436	Rockets † with expelling charge	1.2C				Forbidden			Forbidden		Forbidden			1L	
0437	Rockets † with expelling charge	1.3C				Forbidden			Forbidden		Forbidden			1L	
0438	Rockets † with expelling charge	1.4C	Explosive 1.4		E0	Forbidden			Forbidden		130	75 kg		1L	
0502	Rockets † with inert head	1.2C				Forbidden			Forbidden		Forbidden			1L	
0183	Rockets † with inert head	1.3C				Forbidden			Forbidden		Forbidden			1L	
1286	Rosin oil	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L		A3	3L 3L	
1345	Rubber scrap powdered or granulated, not exceeding 840 microns and rubber content exceeding 45%	4.1	Flamm. solid	II	E2	Y441	5 kg	445	15 kg	448	50 kg		A3	3L	
1345	Rubber shoddy powdered or granulated, not exceeding 840 microns and rubber content exceeding 45%	4.1	Flamm. solid	II	E2	Y441	5 kg	445	15 kg	448	50 kg		A3	3L	



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					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
					EQ see 2.6	Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
1287	Rubber solution	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3	3L 3L			
1423	Rubidium	4.3	Dang. when wet	I	E0	Forbidden		Forbidden		487	15 kg		4W			
2678	Rubidium hydroxide	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg		8L			
2677	Rubidium hydroxide solution	8	Corrosive	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A3 A803	8L 8L			
	Safety fuse, see Fuse, safety † (UN 0105)															
	Safety squibs, see Igniters † (UN 0325) or Igniters † (UN 0454)															
	Saltpetre, see Potassium nitrate (UN 1486)															
0190	Samples, explosive ★ other than initiating explosives	1				Forbidden		Forbidden		Forbidden			1L			
	Sand acid, see Fluorosilicic acid (UN 1778)															
0503	Seat-belt pretensioners †	1.4G	Explosive 1.4		E0	Forbidden		Forbidden		135	75 kg	A32 A56 A802	1L			
3268	Seat-belt pretensioners †	9	Miscellaneous	III	E0	Forbidden		961	25 kg	961	100 kg	A32 A115 A119	9L			
	Security type attaché cases, cash boxes/bags, incorporating dangerous goods such as lithium batteries and/or pyrotechnic material.					Forbidden		Forbidden		Forbidden		A178				
2217	Seed cake with 1.5% or less oil and 11% or less moisture	4.2				Forbidden		Forbidden		Forbidden		A2 A55	4L			
1386	Seed cake with more than 1.5% oil and 11% or less moisture	4.2				Forbidden		Forbidden		Forbidden		A2	4L			
	Seed expellers, see Seed cake (UN 1386) or Seed cake (UN 2217)															
2630	Selenates ★	6.1	Toxic	I	E5	Forbidden		666	5 kg	673	50 kg		6L			
1905	Selenic acid	8	Corrosive	I	E0	Forbidden		Forbidden		862	25 kg	A1	8L			
2630	Selenites ★	6.1	Toxic	I	E5	Forbidden		666	5 kg	673	50 kg		6L			
3440	Selenium compound, liquid, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4	6L 6L 6L			
3283	Selenium compound, solid, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	Y644 Y644 Y645	1 kg 1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5	6L 6L 6L			
2657	Selenium disulphide	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
2194	Selenium hexafluoride	2.3 (8)				Forbidden		Forbidden		Forbidden		A2	2CP			
	Selenium nitride					Forbidden		Forbidden		Forbidden						
2879	Selenium oxychloride	8 (6.1)	Corrosive & Toxic	I	E0	Forbidden		850	0.5 L	854	2.5 L		8P			
3188	Self-heating liquid, corrosive, inorganic, n.o.s. ★	4.2 (8)	Spont. comb. & Corrosive	II III	E2 E1	Forbidden Forbidden		462 463	1 L 5 L	464 465	5 L 60 L	A3 A803	4C 4C			
3185	Self-heating liquid, corrosive, organic, n.o.s. ★	4.2 (8)	Spont. comb. & Corrosive	II III	E2 E1	Forbidden Forbidden		462 463	1 L 5 L	464 465	5 L 60 L	A3 A803	4C 4C			
3186	Self-heating liquid, inorganic, n.o.s. ★	4.2	Spont. comb.	II III	E2 E1	Forbidden Forbidden		462 463	1 L 5 L	464 465	5 L 60 L	A3 A803	4L 4L			

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg				
					EQ see 2.6	Pkg Inst										
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
3183	Self-heating liquid, organic, n.o.s. ★	4.2	Spont. comb.	II	E2	Forbidden	462	1 L	464	5 L	A3	4L				
				III	E1	Forbidden	463	5 L	465	60 L	A803	4L				
3187	Self-heating liquid, toxic, inorganic, n.o.s. ★	4.2 (6.1)	Spont. comb. & Toxic	II	E2	Forbidden	462	1 L	464	5 L	A3	4P				
				III	E1	Forbidden	463	5 L	465	60 L	A803	4P				
3184	Self-heating liquid, toxic, organic, n.o.s. ★	4.2 (6.1)	Spont. comb. & Toxic	II	E2	Forbidden	462	1 L	464	5 L	A3	4P				
				III	E1	Forbidden	463	5 L	465	60 L	A803	4P				
3192	Self-heating solid, corrosive, inorganic, n.o.s. ★	4.2 (8)	Spont. comb. & Corrosive	II	E2	Forbidden	466	15 kg	470	50 kg	A3	4C				
				III	E1	Forbidden	468	25 kg	471	100 kg	A803	4C				
3126	Self-heating solid, corrosive, organic, n.o.s. ★	4.2 (8)	Spont. comb. & Corrosive	II	E2	Forbidden	466	15 kg	470	50 kg	A3	4C				
				III	E1	Forbidden	468	25 kg	471	100 kg	A803	4C				
3190	Self-heating solid, inorganic, n.o.s. ★	4.2	Spont. comb.	II	E2	Forbidden	467	15 kg	470	50 kg	A3	4L				
				III	E1	Forbidden	469	25 kg	471	100 kg	A803	4L				
3088	Self-heating solid, organic, n.o.s. ★	4.2	Spont. comb.	II	E2	Forbidden	467	15 kg	470	50 kg	A3	4L				
				III	E1	Forbidden	469	25 kg	471	100 kg	A803	4L				
3127	Self-heating solid, oxidizing, n.o.s. ★	4.2 (5.1)				Forbidden		Forbidden		Forbidden	A2	4X				
3191	Self-heating solid, toxic, inorganic, n.o.s. ★	4.2 (6.1)	Spont. comb. & Toxic	II	E2	Forbidden	466	15 kg	470	50 kg	A3	4P				
				III	E1	Forbidden	468	25 kg	471	100 kg	A803	4P				
3128	Self-heating solid, toxic, organic, n.o.s. ★	4.2 (6.1)	Spont. comb. & Toxic	II	E2	Forbidden	466	15 kg	470	50 kg	A3	4P				
				III	E1	Forbidden	468	25 kg	471	100 kg	A803	4P				
	Self-inflating passenger restraint systems (air bags) for motor vehicles, see Life-saving appliances, self-inflating (UN 2990), Air bag inflators † (UN 3268), Air bag modules † (UN 3268), Seat-belt pretensioners † (UN 3268)															
	Self-propelled vehicle, see Vehicle, flammable gas powered † (UN 3166), Vehicle, flammable liquid powered † (UN 3166), Battery-powered vehicle (UN 3171), Battery-powered equipment (UN 3171)															
3221	Self-reactive liquid type B ★	4.1				Forbidden		Forbidden		Forbidden		3E				
3231	Self-reactive liquid type B, temperature controlled ★	4.1				Forbidden		Forbidden		Forbidden		3E				
3223	Self-reactive liquid type C ★	4.1	Flamm. solid & Keep away from heat	E0	Forbidden	459	5 L	459	10 L	A20 A802	3L					
3233	Self-reactive liquid type C, temperature controlled ★	4.1				Forbidden		Forbidden		Forbidden		3S				
3225	Self-reactive liquid type D ★	4.1	Flamm. solid & Keep away from heat	E0	Forbidden	459	5 L	459	10 L	A20 A802	3L					
3235	Self-reactive liquid type D, temperature controlled ★	4.1				Forbidden		Forbidden		Forbidden		3S				
3227	Self-reactive liquid type E ★	4.1	Flamm. solid & Keep away from heat	E0	Forbidden	459	10 L	459	25 L	A20 A802	3L					
3237	Self-reactive liquid type E, temperature controlled ★	4.1				Forbidden		Forbidden		Forbidden		3S				
3229	Self-reactive liquid type F ★	4.1	Flamm. solid & Keep away from heat	E0	Forbidden	459	10 L	459	25 L	A20 A802	3L					
3239	Self-reactive liquid type F, temperature controlled ★	4.1				Forbidden		Forbidden		Forbidden		3S				
	Self-reactive solid type B					Forbidden		Forbidden		Forbidden						
	Self-reactive solid type B, temperature controlled					Forbidden		Forbidden		Forbidden						



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					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E	F	G	H	I	J	K	L	M	N		
3224	Self-reactive solid type C ★	4.1	Flamm. solid & Keep away from heat		E0	Forbidden		459	5 kg	459	10 kg	A20 A802	3L		
3234	Self-reactive solid type C, temperature controlled ★	4.1				Forbidden			Forbidden		Forbidden			3S	
3226	Self-reactive solid type D ★	4.1	Flamm. solid & Keep away from heat		E0	Forbidden		459	5 kg	459	10 kg	A20 A802	3L		
3236	Self-reactive solid type D, temperature controlled ★	4.1				Forbidden			Forbidden		Forbidden			3S	
3228	Self-reactive solid type E ★	4.1	Flamm. solid & Keep away from heat		E0	Forbidden		459	10 kg	459	25 kg	A20 A802	3L		
3238	Self-reactive solid type E, temperature controlled ★	4.1				Forbidden			Forbidden		Forbidden			3S	
3230	Self-reactive solid type F ★	4.1	Flamm. solid & Keep away from heat		E0	Forbidden		459	10 kg	459	25 kg	A20 A802	3L		
3240	Self-reactive solid type F, temperature controlled ★	4.1				Forbidden			Forbidden		Forbidden			3S	
1288	Shale oil	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3	3L 3L		
	Shaped charges, commercial, see Charges, shaped † (UN 0059), Charges, shaped † (UN 0439), Charges, shaped † (UN 0440), Charges, shaped † (UN 0441)														
	Shellac, see Paint (UN 1263)														
0191	Signal devices, hand †	1.4G	Explosive 1.4		E0	Forbidden			Forbidden	135	75 kg	A802	1L		
0373	Signal devices, hand †	1.4S	Explosive 1.4		E0	Forbidden		135	25 kg	135	100 kg	A802	3L		
0194	Signals, distress † ship	1.1G				Forbidden			Forbidden		Forbidden			1L	
0195	Signals, distress † ship	1.3G	Explosive		E0	Forbidden			Forbidden	135	75 kg	A802	1L		
0505	Signals, distress † ship	1.4G	Explosive 1.4		E0	Forbidden			Forbidden	135	75 kg	A802	1L		
0506	Signals, distress † ship	1.4S	Explosive 1.4		E0	Forbidden		135	25 kg	135	100 kg	A802	3L		
	Signals, distress, ship, water-activated, see Contrivances, water-activated ★ † (UN 0248) or Contrivances, water-activated ★ † (UN 0249)														
	Signals, highway, see Signal devices, hand † (UN 0191), Fireworks † (UN 0333), Fireworks † (UN 0334), Fireworks † (UN 0335), Fireworks † (UN 0336), Fireworks † (UN 0337), Signal devices, hand † (UN 0373)														
0192	Signals, railway track, explosive †	1.1G				Forbidden			Forbidden		Forbidden			1L	
0492	Signals, railway track, explosive †	1.3G				Forbidden			Forbidden		Forbidden			1L	
0493	Signals, railway track, explosive †	1.4G	Explosive 1.4		E0	Forbidden			Forbidden	135	75 kg	A802	1L		
0193	Signals, railway track, explosive †	1.4S	Explosive 1.4		E0	Forbidden		135	25 kg	135	100 kg	A802	3L		
0196	Signals, smoke †	1.1G				Forbidden			Forbidden		Forbidden			1L	
0313	Signals, smoke †	1.2G				Forbidden			Forbidden		Forbidden			1L	
0487	Signals, smoke †	1.3G				Forbidden			Forbidden		Forbidden			1L	
0197	Signals, smoke †	1.4G	Explosive 1.4		E0	Forbidden			Forbidden	135	75 kg	A802	1L		
0507	Signals, smoke †	1.4S	Explosive 1.4		E0	Forbidden		135	25 kg	135	100 kg	A802	3L		

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
2203	Silane Silicofluoric acid, see Fluorosilicic acid (UN 1778) Silicofluorides, n.o.s., see Fluorosilicates, n.o.s. ★ (UN 2856) Silicon chloride, see Silicon tetrachloride (UN 1818)	2.1						Forbidden		Forbidden		Forbidden		A2	10L
1346	Silicon powder, amorphous	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	876	30 L	A54 A803	3L
1818	Silicon tetrachloride	8	Corrosive	II	E0			Forbidden		Forbidden		876	30 L	A1	8L
1859	Silicon tetrafluoride Silver acetylide (dry)	2.3 (8)						Forbidden		Forbidden		ForbIDDEN		A2	2CP
1683	Silver arsenite Silver azide (dry) Silver chlorite (dry)	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L
1684	Silver cyanide Silver fulminate (dry)	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L
1493	Silver nitrate Silver oxalate (dry) Silver picrate (dry)	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg				5L
1347	Silver picrate, wetted with 30% or more water, by weight Silver picrate, wetted with less than 30% water, by weight Sisal, see Fibres, animal, n.o.s. (UN 1373), Fibres, synthetic, n.o.s. (UN 1373), Fibres, vegetable, n.o.s. (UN 1373)	4.1						Forbidden		Forbidden		ForbIDDEN		A40	3E
1906	Sludge acid † Small quantities of dangerous goods, see 2.7	8	Corrosive	II	E0			Forbidden		Forbidden		855	30 L	A1	8L
1907	Soda lime † with more than 4% sodium hydroxide	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	864	100 kg	A16 A803	8L
1428	Sodium	4.3	Dang. when wet	I	E0			Forbidden		Forbidden		487	15 kg	A1	4W
2812	Sodium aluminate, solid	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	864	100 kg	A803	8L
1819	Sodium aluminate solution	8	Corrosive	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A3 A803	8L 8L		
2835	Sodium aluminium hydride Sodium amalgam, see Alkali metal amalgam, liquid (UN 1389) or Alkali metal amalgam, solid (UN 3401) Sodium amide, see Alkali metal amides (UN 1390)	4.3	Dang. when wet	II	E0			Forbidden		Forbidden		489	50 kg	A1	4W
2863	Sodium ammonium vanadate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L
2473	Sodium arsanilate	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg				6L
1685	Sodium arsenate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L
1686	Sodium arsenite, aqueous solution	6.1	Toxic	II III	E4 E1	Y641 Y642	1 L 2 L	654 655	5 L 60 L	662 663	60 L 220 L	A3 A6	6L 6L		



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UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
2027	Sodium arsenite, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg	A6	6L		
1687	Sodium azide	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L		
	Sodium bifluoride, see Sodium hydrogendifluoride (UN 2439)														
	Sodium bioxide, see Sodium peroxide (UN 1504)														
	Sodium bisulphate solution, see Bisulphates, aqueous solution (UN 2837)														
	Sodium bisulphite solution, see Bisulphites, aqueous solution, n.o.s. * (UN 2693)														
1426	Sodium borohydride	4.3	Dang. when wet	I	E0	Forbidden		Forbidden		487	15 kg		4W		
3320	Sodium borohydride and sodium hydroxide solution with 12% or less sodium borohydride and 40% or less sodium hydroxide, by mass	8	Corrosive	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A3 A803	8L 8L		
1494	Sodium bromate	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg		5L		
1688	Sodium cacodylate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L		
3378	Sodium carbonate peroxyhydrate	5.1	Oxidizer	II III	E2 E1	Y544 Y546	2.5 kg 10 kg	558 559	5 kg 25 kg	562 563	25 kg 100 kg	A803	5L 5L		
1495	Sodium chlorate	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg		5L		
2428	Sodium chlorate, aqueous solution	5.1	Oxidizer	II III	E2 E1	Y540 Y541	0.5 L 1 L	550 551	1 L 2.5 L	554 555	5 L 30 L	A3 A803	5L 5L		
	Sodium chlorate mixed with dinitrotoluene, see Explosive, blasting, type C † (UN 0083)														
1496	Sodium chlorite	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg		5L		
	Sodium chlorite solution, see Chlorite solution (UN 1908)														
	Sodium chlorite solution with less than 5% available chlorine														
2659	Sodium chloroacetate	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg		6L		
2316	Sodium cuprocyanide, solid	6.1	Toxic	I	E5	Forbidden		666	5 kg	673	50 kg		6L		
2317	Sodium cuprocyanide solution	6.1	Toxic	I	E5	Forbidden		652	1 L	658	30 L		6L		
1689	Sodium cyanide, solid	6.1	Toxic	I	E5	Forbidden		666	5 kg	673	50 kg		6L		
3414	Sodium cyanide solution	6.1	Toxic	I II III	E5 E4 E1	Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3	6L 6L 6L		
	Sodium 2-diazo-1-naphthol-5-sulphonate, see Self-reactive solid type D * (UN 3226)														
	Sodium 2-diazo-1-naphthol-4-sulphonate, see Self-reactive solid type D * (UN 3226)														
	Sodium dicyanocuprate (I), solid, see Sodium cuprocyanide, solid (UN 2316)														
	Sodium dicyanocuprate (I), solution, see Sodium cuprocyanide solution (UN 2317)														
	Sodium dimethylarsenate, see Sodium cacodylate (UN 1688)														
0234	Sodium dinitro-o-cresolate dry or wetted with less than 15% water, by weight	1.3C				Forbidden		Forbidden		Forbidden			1L		
3369	Sodium dinitro-o-cresolate, wetted with 10% or more but less than 15% water, by weight	4.1	Flamm. solid	I	E0	Forbidden		451	0.5 kg	451	0.5 kg	A40	3E		

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
1348	Sodium dinitro-o-cresolate, wetted with 15% or more water, by weight	4.1 (6.1)	Flamm. solid & Toxic	I	E0	Forbidden		451	1 kg	451	15 kg	A40	3EP		
	Sodium dioxide, see Sodium peroxide (UN 1504)														
1384	Sodium dithionite	4.2	Spont. comb.	II	E2	Forbidden		467	15 kg	470	50 kg		4L		
1690	Sodium fluoride, solid	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg		6L		
3415	Sodium fluoride solution	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L	A3	6L		
2629	Sodium fluoroacetate	6.1	Toxic	I	E5	Forbidden		666	5 kg	673	50 kg		6L		
2674	Sodium fluorosilicate	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg		6L		
	Sodium hexafluorosilicate, see Sodium fluorosilicate (UN 2674)														
	Sodium hydrate solution, see Sodium hydroxide solution (UN 1824)														
1427	Sodium hydride	4.3	Dang. when wet	I	E0	Forbidden			Forbidden	487	15 kg		4W		
	Sodium hydrogen 4-aminophenylarsenate, see Sodium arsanilate (UN 2473)														
2439	Sodium hydrogendifluoride	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg		8L		
	Sodium hydrogen sulphate solution, see Bisulphates, aqueous solution (UN 2837)														
	Sodium hydrogen sulphite in solution, see Bisulphites, aqueous solution, n.o.s. * (UN 2693)														
2318	Sodium hydrosulphide with less than 25% water of crystallization	4.2	Spont. comb.	II	E2	Forbidden		467	15 kg	470	50 kg		4L		
2949	Sodium hydrosulphide hydrated with 25% or more water of crystallization	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg		8L		
1384	Sodium hydrosulphite	4.2	Spont. comb.	II	E2	Forbidden		467	15 kg	470	50 kg		4L		
1823	Sodium hydroxide, solid	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg		8L		
1824	Sodium hydroxide solution	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L	A3	8L	A803	8L
	Sodium hypochlorite solution, see Hypochlorite solution † (UN 1791)							852	5 L	856	60 L				
	Sodium metal, liquid alloy †, see Alkali metal alloy, liquid, n.o.s. (UN 1421)														
	Sodium metasilicate pentahydrate, see Disodium trioxosilicate (UN 3253)														
1431	Sodium methylate	4.2 (8)	Spont. comb. & Corrosive	II	E2	Forbidden		466	15 kg	470	50 kg		4C		
1289	Sodium methylate solution in alcohol	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L	A3	3C	A803	3C
				III	E1	Y342	1 L	354	5 L	365	60 L				
1825	Sodium monoxide	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg		8L		
1498	Sodium nitrate	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803	5L		
1499	Sodium nitrate and potassium nitrate mixture	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803	5L		
1500	Sodium nitrite	5.1 (6.1)	Oxidizer & Toxic	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803	5P		
	Sodium nitrite and potassium nitrate mixture, see Potassium nitrate and sodium nitrite mixture (UN 1487)														



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
2567	Sodium pentachlorophenate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg			6L	
3377	Sodium perborate monohydrate	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803		5L	
1502	Sodium perchlorate	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg			5L	
1503	Sodium permanganate	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg			5L	
1504	Sodium peroxide	5.1	Oxidizer	I	E0	Forbidden		Forbidden		561	15 kg	A1		5L	
3247	Sodium peroxoborate, anhydrous	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg			5L	
1505	Sodium persulphate	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803		5L	
	Sodium phenolate, solid, see Phenolates, solid (UN 2905)														
1432	Sodium phosphide	4.3 (6.1)	Dang. when wet & Toxic	I	E0	Forbidden		Forbidden		487	15 kg			4PW	
0235	Sodium picramate dry or wetted with less than 20% water, by weight	1.3C				Forbidden		Forbidden		Forbidden				1L	
1349	Sodium picramate, wetted with 20% or more water, by weight	4.1	Flamm. solid	I	E0	Forbidden		Forbidden		451	15 kg	A1 A40		3E	
	Sodium picryl peroxide					Forbidden		Forbidden		Forbidden					
	Sodium potassium alloys, see Potassium sodium alloys, liquid (UN 1422) or Potassium sodium alloys, solid (UN 3404)														
	Sodium selenate, see Selenates ★ (UN 2630)														
	Sodium selenite, see Selenites ★ (UN 2630)														
	Sodium silicofluoride, see Sodium fluorosilicate (UN 2674)														
	Sodium sulphate acid solution, see Bisulphates, aqueous solution (UN 2837)														
1385	Sodium sulphide † with less than 30% water of crystallization	4.2	Spont. comb.	II	E2	Forbidden		467	15 kg	470	50 kg			4L	
1385	Sodium sulphide, anhydrous †	4.2	Spont. comb.	II	E2	Forbidden		467	15 kg	470	50 kg			4L	
1849	Sodium sulphide, hydrated † with 30% or more water	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg			8L	
2547	Sodium superoxide	5.1	Oxidizer	I	E0	Forbidden		Forbidden		561	15 kg	A1		5L	
	Sodium tetranitride					Forbidden		Forbidden		Forbidden					
3244	Solids containing corrosive liquid, n.o.s. ★	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg	A77		8L	
3175	Solids containing flammable liquid, n.o.s. ★	4.1	Flamm. solid	II	E2	Y441	5 kg	445	15 kg	448	50 kg	A46		3L	
3243	Solids containing toxic liquid, n.o.s. ★	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg	A50		6L	
	Solvents, flammable, n.o.s. †, see Flammable liquid, n.o.s. ★ (UN 1993)														
	Solvents, flammable, toxic, n.o.s. †, see Flammable liquid, toxic, n.o.s. ★ (UN 1992)														
0374	Sounding devices, explosive †	1.1D				Forbidden		Forbidden		Forbidden				1L	
0296	Sounding devices, explosive †	1.1F				Forbidden		Forbidden		Forbidden				1L	
0375	Sounding devices, explosive †	1.2D				Forbidden		Forbidden		Forbidden				1L	

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
0204	Sounding devices, explosive † Squibs, see Igniters † (UN 0325) or Igniters † (UN 0454) Stain, see Paint (UN 1263)	1.2F						Forbidden			Forbidden				1L
1827	Stannic chloride, anhydrous	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L				8W
2440	Stannic chloride pentahydrate	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A803			8L
1433	Stannic phosphides Steel swarf, see Ferrous metal shavings (UN 2793), Ferrous metal cuttings (UN 2793), Ferrous metal turnings (UN 2793), Ferrous metal borings (UN 2793)	4.3 (6.1)	Dang. when wet & Toxic	I	E0		Forbidden			487	15 kg				4PW
2676	Stibine Storage batteries wet, see Batteries, wet, filled with acid † (UN 2794), Batteries, wet, filled with alkali † (UN 2795), Batteries, wet, non-spillable † (UN 2800) Strontium alloy, see Alkaline earth metal alloy, n.o.s. (UN 1393) Strontium alloy, pyrophoric, see Pyrophoric metal, n.o.s. * (UN 1383) or Pyrophoric alloy, n.o.s. * (UN 1383)	2.3 (2.1)					Forbidden					A2			10P
1691	Strontium arsenite	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg				6L
1506	Strontium chlorate Strontium dioxide, see Strontium peroxide (UN 1509)	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg				5L
1507	Strontium nitrate	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803			5L
1508	Strontium perchlorate	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg				5L
1509	Strontium peroxide	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg				5L
2013	Strontium phosphide	4.3 (6.1)	Dang. when wet & Toxic	I	E0		Forbidden			487	15 kg				4PW
1692	Strychnine	6.1	Toxic	I	E5		Forbidden			666	5 kg	673	50 kg	A5	6L
1692	Strychnine salts	6.1	Toxic	I	E5		Forbidden			666	5 kg	673	50 kg	A5	6L
0219	Styphnic acid dry or wetted with less than 20% water, or mixture of alcohol and water, by weight	1.1D					Forbidden								1L
0394	Styphnic acid, wetted with not less than 20% water, or mixture of alcohol and water, by weight	1.1D					Forbidden								1L
2055	Styrene monomer, stabilized Styrene monomer, unstabilized	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
0482	Substances, EVI, n.o.s. * †	1.5D					Forbidden								1L
0473	Substances, explosive, n.o.s. *	1.1A					Forbidden								1L
0474	Substances, explosive, n.o.s. *	1.1C					Forbidden								1L
0475	Substances, explosive, n.o.s. *	1.1D					Forbidden								1L
0476	Substances, explosive, n.o.s. *	1.1G					Forbidden								1L
0357	Substances, explosive, n.o.s. *	1.1L					Forbidden								1L
0358	Substances, explosive, n.o.s. *	1.2L					Forbidden								1L



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
A	B	C	D	E		F	G						M	N		
0477	Substances, explosive, n.o.s. *	1.3C					Forbidden			Forbidden			Forbidden		1L	
0478	Substances, explosive, n.o.s. *	1.3G					Forbidden			Forbidden			Forbidden		1L	
0359	Substances, explosive, n.o.s. *	1.3L					Forbidden			Forbidden			Forbidden		1L	
0479	Substances, explosive, n.o.s. *	1.4C	Explosive 1.4		E0		Forbidden			Forbidden		101	75 kg	A62 A802	1L	
0480	Substances, explosive, n.o.s. *	1.4D	Explosive 1.4		E0		Forbidden			Forbidden		101	75 kg	A62 A802	1L	
0485	Substances, explosive, n.o.s. *	1.4G	Explosive 1.4		E0		Forbidden			Forbidden		101	75 kg	A62 A802	1L	
0481	Substances, explosive, n.o.s. *	1.4S	Explosive 1.4		E0		Forbidden		101	25 kg		101	100 kg	A62 A802	3L	
0482	Substances, explosive, very insensitive, n.o.s. * †	1.5D					Forbidden			Forbidden			Forbidden		1L	
	Substances liable to spontaneous combustion, n.o.s., see Pyrophoric liquid, organic, n.o.s. * † (UN 2845), Pyrophoric solid, organic, n.o.s. * † (UN 2846), Self-heating solid, organic, n.o.s. * (UN 3088), Hydrogen peroxide and peroxyacetic acid mixture stabilized (UN 3149), Self-heating liquid, organic, n.o.s. * (UN 3183), Self-heating liquid, inorganic, n.o.s. * (UN 3186), Self-heating solid, inorganic, n.o.s. * (UN 3190), Pyrophoric liquid, inorganic, n.o.s. * † (UN 3194), Pyrophoric solid, inorganic, n.o.s. * † (UN 3200)															
	Substances which in contact with water emit flammable gases, see Water-reactive solid, n.o.s. * (UN 2813), Water-reactive liquid, corrosive, n.o.s. * (UN 3129), Water-reactive liquid, toxic, n.o.s. * (UN 3130), Water-reactive solid, corrosive, n.o.s. * (UN 3131), Water-reactive solid, flammable, n.o.s. * (UN 3132), Water-reactive solid, oxidizing, n.o.s. * (UN 3133), Water-reactive solid, toxic, n.o.s. * (UN 3134), Water-reactive solid, self-heating, n.o.s. * (UN 3135), Water-reactive liquid, n.o.s. * (UN 3148)															
2780	Substituted nitrophenol pesticide, liquid, flammable, toxic, * flash point less than 23°C	3 (6.1)	Flamm. liquid & Toxic	I II	E0 E2	Forbidden Y341	1 L	352	1 L	361 364	30 L 60 L	A4	3P 3P			
3014	Substituted nitrophenol pesticide, liquid, toxic *	6.1	Toxic	I II III	E5 E4 E1	Forbidden Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4	6L 6L			
3013	Substituted nitrophenol pesticide, liquid, toxic, flammable, * flash point 23°C or more	6.1 (3)	Toxic & Flamm. liquid	I II III	E5 E4 E1	Forbidden Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4	6F 6F			
2779	Substituted nitrophenol pesticide, solid, toxic *	6.1	Toxic	I II III	E5 E4 E1	Forbidden Y644 Y645	1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5	6L 6L			
	Sucrose octanitrate (dry)						Forbidden			Forbidden			Forbidden			
2967	Sulphamic acid	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A803	8L			
1350	Sulphur	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A105	3L			
1828	Sulphur chlorides	8	Corrosive	I	E0	Forbidden			Forbidden			854	2.5 L	A1	8W	
	Sulphur dichloride, see Sulphur chlorides (UN 1828)															
1079	Sulphur dioxide	2.3 (8)					Forbidden			Forbidden			Forbidden		A2	2CP
	Sulphur dioxide solution, see Sulphurous acid (UN 1833)															
	Sulphuretted hydrogen, see Hydrogen sulphide (UN 1053)															

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
A	B	C	D	E		F	G						M	N		
1080	Sulphur hexafluoride	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg				2L	
2796	Sulphuric acid with 51% or less acid	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L				8L	
1830	Sulphuric acid with more than 51% acid	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L				8L	
1831	Sulphuric acid, fuming †	8 (6.1)				Forbidden			Forbidden		Forbidden				A2	8P
1832	Sulphuric acid, spent †	8	Corrosive	II	E0	Forbidden			Forbidden		855	30 L	A1 A34		8L	
	Sulphuric acid, unstable					Forbidden			Forbidden		Forbidden					
	Sulphuric and hydrofluoric acid mixture, see Hydrofluoric acid and sulphuric acid mixture (UN 1786)															
	Sulphuric anhydride, see Sulphur trioxide, stabilized (UN 1829)															
2448	Sulphur, molten	4.1				Forbidden			Forbidden		Forbidden					3L
	Sulphur monochloride, see Sulphur chlorides (UN 1828)															
1833	Sulphurous acid	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L				8L	
2418	Sulphur tetrafluoride	2.3 (8)				Forbidden			Forbidden		Forbidden				A2	2CP
1829	Sulphur trioxide, stabilized	8				Forbidden			Forbidden		Forbidden				A2	8L
	Sulphur trioxide, unstabilized					Forbidden			Forbidden		Forbidden					
1834	Sulphuryl chloride	6.1 (8)				Forbidden			Forbidden		Forbidden					6C
2191	Sulphuryl fluoride	2.3				Forbidden			Forbidden		Forbidden				A2	2P
	Talcum with tremolite and/or actinolite, see White asbestos † (UN 2590)															
1999	Tars, liquid including road asphalt and oils, bitumen and cut backs	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L			A3	3L 3L	
	Tartar emetic, see Antimony potassium tartrate (UN 1551)															
1700	Tear gas candles	6.1 (4.1)	Toxic & Flamm. solid	II	E0	Forbidden			Forbidden			679	50 kg	A1	6F	
	Tear gas cartridges, see Ammunition, tear-producing † (UN 0018), Ammunition, tear-producing † (UN 0019), Ammunition, tear-producing † (UN 0301)															
	Tear gas devices containing tear gas substances, see Aerosols, non-flammable (UN 1950)															
	Tear gas grenades, see Tear gas candles (UN 1700)															
1693	Tear gas substance, liquid, n.o.s. ★	6.1	Toxic	I II	E0	Forbidden Forbidden			Forbidden Forbidden			659	5 L	A2 A36	6i 6i	
3448	Tear gas substance, solid, n.o.s. ★	6.1	Toxic	I II	E0 E0	Forbidden Forbidden			Forbidden Forbidden			672 674	15 kg 25 kg	A1 A36	6L 6L	
3284	Tellurium compound, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	Forbidden 1 kg Y644 Y645 10 kg		666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg			A3 A5	6L 6L 6L	
2195	Tellurium hexafluoride	2.3 (8)				Forbidden			Forbidden					A2	2CP	
2319	Terpene hydrocarbons, n.o.s.	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L	



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
2541	Terpinolene Tertiary alcohol, see Alcohols, n.o.s.★ (UN 1987)	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L	
	Tetraazido benzene quinone						Forbidden								
2504	Tetrabromoethane Tetrachlorodinitroethane, see Toxic solid, organic, n.o.s.★ (UN 2811)	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L			6L	
1702	1,1,2,2-Tetrachloroethane	6.1	Toxic	II	E4	Y641	1 L	654	5 L	661	60 L			6L	
1897	Tetrachloroethylene Tetrachloromethane, see Carbon tetrachloride (UN 1846)	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L			6L	
	Tetraethylammonium perchlorate (dry)						Forbidden								
1704	Tetraethyl dithiopyrophosphate	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L	A6		6L	
2320	Tetraethylenepentamine Tetraethyl lead, see Motor fuel anti-knock mixture † (UN 1649)	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803		8L	
	Tetraethyloxysilane, see Tetraethyl silicate (UN 1292)														
1292	Tetraethyl silicate Tetrafluorodichloroethane, see Refrigerant gas R 114 (UN 1958)	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L	
3159	1,1,1,2-Tetrafluoroethane	2.2	Non-flamm. gas		E1		Forbidden	200	75 kg	200	150 kg			2L	
1081	Tetrafluoroethylene, stabilized Tetrafluoroethylene, unstabilized	2.1	Flamm. gas		E0		Forbidden		Forbidden	200	150 kg	A1		10L	
							Forbidden		Forbidden						
1982	Tetrafluoromethane	2.2	Non-flamm. gas		E1		Forbidden	200	75 kg	200	150 kg			2A	
2498	1,2,3,6-Tetrahydrobenzaldehyde	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L	
2056	Tetrahydrofuran	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H	
2943	Tetrahydrofurfurylamine Tetrahydro-1,4-oxazine, see Morpholine (UN 2054)	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L	
2698	Tetrahydrophthalic anhydrides with more than 0.05% of maleic anhydride	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A74 A803		8L	
2410	1,2,3,6-Tetrahydropyridine	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
2412	Tetrahydrothiophene Tetramethoxysilane, see Methyl orthosilicate (UN 2606)	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L	
3423	Tetramethylammonium hydroxide, solid	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg			8L	
1835	Tetramethylammonium hydroxide, solution Tetramethylene, see Cyclobutane (UN 2601)	8	Corrosive	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A3 A803		8L 8L	
	Tetramethylene cyanide, see Adiponitrile (UN 2205)														
	Tetramethylene diperoxide dicarbamide						Forbidden								
	Tetramethyl lead, see Motor fuel anti-knock mixture † (UN 1649)						Forbidden								
2749	Tetramethylsilane	3	Flamm. liquid	I	E0		Forbidden					361	30 L	A1	3H

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					Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg				
					EQ see 2.6	Pkg Inst										
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
0207	Tetranitroaniline	1.1D				Forbidden		Forbidden		Forbidden					1L	
	Tetranitro diglycerin					Forbidden		Forbidden		Forbidden						
1510	Tetranitromethane	6.1 (5.1)				Forbidden		Forbidden		Forbidden					6X	
	2,3,4,6-Tetranitrophenol					Forbidden		Forbidden		Forbidden						
	2,3,4,6-Tetranitrophenyl methyl nitramine					Forbidden		Forbidden		Forbidden						
	2,3,4,6-Tetranitrophenylnitramine					Forbidden		Forbidden		Forbidden						
	Tetranitroresorcinol (dry)					Forbidden		Forbidden		Forbidden						
	2,3,5,6-Tetranitroso-1,4-dinitrobenzene					Forbidden		Forbidden		Forbidden						
	2,3,5,6-Tetranitroso nitrobenzene (dry)					Forbidden		Forbidden		Forbidden						
2413	Tetrapropyl orthotitanate	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L	
	Tetrazene (dry)					Forbidden		Forbidden		Forbidden						
0114	Tetrazene, wetted with 30% or more water, or mixture of alcohol and water, by weight	1.1A				Forbidden		Forbidden		Forbidden					1L	
	Tetrazine					Forbidden		Forbidden		Forbidden						
0407	Tetrazol-1-acetic acid	1.4C	Explosive 1.4		E0	Forbidden		Forbidden		114	75 kg	A802			1L	
0504	1H-Tetrazole	1.1D				Forbidden		Forbidden		Forbidden					1L	
	Tetrazolyl azide (dry)					Forbidden		Forbidden		Forbidden						
0208	Tetryl	1.1D				Forbidden		Forbidden		Forbidden					1L	
2573	Thallium chloride	5.1 (6.1)	Oxidizer & Toxic	II	E2	Y543	1 kg	558	5 kg	562	25 kg				5P	
△ 1707	Thallium compound, n.o.s. ★	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg	A6			6L	
	Thallium (I) chloride, see Thallium chloride (UN 2573)															
	Thallium (I) nitrate, see Thallium nitrate (UN 2727)															
2727	Thallium nitrate	6.1 (5.1)	Toxic & Oxidizer	II	E4	Y644	1 kg	667	5 kg	674	25 kg				6X	
	Thallous chloride, see Thallium chloride (UN 2573)															
	Thermometers, barometers, etc.															
	Thia-4-pentanal, see 4-Thiapentanal (UN 2785)															
2785	4-Thiapentanal	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L				6L	
2436	Thioacetic acid	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3i	
2772	Thiocarbamate pesticide, liquid, flammable, toxic, ★ flash point less than 23°C	3 (6.1)	Flamm. liquid & Toxic	I II	E0 E2	Forbidden Y341	1 L	352	1 L	361 364	30 L 60 L	A4			3P 3P	
3006	Thiocarbamate pesticide, liquid, toxic ★	6.1	Toxic	I II III	E5 E4 E1	Forbidden Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4			6L 6L 6L	
3005	Thiocarbamate pesticide, liquid, toxic, flammable, ★ flash point 23°C or more	6.1 (3)	Toxic & Flamm. liquid	I II III	E5 E4 E1	Forbidden Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4			6F 6F 6F	



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						F	G									
A	B	C	D	E												
2771	Thiocarbamate pesticide, solid, toxic ★ Thiocarbonylchloride, see Thiophosgene (UN 2474)	6.1	Toxic	I II III	E5 E4 E1	ForbIDDEN Y644 Y645	1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5	6L 6L 6L			
2966	Thioglycol	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L		6L			
1940	Thioglycolic acid	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L		8L			
2936	Thiolactic acid	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L		6L			
1836	Thionyl chloride	8				ForbIDDEN			ForbIDDEN		ForbIDDEN		A2	8W		
2414	Thiophene Thiophenol, see Phenyl mercaptan (UN 2337)	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3H			
2474	Thiophosgene	6.1				ForbIDDEN			ForbIDDEN		ForbIDDEN		A2	6L		
1837	Thiophosphoryl chloride	8	Corrosive	II	E0	ForbIDDEN			ForbIDDEN		855	30 L	A1	8W		
3341	Thiourea dioxide Tin, chloride anhydrous, see Stannic chloride, anhydrous (UN 1827) Tin chloride pentahydrate, see Stannic chloride pentahydrate (UN 2440)	4.2	Spont. comb.	II III	E2 E1	ForbIDDEN ForbIDDEN		467 469	15 kg 25 kg	470 471	50 kg 100 kg	A3 A803	4L 4L			
1293	Tinctures, medicinal Tin (IV) chloride, anhydrous, see Stannic chloride, anhydrous (UN 1827) Tin (IV) chloride pentahydrate, see Stannic chloride pentahydrate (UN 2440) Tinning flux, see Zinc chloride, anhydrous (UN 2331) Tin tetrachloride, see Stannic chloride, anhydrous (UN 1827)	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3	3L 3L			
	Tire assemblies inflated, above maximum rated pressure	2.2				ForbIDDEN			ForbIDDEN		ForbIDDEN		A59			
	Tire assemblies inflated, unserviceable, damaged or above maximum rated pressure	2.2				ForbIDDEN			ForbIDDEN		ForbIDDEN		A59			
	Tire assemblies serviceable, inflated to pressure not greater than their rated inflation pressure					Not Restricted			Not Restricted		Not Restricted					
3174	Titanium disulphide	4.2	Spont. comb.	III	E1	ForbIDDEN		469	25 kg	471	100 kg	A803	4L			
1871	Titanium hydride	4.1	Flamm. solid	II	E2	Y441	5 kg	445	15 kg	448	50 kg		3W			
2546	Titanium powder, dry	4.2	Spont. comb.	I II III	E2 E1	ForbIDDEN ForbIDDEN ForbIDDEN		467 469	15 kg 25 kg	470 471	50 kg 100 kg	A3 A803	4L 4L 4L			
1352	Titanium powder, wetted with 25% or more 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 Titanium powder, wetted with 25% or more water (a visible excess of water must be present) (a) mechanically produced: particle size more than 53 microns; (b) chemically produced: particle size more than 840 microns	4.1	Flamm. solid	II	E2	Y441	5 kg	445	15 kg	448	50 kg	A35	3L			
2878	Titanium sponge granules	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A3 A803	3L			

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
2878	Titanium sponge powders Titanium sulphate solution with 45% or less sulphuric acid, see Corrosive liquid, acidic, inorganic, n.o.s. * (UN 3264)	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A3 A803	3L		
1838	Titanium tetrachloride	6.1 (8)					Forbidden		Forbidden		Forbidden	A2	6C		
2869	Titanium trichloride mixture	8	Corrosive	II III	E2 E1	Y844 Y845	5 kg 5 kg	859 860	15 kg 25 kg	863 864	50 kg 100 kg	A3 A803	8L 8L		
2441	Titanium trichloride mixture, pyrophoric	4.2 (8)					Forbidden		Forbidden		Forbidden		4C		
2441	Titanium trichloride, pyrophoric	4.2 (8)					Forbidden		Forbidden		Forbidden		4C		
0209	TNT dry or wetted with < 30% water, by weight	1.1D					Forbidden		Forbidden		Forbidden		1L		
0388	TNT and hexanitrostilbene mixture	1.1D					Forbidden		Forbidden		Forbidden		1L		
0388	TNT and trinitrobenzene mixture TNT mixed with aluminium, see Tritonal (UN 0390)	1.1D					Forbidden		Forbidden		Forbidden		1L		
0389	TNT mixture containing trinitrobenzene and hexanitrostilbene	1.1D					Forbidden		Forbidden		Forbidden		1L		
3366	TNT, wetted with 10% or more but less than 30% water, by weight	4.1	Flamm. solid	I	E0		Forbidden		451	0.5 kg	451	0.5 kg	A40	3E	
1356	TNT, wetted with ≥ 30% water, by weight Toe puffs, nitrocellulose base, see Fabrics impregnated with weakly nitrated nitrocellulose, n.o.s. (UN 1353)	4.1	Flamm. solid	I	E0		Forbidden		451	0.5 kg	451	0.5 kg	A40	3E	
1294	Toluene	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L		
2078	Toluene diisocyanate Toluene sulphonic acid, see Arylsulphonic acids, solid (UN 2583), Arylsulphonic acids, liquid (UN 2584), Arylsulphonic acids, solid (UN 2585), Arylsulphonic acids, liquid (UN 2586)	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L	A113	6L		
1708	Toluidines, liquid	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L	A113	6L		
3451	Toluidines, solid Toluol, see Toluene (UN 1294)	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg	A113	6L		
1709	2,4-Toluylenediamine, solid	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg		6L		
3418	2,4-Toluylenediamine solution Tolylene diisocyanate, see Toluene diisocyanate (UN 2078)	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L	A3	6L		
	Tolylethylene, see Vinyltoluenes, stabilized (UN 2618)														
0451	Torpedoes † with bursting charge	1.1D					Forbidden		Forbidden		Forbidden		1L		
0329	Torpedoes † with bursting charge	1.1E					Forbidden		Forbidden		Forbidden		1L		
0330	Torpedoes † with bursting charge	1.1F					Forbidden		Forbidden		Forbidden		1L		



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					Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
					EQ see 2.6	Pkg Inst									
A	B	C	D	E	F	G	H	I	J	K	L	M	N		
0449	Torpedoes, liquid fuelled † with or without bursting charge	1.1J					Forbidden		Forbidden		Forbidden			1L	
0450	Torpedoes, liquid fuelled † with inert head	1.3J					Forbidden		Forbidden		Forbidden			1L	
△ 3381	Toxic by inhalation liquid, n.o.s. ★ with an LC ₅₀ ≤ 200 mL/m ³ and saturated vapour concentration ≥ 500 LC ₅₀	6.1					Forbidden		Forbidden		Forbidden			6L	
△ 3382	Toxic by inhalation liquid, n.o.s. ★ with an LC ₅₀ ≤ 1000 mL/m ³ and saturated vapour concentration ≥ 10 LC ₅₀	6.1					Forbidden		Forbidden		Forbidden			6L	
△ 3390	Toxic by inhalation liquid, corrosive, n.o.s. ★ with an LC ₅₀ ≤ 1000 mL/m ³ and saturated vapour concentration ≥ 10 LC ₅₀	6.1 (8)					Forbidden		Forbidden		Forbidden			6C	
△ 3389	Toxic by inhalation liquid, corrosive, n.o.s. ★ with an LC ₅₀ ≤ 200 mL/m ³ and saturated vapour concentration ≥ 500 LC ₅₀	6.1 (8)					Forbidden		Forbidden		Forbidden			6C	
⊗															
⊗															
△ 3384	Toxic by inhalation liquid, flammable, n.o.s. ★ with an LC ₅₀ ≤ 1000 mL/m ³ and saturated vapour concentration ≥ 10 LC ₅₀	6.1 (3)					Forbidden		Forbidden		Forbidden			6F	
△ 3383	Toxic by inhalation liquid, flammable, n.o.s. ★ with an LC ₅₀ ≤ 200 mL/m ³ and saturated vapour concentration ≥ 500 LC ₅₀	6.1 (3)					Forbidden		Forbidden		Forbidden			6F	
△ 3489	Toxic by inhalation liquid, flammable, corrosive, n.o.s. ★ with an LC ₅₀ ≤ 1000 mL/m ³ and saturated vapour concentration ≥ 10 LC ₅₀	6.1 (3, 8)					Forbidden		Forbidden		Forbidden			6FC	
△ 3488	Toxic by inhalation liquid, flammable, corrosive, n.o.s. ★ with an LC ₅₀ ≤ 200 mL/m ³ and saturated vapour concentration ≥ 500 LC ₅₀	6.1 (3, 8)					Forbidden		Forbidden		Forbidden			6FC	
△ 3388	Toxic by inhalation liquid, oxidizing, n.o.s. ★ with an LC ₅₀ ≤ 1000 mL/m ³ and saturated vapour concentration ≥ 10 LC ₅₀	6.1 (5.1)					Forbidden		Forbidden		Forbidden			6X	
△ 3387	Toxic by inhalation liquid, oxidizing, n.o.s. ★ with an LC ₅₀ ≤ 200 mL/m ³ and saturated vapour concentration ≥ 500 LC ₅₀	6.1 (5.1)					Forbidden		Forbidden		Forbidden			6X	
△ 3386	Toxic by inhalation liquid, water-reactive, n.o.s. ★ with an LC ₅₀ ≤ 1000 mL/m ³ and saturated vapour concentration ≥ 10 LC ₅₀	6.1 (4.3)					Forbidden		Forbidden		Forbidden			6W	
△ 3385	Toxic by inhalation liquid, water-reactive, n.o.s. ★ with an LC ₅₀ ≤ 200 mL/m ³ and saturated vapour concentration ≥ 500 LC ₅₀	6.1 (4.3)					Forbidden		Forbidden		Forbidden			6W	
△ 3491	Toxic by inhalation liquid, water-reactive, flammable, n.o.s. ★ with an LC ₅₀ ≤ 1000 mL/m ³ and saturated vapour concentration ≥ 10 LC ₅₀	6.1 (3, 4.3)					Forbidden		Forbidden		Forbidden			6WF	
△ 3490	Toxic by inhalation liquid, water-reactive, flammable, n.o.s. ★ with an LC ₅₀ ≤ 200 mL/m ³ and saturated vapour concentration ≥ 500 LC ₅₀	6.1 (3, 4.3)					Forbidden		Forbidden		Forbidden			6WF	

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						F	G									
A		C	D	E												
	Toxic gas, n.o.s., see Compressed gas, toxic, flammable, n.o.s. ★ (UN 1953), Compressed gas, toxic, n.o.s. ★ (UN 1955), Liquefied gas, toxic, flammable, n.o.s. ★ (UN 3160), Liquefied gas, toxic, n.o.s. ★ (UN 3162), Compressed gas, toxic, oxidizing, n.o.s. ★ (UN 3303), Compressed gas, toxic, corrosive, n.o.s. ★ (UN 3304), Compressed gas, toxic, flammable, corrosive, n.o.s. ★ (UN 3305), Compressed gas, toxic, oxidizing, corrosive, n.o.s. ★ (UN 3306), Liquefied gas, toxic, oxidizing, n.o.s. ★ (UN 3307), Liquefied gas, toxic, corrosive, n.o.s. ★ (UN 3308), Liquefied gas, toxic, flammable, corrosive, n.o.s. ★ (UN 3309), Liquefied gas, toxic, oxidizing, corrosive, n.o.s. ★ (UN 3310)															
3289	Toxic liquid, corrosive, inorganic, n.o.s. ★	6.1 (8)	Toxic & Corrosive	I II	E5 E4	Forbidden Y640	0.5 L	651 653	0.5 L 1 L	657 660	2.5 L 30 L	A4 A137	6C 6C			
2927	Toxic liquid, corrosive, organic, n.o.s. ★	6.1 (8)	Toxic & Corrosive	I II	E5 E4	Forbidden Y640	0.5 L	651 653	0.5 L 1 L	657 660	2.5 L 30 L	A4 A137	6C 6C			
2929	Toxic liquid, flammable, organic, n.o.s. ★	6.1 (3)	Toxic & Flamm. liquid	I II	E5 E4	Forbidden Y641	1 L	652 654	1 L 5 L	658 662	30 L 60 L	A4 A137	6F 6F			
3287	Toxic liquid, inorganic, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	Forbidden Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4 A137	6L 6L 6L			
2810	Toxic liquid, organic, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	Forbidden Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4 A137	6L 6L 6L			
3122	Toxic liquid, oxidizing, n.o.s. ★	6.1 (5.1)	Toxic & Oxidizer	I II	E0 E4	Forbidden Y641	1 L	ForbIDDEN 653	1 L	657 659	2.5 L 5 L	A4 A137	6X 6X			
3123	Toxic liquid, water-reactive, n.o.s. ★	6.1 (4.3)	Toxic & Dang. when wet	I II	E0 E4	Forbidden ForbIDDEN		ForbIDDEN 653	1 L	699 659	1 L 5 L	A4 A137	6W 6W			
3290	Toxic solid, corrosive, inorganic, n.o.s. ★	6.1 (8)	Toxic & Corrosive	I II	E5 E4	Forbidden Y644	1 kg	665 668	1 kg 15 kg	672 675	15 kg 50 kg	A5	6C 6C			
2928	Toxic solid, corrosive, organic, n.o.s. ★	6.1 (8)	Toxic & Corrosive	I II	E5 E4	Forbidden Y644	1 kg	665 668	1 kg 15 kg	672 675	15 kg 50 kg	A5	6C 6C			
2930	Toxic solid, flammable, organic, n.o.s. ★	6.1 (4.1)	Toxic & Flamm. solid	I II	E5 E4	Forbidden Y644	1 kg	665 668	1 kg 15 kg	672 675	15 kg 50 kg	A5	6F 6F			
3288	Toxic solid, inorganic, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	Forbidden Y644 Y645	1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5	6L 6L 6L			
2811	Toxic solid, organic, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	Forbidden Y644 Y645	1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5	6L 6L 6L			
3086	Toxic solid, oxidizing, n.o.s. ★	6.1 (5.1)	Toxic & Oxidizer	I II	E5 E4	Forbidden Y644	1 kg	665 667	1 kg 5 kg	672 674	15 kg 25 kg	A5	6X 6X			
3124	Toxic solid, self-heating, n.o.s. ★	6.1 (4.2)	Toxic & Spont. comb.	I II	E5 E4	Forbidden ForbIDDEN		665 668	1 kg 15 kg	672 675	15 kg 50 kg	A5	6S 6S			
3125	Toxic solid, water-reactive, n.o.s. ★	6.1 (4.3)	Toxic & Dang. when wet	I II	E5 E4	Forbidden Y644	1 kg	699 668	5 kg 15 kg	699 675	15 kg 50 kg	A5	6W 6W			
3172	Toxins, extracted from living sources, liquid, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	Forbidden Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A43	6L 6L 6L			
3462	Toxins, extracted from living sources, solid, n.o.s. ★	6.1	Toxic	I II III	E5 E4 E1	Forbidden Y644 Y645	1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A43	6L 6L 6L			
0212	Tracers for ammunition †	1.3G				Forbidden		Forbidden		Forbidden					1L	



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					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E	F	G	H	I	J	K	L	M	N		
0306	Tracers for ammunition † Tractors, see Vehicle, flammable gas powered † (UN 3166) or Vehicle, flammable liquid powered † (UN 3166) Tremolite, see White asbestos † (UN 2590)	1.4G	Explosive 1.4		E0	Forbidden		Forbidden		133	75 kg	A802	1L		
2610	Triallylamine	3 (8)	Flamm. liquid & Corrosive	III	E1	Y342	1 L	354	5 L	365	60 L	A803	3C		
2609	Triallyl borate	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L		6L		
2764	Triazine pesticide, liquid, flammable, toxic, ★ flash point less than 23°C	3 (6.1)	Flamm. liquid & Toxic	I II	E0 E2	Y341	1 L	352	1 L	361 364	30 L 60 L	A4	3P 3P		
2998	Triazine pesticide, liquid, toxic ★	6.1	Toxic	I II III	E5 E4 E1	Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4	6L 6L 6L		
2997	Triazine pesticide, liquid, toxic, flammable, ★ flash point 23°C or more	6.1 (3)	Toxic & Flamm. liquid	I II III	E5 E4 E1	Y641 Y642	1 L 2 L	652 654 655	1 L 5 L 60 L	658 662 663	30 L 60 L 220 L	A3 A4	6F 6F 6F		
2763	Triazine pesticide, solid, toxic ★ Tribromoborane, see Boron tribromide (UN 2692)	6.1	Toxic	I II III	E5 E4 E1	Y644 Y645	1 kg 10 kg	666 669 670	5 kg 25 kg 100 kg	673 676 677	50 kg 100 kg 200 kg	A3 A5	6L 6L 6L		
2542	Tributylamine	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L		6L		
3254	Tributylphosphane	4.2				Forbidden		Forbidden		Forbidden			4L		
	Trichloroacetaldehyde, see Chloral, anhydrous, stabilized (UN 2075)														
1839	Trichloroacetic acid	8	Corrosive	II	E2	Y844	5 kg	859	15 kg	863	50 kg		8L		
2564	Trichloroacetic acid solution	8	Corrosive	II III	E2 E1	Y840 Y841	0.5 L 1 L	851 852	1 L 5 L	855 856	30 L 60 L	A3 A803	8L 8L		
	Trichloroacetaldehyde, see Chloral, anhydrous, stabilized (UN 2075)														
2442	Trichloroacetyl chloride	8				Forbidden		Forbidden		Forbidden		A2	8W		
2321	Trichlorobenzenes, liquid	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L		6L		
2322	Trichlorobutene	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L		6L		
2831	1,1,1-Trichloroethane	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L		6L		
1710	Trichloroethylene	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L		6A		
2468	Trichloroisocyanuric acid, dry	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg		5L		
	Trichloromethyl perchlorate					Forbidden		Forbidden		Forbidden					
	Trichloronitromethane, see Chloropicrin (UN 1580)														
1295	Trichlorosilane	4.3 (3, 8)				Forbidden		Forbidden		Forbidden			4HW		
	1,3,5-Trichloro-s-triazine-2,4,6-trione, see Trichloroisocyanuric acid, dry (UN 2468)														
	2,4,6-Trichloro-1,3,5-triazine, see Cyanuric chloride (UN 2670)														
2574	Tricresyl phosphate with more than 3% ortho isomer	6.1	Toxic	II	E4	Y641	1 L	654	5 L	661	60 L		6L		

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
1296	Triethylamine	3 (8)	Flamm. liquid & Corrosive	II	E2	Y340	0.5 L	352	1 L	363	5 L				3CH
	Triethyl borate; see Ethyl borate (UN 1176)														
2259	Triethylenetetramine	8	Corrosive	II	E2	Y840	0.5 L	851	1 L	855	30 L				8L
	Triethylmethyl lead mixture, see Motor fuel anti-knock mixture † (UN 1649)														
	Triethyl orthoformate, see Ethyl orthoformate (UN 2524)														
2323	Triethyl phosphite	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
2699	Trifluoroacetic acid	8	Corrosive	I	E0	ForbIDDEN		850	0.5 L	854	2.5 L				8N
3057	Trifluoroacetyl chloride	2.3 (8)					ForbIDDEN		ForbIDDEN		ForbIDDEN				A2 2CP
	Trifluorobromomethane, see Bromotrifluoromethane (UN 1009)														
	Trifluorochloroethane, see 1-Chloro-2,2,2-trifluoroethane (UN 1983)														
1082	Trifluorochloroethylene, stabilized (R1113)	2.3 (2.1)					ForbIDDEN		ForbIDDEN		ForbIDDEN				A2 10P
	Trifluorochloromethane, see Chlorotrifluoromethane (UN 1022)														
2035	1,1,1-Trifluoroethane (R143a)	2.1	Flamm. gas		E0	ForbIDDEN		ForbIDDEN		200	150 kg				A1 10L
1984	Trifluoromethane (R23)	2.2	Non-flamm. gas		E1	ForbIDDEN		200	75 kg	200	150 kg				2A
3136	Trifluoromethane, refrigerated liquid	2.2	Non-flamm. gas & Cryogenic liquid		E1	ForbIDDEN		202	50 kg	202	500 kg				2A
2948	3-Trifluoromethylaniline	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L				6L
2942	2-Trifluoromethylaniline	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L				6L
	Triformoxime trinitrate						ForbIDDEN		ForbIDDEN		ForbIDDEN				
2324	Triisobutylene	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
2616	Triisopropyl borate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				A3 3L
				III	E1	Y344	10 L	355	60 L	366	220 L				3L
2438	Trimethylacetyl chloride	6.1 (3, 8)					ForbIDDEN		ForbIDDEN		ForbIDDEN				6FW
1083	Trimethylamine, anhydrous	2.1	Flamm. gas		E0	ForbIDDEN		ForbIDDEN		200	150 kg				A1 10L
1297	Trimethylamine, aqueous solution 50% or less trimethylamine, by weight	3 (8)	Flamm. liquid & Corrosive	I	E0	ForbIDDEN		350	0.5 L	360	2.5 L				A3 A803 3CH
				II	E2	Y340	0.5 L	352	1 L	363	5 L				3CH
				III	E1	Y342	1 L	354	5 L	365	60 L				3C
2325	1,3,5-Trimethylbenzene	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				3L
2416	Trimethyl borate	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L				3L
	Trimethyl carbonyl, see Butanols (UN 1120)														
1298	Trimethylchlorosilane	3 (8)	Flamm. liquid & Corrosive	II	E0	ForbIDDEN		ForbIDDEN		377	5 L				3CH
2326	Trimethylcyclohexylamine	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L				A803 8L
	Trimethylenchlorobromide, see 1-Bromo-3-chloropropane (UN 2688)						ForbIDDEN		ForbIDDEN		ForbIDDEN				
	Trimethylene glycol diperchlorate														



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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
2327	Trimethylhexamethylenediamines	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A803	8L		
2328	Trimethylhexamethylene diisocyanate	6.1	Toxic	III	E1	Y642	2 L	655	60 L	663	220 L		6L		
	Trimethylol nitromethane trinitrate					ForbIDDEN			ForbIDDEN		ForbIDDEN				
	2,4,4-Trimethylpentene-1, see Diisobutylene, isomeric compounds (UN 2050)														
	2,4,4-Trimethylpentene-2, see Diisobutylene, isomeric compounds (UN 2050)														
2329	Trimethyl phosphite	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L		
	1,3,5-Trimethyl-2,4,6-trinitrobenzene					ForbIDDEN			ForbIDDEN		ForbIDDEN				
	Trimethoxy silane					ForbIDDEN			ForbIDDEN		ForbIDDEN				
	Trinitroacetic acid					ForbIDDEN			ForbIDDEN		ForbIDDEN				
	Trinitroacetonitrile					ForbIDDEN			ForbIDDEN		ForbIDDEN				
	Trinitroamine cobalt					ForbIDDEN			ForbIDDEN		ForbIDDEN				
0153	Trinitroaniline	1.1D						ForbIDDEN		ForbIDDEN		ForbIDDEN		1L	
0213	Trinitroanisole	1.1D						ForbIDDEN		ForbIDDEN		ForbIDDEN		1L	
0214	Trinitrobenzene dry or wetted with < 30% water, by weight	1.1D						ForbIDDEN		ForbIDDEN		ForbIDDEN		1L	
0386	Trinitrobenzenesulphonic acid	1.1D						ForbIDDEN		ForbIDDEN		ForbIDDEN		1L	
3367	Trinitrobenzene, wetted with 10% or more water but less than 30% water, by weight	4.1	Flamm. solid	I	E0	ForbIDDEN		451	0.5 kg	451	0.5 kg	A40	3E		
1354	Trinitrobenzene, wetted with 30% or more water, by weight	4.1	Flamm. solid	I	E0	ForbIDDEN		451	0.5 kg	451	0.5 kg	A40	3E		
0215	Trinitrobenzoic acid dry or wetted with < 30% water, by weight	1.1D						ForbIDDEN		ForbIDDEN		ForbIDDEN		1L	
3368	Trinitrobenzoic acid, wetted with 10% or more water but less than 30% water, by weight	4.1	Flamm. solid	I	E0	ForbIDDEN		451	0.5 kg	451	0.5 kg	A40	3E		
1355	Trinitrobenzoic acid, wetted with 30% or more water, by weight	4.1	Flamm. solid	I	E0	ForbIDDEN		451	0.5 kg	451	0.5 kg	A40	3E		
0155	Trinitrochlorobenzene	1.1D						ForbIDDEN		ForbIDDEN		ForbIDDEN		1L	
3365	Trinitrochlorobenzene, wetted with 10% or more water, by weight	4.1	Flamm. solid	I	E0	ForbIDDEN		451	0.5 kg	451	0.5 kg	A40	3E		
0216	Trinitro-m-cresol	1.1D						ForbIDDEN		ForbIDDEN		ForbIDDEN		1L	
	2,4,6-Trinitro-1,3-diazobenzene					ForbIDDEN			ForbIDDEN		ForbIDDEN				
	Trinitroethanol					ForbIDDEN			ForbIDDEN		ForbIDDEN				
	Trinitroethyl nitrate					ForbIDDEN			ForbIDDEN		ForbIDDEN				
0387	Trinitrofluorenone	1.1D						ForbIDDEN		ForbIDDEN		ForbIDDEN		1L	
	Trinitromethane					ForbIDDEN			ForbIDDEN		ForbIDDEN				
0217	Trinitronaphthalene	1.1D						ForbIDDEN		ForbIDDEN		ForbIDDEN		1L	
0218	Trinitrophenetole	1.1D						ForbIDDEN		ForbIDDEN		ForbIDDEN		1L	
0154	Trinitrophenol dry or wetted with < 30% water, by weight	1.1D						ForbIDDEN		ForbIDDEN		ForbIDDEN		1L	

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
3364	Trinitrophenol, wetted with 10% or more water but less than 30% water, by weight	4.1	Flamm. solid	I	E0	Forbidden		451	0.5 kg	451	0.5 kg	451	0.5 kg	A40	3E
1344	Trinitrophenol, wetted with 30% or more water, by weight	4.1	Flamm. solid	I	E0	Forbidden		451	1 kg	451	15 kg	451	15 kg	A40	3E
	2,4,6-Trinitrophenyl guanadine (dry)					Forbidden			Forbidden		Forbidden		Forbidden		
0208	TrinitrophenylmethylNitramine	1.1D				Forbidden			Forbidden		Forbidden		Forbidden		1L
	2,4,6-Trinitrophenyl nitramine					Forbidden			Forbidden		Forbidden		Forbidden		
	2,4,6-Trinitrophenyl trimethylol methyl nitramine trinitrate (dry)					Forbidden			Forbidden		Forbidden		Forbidden		
0219	Trinitroresorcinol dry or wetted with less than 20% water, or mixture of alcohol and water, by weight	1.1D				Forbidden			Forbidden		Forbidden		Forbidden		1L
0394	Trinitroresorcinol, wetted with 20% or more water, or mixture of alcohol and water, by weight	1.1D				Forbidden			Forbidden		Forbidden		Forbidden		1L
	2,4,6-Trinitroso-3-methyl nitraminoanisole					Forbidden			Forbidden		Forbidden		Forbidden		
	Trinitrotetramine cobalt nitrate					Forbidden			Forbidden		Forbidden		Forbidden		
0209	Trinitrotoluene dry or wetted with < 30% water, by weight	1.1D				Forbidden			Forbidden		Forbidden		Forbidden		1L
0388	Trinitrotoluene and hexanitrostilbene mixture	1.1D				Forbidden			Forbidden		Forbidden		Forbidden		1L
0388	Trinitrotoluene and trinitrobenzene mixture	1.1D				Forbidden			Forbidden		Forbidden		Forbidden		1L
0389	Trinitrotoluene mixture containing Trinitrobenzene and hexanitrostilbene	1.1D				Forbidden			Forbidden		Forbidden		Forbidden		1L
1366	Trinitrotoluene, wetted with 10% or more but less than 30% water, by weight	4.1	Flamm. solid	I	E0	Forbidden		451	0.5 kg	451	0.5 kg	451	0.5 kg	A40	3E
1356	Trinitrotoluene, wetted with 30% or more water, by weight	4.1	Flamm. solid	I	E0	Forbidden		451	0.5 kg	451	0.5 kg	451	0.5 kg	A40	3E
	2,4,6-Trinitro-1,3,5-triazido benzene (dry)					Forbidden			Forbidden		Forbidden		Forbidden		
2260	Tripropylamine	3 (8)	Flamm. liquid & Corrosive	III	E1	Y342	1 L	354	5 L	365	60 L	366	60 L	A803	3C
2057	Tripropylene	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	363	60 L 220 L	A3	3L 3L
2501	Tris-(1-aziridinyl) phosphine oxide solution	6.1	Toxic	II III	E4 E1	Y641 Y642	1 L 2 L	654 655	5 L 60 L	662 663	60 L 220 L	662 663	60 L 220 L	A3	6L 6L
	Tris, bis-bifluoroamino diethoxy propane (TVOPA)					Forbidden			Forbidden		Forbidden		Forbidden		
0390	Tritonal	1.1D				Forbidden			Forbidden		Forbidden		Forbidden		1L
	Tropilidene, see Cycloheptatriene (UN 2603)					Forbidden			Forbidden		Forbidden		Forbidden		
	Tungates, liquid, see Flammable liquid, n.o.s. ★ (UN 1993)					Forbidden			Forbidden		Forbidden		Forbidden		
	Tungates, solid, see Flammable solid, organic, n.o.s. ★ (UN 1325) or Flammable solid, inorganic, n.o.s. ★ (UN 3178)					Forbidden			Forbidden		Forbidden		Forbidden		
2196	Tungsten hexafluoride	2.3 (8)				Forbidden			Forbidden		Forbidden		Forbidden		A2
1299	Turpentine	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L				2CP 3L



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					Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E	F	G	H	I	J	K	L	M	N	
1300	Turpentine substitute †	3	Flamm. liquid	II III	E2	Y341	1 L	353	5 L	364	60 L	A3	3L 3L	
	Tyre assemblies inflated, above maximum rated pressure	2.2			E1	Y344	10 L	355	60 L	366	220 L	A59		
	Tyre assemblies inflated, unserviceable, damaged or above maximum rated pressure	2.2					Forbidden	Forbidden	Forbidden	Forbidden	Forbidden	A59		
	Tyre assemblies serviceable, inflated to pressure not greater than their rated inflation pressure						ForbIDDEN	ForbIDDEN	ForbIDDEN	ForbIDDEN	ForbIDDEN			
								Not Restricted	Not Restricted	Not Restricted	Not Restricted			
2330	Undecane	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L		3L	
1511	Urea hydrogen peroxide	5.1 (8)	Oxidizer & Corrosive	III	E1	Y545	5 kg	559	25 kg	563	100 kg	A803	5C	
0220	Urea nitrate dry or wetted with < 20% water, by weight	1.1D					Forbidden		Forbidden		Forbidden		1L	
3370	Urea nitrate, wetted with > 10% but < 20% water, by weight	4.1	Flamm. solid	I	E0		Forbidden	451	0.5 kg	451	0.5 kg	A40	3E	
1357	Urea nitrate, wetted with 20% or more water, by weight	4.1	Flamm. solid	I	E0		Forbidden	451	1 kg	451	15 kg	A40 A101	3E	
	Urea peroxide, see Urea hydrogen peroxide (UN 1511)													
	Valeral, see Valeraldehyde (UN 2058)													
	n-Valeraldehyde, see Valeraldehyde (UN 2058)													
2058	Valeraldehyde	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L		3L	
	Valeric acid, see Corrosive liquid, acidic, organic, n.o.s. ★ (UN 3265)													
	Valeric aldehyde, see Valeraldehyde (UN 2058)													
2502	Valeryl chloride	8 (3)	Corrosive & Flamm. liquid	II	E2	Y840	0.5 L	851	1 L	855	30 L		8FW	
3285	Vanadium compound, n.o.s. ★	6.1	Toxic	I II III	E5		Forbidden	666	5 kg	673	50 kg	A3	6L	
	Vanadium (IV) oxide sulphate, see Vanadyl sulphate (UN 2931)				E4	Y644	1 kg	669	25 kg	676	100 kg	A5	6L	
	Vanadium oxysulphate, see Vanadyl sulphate (UN 2931)				E1	Y645	10 kg	670	100 kg	677	200 kg		6L	
2443	Vanadium oxytrichloride	8	Corrosive	II	E0		Forbidden		Forbidden	855	30 L	A1	8W	
2862	Vanadium pentoxide non-fused form	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg		6L	
2444	Vanadium tetrachloride	8	Corrosive	I	E0		Forbidden		Forbidden	854	2.5 L	A1	8W	
2475	Vanadium trichloride	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A803	8W	
2931	Vanadyl sulphate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L	
	Varnish, see Paint (UN 1263)													
	Varnish drier, liquid, see Flammable liquid, n.o.s. ★ (UN 1993)													
	Varnish drier, solid, see Flammable solid, organic, n.o.s. ★ (UN 1325) or Flammable solid, inorganic, n.o.s. ★ (UN 3178)													

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					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
					EQ see 2.6	Pkg Inst	G									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
3166	Vehicle, flammable gas powered	9	Miscellaneous		E0	Forbidden		Forbidden		951	No limit	A67 A70 A87 A118 A120 A134		9L		
3166	Vehicle, flammable liquid powered	9	Miscellaneous		E0	Forbidden		950	No limit	950	No limit	A67 A70 A87 A118 A120 A134		9L		
3166	Vehicle, fuel cell, flammable gas powered †	9	Miscellaneous		E0	Forbidden		Forbidden		951	No limit	A67 A70 A87 A118 A120 A134 A176		9L		
3166	Vehicle, fuel cell, flammable liquid powered †	9	Miscellaneous		E0	Forbidden		950	No limit	950	No limit	A67 A70 A87 A118 A120 A134 A176		9L		
	Vehicles, self-propelled, see Vehicle, flammable liquid powered † (UN 3166), Vehicle, flammable gas powered † (UN 3166), Battery-powered equipment (UN 3171), Battery-powered vehicle (UN 3171)															
	Very signal cartridge, see Cartridges, signal † (UN 0054), Cartridges, signal † (UN 0312), Cartridges, signal † (UN 0405)															
	Villiaumite, see Sodium fluoride, solid (UN 1690) or Sodium fluoride solution (UN 3415)															
1301	Vinyl acetate, stabilized	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H		
	Vinyl acetate, unstabilized					Forbidden		Forbidden		Forbidden						
	Vinyl benzene, see Styrene monomer, stabilized (UN 2055)															
1085	Vinyl bromide, stabilized	2.1	Flamm. gas		E0	Forbidden		Forbidden		200	150 kg	A1	10L			
	Vinyl bromide, unstabilized					Forbidden		Forbidden		Forbidden						
2838	Vinyl butyrate, stabilized	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3L		
	Vinyl butyrate, unstabilized					Forbidden		Forbidden		Forbidden						
1086	Vinyl chloride, stabilized	2.1	Flamm. gas		E0	Forbidden		Forbidden		200	150 kg	A1	10L			
	Vinyl chloride, unstabilized					Forbidden		Forbidden		Forbidden						
2589	Vinyl chloroacetate	6.1 (3)	Toxic & Flamm. liquid	II	E4	Y641	1 L	654	5 L	662	60 L			6F		
	Vinyl cyanide, see Acrylonitrile, stabilized (UN 1093)															
1302	Vinyl ethyl ether, stabilized	3	Flamm. liquid	I	E3	Forbidden		351	1 L	361	30 L			3H		
	Vinyl ethyl ether, unstabilized					Forbidden		Forbidden		Forbidden						
1860	Vinyl fluoride, stabilized	2.1	Flamm. gas		E0	Forbidden		Forbidden		200	150 kg	A1	10L			
	Vinyl fluoride, unstabilized					Forbidden		Forbidden		Forbidden						

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					Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg				
					EQ see 2.6	Pkg Inst										
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
1303	Vinylidene chloride, stabilized	3	Flamm. liquid	I	E3	Forbidden		351	1 L	361	30 L			3H		
	Vinylidene chloride, unstabilized					Forbidden			Forbidden		Forbidden					
	Vinylidene fluoride, see 1,1-Difluoroethylene (UN 1959)															
1304	Vinyl isobutyl ether, stabilized	3	Flamm. liquid	II	E2	Y341	1 L	353	5 L	364	60 L			3H		
	Vinyl isobutyl ether, unstabilized					Forbidden		Forbidden		Forbidden	Forbidden					
1087	Vinyl methyl ether, stabilized	2.1	Flamm. gas		E0	Forbidden		Forbidden		200	150 kg	A1	10L			
	Vinyl methyl ether, unstabilized					Forbidden		Forbidden		Forbidden	Forbidden					
	Vinyl nitrate polymer					Forbidden		Forbidden		Forbidden	Forbidden					
3073	Vinylpyridines, stabilized	6.1 (3, 8)	Toxic & Flamm. liquid & Corrosive	II	E4	Y640	0.5 L	653	1 L	660	30 L			6CF		
	Vinylpyridines, unstabilized					Forbidden		Forbidden		Forbidden	Forbidden					
2618	Vinytoluenes, stabilized	3	Flamm. liquid	III	E1	Y344	10 L	355	60 L	366	220 L			3L		
	Vinytoluenes, unstabilized					Forbidden		Forbidden		Forbidden	Forbidden					
1305	Vinyltrichlorosilane	3 (8)	Flamm. liquid & Corrosive	II	E0	Forbidden		Forbidden		377	5 L			3CH		
	Vinyltrichlorosilane, unstabilized					Forbidden		Forbidden		Forbidden	Forbidden					
	Warheads for guided missiles, see Warheads, rocket † (UN 0286), Warheads, rocket † (UN 0287), Warheads, rocket † (UN 0369), Warheads, rocket † (UN 0370), Warheads, rocket † (UN 0371)															
0286	Warheads, rocket † with bursting charge	1.1D				Forbidden		Forbidden		Forbidden				1L		
0369	Warheads, rocket † with bursting charge	1.1F				Forbidden		Forbidden		Forbidden				1L		
0287	Warheads, rocket † with bursting charge	1.2D				Forbidden		Forbidden		Forbidden				1L		
0370	Warheads, rocket † with burster or expelling charge	1.4D	Explosive 1.4		E0	Forbidden		Forbidden		130	75 kg	A802	1L			
0371	Warheads, rocket † with burster or expelling charge	1.4F				Forbidden		Forbidden		Forbidden				1L		
0221	Warheads, torpedo † with bursting charge	1.1D				Forbidden		Forbidden		Forbidden				1L		
3148	Water-reactive liquid, n.o.s. ★	4.3	Dang. when wet	I	E0	Forbidden		Forbidden		480	1 L	A3	4W			
				II	E2	Forbidden		478	1 L	481	5 L	A803	4W			
				III	E1	Forbidden		479	5 L	482	60 L		4W			
3129	Water-reactive liquid, corrosive, n.o.s. ★	4.3 (8)	Dang. when wet & Corrosive	I	E0	Forbidden		Forbidden		480	1 L	A3	4CW			
				II	E2	Forbidden		481	5 L	482	60 L	A803	4CW			
				III	E1	Forbidden		479	5 L	482	60 L		4CW			
3130	Water-reactive liquid, toxic, n.o.s. ★	4.3 (6.1)	Dang. when wet & Toxic	I	E0	Forbidden		Forbidden		480	1 L	A3	4PW			
				II	E2	Forbidden		481	5 L	482	60 L	A803	4PW			
				III	E1	Forbidden		479	5 L	482	60 L		4PW			
2813	Water-reactive solid, n.o.s. ★	4.3	Dang. when wet	I	E0	Forbidden		Forbidden		488	15 kg	A3	4W			
				II	E2	Y475	5 kg	484	15 kg	490	50 kg	A803	4W			
				III	E1	Y477	10 kg	486	25 kg	491	100 kg		4W			
3131	Water-reactive solid, corrosive, n.o.s. ★	4.3 (8)	Dang. when wet & Corrosive	I	E0	Forbidden		Forbidden		488	15 kg	A3	4CW			
				II	E2	Y475	5 kg	483	15 kg	490	50 kg	A803	4CW			
				III	E1	Y476	5 kg	486	25 kg	491	100 kg		4CW			

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					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
						F	G									
3132	Water-reactive solid, flammable, n.o.s. ★	4.3 (4.1)	Dang. when wet & Flamm. solid	I II III	E0 E2 E1	Forbidden Y475 Y476	5 kg 5 kg	483 486	15 kg 25 kg	488 490 491	15 kg 50 kg 100 kg	A3 A803	4FW 4FW 4FW			
3133	Water-reactive solid, oxidizing, n.o.s. ★	4.3 (5.1)					Forbidden				Forbidden			A2 A3 A803	4WX	
3135	Water-reactive solid, self-heating, n.o.s. ★	4.3 (4.2)	Dang. when wet & Spont. comb.	I II III	E0 E2 E1	Forbidden Forbidden Forbidden		483 486	15 kg 25 kg	488 490 491	15 kg 50 kg 100 kg	A3 A803	4SW 4SW 4SW			
3134	Water-reactive solid, toxic, n.o.s. ★	4.3 (6.1)	Dang. when wet & Toxic	I II III	E0 E2 E1	Forbidden Y474 Y477	1 kg 10 kg	483 486	15 kg 25 kg	488 490 491	15 kg 50 kg 100 kg	A3 A803	4PW 4PW 4PW			
	Wheelchair, electric with batteries, see Battery-powered vehicle (UN 3171) or Battery-powered equipment (UN 3171)															
	White arsenic, see Arsenic trioxide (UN 1561)															
2590	White asbestos † (chrysotile, actinolite, anthophyllite, tremolite)	9	Miscellaneous	III	E1	Forbidden		958	200 kg	958	200 kg	A61	9L			
	White spirit, see Turpentine substitute † (UN 1300)															
1306	Wood preservatives, liquid	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3	3L 3L			
3342	Xanthates	4.2	Spont. comb.	II III	E2 E1	Forbidden Forbidden		467 469	15 kg 25 kg	470 471	50 kg 100 kg	A3 A803	4L 4L			
2036	Xenon	2.2	Non-flamm. gas		E1	Forbidden		200	75 kg	200	150 kg	A69	2L			
2591	Xenon, refrigerated liquid	2.2	Non-flamm. gas & Cryogenic liquid		E1	Forbidden		202	50 kg	202	500 kg		2L			
1307	Xylenes	3	Flamm. liquid	II III	E2 E1	Y341 Y344	1 L 10 L	353 355	5 L 60 L	364 366	60 L 220 L	A3	3L 3L			
3430	Xylenols, liquid	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L		6L			
2261	Xylenols, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
1711	Xylidines, liquid	6.1	Toxic	II	E4	Y641	1 L	654	5 L	662	60 L		6L			
3452	Xylidines, solid	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
	Xylools, see Xylenes (UN 1307)															
1701	Xylyl bromide, liquid	6.1	Toxic	II	E0	Forbidden			Forbidden	661	60 L	A1	6L			
3417	Xylyl bromide, solid	6.1	Toxic	II	E4	Forbidden		669	25 kg	676	100 kg		6L			
	p-Xylyl diazide					Forbidden			Forbidden							
1512	Zinc ammonium nitrite	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg		5L			
1712	Zinc arsenate	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
1712	Zinc arsenate and zinc arsenite mixture	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
1712	Zinc arsenite	6.1	Toxic	II	E4	Y644	1 kg	669	25 kg	676	100 kg		6L			
1435	Zinc ashes	4.3	Dang. when wet	III	E1	Y477	10 kg	486	25 kg	491	100 kg	A3 A803	4W			
	Zinc bisulphite solution, see Bisulphites, aqueous solution, n.o.s. ★ (UN 2693)															
2469	Zinc bromate	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803	5L			

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Dangerous Goods Regulations

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code		
					Ltd Qty			Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg			
					EQ see 2.6	Pkg Inst	Max Net Qty/Pkg									
A	B	C	D	E	F	G	H	I	J	K	L	M	N			
1513	Zinc chlorate	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg			5L		
2331	Zinc chloride, anhydrous	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A803		8L		
1840	Zinc chloride solution	8	Corrosive	III	E1	Y841	1 L	852	5 L	856	60 L	A3 A803		8L		
1713	Zinc cyanide	6.1	Toxic	I	E5	Forbidden		666	5 kg	673	50 kg			6L		
1931	Zinc dithionite	9	Miscellaneous	III	E1	Forbidden		956	100 kg	956	200 kg	A48		9L		
1436	Zinc dust	4.3 (4.2)	Dang. when wet & Spont. comb.	I II III	E0 E2 E1	Forbidden Forbidden Forbidden		483	15 kg	488 490 491	15 kg 50 kg 100 kg	A3 A803		4SW 4SW 4SW		
2855	Zinc fluorosilicate	6.1	Toxic	III	E1	Y645	10 kg	670	100 kg	677	200 kg			6L		
	Zinc hexafluorosilicate, see Zinc fluorosilicate (UN 2855)															
1931	Zinc hydrosulphite	9	Miscellaneous	III	E1	Forbidden		956	100 kg	956	200 kg	A48		9L		
	Zinc muriate solution, see Zinc chloride solution (UN 1840)															
1514	Zinc nitrate	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg			5L		
1515	Zinc permanganate	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg			5L		
1516	Zinc peroxide	5.1	Oxidizer	II	E2	Y544	2.5 kg	558	5 kg	562	25 kg			5L		
1714	Zinc phosphide	4.3 (6.1)	Dang. when wet & Toxic	I	E0	Forbidden			Forbidden		487	15 kg			4PW	
1436	Zinc powder	4.3 (4.2)	Dang. when wet & Spont. comb.	I II III	E0 E2 E1	Forbidden Forbidden Forbidden		483	15 kg	488 490 491	15 kg 50 kg 100 kg	A3 A803		4SW 4SW 4SW		
2714	Zinc resinate	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803		3L		
	Zinc selenate, see Selenates ★ (UN 2630)															
	Zinc selenite, see Selenites ★ (UN 2630)															
	Zinc silicofluoride, see Zinc fluorosilicate (UN 2855)															
2858	Zirconium, dry coiled wire, finished metal sheets, strip (thinner than 254 microns but not thinner than 18 microns)	4.1	Flamm. solid	III	E1	Y443	10 kg	446	25 kg	449	100 kg	A803		3L		
2009	Zirconium, dry finished sheets, strip or coiled wire (thinner than 18 microns)	4.2	Spont. comb.	III	E1	Forbidden		469	25 kg	471	100 kg	A3 A803		4L		
1437	Zirconium hydride	4.1	Flamm. solid	II	E2	Y441	5 kg	445	15 kg	448	50 kg			3L		
2728	Zirconium nitrate	5.1	Oxidizer	III	E1	Y546	10 kg	559	25 kg	563	100 kg	A803		5L		
0236	Zirconium picramate dry or wetted with less than 20% water, by weight	1.3C				Forbidden			Forbidden		Forbidden			1L		
1517	Zirconium picramate, wetted with 20% or more water, by weight	4.1	Flamm. solid	I	E0	Forbidden		451	1 kg	451	15 kg	A40		3E		
2008	Zirconium powder, dry	4.2	Spont. comb.	I II III	E2 E1	Forbidden Forbidden Forbidden		467 469	15 kg 25 kg	470 471	50 kg 100 kg	A3 A803		4L 4L 4L		

UN/ ID no.	Proper Shipping Name/Description	Class or Div. (Sub Risk)	Hazard Label(s)	PG	Passenger and Cargo Aircraft						Cargo Aircraft Only		S.P. see 4.4	ERG Code	
					EQ see 2.6	Ltd Qty		Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg	Pkg Inst	Max Net Qty/Pkg		
A	B	C	D	E		F	G						M	N	
1358	Zirconium powder, wetted with 25% or more 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 Zirconium powder, wetted with 25% or more water (a visible excess of water must be present) (a) mechanically produced: particle size more than 53 microns; (b) chemically produced: particle size more than 840 microns	4.1	Flamm. solid	II	E2	Y441	5 kg	445	15 kg	448	50 kg	A35	3L		
1932	Zirconium scrap	4.2					Not Restricted			Not Restricted			Not Restricted		
1308	Zirconium suspended in a flammable liquid †	3	Flamm. liquid	I II III	E0 E2 E1	Y341 Y344	1 L 10 L					361 364 366	30 L 60 L 220 L	A1 A3 A108	3H 3H 3L
2503	Zirconium tetrachloride	8	Corrosive	III	E1	Y845	5 kg	860	25 kg	864	100 kg	A803	8L		

4.3 Numerical “Cross-Reference” List of Dangerous Goods

UN or ID No.	Name and Description (ERG Code)	Page No.
0004	Ammonium picrate dry or wetted with less than 10% water, by weight (1L)	174
0005	Cartridges for weapons † with bursting charge (1L).....	193
0006	Cartridges for weapons † with bursting charge (1L).....	193
0007	Cartridges for weapons † with bursting charge (1L).....	193
0009	Ammunition, incendiary † with or without burster, expelling charge or propelling charge (1L).....	175
0010	Ammunition, incendiary † with or without burster, expelling charge or propelling charge (1L).....	175
0012	Cartridges, small arms † (3L)	194
0012	Cartridges for weapons, inert projectile † (3L)	193
0014	Cartridges, small arms, blank † (3L)	194
0014	Cartridges for tools, blank † (3L)	193
0014	Cartridges for weapons, blank † (3L)	193
0015	Ammunition, smoke † with or without burster, expelling charge or propelling charge (1L)	175
0016	Ammunition, smoke † with or without burster, expelling charge or propelling charge (1L)	175
0018	Ammunition, tear-producing † with burster, expelling charge or propelling charge (1CP).....	176
0019	Ammunition, tear-producing † with burster, expelling charge or propelling charge (1CP).....	176
0020	Ammunition, toxic ★ † with burster, expelling charge or propelling charge (1P)	176
0021	Ammunition, toxic ★ † with burster, expelling charge or propelling charge (1P)	176
0027	Black powder † granular or as a meal (1L).....	184
0027	Gunpowder † granular or as a meal (1L)	233
0028	Black powder, compressed † (1L)	184
0028	Black powder in pellets † (1L)	184
0028	Gunpowder, compressed † (1L)	234
0028	Gunpowder in pellets † (1L)	234
0029	Detonators, non-electric † for blasting (1L).....	208
0030	Detonators, electric † for blasting (1L)	208
0033	Bombs † with bursting charge (1L)	185
0034	Bombs † with bursting charge (1L)	185
0035	Bombs † with bursting charge (1L)	185
0037	Bombs, photo-flash † (1L)	185
0038	Bombs, photo-flash † (1L)	185
0039	Bombs, photo-flash † (1L)	185
0042	Boosters † without detonator (1L)	185
0043	Bursters † explosive (1L).....	187
0044	Primers, cap type † (3L)	278

UN or ID No.	Name and Description (ERG Code)	Page No.
0048	Charges, demolition † (1L)	195
0049	Cartridges, flash † (1L)	193
0050	Cartridges, flash † (1L)	193
0054	Cartridges, signal † (1L)	194
0055	Cases, cartridge, empty, with primer † (3L)	194
0056	Charges, depth † (1L)	195
0059	Charges, shaped † without detonator (1L).....	196
0060	Charges, supplementary, explosive † (1L)	196
0065	Cord, detonating, † flexible (1L).....	203
0066	Cord, igniter † (1L)	203
0070	Cutters, cable, explosive † (3L)	206
0072	Cyclonite, wetted with not less than 15% water, by weight (1L).....	207
0072	Cyclotrimethylenetrinitramine, wetted with 15% or more water, by weight (1L).....	207
0072	Hexogen, wetted with not less than 15% water, by weight (1L).....	236
0072	RDX, wetted with 15% or more water, by weight (1L)	283
0073	Detonators for ammunition † (1L)	208
0074	Diazodinitrophenol, wetted with not less than 40% water or mixture of alcohol and water, by weight (1L).....	209
0075	Diethyleneglycol dinitrate, desensitized with 25% or more non-volatile, water insoluble phlegmatizer, by weight (1L).....	213
0076	Dinitrophenol dry or wetted with less than 15% water, by weight (1P)	216
0077	Dinitrophenolates alkali metals, dry or wetted with less than 15% water, by weight (1P)	216
0078	Dinitroresorcinol dry or wetted with less than 15% water, by weight (1L)	216
0079	Dipicrylamine (1L)	217
0079	Hexanitrodiphenylamine (1L)	235
0079	Hexyl (1L)	236
0081	Explosive, blasting, type A † (1L)	225
0082	Explosive, blasting, type B † (1L)	225
0083	Explosive, blasting, type C † (1L)	225
0084	Explosive, blasting, type D † (1L)	225
0092	Flares, surface † (1L)	228
0093	Flares, aerial † (1L)	228
0094	Flash powder † (1L)	228
0099	Fracturing devices, explosive, † without detonator for oil wells (1L)	229
0101	Fuse, non-detonating † (1L)	231
0102	Cord, detonating, † metal clad (1L)	203
0102	Fuse, detonating † metal clad (1L)	230
0103	Fuse, igniter † tubular, metal clad (1L)	231
0104	Cord, detonating, mild effect, † metal clad (1L)	203
0104	Fuse, detonating, mild effect † metal clad (1L)	231

UN or ID No.	Name and Description (ERG Code)	Page No.	UN or ID No.	Name and Description (ERG Code)	Page No.
0105	Fuse, safety † (3L)	231	0150	PETN, desensitized with 15% or more phlegmatizer, by weight (1L).....	271
0106	Fuzes, detonating † (1L)	231	0150	PETN, wetted with 25% or more water, by weight (1L).....	271
0107	Fuzes, detonating † (1L)	231	0151	Pentolite dry or wetted with less than 15% water, by weight (1L).....	269
0110	Grenades, practice † hand or rifle (3L)	233	0153	Picramide (1L)	274
0113	Guanyl nitrosaminoguanilydene hydrazine, wetted with 30% or more water, by weight (1L)....	233	0153	Trinitroaniline (1L)	304
0114	Guanyl nitrosaminoguanyltetrazene, wetted with 30% or more water or mixture of alcohol and water, by weight (1L).....	233	0154	Picric acid dry or wetted with < 30% water, by weight (1L).....	274
0114	Tetrazenes, wetted with 30% or more water, or mixture of alcohol and water, by weight (1L)	297	0154	Trinitrophenol dry or wetted with < 30% water, by weight (1L).....	304
0118	Hexolite dry or wetted with less than 15% water, by weight (1L).....	236	0155	Picryl chloride (1L)	274
0118	Hexotol dry or wetted with less than 15% water, by weight (1L).....	236	0155	Trinitrochlorobenzene (1L)	304
0121	Igniters † (1L)	239	0159	Powder cake, wetted † with 25% or more water, by weight (1L).....	277
0124	Jet perforating guns, charged, † oil well, without detonator (1L)	243	0159	Powder paste, wetted † with 25% or more water, by weight (1L).....	277
0129	Lead azide, wetted with 20% or more water or mixture of alcohol and water, by weight (1L)	244	0160	Powder, smokeless † (1L)	277
0130	Lead styphnate, wetted with 20% or more water or mixture of alcohol and water, by weight (1L)....	244	0161	Powder, smokeless † (1L)	278
0130	Lead trinitroresorcinate, wetted with 20% or more water, or mixture of alcohol and water, by weight (1L)	245	0167	Projectiles † with bursting charge (1L)	278
0131	Lighters, fuse † (3L)	245	0168	Projectiles † with bursting charge (1L)	278
0132	Deflagrating metal salts of aromatic nitroderivatives, n.o.s. (1L)	208	0169	Projectiles † with bursting charge (1L)	278
0133	Mannitol hexanitrate, wetted with 40% or more water or mixture of alcohol and water, by weight (1L)	249	0171	Ammunition, illuminating † with or without burster, expelling charge or propelling charge (1L)	175
0133	Nitromannite, wetted with 40% or more water, or mixture of alcohol and water, by weight (1L)....	262	0173	Release devices, explosive † (3L)	284
0135	Mercury fulminate, wetted with 20% or more water or mixture of alcohol and water, by weight (1L)	251	0174	Rivets, explosive (3L)	285
0136	Mines † with bursting charge (1L)	257	0180	Rockets † with bursting charge (1L)	285
0137	Mines † with bursting charge (1L)	257	0181	Rockets † with bursting charge (1L)	285
0138	Mines † with bursting charge (1L)	257	0182	Rockets † with bursting charge (1L)	285
0143	Nitroglycerin, desensitized with 40% or more non-volatile water-insoluble phlegmatizer, by weight (1P).....	262	0183	Rockets † with inert head (1L)	285
0144	Nitroglycerin solution in alcohol with 10% or less but more than 1% nitroglycerin (1L)	262	0186	Rocket motors † (1L)	285
0146	Nitrostarch dry or wetted with less than 20% water, by weight (1L).....	263	0190	Samples, explosive ★ other than initiating explosives (1L)	286
0147	Nitro urea (1L)	263	0191	Signal devices, hand † (1L)	288
0150	Pentaerythrite tetranitrate, desensitized with 15% or more phlegmatizer, by weight (1L).....	268	0192	Signals, railway track, explosive † (1L)	288
0150	Pentaerythrite tetranitrate, wetted with 25% or more water, by weight (1L)	269	0193	Signals, railway track, explosive † (3L)	288
0150	Pentaerythritol tetranitrate, desensitized with 15% or more phlegmatizer, by weight (1L)	269	0194	Signals, distress † ship (1L)	288
0150	Pentaerythritol tetranitrate, wetted with 25% or more water, by weight (1L)	269	0195	Signals, distress † ship (1L)	288

UN or ID No.	Name and Description (ERG Code)	Page No.	UN or ID No.	Name and Description (ERG Code)	Page No.
0214	Trinitrobenzene dry or wetted with < 30% water, by weight (1L).....	304	0248	Contrivances, water-activated ★ † with burster, expelling charge or propelling charge (1L)	202
0215	Trinitrobenzoic acid dry or wetted with < 30% water, by weight (1L).....	304	0249	Contrivances, water-activated ★ † with burster, expelling charge or propelling charge (1L)	202
0216	Trinitro-m-cresol (1L).....	304	0250	Rocket motors with hypergolic liquids † with or without expelling charge (1L).....	285
0217	Trinitronaphthalene (1L).....	304	0254	Ammunition, illuminating † with or without burster, expelling charge or propelling charge (1L).....	175
0218	Trinitrophenetole (1L).....	304	0255	Detonators, electric † for blasting (1L)	208
0219	Styphnic acid dry or wetted with less than 20% water, or mixture of alcohol and water, by weight (1L)	293	0257	Fuzes, detonating † (1L)	231
0219	Trinitroresorcinol dry or wetted with less than 20% water, or mixture of alcohol and water, by weight (1L).....	305	0266	Octol dry or wetted with < 15% water, by weight (1L)	264
0220	Urea nitrate dry or wetted with < 20% water, by weight (1L)	306	0266	Octolite dry or wetted with < 15% water, by weight (1L)	264
0221	Warheads, torpedo † with bursting charge (1L).....	308	0267	Detonators, non-electric † for blasting (1L).....	208
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 (1L).....	174	0268	Boosters with detonator † (1L)	185
0224	Barium azide dry or wetted with less than 50% water, by weight (1P)	181	0271	Charges, propelling † (1L)	195
0225	Boosters with detonator † (1L)	185	0272	Charges, propelling † (1L)	195
0226	Cyclotetramethylenetrinitramine, wetted with 15% or more water, by weight (1L)	207	0275	Cartridges, power device † (1L)	193
0226	HMX, wetted with not less than 15% water, by weight (1L)	236	0276	Cartridges, power device † (1L)	193
0226	Octogen, wetted with not less than 15% water, by weight (1L)	264	0277	Cartridges, oil well † (1L)	193
0234	Sodium dinitro-o-cresolate dry or wetted with less than 15% water, by weight (1L).....	290	0278	Cartridges, oil well † (1L)	193
0235	Sodium picramate dry or wetted with less than 20% water, by weight (1L)	292	0279	Charges, propelling, for cannon † (1L)	196
0236	Zirconium picramate dry or wetted with less than 20% water, by weight (1L)	310	0280	Rocket motors † (1L)	285
0237	Charges, shaped, flexible, linear † (1L)	196	0281	Rocket motors † (1L)	285
0238	Rockets, line-throwing † (1L)	285	0282	Nitroguanidine dry or wetted with less than 20% water, by weight (1L)	262
0240	Rockets, line-throwing † (1L)	285	0282	Picrite dry or wetted with less than 20% water, by weight (1L)	274
0241	Explosive, blasting, type E † (1L)	225	0283	Boosters † without detonator (1L)	185
0242	Charges, propelling, for cannon † (1L)	196	0284	Grenades † hand or rifle, with bursting charge (1L)	233
0243	Ammunition, incendiary, white phosphorus † with burster, expelling charge or propelling charge (1L).....	175	0285	Grenades † hand or rifle, with bursting charge (1L)	233
0244	Ammunition, incendiary, white phosphorus † with burster, expelling charge or propelling charge (1L).....	175	0286	Warheads, rocket † with bursting charge (1L)	308
0245	Ammunition, smoke, white phosphorus † with burster, expelling charge or propelling charge (1L).....	176	0287	Warheads, rocket † with bursting charge (1L)	308
0246	Ammunition, smoke, white phosphorus † with burster, expelling charge or propelling charge (1L).....	176	0288	Charges, shaped, flexible, linear † (1L)	196
0247	Ammunition, incendiary † liquid or gel, with burster, expelling charge or propelling charge (1L).....	175	0289	Cord, detonating, † flexible (1L)	203
			0290	Cord, detonating, † metal clad (1L)	203
			0290	Fuse, detonating † metal clad (1L)	230
			0291	Bombs † with bursting charge (1L)	185
			0292	Grenades † hand or rifle, with bursting charge (1L)	233
			0293	Grenades † hand or rifle, with bursting charge (1L)	233
			0294	Mines † with bursting charge (1L)	257
			0295	Rockets † with bursting charge (1L)	285
			0296	Sounding devices, explosive † (1L)	292
			0297	Ammunition, illuminating † with or without burster, expelling charge or propelling charge (1L)	175
			0299	Bombs, photo-flash † (1L)	185

UN or ID No.	Name and Description (ERG Code)	Page No.	UN or ID No.	Name and Description (ERG Code)	Page No.
0300	Ammunition, incendiary † with or without burster, expelling charge or propelling charge (1L).....	175	0342	Nitrocellulose, wetted with 25% or more alcohol, by weight (1L)	261
0301	Ammunition, tear-producing † with burster, expelling charge or propelling charge (1CP).....	176	0343	Nitrocellulose, plasticized with 18% or more plasticizing substance, by weight (1L)	261
0303	Ammunition, smoke † with or without burster, expelling charge or propelling charge (1L)	175	0344	Projectiles † with bursting charge (1L)	279
0305	Flash powder † (1L)	228	0345	Projectiles † inert with tracer (3L).....	278
0306	Tracers for ammunition † (1L)	302	0346	Projectiles † with burster or expelling charge (1L).....	278
0312	Cartridges, signal † (1L)	194	0347	Projectiles † with burster or expelling charge (1L).....	278
0313	Signals, smoke † (1L)	288	0348	Cartridges for weapons † with bursting charge (1L).....	193
0314	Igniters † (1L).....	239	0349	Articles, explosive, n.o.s. ★ (3L).....	180
0315	Igniters † (1L).....	239	0350	Articles, explosive, n.o.s. ★ (1L).....	179
0316	Fuzes, igniting † (1L)	231	0351	Articles, explosive, n.o.s. ★ (1L).....	179
0317	Fuzes, igniting † (1L)	231	0352	Articles, explosive, n.o.s. ★ (1L).....	179
0318	Grenades, practice † hand or rifle (1L)	233	0353	Articles, explosive, n.o.s. ★ (1L).....	179
0319	Primers, tubular † (1L).....	278	0354	Articles, explosive, n.o.s. ★ (1L).....	179
0320	Primers, tubular † (1L).....	278	0355	Articles, explosive, n.o.s. ★ (1L).....	179
0321	Cartridges for weapons † with bursting charge (1L).....	193	0356	Articles, explosive, n.o.s. ★ (1L).....	179
0322	Rocket motors with hypergolic liquids † with or without expelling charge (1L).....	285	0357	Substances, explosive, n.o.s. ★ (1L).....	293
0323	Cartridges, power device † (3L).....	194	0358	Substances, explosive, n.o.s. ★ (1L).....	293
0324	Projectiles † with bursting charge (1L)	279	0359	Substances, explosive, n.o.s. ★ (1L).....	294
0325	Igniters † (1L).....	239	0360	Detonator assemblies, non-electric † for blasting (1L)	208
0326	Cartridges for weapons, blank † (1L).....	193	0361	Detonator assemblies, non-electric † for blasting (1L)	208
0327	Cartridges, small arms, blank † (1L)	194	0362	Ammunition, practice † (1L)	175
0327	Cartridges for weapons, blank † (1L)	193	0363	Ammunition, proof † (1L)	175
0328	Cartridges for weapons, inert projectile † (1L).....	193	0364	Detonators for ammunition † (1L)	208
0329	Torpedoes † with bursting charge (1L).....	299	0365	Detonators for ammunition † (1L)	208
0330	Torpedoes † with bursting charge (1L).....	299	0366	Detonators for ammunition † (3L)	208
0331	Agent, blasting type B † (1L).....	168	0367	Fuzes, detonating † (3L)	231
0331	Explosive, blasting, type B † (1L).....	225	0368	Fuzes, igniting † (3L)	231
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1233	Methylamyl acetate (3L)	253	1295	Trichlorosilane (4HW)	302
1234	Methylal (3H)	253	1296	Triethylamine (3CH)	303
1235	Methylamine, aqueous solution (3CH)	253	1297	Trimethylamine, aqueous solution 50% or less trimethylamine, by weight (3CH)	303
1237	Methyl butyrate (3L)	254	1298	Trimethylchlorosilane (3CH)	303
1238	Methyl chloroformate (6F)	254	1299	Turpentine (3L)	305
1239	Methyl chloromethyl ether (6F)	254	1300	Turpentine substitute † (3L)	306
1242	Methyldichlorosilane (4HW)	254	1301	Vinyl acetate, stabilized (3H)	307
1243	Methyl formate (3H)	255	1302	Vinyl ethyl ether, stabilized (3H)	307
1244	Methylhydrazine (6F)	255	1303	Vinylidene chloride, stabilized (3H)	308
1245	Methyl isobutyl ketone (3L)	255			

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1304	Vinyl isobutyl ether, stabilized (3H)	308	1345	Rubber scrap powdered or granulated, not exceeding 840 microns and rubber content exceeding 45% (3L)	285
1305	Vinyltrichlorosilane (3CH)	308	1345	Rubber shoddy powdered or granulated, not exceeding 840 microns and rubber content exceeding 45% (3L)	285
1306	Wood preservatives, liquid (3L).....	309	1346	Silicon powder, amorphous (3L)	289
1307	Xylenes (3L)	309	1347	Silver picrate, wetted with 30% or more water, by weight (3E)	289
1308	Zirconium suspended in a flammable liquid † (3H).....	311	1348	Sodium dinitro-o-cresolate, wetted with 15% or more water, by weight (3EP).....	291
1309	Aluminium powder, coated † (3L).....	171	1349	Sodium picramate, wetted with 20% or more water, by weight (3E)	292
1310	Ammonium picrate, wetted with not less than 10% water, by weight (3E).....	174	1350	Sulphur (3L)	294
1312	Borneol (3L)	185	1352	Titanium powder, wetted with 25% or more 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 (3L)	298
1313	Calcium resinate (3L).....	191	1353	Fabrics impregnated with weakly nitrated nitrocellulose, n.o.s. (3L)	225
1314	Calcium resinate, fused (3L)	191	1353	Fibres impregnated with weakly nitrated nitrocellulose, n.o.s. (3L)	226
1318	Cobalt resinate, precipitated (3L)	201	1354	Trinitrobenzene, wetted with 30% or more water, by weight (3E)	304
1320	Dinitrophenol, wetted with 15% or more water, by weight (3EP).....	216	1355	Trinitrobenzoic acid, wetted with 30% or more water, by weight (3E)	304
1321	Dinitrophenolates, wetted with 15% or more water, by weight (3EP).....	216	1356	TNT, wetted with ≥ 30% water, by weight (3E)	299
1322	Dinitroresorcinol, wetted with 15% or more water, by weight (3E)	217	1356	Trinitrotoluene, wetted with 30% or more water, by weight (3E)	305
1323	Ferrocerium (3L).....	226	1357	Urea nitrate, wetted with 20% or more water, by weight (3E)	306
1324	Films, nitrocellulose base † gelatin coated, except scrap (3L)	226	1358	Zirconium powder, wetted with 25% or more 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 (3L)	311
1325	Flammable solid, organic, n.o.s. ★ (3L).....	227	1360	Calcium phosphide (4PW)	191
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 (3L)	234	1361	Carbon animal or vegetable origin (4L)	192
1328	Hexamethylenetetramine (3L)	235	1362	Carbon, activated (4L)	192
1330	Manganese resinate (3L)	249	1363	Copra † (4L)	203
1331	Matches, strike anywhere † (3L)	249	1364	Cotton waste, oily (4L)	205
1332	Metaldehyde (3L)	252	1365	Cotton, wet (4L)	205
1333	Cerium slabs, ingots or rods (3L)	195	1369	p-Nitrosodimethylaniline (4L)	263
1334	Naphthalene, crude (3L)	258	1373	Fabrics, animal, n.o.s. with oil (4L)	225
1334	Naphthalene, refined (3L)	258	1373	Fabrics, synthetic, n.o.s. with oil (4L)	225
1336	Nitroguanidine, wetted with 20% or more water, by weight (3E)	262	1373	Fabrics, vegetable, n.o.s. with oil (4L)	226
1336	Picrite, wetted with 20% or more water, by weight (3E)	274	1373	Fibres, animal, n.o.s. with oil (4L)	226
1337	Nitrostarch, wetted with 20% or more water, by weight (3E)	263	1373	Fibres, synthetic, n.o.s. with oil (4L)	226
1338	Phosphorus, amorphous (3L)	273	1373	Fibres, vegetable, n.o.s. with oil (4L)	226
1339	Phosphorus heptasulphide free from yellow and white phosphorus (3L)	273	1376	Iron oxide, spent † (obtained from coal gas purification) (4L)	240
1340	Phosphorus pentasulphide free from yellow and white phosphorus (4FW)	273	1376	Iron sponge, spent † (obtained from coal gas purification) (4L)	240
1341	Phosphorus sesquisulphide free from yellow and white phosphorus (3W)	273	1378	Metal catalyst, wetted ★ † with a visible excess of liquid (4L)	252
1343	Phosphorus trisulphide free from yellow and white phosphorus (3W)	274			
1344	Picric acid, wetted with ≥ 30% water, by weight (3E)	274			
1344	Trinitrophenol, wetted with 30% or more water, by weight (3E)	305			

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1380	Pentaborane (4P).....	268	1418	Magnesium powder (4SW)	248
1381	Phosphorus, white, dry (4P)	274	1419	Magnesium aluminium phosphide (4PW)	247
1381	Phosphorus, white, in solution (4P).....	274	1420	Potassium metal alloys, liquid (4W)	277
1381	Phosphorus, white, under water (4P).....	274	1421	Alkali metal alloy, liquid, n.o.s. (4W)	169
1381	Phosphorus, yellow, dry (4P).....	274	1422	Potassium sodium alloys, liquid (4W)	277
1381	Phosphorus, yellow, in solution (4P).....	274	1423	Rubidium (4W)	286
1381	Phosphorus, yellow, under water (4P).....	274	1426	Sodium borohydride (4W)	290
1382	Potassium sulphide, anhydrous † (4L)	277	1427	Sodium hydride (4W)	291
1382	Potassium sulphide † with less than 30% water of crystallization (4L)	277	1428	Sodium (4W)	289
1383	Pyrophoric alloy, n.o.s. ★ (4L)	280	1431	Sodium methylate (4C)	291
1383	Pyrophoric metal, n.o.s. ★ (4L)	280	1432	Sodium phosphide (4PW)	292
1384	Sodium dithionite (4L)	291	1433	Stannic phosphides (4PW)	293
1384	Sodium hydrosulphite (4L)	291	1435	Zinc ashes (4W)	309
1385	Sodium sulphide, anhydrous † (4L)	292	1436	Zinc dust (4SW)	310
1385	Sodium sulphide † with less than 30% water of crystallization (4L)	292	1436	Zinc powder (4SW)	310
1386	Seed cake with more than 1.5% oil and 11% or less moisture (4L).....	286	1437	Zirconium hydride (3L)	310
1389	Alkali metal amalgam, liquid (4W)	169	1438	Aluminium nitrate (5L)	171
1390	Alkali metal amides (4W)	169	1439	Ammonium dichromate (5L)	173
1391	Alkali metal dispersion (4W)	169	1442	Ammonium perchlorate (5L)	174
1391	Alkaline earth metal dispersion (4W)	169	1444	Ammonium persulphate (5L)	174
1392	Alkaline earth metal amalgam, liquid (4W)	169	1445	Barium chlorate, solid (5P)	181
1393	Alkaline earth metal alloy, n.o.s. (4W)	169	1446	Barium nitrate (5P)	181
1394	Aluminium carbide (4W)	171	1447	Barium perchlorate, solid (5P)	182
1395	Aluminium ferrosilicon powder (4PW)	171	1448	Barium permanganate (5P)	182
1396	Aluminium powder, uncoated † (4W)	171	1449	Barium peroxide (5P)	182
1397	Aluminium phosphide (4PW)	171	1450	Bromates, inorganic, n.o.s. ★ (5L)	186
1398	Aluminium silicon powder, uncoated (4W)	172	1451	Caesium nitrate (5L)	190
1400	Barium (4W)	181	1452	Calcium chlorate (5L)	190
1401	Calcium (4W)	190	1453	Calcium chlorite (5L)	190
1402	Calcium carbide (4W)	190	1454	Calcium nitrate (5L)	191
1403	Calcium cyanamide with more than 0.1% calcium carbide (4W)	190	1455	Calcium perchlorate (5L)	191
1404	Calcium hydride (4W)	190	1456	Calcium permanganate (5L)	191
1405	Calcium silicide (4W)	191	1457	Calcium peroxide (5L)	191
1407	Caesium (4W)	189	1458	Chlorate and borate mixture (5L)	196
1408	Ferrosilicon with 30% or more but less than 90% silicon (4PW)	226	1459	Chlorate and magnesium chloride mixture, solid (5L)	196
1409	Metal hydrides, water-reactive, n.o.s. ★ (4W)	252	1461	Chlorates, inorganic, n.o.s. ★ (5L)	196
1410	Lithium aluminium hydride (4W)	246	1462	Chlorites, inorganic, n.o.s. ★ (5L)	197
1411	Lithium aluminium hydride, ethereal (4HW)	246	1463	Chromium trioxide, anhydrous (5CP)	200
1413	Lithium borohydride (4W)	246	1465	Didymium nitrate (5L)	212
1414	Lithium hydride (4W)	246	1466	Ferric nitrate (5L)	226
1415	Lithium (4W)	246	1467	Guanidine nitrate (5L)	233
1417	Lithium silicon † (4W)	247	1469	Lead nitrate (5P)	244
			1470	Lead perchlorate, solid (5P)	244
			1471	Lithium hypochlorite, dry (5L)	246
			1471	Lithium hypochlorite mixture (5L)	246
			1472	Lithium peroxide (5L)	247

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1474	Magnesium nitrate (5L).....	248	1548	Aniline hydrochloride (6L).....	177
1475	Magnesium perchlorate (5L)	248	1549	Antimony compound, inorganic, solid, n.o.s. ★ (6L)	177
1476	Magnesium peroxide (5L).....	248	1550	Antimony lactate (6L).....	177
1477	Nitrates, inorganic, n.o.s. (5L).....	259	1551	Antimony potassium tartrate (6L).....	178
1479	Oxidizing solid, n.o.s. ★ (5L).....	267	1553	Arsenic acid, liquid (6L).....	178
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1483	Peroxides, inorganic, n.o.s. (5L).....	270	1556	Arsenic compound, liquid, n.o.s. ★ inorganic, including: Arsenates, n.o.s.; Arsenites, n.o.s.; and Arsenic sulphides, n.o.s. (6L).....	178
1484	Potassium bromate (5L)	276	1557	Arsenic compound, solid, n.o.s. ★ inorganic, including: Arsenates, n.o.s.; Arsenites, n.o.s.; and Arsenic sulphides, n.o.s. (6L).....	178
1485	Potassium chlorate (5L).....	276	1558	Arsenic (6L).....	178
1486	Potassium nitrate (5L).....	277	1559	Arsenic pentoxide (6L).....	179
1487	Potassium nitrate and sodium nitrite mixture (5L).....	277	1560	Arsenic trichloride (6L).....	179
1488	Potassium nitrite (5L).....	277	1561	Arsenic trioxide (6L).....	179
1489	Potassium perchlorate (5L).....	277	1562	Arsenical dust † (6L).....	178
1490	Potassium permanganate (5L).....	277	1564	Barium compound, n.o.s. ★ (6L)	181
1491	Potassium peroxide (5L).....	277	1565	Barium cyanide (6L).....	181
1492	Potassium persulphate (5L).....	277	1566	Beryllium compound, n.o.s. ★ (6L)	183
1493	Silver nitrate (5L).....	289	1567	Beryllium powder (6F)	184
1494	Sodium bromate (5L)	290	1569	Bromoacetone (6F)	186
1495	Sodium chlorate (5L).....	290	1570	Brucine (6L)	187
1496	Sodium chlorite (5L).....	290	1571	Barium azide, wetted with 50% or more water, by weight (3EP).....	181
1498	Sodium nitrate (5L).....	291	1572	Cacodylic acid (6L).....	189
1499	Sodium nitrate and potassium nitrate mixture (5L).....	291	1573	Calcium arsenate (6L).....	190
1500	Sodium nitrite (5P)	291	1574	Calcium arsenate and calcium arsenite mixture, solid (6L)	190
1502	Sodium perchlorate (5L).....	292	1575	Calcium cyanide (6L).....	190
1503	Sodium permanganate (5L).....	292	1577	Chlorodinitrobenzenes, liquid (6L)	198
1504	Sodium peroxide (5L).....	292	1578	Chloronitrobenzenes, solid (6L)	199
1505	Sodium persulphate (5L).....	292	1579	4-Chloro-o-toluidine hydrochloride, solid (6L)	200
1506	Strontium chlorate (5L).....	293	1580	Chloropicrin (6L)	199
1507	Strontium nitrate (5L).....	293	1581	Chloropicrin and methyl bromide mixture, with more than 2% chloropicrin (2P)	199
1508	Strontium perchlorate (5L)	293	1582	Chloropicrin and methyl chloride mixture (2P)	199
1509	Strontium peroxide (5L).....	293	1583	Chloropicrin mixture, n.o.s. ★ (6L)	199
1510	Tetranitromethane (6X).....	297	1585	Copper acetoarsenite (6L)	202
1511	Urea hydrogen peroxide (5C).....	306	1586	Copper arsenite (6L)	202
1512	Zinc ammonium nitrite (5L)	309	1587	Copper cyanide (6L)	203
1513	Zinc chlorate (5L)	310	1588	Cyanides, inorganic, solid, n.o.s. ★ (6L)	206
1514	Zinc nitrate (5L)	310	1589	Cyanogen chloride, stabilized (2CP)	206
1515	Zinc permanganate (5L).....	310	1590	Dichloroanilines, liquid (6L)	210
1516	Zinc peroxide (5L)	310	1591	o-Dichlorobenzene (6L)	210
1517	Zirconium picramate, wetted with 20% or more water, by weight (3E)	310	1593	Dichloromethane (6L)	211
1541	Acetone cyanohydrin, stabilized (6L).....	165			
1544	Alkaloids, solid, n.o.s. ★ (6L).....	170			
1544	Alkaloid salts, solid, n.o.s. ★ (6L)	170			
1545	Allyl isothiocyanate, stabilized (6F)	171			
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1595	Dimethyl sulphate (6C).....	216	1645	Mercury sulphate (6L).....	251
1596	Dinitroanilines (6L).....	216	1646	Mercury thiocyanate (6L).....	251
1597	Dinitrobenzenes, liquid (6L).....	216	1647	Methyl bromide and ethylene dibromide mixture, liquid (6L).....	253
1598	Dinitro-o-cresol (6L).....	216	1648	Acetonitrile (3L).....	165
1599	Dinitrophenol solution (6L).....	216	1649	Motor fuel anti-knock mixture † (6L).....	257
1600	Dinitrotoluenes, molten (6L).....	217	1650	beta-Naphthylamine, solid (6L).....	258
1601	Disinfectant, solid, toxic, n.o.s. ★ (6L).....	218	1651	Naphthylthiourea (6L).....	258
1602	Dye, liquid, toxic, n.o.s. ★ † (6L).....	219	1652	Naphthylurea (6L).....	258
1602	Dye intermediate, liquid, toxic, n.o.s. ★ † (6L).....	219	1653	Nickel cyanide (6L).....	258
1603	Ethyl bromoacetate (6F).....	222	1654	Nicotine (6L).....	259
1604	Ethylenediamine (8F).....	223	1655	Nicotine compound, solid, n.o.s. ★ (6L).....	259
1605	Ethylene dibromide (6L).....	223	1655	Nicotine preparation, solid, n.o.s. ★ (6L).....	259
1606	Ferric arsenate (6L).....	226	1656	Nicotine hydrochloride, liquid (6L).....	259
1607	Ferric arsenite (6L).....	226	1656	Nicotine hydrochloride, solution (6L).....	259
1608	Ferrous arsenate (6L).....	226	1657	Nicotine salicylate (6L).....	259
1611	Hexaethyl tetraphosphate (6L).....	235	1658	Nicotine sulphate solution (6L).....	259
1612	Hexaethyl tetraphosphate and compressed gas mixture (2P).....	235	1659	Nicotine tartrate (6L).....	259
1613	Hydrocyanic acid, aqueous solution with 20% or less hydrogen cyanide (6L).....	237	1660	Nitric oxide, compressed (2PX).....	260
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1622	Magnesium arsenate (6L).....	247	1671	Phenol, solid (6L).....	272
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1624	Mercuric chloride (6L).....	250	1673	Phenylenediamines (o-, m-, p-) (6L).....	272
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1626	Mercuric potassium cyanide (6L).....	250	1677	Potassium arsenate (6L).....	275
1627	Mercurous nitrate (6L).....	250	1678	Potassium arsenite (6L).....	276
1629	Mercury acetate (6L).....	250	1679	Potassium cuprocyanide (6L).....	276
1630	Mercury ammonium chloride (6L).....	250	1680	Potassium cyanide, solid (6L).....	276
1631	Mercury benzoate (6L).....	250	1683	Silver arsenite (6L).....	289
1634	Mercury bromides (6L).....	250	1684	Silver cyanide (6L).....	289
1636	Mercury cyanide (6L).....	251	1685	Sodium arsenate (6L).....	289
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1639	Mercury nucleate (6L).....	251	1688	Sodium cacodylate (6L).....	290
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1641	Mercury oxide (6L).....	251	1690	Sodium fluoride, solid (6L).....	291
1642	Mercury oxycyanide, desensitized (6L).....	251	1691	Strontium arsenite (6L).....	293
1643	Mercury potassium iodide (6L).....	251	1692	Strychnine (6L).....	293
			1692	Strychnine salts (6L).....	293
			1693	Tear gas substance, liquid, n.o.s. ★ (6i).....	295
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1697	Chloroacetophenone, solid (6)	197	1748	Calcium hypochlorite, dry (5L)	190
1698	Diphenylamine chloroarsine (6)	217	1748	Calcium hypochlorite mixture, dry with > 39% available chlorine (8.8% available oxygen) (5L)	191
1699	Diphenylchloroarsine, liquid (6)	217	1749	Chlorine trifluoride (2PX)	197
1700	Tear gas candles (6F)	295	1750	Chloroacetic acid solution (6C)	197
1701	Xylyl bromide, liquid (6L)	309	1751	Chloroacetic acid, solid (6C)	197
1702	1,1,2,2-Tetrachloroethane (6L)	296	1752	Chloroacetyl chloride (6C)	197
1704	Tetraethyl dithiopyrophosphate (6L)	296	1753	Chlorophenyltrichlorosilane (8L)	199
1707	Thallium compound, n.o.s. ★ (6L)	297	1754	Chlorosulphonic acid (with or without sulphur trioxide) (8W)	200
1708	Toluidines, liquid (6L)	299	1755	Chromic acid solution (8L)	200
1709	2,4-Toluenediamine, solid (6L)	299	1756	Chromic fluoride, solid (8L)	200
1710	Trichloroethylene (6A)	302	1757	Chromic fluoride solution (8L)	200
1711	Xyliidines, liquid (6L)	309	1758	Chromium oxychloride (8W)	200
1712	Zinc arsenate (6L)	309	1759	Corrosive solid, n.o.s. ★ (8L)	204
1712	Zinc arsenate and zinc arsenite mixture (6L)	309	1760	Corrosive liquid, n.o.s. ★ (8L)	203
1712	Zinc arsenite (6L)	309	1761	Cupriethylenediamine solution (8P)	206
1713	Zinc cyanide (6L)	310	1762	Cyclohexenyltrichlorosilane (8L)	207
1714	Zinc phosphide (4PW)	310	1763	Cyclohexyltrichlorosilane (8L)	207
1715	Acetic anhydride (8F)	165	1764	Dichloroacetic acid (8)	210
1716	Acetyl bromide (8L)	165	1765	Dichloroacetyl chloride (8)	210
1717	Acetyl chloride (3C)	165	1766	Dichlorophenyltrichlorosilane (8L)	211
1718	Butyl acid phosphate (8L)	188	1767	Diethyl dichlorosilane (8F)	213
1719	Caustic alkali liquid, n.o.s. ★ (8L)	194	1768	Difluorophosphoric acid, anhydrous (8L)	214
1722	Allyl chloroformate (6CF)	170	1769	Diphenyldichlorosilane (8L)	217
1723	Allyl iodide (3C)	170	1770	Diphenylmethyl bromide (8L)	217
1724	Allyltrichlorosilane, stabilized (8F)	171	1771	Dodecyltrichlorosilane (8L)	218
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1726	Aluminium chloride, anhydrous (8L)	171	1774	Fire extinguisher charges † corrosive liquid (8L)	227
1727	Ammonium hydrogendifluoride, solid (8L)	173	1775	Fluoroboric acid (8L)	228
1728	Amyltrichlorosilane (8F)	177	1776	Fluorophosphoric acid, anhydrous (8L)	228
1729	Anisoyl chloride (8L)	177	1777	Fluorosulphonic acid (8W)	229
1730	Antimony pentachloride, liquid (8L)	177	1778	Fluorosilicic acid (8L)	229
1731	Antimony pentachloride solution (8L)	177	1779	Formic acid with more than 85% acid by weight (8F)	229
1732	Antimony pentafluoride (8P)	177	1780	Fumaryl chloride (8L)	230
1733	Antimony trichloride † (8L)	178	1781	Hexadecyltrichlorosilane (8L)	235
1736	Benzoyl chloride (8W)	183	1782	Hexafluorophosphoric acid (8L)	235
1737	Benzyl bromide (6C)	183	1783	Hexamethylenediamine solution (8L)	235
1738	Benzyl chloride (6C)	183	1784	Hexyltrichlorosilane (8L)	236
1739	Benzyl chloroformate (8L)	183	1786	Hydrofluoric acid and sulphuric acid mixture (8P)	237
1740	Hydrogendifluorides, solid, n.o.s. (8L)	238	1787	Hydriodic acid (8L)	236
1741	Boron trichloride (2CP)	185	1788	Hydrobromic acid 49% or less strength (8L)	237
1742	Boron trifluoride acetic acid complex, liquid (8L)	185	1788	Hydrobromic acid more than 49% strength (8L)	237
1743	Boron trifluoride propionic acid complex, liquid (8L)	186	1789	Hydrochloric acid (8L)	237
1744	Bromine (8P)	186	1790	Hydrofluoric acid 60% or less strength (8P)	237
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1792	Iodine monochloride, solid (8L).....	240	1838	Titanium tetrachloride (6C)	299
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1796	Nitrating acid mixture † with 50% or less nitric acid (8L)	259	1841	Acetaldehyde ammonia (9L).....	165
1796	Nitrating acid mixture † with more than 50% nitric acid (8X)	259	1843	Ammonium dinitro-o-cresolate, solid (6L).....	173
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1801	Octyltrichlorosilane (8L).....	264	1848	Potassium sulphide, hydrated † with 30% or more water of crystallization (8L).....	277
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1826	Nitrating acid mixture, spent with more than 50% nitric acid (8X)	259	1885	Benzidine (6L)	183
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1832	Sulphuric acid, spent † (8L)	295	1892	Ethyldichloroarsine (6)	222
1833	Sulphurous acid (8L)	295	1894	Phenylmercuric hydroxide (6L)	273
1834	Sulphuryl chloride (6C)	295	1895	Phenylmercuric nitrate (6L)	273
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1907	Soda lime † with more than 4% sodium hydroxide (8L)	289	1950	Aerosols, non-flammable (2L)	167
1908	Chlorite solution (8L)	197	1950	Aerosols, non-flammable, containing substances in Class 8, Packing Group II (2C)	167
1910	Calcium oxide (8L)	191	1950	Aerosols, non-flammable, containing substances in Class 8, Packing Group III (2C)	167
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1914	Butyl propionates (3L)	189	1950	Aerosols, non-flammable, containing substances in Division 6.1, Packing Group III (2P)	167
1915	Cyclohexanone (3L)	206	1950	Aerosols, non-flammable, containing substances in Division 6.1, Packing Group III (2P)	167
1916	2,2'-Dichlorodiethyl ether (6F)	211	1950	Aerosols, non-flammable, containing substances in Division 6.1, Packing Group III (2P)	167
1917	Ethyl acrylate, stabilized (3i)	221	1950	Aerosols, non-flammable, containing substances in Division 6.1, Packing Group III (2P)	167
1918	Isopropylbenzene (3L)	242	1950	Aerosols, non-flammable, containing substances in Division 6.1, Packing Group III (2P)	167
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1923	Calcium hydrosulphite (4L).....	190	1950	Aerosols, non-flammable (containing biological products or a medicinal preparation which will be deteriorated by a heat test) (2L)	167
1928	Methyl magnesium bromide in ethyl ether (4HW)	255	1950	Aerosols, non-flammable (tear gas devices) (2P)	167
1929	Potassium dithionite (4L)	276	1951	Argon, refrigerated liquid (2L)	178
1929	Potassium hydrosulphite (4L)	276	1952	Ethylene oxide and carbon dioxide mixture with not more than 9% ethylene oxide (2L)	223
1931	Zinc dithionite (9L)	310	1953	Compressed gas, toxic, flammable, n.o.s. ★ (10P)	202
1931	Zinc hydrosulphite (9L)	310	1954	Compressed gas, flammable, n.o.s. ★ (10L)	202
1932	Zirconium scrap (4L)	311	1955	Compressed gas, toxic, n.o.s. ★ (2P)	202
1935	Cyanide solution, n.o.s. ★ (6L)	206	1956	Compressed gas, n.o.s. ★ (2L)	202
1938	Bromoacetic acid, solution (8L)	186	1957	Deuterium, compressed (10L)	209
1939	Phosphorus oxybromide (8W)	273	1958	1,2-Dichloro-1,1,2,2-tetrafluoroethane (2L)	211
1940	Thioglycolic acid (8L)	298	1958	Refrigerant gas R 114 (2L)	283
1941	Dibromodifluoromethane (9L)	210	1959	1,1-Difluoroethylene (10L)	213
1942	Ammonium nitrate with 0.2% or less combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance (5L)	174	1959	Refrigerant gas R 1132a (10L)	284
1944	Matches, safety † (book, card or strike on box) (3L)	249	1961	Ethane, refrigerated liquid (10L)	221
1945	Matches, wax vesta (3L)	249	1962	Ethylene (10A)	222
1950	Aerosols, flammable (10L)	167	1963	Helium, refrigerated liquid (2L)	234
1950	Aerosols, flammable, containing substances in Class 8, Packing Group II (10C)	167	1964	Hydrocarbon gas mixture, compressed, n.o.s. ★ † (10L)	237
1950	Aerosols, flammable, containing substances in Class 8, Packing Group III (10C)	167	1965	Hydrocarbon gas mixture, liquefied, n.o.s. ★ † (10L)	237
1950	Aerosols, flammable, containing substances in Division 6.1, Packing Group II (10P)	167	1966	Hydrogen, refrigerated liquid (10L)	238
1950	Aerosols, flammable, containing substances in Division 6.1, Packing Group III (10P)	167	1967	Insecticide gas, toxic, n.o.s. ★ (2P)	240

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1969	Isobutane (10L).....	241	2010	Magnesium hydride (4W).....	248
1970	Krypton, refrigerated liquid (2L)	243	2011	Magnesium phosphide (4PW).....	248
1971	Methane, compressed (10L)	252	2012	Potassium phosphide (4PW).....	277
1971	Natural gas, compressed with high methane content (10L)	258	2013	Strontium phosphide (4PW).....	293
1972	Methane, refrigerated liquid with high methane content (10L)	252	2014	Hydrogen peroxide, aqueous solution with 20% or more but 40% or less hydrogen peroxide (stabilized as necessary) (5C)	238
1972	Natural gas, refrigerated liquid with high methane content (10L)	258	2014	Hydrogen peroxide, aqueous solution with more than 40% but 60% or less hydrogen peroxide (stabilized as necessary) (5C).....	238
1973	Chlorodifluoromethane and chloropentafluoroethane mixture with fixed boiling point, with approximately 49% chlorodifluoromethane (2L)	198	2015	Hydrogen peroxide, aqueous solution, stabilized with more than 60% hydrogen peroxide (5C)	238
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1975	Nitric oxide and dinitrogen tetroxide mixture (2PX)	260	2018	Chloroanilines, solid (6L)	197
1975	Nitric oxide and nitrogen dioxide mixture (2PX)	260	2019	Chloroanilines, liquid (6L)	197
1976	Octafluorocyclobutane (2L).....	264	2020	Chlorophenols, solid (6L)	199
1976	Refrigerant gas R C318 (2L).....	284	2021	Chlorophenols, liquid (6L)	199
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1978	Propane (10L)	279	2023	Epichlorohydrin (6F)	220
1982	Refrigerant gas R 14 (2A)	283	2024	Mercury compound, liquid, n.o.s. ★ (6L)	251
1982	Tetrafluoromethane (2A).....	296	2025	Mercury compound, solid, n.o.s. ★ (6L)	251
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1984	Refrigerant gas R 23 (2A)	283	2028	Bombs, smoke, non-explosive with corrosive liquid, without initiating device (8L)	185
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1986	Alcohols, flammable, toxic, n.o.s. ★ (3HP).....	169	2030	Hydrazine, aqueous solution with more than 37% hydrazine by weight (8P)	236
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1989	Aldehydes, n.o.s. ★ (3H)	169	2031	Nitric acid other than red fuming, with more than 70% nitric acid (8X)	260
1990	Benzaldehyde (9N)	182	2031	Nitric acid other than red fuming, with ≥ 65% but ≤ 70% nitric acid (8L)	260
1991	Chloroprene, stabilized (3HP)	199	2032	Nitric acid, red fuming (8PX)	260
1992	Flammable liquid, toxic, n.o.s. ★ (3HP)	227	2033	Potassium monoxide (8L)	277
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1994	Iron pentacarbonyl (6H)	240	2035	1,1,1-Trifluoroethane (R143a) (10L)	303
1999	Tars, liquid including road asphalt and oils, bitumen and cut backs (3L)	295	2035	Refrigerant gas R 143a (10L)	284
2000	Celluloid in blocks, rods, rolls, sheets, tubes, etc. (except scrap) (3L)	195	2036	Xenon (2L)	309
2001	Cobalt naphthenates, powder (3L)	201	2037	Gas cartridges (flammable) without a release device, non-refillable (10L)	231
2002	Celluloid, scrap (4L)	195			
2004	Magnesium diamide (4W)	248			
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2428	Sodium chlorate, aqueous solution (5L)	290	2478	Isocyanates, flammable, toxic, n.o.s. ★ † (3P)	241
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2431	Anisidines (6L)	177	2481	Ethyl isocyanate (6F)	224
2432	N,N-Diethylaniline (6L)	212	2482	n-Propyl isocyanate (6F)	280
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2435	Ethylphenyldichlorosilane (8L)	224	2485	n-Butyl isocyanate (6F)	188
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2437	Methylphenyldichlorosilane (8L)	256	2487	Phenyl isocyanate (6F)	272
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2441	Titanium trichloride mixture, pyrophoric (4C)	299	2493	Hexamethyleneimine (3C)	235
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2453	Refrigerant gas R 161 (10L)	284	2507	Chloroplatinic acid, solid (8L)	199
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2454	Refrigerant gas R 41 (10L)	283	2509	Potassium hydrogen sulphate (8L)	276
2456	2-Chloropropene (3H)	199	2511	2-Chloropropionic acid (8L)	199
2457	2,3-Dimethylbutane (3H)	215	2512	Aminophenols (o-, m-, p-) (6L)	172
2458	Hexadiene (3H)	235	2513	Bromoacetyl bromide (8L)	186
2459	2-Methyl-1-butene (3H)	253	2514	Bromobenzene (3L)	186
2460	2-Methyl-2-butene (3H)	253	2515	Bromoform (6L)	186
2461	Methylpentadiene (3H)	256	2516	Carbon tetrabromide (6L)	192
2463	Aluminium hydride (4W)	171	2517	1-Chloro-1,1-difluoroethane (10L)	198
2464	Beryllium nitrate (5P)	183	2517	Refrigerant gas R 142b (10L)	284

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2529	Isobutyric acid (3C)	241	2583	Arylsulphonic acids, solid with more than 5% free sulphuric acid (8L)	180
2531	Methacrylic acid, stabilized (8L)	252	2584	Alkylsulphonic acids, liquid with more than 5% free sulphuric acid (8L)	170
2533	Methyl trichloroacetate (6L)	256	2584	Arylsulphonic acids, liquid with more than 5% free sulphuric acid (8L)	180
2534	Methylchlorosilane (10P)	254	2585	Alkylsulphonic acids, solid with 5% or less free sulphuric acid (8L)	170
2535	4-Methylmorpholine (3C)	256	2585	Arylsulphonic acids, solid with 5% or less free sulphuric acid (8L)	180
2535	N-Methylmorpholine (3C)	256	2586	Alkylsulphonic acids, liquid with 5% or less free sulphuric acid (8L)	170
2536	Methyltetrahydrofuran (3H)	256	2586	Arylsulphonic acids, liquid with 5% or less free sulphuric acid (8L)	180
2538	Nitronaphthalene (3L)	262	2587	Benzoquinone (6L)	183
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2546	Titanium powder, dry (4L)	298	2591	Xenon, refrigerated liquid (2L)	309
2547	Sodium superoxide (5L)	292	2599	Chlorotrifluoromethane and trifluoromethane azeotropic mixture with approximately 60% chlorotrifluoromethane (2L)	200
2548	Chlorine pentafluoride (2PX)	197	2599	Refrigerant gas R 503 (2L)	284
2552	Hexafluoroacetone hydrate, liquid (6L)	235	2601	Cyclobutane (10L)	206
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2557	Nitrocellulose mixture without plasticizer, with pigment with 12.6% or less nitrogen, by dry weight (3L)	261	2605	Methoxymethyl isocyanate (6F)	252
2557	Nitrocellulose mixture with plasticizer, without pigment with 12.6% or less nitrogen by dry weight (3L)	261	2606	Methyl orthosilicate (6F)	256
2558	Epibromohydrin (6F)	220	2607	Acrolein dimer, stabilized (3L)	166
2560	2-Methylpentan-2-ol (3L)	256	2608	Nitropropanes (3L)	263
2561	3-Methyl-1-butene (3H)	253	2609	Triallyl borate (6L)	302
2564	Trichloroacetic acid solution (8L)	302	2610	Triallylamine (3C)	302
2565	Dicyclohexylamine (8L)	212	2611	Propylene chlorohydrin (6F)	279
2567	Sodium pentachlorophenate (6L)	292	2612	Methyl propyl ether (3AH)	256
2570	Cadmium compound ★ (6L)	189	2614	Methallyl alcohol (3L)	252
2571	Alkylsulphuric acids (8L)	170	2615	Ethyl propyl ether (3H)	224
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2621	Acetyl methyl carbinol (3L)	166	2685	N,N-Diethylethylenediamine (8F)	213
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2744	Cyclobutyl chloroformate (6CF)	206	2789	Acetic acid solution more than 80% acid, by weight (8F)	165
2745	Chloromethyl chloroformate (6C)	198	2790	Acetic acid solution more than 10% but less than 50% acid, by weight (8L)	165
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2747	tert-Butylcyclohexyl chloroformate (6L)	188	2793	Ferrous metal borings in a form liable to self-heating (4L)	226
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2749	Tetramethylsilane (3H)	296	2793	Ferrous metal shavings in a form liable to self-heating (4L)	226
2750	1,3-Dichloropropanol-2 (6L)	211	2793	Ferrous metal turnings in a form liable to self-heating (4L)	226
2751	Diethylthiophosphoryl chloride (8L)	213	2794	Batteries, wet, filled with acid † electric storage (8L)	182
2752	1,2-Epoxy-3-ethoxypropane (3L)	220	2795	Batteries, wet, filled with alkali † electric storage (8L)	182
2753	N-Ethylbenzyltoluidines, liquid (6L)	222	2796	Battery fluid, acid (8L)	182
2754	N-Ethyltoluidines (6L)	224	2796	Sulphuric acid with 51% or less acid (8L)	295
2757	Carbamate pesticide, solid, toxic ★ (6L)	192	2797	Battery fluid, alkali (8L)	182
2758	Carbamate pesticide, liquid, flammable, toxic ★ flash point less than 23°C (3P)	192	2798	Phenylphosphorus dichloride (8L)	273
2759	Arsenical pesticide, solid, toxic ★ (6L)	178	2799	Phenylphosphorus thiodichloride (8L)	273
2760	Arsenical pesticide, liquid, flammable, toxic, ★ flash point less than 23°C (3P)	178	2800	Batteries, wet, non-spillable † electric storage (8L)	182
2761	Organochlorine pesticide, solid, toxic ★ (6L)	265	2801	Dye, liquid, corrosive, n.o.s. ★ † (8L)	219
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2763	Triazine pesticide, solid, toxic ★ (6L)	302	2802	Copper chloride (8L)	203
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2775	Copper based pesticide, solid, toxic ★ (6L)	203	2807	Magnetized material † (9M)	248
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2778	Mercury based pesticide, liquid, flammable, toxic, ★ flash point less than 23°C (3P)	250	2811	Toxic solid, organic, n.o.s. ★ (6L)	301
2779	Substituted nitrophenol pesticide, solid, toxic ★ (6L)	294	2812	Sodium aluminate, solid (8L)	289
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2781	Bipyridinium pesticide, solid, toxic ★ (6L)	184	2814	Infectious substance, affecting humans ★ (liquid) (11Y)	239
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3056	n-Heptaldehyde (3L)	234	3096	Corrosive solid, water-reactive, n.o.s. ★ (8W)	204
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3083	Perchloryl fluoride (2PX)	270	3118	Organic peroxide type E, solid, temperature controlled ★ † (5S)	265
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3147	Dye, solid, corrosive, n.o.s. ★ † (8L)	219	3170	Aluminium remelting by-products † (4W)	172
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3453	Phosphoric acid, solid (8L)	273	3478	Fuel cell cartridges † containing liquefied flammable gas (10L)	229
3454	Dinitrotoluenes, solid (6L).....	217	3478	Fuel cell cartridges contained in equipment † containing liquefied flammable gas (10L)	229
3455	Cresols, solid (6C).....	205	3478	Fuel cell cartridges packed with equipment † containing liquefied flammable gas (10L)	230
3456	Nitrosylsulphuric acid, solid (8L)	263	3479	Fuel cell cartridges † containing hydrogen in metal hydride (10L)	229
3457	Chloronitrotoluenes, solid (6L).....	199	3479	Fuel cell cartridges contained in equipment † containing hydrogen in metal hydride (10L)	229
3458	Nitroanisoles, solid (6L).....	260	3479	Fuel cell cartridges packed with equipment † containing hydrogen in metal hydride (10L)	230
3459	Nitrobromobenzenes, solid (6L)	260	3480	Lithium ion batteries † (including lithium polymer batteries) (9FZ).....	246
3460	N-Ethylbenzyltoluidines, solid (6L).....	222	3481	Lithium ion batteries contained in equipment † (including lithium polymer batteries) (9FZ)	246
3462	Toxins, extracted from living sources, solid, n.o.s. ★ (6L)	301	3481	Lithium ion batteries packed with equipment † (including lithium polymer batteries) (9FZ)	247
3463	Propionic acid with ≥ 90% acid by weight (8F)....	279	3482	Alkali metal dispersion, flammable (4W)	169
3464	Organophosphorus compound, solid, toxic, n.o.s. ★ (6L)	266	3482	Alkaline earth metal dispersion, flammable (4W)	169
3465	Organoarsenic compound, solid, n.o.s. ★ (6L)	265	3483	Motor fuel anti-knock mixture, flammable (6F)	257
3466	Metal carbonyls, solid, n.o.s. ★ (6L)	251	3484	Hydrazine aqueous solution, flammable with more than 37% hydrazine, by weight (8FP).....	236
3467	Organometallic compound, solid, toxic, n.o.s. ★ (6L)	266	3485	Calcium hypochlorite, dry, corrosive with > 39% available chlorine (8.8% available oxygen) (5C)	190
3468	Hydrogen in a metal hydride storage system (10L)	238	3485	Calcium hypochlorite mixture, dry, corrosive with > 39% available chlorine (8.8% available oxygen) (5C)	191
3468	Hydrogen in a metal hydride storage system contained in equipment (10L)	238	3486	Calcium hypochlorite mixture, dry, corrosive with > 10% but ≤ 39% available chlorine (5C)	191
3468	Hydrogen in a metal hydride storage system packed with equipment (10L)	238	3487	Calcium hypochlorite, hydrated, corrosive with ≥ 5.5% but ≤ 16% water (5C)	190
3469	Paint, flammable, corrosive (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) (3CH)	268	3487	Calcium hypochlorite, hydrated mixture, corrosive with ≥ 5.5% but ≤ 16% water (5C)	190
3469	Paint related material, flammable, corrosive (including paint thinning or reducing compound) (3CH)	268			
3470	Paint, corrosive, flammable (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) (8F)	268			
3470	Paint related material, corrosive, flammable (including paint thinning or reducing compound) (8F)	268			
3471	Hydrogendifluorides, solution, n.o.s. (8P).....	238			
3472	Crotonic acid, liquid (8L)	205			
3473	Fuel cell cartridges † containing flammable liquids (3L).....	229			
3473	Fuel cell cartridges contained in equipment † containing flammable liquids (3L)	229			
3473	Fuel cell cartridges packed with equipment † containing flammable liquids (3L)	230			

UN or ID No.	Name and Description (ERG Code)	Page No.	UN or ID No.	Name and Description (ERG Code)	Page No.
3488	Toxic by inhalation liquid, flammable, corrosive, n.o.s. ★ with an LC₅₀ ≤ 200 mL/m³ and saturated vapour concentration ≥ 500 LC₅₀ (6FC)	300	3498	Iodine monochloride, liquid (8L).....	240
3489	Toxic by inhalation liquid, flammable, corrosive, n.o.s. ★ with an LC₅₀ ≤ 1000 mL/m³ and saturated vapour concentration ≥ 10 LC₅₀ (6FC)	300	3499	Capacitor electric double layer (with an energy storage capacity greater than 0.3 Wh) (9L)	191
3490	Toxic by inhalation liquid, water-reactive, flammable, n.o.s. ★ with an LC₅₀ ≤ 200 mL/m³ and saturated vapour concentration ≥ 500 LC₅₀ (6WF).....	300	3500	Chemical under pressure, n.o.s. ★ (2L).....	196
3491	Toxic by inhalation liquid, water-reactive, flammable, n.o.s. ★ with an LC₅₀ ≤ 1000 mL/m³ and saturated vapour concentration ≥ 10 LC₅₀ (6WF).....	300	3501	Chemical under pressure, flammable, n.o.s. ★ (10L)	196
3494	Petroleum sour crude oil, flammable, toxic (3P).....	271	3502	Chemical under pressure, toxic, n.o.s. ★ (2P).....	196
3495	Iodine (8P).....	240	3503	Chemical under pressure, corrosive, n.o.s. ★ (2C).....	196
			3504	Chemical under pressure, flammable, toxic, n.o.s. ★ (10P).....	196
			3505	Chemical under pressure, flammable, corrosive, n.o.s. ★ (10C)	196
			3506	Mercury contained in manufactured articles (8L)	251
			8000	Consumer commodity † (9L).....	202

4.4 Special Provisions

The "Special Provisions" are referred to in Column M of the List of Dangerous Goods and the information contained therein 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 immediately following the air mode special provision number.

A1 This article or substance may be transported on passenger aircraft only with the prior approval of the appropriate authority of the State of origin and the State of the operator under the written conditions established by those authorities. A copy of the document of approval, showing the quantity limitations and packing requirements, must accompany the consignment. The article or substance may be carried on cargo aircraft in accordance with Columns K and L of the List of Dangerous Goods in Subsection 4.2. Where States, other than the State of origin and the State of the operator, have lodged a variation advising that they require prior approval of shipments made under this Special Provision, approval must also be obtained from these States, as appropriate.

Note:

Where Special Provision A1 applies to an item in Subsection 4.2 and the "hand" symbol "☞" is also shown in the left margin, these items may be accepted for transport by operator(s) on cargo aircraft provided approval has been received and advance arrangements made with the operator(s) (see also Subsection 9.0).

A2 This article or substance may be transported on cargo aircraft, only with the prior approval of the appropriate authority of the State of origin and the State of the operator under the written conditions established by those authorities.

Where States, other than the State of origin and the State of the operator, have lodged a variation advising 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, as appropriate.

In each case, a copy of the document(s) of approval, showing the quantity limitations and the packing 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 C, or any other class or division, it is not subject to these Regulations.

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 instruction 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 3.6.1.7 and 3.6.1.8).

A7 Not used.

A8 (322) When transported in non friable tablet form, these goods are assigned to Packing Group III.

A9 Alcoholic beverages containing 70% or less alcohol by volume, when packed in receptacles of 5 L or less, are not subject to these Regulations when carried as cargo.

A10 (39) This substance is not subject to these Regulations when it contains less than 30% silicon, or not less than 90% silicon.

A11 (305) These substances are not subject to these Regulations when in concentrations of less than 50 mg/kg (ppm).

A12 (45) Antimony sulphides and oxides which contain 0.5% or less of arsenic calculated on the total weight are not subject to these Regulations.

A13 (47) Ferricyanides and ferrocyanides are not subject to these Regulations.

A14 Not used.

A15 (59) These substances are not subject to these Regulations when they contain 50% or less magnesium.

A16 (52) This substance is not subject to these Regulations when it contains 4% or less sodium hydroxide.

A17 (278) These substances must not be classified and transported unless authorized by the appropriate national 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 Regulations.

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 g 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 adequately ventilated areas. A statement to this effect must be included on the Shipper's Declaration.

Notes:

1. See 8.1.6.11.1 and Appendix C.1 and C.2 for additional information.
2. Packages must have the "Keep Away From Heat" handling label affixed (see 7.2.4.5 and Figure 7.4.F).

△ **A21** (240) This entry only applies to vehicles powered by wet batteries, sodium batteries or lithium metal batteries or lithium ion batteries and equipment powered by wet

batteries or sodium batteries which are transported with these batteries installed.

For the purpose of this special provision, vehicles are self-propelled apparatus designed to carry one or more persons or goods. Examples of such vehicles are electrically-powered cars, scooters, three- and four-wheeled vehicles or motorcycles, battery-assisted bicycles (e bikes), wheelchairs, lawn tractors, boats and aircraft. Examples of equipment are lawnmowers, cleaning machine, model boats and model aircraft.

Equipment powered by lithium metal batteries or lithium ion batteries must be consigned under the entries UN 3091 **Lithium metal batteries contained in equipment** or UN 3091 **Lithium metal batteries packed with equipment** or UN 3481 **Lithium ion batteries contained in equipment** or UN 3481 **Lithium ion batteries packed with equipment**, as appropriate.

Vehicles or equipment which also contain an internal combustion engine must be consigned under the entries UN 3166, **Engine, internal combustion, flammable gas powered** or UN 3166, **Engine, internal combustion, flammable liquid powered** or UN 3166, **Vehicle, flammable gas powered** or UN 3166, **Vehicle, flammable liquid powered**, as appropriate. Hybrid electric vehicles powered by both an internal combustion engine and wet batteries, sodium batteries or lithium metal batteries or lithium ion 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.

Vehicles or equipment powered by a fuel cell engine must be consigned under the entries UN 3166, **Engine, fuel cell, flammable gas powered** or UN 3166, **Engine, fuel cell, flammable liquid powered** or UN 3166, **Vehicle, fuel cell, flammable gas powered** or UN 3166, **Vehicle, fuel cell, flammable liquid powered**, as appropriate.

A22 (152) 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 (119) 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 Regulations 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 Regulations.

A29 (138) p-Bromobenzyl cyanide is not subject to these Regulations.

A30 (273) Maneb or maneb preparations, stabilized against self-heating need not be classified in Division 4.2 when it can be demonstrated by testing that 1 m³ 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 Regulations.

△ **A32** Air bag inflators, air bag modules or seat-belt pretensioners installed in vehicles, vessels or aircraft or in completed components such as steering columns, door panels, seats, etc. which are not capable of inadvertent activation are not subject to these Regulations when carried as cargo.

The words "Not Restricted" and the Special Provision number must be included in the description of the substance on the Air Waybill as required by 8.2.6 when an Air Waybill is issued.

A33 (103) Ammonium nitrites and mixtures of an inorganic nitrite with an ammonium salt are forbidden.

A34 (113) The transport of chemically unstable mixtures is forbidden.

A35 This substance is not subject to these Regulations 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 forbidden 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 purposes of calibrating air quality

monitoring devices are not subject to these Regulations when carried as cargo 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 quantity of dangerous goods in each device is limited to 2 mL 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:
 1. 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
 2. 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 weight of the completed package must not exceed 30 kg.

A42 (249) Ferrocerium (lighter flints), stabilized against corrosion, with a minimum iron content of 10% are not subject to these Regulations.

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 kits or first aid kits is intended to apply to boxes, cases, etc. containing small quantities of various dangerous goods which are used for example for medical, analytical or testing or repair purposes. Components must not react dangerously (see 5.0.2.11(a)). The packing group assigned to the kit as a whole must be the most stringent packing group assigned to any individual substance in the kit. The assigned packing group must be shown on the Shipper's Declaration. Where the kit contains only dangerous goods to

which no packing group is assigned, a packing group must not be indicated on the Shipper's Declaration. The only dangerous goods, which are permitted in the kits, are substances which may be transported as:

- excepted quantities as specified in Column F of Table 4.2, providing the inner packagings and quantities are as prescribed in Table 2.6.A and 2.6.5.1(a); or
- limited quantities under 2.7.2.1.

A45 Not used.

△ A46 Mixtures of solids which are not subject to these Regulations 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 for single packagings the packaging must pass a leak-proofness 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 Regulations provided there is no free liquid in the packet or article.

△ A47 (219) Genetically modified micro-organisms (GMMO) and genetically modified organisms (GMO), packed and marked in accordance with Packing Instruction 959 are not subject to any other requirements in these Regulations when carried as cargo.

If GMMO or GMO meet the definition in 3.6 of a toxic substance or an infectious substance and the criteria for inclusion in Division 6.1 or 6.2, the requirements in these Regulations for transporting toxic substances or infectious substances apply.

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 Regulations 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 for single packagings 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 J in Subsection 4.2-List of Dangerous Goods, aircraft batteries may be transported on passenger aircraft as follows:

- (a) wet cell batteries, UN 2794 or UN 2795, up to a limit of 100 kg net weight per package;
- (b) lithium ion batteries, UN 3480, packages containing a single aircraft battery with a net weight not exceeding 35 kg; and
- (c) transport in accordance with this Special Provision must be noted on the Shipper's Declaration for Dangerous Goods.

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 Regulations when coated.

A54 (32) This substance is not subject to these Regulations when in any other form.

A55 (142) Solvent extracted soya bean meal containing 1.5% or less oil and 11% or less moisture, which is substantially free of flammable solvent, is not subject to these Regulations.

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 life-saving vehicle air bag inflators or air bag modules or seat-belt pretensioners.

The quantities given in Columns H, J and L of Subsection 4.2—List of Dangerous Goods refer to the net weight of the finished article.

Note:

For the carriage of a vehicle, see Packing Instructions 950, 951 and 952.

A57 Packagings must be so constructed that explosion is not possible by reason of increased internal pressure.

A58 (144) An aqueous solution containing 24% or less alcohol by volume is not subject to these Regulations.

A59 A tyre assembly unserviceable or damaged is not subject to these Regulations if the tyre is completely deflated. A tyre assembly with a serviceable tyre is not subject to these Regulations provided the tyre is not inflated to a gauge pressure exceeding the maximum rated pressure for that tyre. However, such tyres (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 Subsection 3.4 and Appendix C.1 of these Regulations. Homogeneous mixtures containing not more than 35% by mass of azocarbonamide and at least 65% of inert substance are not subject to these Regulations 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, plastic, 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 Regulations. Manufactured articles, containing asbestos and not meeting this requirement, are nevertheless not subject to these Regulations when packed so that no escape of hazardous quantities of respirable asbestos fibres can occur during transport.

A62 (178) This designation must only be used when no other appropriate designation exists 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 to Test Series 1 and 2 of Class 1 (See *UN Manual of Tests and Criteria*, Part 1).

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 80% or less 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 that are authorized for transport on passenger aircraft are permitted in the kits. Packing Group II or III is assigned according to the criteria for Class 3, applied to the base material.

△ **A67** Non-spillable batteries meeting the requirements of Packing Instruction 872 are not subject to these Regulations when carried as cargo 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 must be included in the description of the substance on the Air Waybill as required by 8.2.6, 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 or UN 0150, as appropriate).

△ **A69** The following are not subject to these Regulations when carried as cargo:

- (a) articles such as thermometers, switches and relays, each containing a total quantity of not more than 15 g of mercury, 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 normal conditions of transport;
- (b) lamps, each containing not more than 1 g of mercury and packaged so that there is not more than 30 g of mercury per package. Packages must be so designed and constructed such that when subjected to drop tests from a height of not less than 0.5 m the packages must still be fit for transport and there must be no damage to the contents;
- (c) 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 is 1 g or less.

The words "Not Restricted" and the Special Provision number must be included in the description of the substance on the Air Waybill as required by 8.2.6, when an Air Waybill is issued.

△ **A70** Internal combustion or fuel cell engines, being shipped either separately or incorporated into a vehicle, machine or other apparatus, without batteries or other dangerous goods, are not subject to these Regulations when carried as cargo, provided that:

(a) for flammable liquid powered engines:

1. the engine is powered by a fuel that does not meet the classification criteria for any class or division; or
2. the fuel tank of the vehicle, machine or other apparatus has never contained any fuel, or the fuel tank has been flushed and purged of vapours and adequate measures taken to nullify the hazard; and
3. the entire fuel system of the engine has no free liquid and all fuel lines are sealed or capped or securely connected to the engine and vehicle, machinery or apparatus.

(b) for flammable gas powered internal combustion or fuel cell engines:

1. the entire fuel system must have been flushed, purged and filled with a non-flammable gas or fluid to nullify the hazard;
2. the final pressure of the non-flammable gas used to fill the system does not exceed 200 kPa at 20°C;
3. the shipper has made prior arrangements with the operator; and
4. the shipper has provided the operator with written or electronic documentation stating that the flushing, purging and filling procedure has been followed and that the final contents of the engine(s) have been tested and verified to be non-flammable.

Multiple engines meeting the provisions of this special provision may be shipped in a unit load device or other type of pallet provided that the shipper has made prior arrangements with the operator(s) for each consignment.

When this special provision is used, the words "Not Restricted" and the Special Provision number must be included in the description of the substance on the Air Waybill as required by 8.2.6, when an Air Waybill is issued.

A71 (38) This substance is not subject to these Regulations when it contains 0.1% or less calcium carbide.

A72 (163) A substance specifically listed by name in the List of Dangerous Goods must not be transported under this entry. Materials transported under this entry may contain 20% or less nitrocellulose provided the nitrocellulose contains 12.6% or less 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*, nitrocellulose membrane filters in the form in which they are to be transported are not subject to the provisions of these Regulations applicable to flammable solids in Division 4.1.

A74 (169) Phthalic anhydride in the solid state and tetrahydrophthalic anhydrides, with 0.05% or less maleic anhydride, are not subject to these Regulations. Phthalic anhydride molten at a temperature above its flash point, with 0.05% or less 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 Subsection 2.6 irrespective of 2.6.1 and the indication of "Forbidden" in columns G to L of the List of Dangerous Goods (Section 4.2), provided such packagings were first subjected to comparative fire testing. Comparative fire testing between a package as prepared for transport (including the substance to be transported) and an identical package filled with water must show that the maximum temperature measured inside the packages during testing does not differ by more than 200°C. Packagings may include a vent to permit the slow escape of gas (i.e. not more than 0.1 mL/hour per 30 mL inner packaging at 20°C) produced from gradual decomposition.

A76 In the case of fissile uranium hexafluoride, the material must be classified under UN 2977.

△ **A77** (326) Mixtures of solids which are not subject to these Regulations 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, for single packagings, the packaging must pass a leak-proofness 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 10.7.2. Corresponding placards must be affixed to cargo transport units in accordance with the relevant provisions of 10.7.5.

(b) be allocated to Packing Groups I, II or III, as and if appropriate, by application of the grouping criteria in Section 3 corresponding to the nature of the predominant subsidiary risk.

The description required in 10.8.3.9.2(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.

(c) the packaging must also be capable of meeting the appropriate performance criteria for the subsidiary risk.

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 and the State of the operator under the conditions established by those authorities. 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% ammonium nitrate with not more than 0.2% total combustible/organic material calculated as carbon and with added matter, if any, which is inorganic and inert towards ammonium nitrate;
- (b) less than 90% but more than 70% ammonium nitrate with other inorganic materials or more than 80% but less than 90% ammonium nitrate mixed with calcium carbonate and/or dolomite and/or mineral calcium sulphate and not more than 0.4% 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% but less than 70% ammonium nitrate and not more than 0.4% total combustible/organic material calculated as carbon such that the sum of the percentage composition of ammonium nitrate and ammonium sulphate exceeds 70%.

A80 (220) The technical name of the flammable liquid component only of this solution or mixture must be shown in parentheses immediately following the proper shipping name.

A81 The quantity limits shown in Columns J and L do not apply to body parts, organs or whole bodies.

Note:

Blood, urine and other body fluids are not considered "body parts" for the purposes of this special provision.

☞ Transport in accordance with this Special Provision must be noted on the Shipper's Declaration for Dangerous Goods.

A82 (177) Barium sulphate is not subject to these Regulations.

A83 (208) The commercial grade of calcium nitrate fertilizer, when consisting mainly of a double salt (calcium nitrate and ammonium nitrate) containing 10% or less ammonium nitrate and 12% or more water of crystallization, is not subject to these Regulations.

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 Regulations, provided that:

- (i) they do not exhibit dangerous properties when tested for their liability to detonate, deflagrate or explode when heated under defined confinement by the tests of Test Series 1(a), 2(b) and 2(c) respectively in the *UN Manual of Tests and Criteria*; and
- (ii) they are not flammable solids when tested in accordance with 3.4.1.1.3 or 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 Subsection 7.1 or the labelling requirements of Subsection 7.2.

A88 Prototype or low production, (i.e. annual production runs consisting of no more than 100 lithium cells or batteries) lithium cells or batteries 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) except as provided in paragraph (c), the cells or 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;
- (b) except as provided in paragraph (c), each cell or 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 or batteries must be protected against short-circuiting;
- (c) 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 packed in strong outer packagings or protective enclosures not subject to the requirements of Section 6 of these Regulations. The batteries or battery assemblies must be protected against short circuiting; and
- (d) a copy of the document of approval showing the quantity limitations must accompany the consignment.

Irrespective of the limit specified in Column L of Table 4.2, the battery or battery assembly as prepared for transport may have a mass exceeding 35 kg.

A89 (186) In determining the ammonium nitrate content, all nitrate ions for which a molecular equivalent of ammonium ions is present in the mixture shall 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% ammonium nitrate and not more than 0.4% total combustible/organic material calculated as carbon or with not more than 45% ammonium nitrate and unrestricted combustible material. Fertilizers within these composition

limits are not subject to these Regulations if shown by the 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 20% or less nitrocellulose may be transported under the requirements for "Paint", UN 1263, UN 3066, UN 3469 or UN 3470, "Perfumery Products", UN 1266 or "Printing Ink", UN 1210, as appropriate.

A92 (199) Lead compounds which, when mixed in a ratio of 1:1000 with 0.07 M (molar) hydrochloric acid and stirred for one hour at a temperature of $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$, exhibit a solubility of 5% or less are (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 Regulations unless they meet the criteria for inclusion in another hazard class or division.

A93 A heat-producing article is not subject to these Regulations 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 must be included in the description of the substance on the Air Waybill as required by 8.2.6, when an Air Waybill is issued.

A94 Batteries or cells containing sodium must not contain dangerous goods other than sodium, sulphur or sodium compounds (e.g. sodium polysulphides and sodium tetrachloroaluminate). 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 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 Poly-chlorinated 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 must 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 3.9.2.4. This designation may also be used for wastes not otherwise subject to these Regulations but

which are covered under the *Basle 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 Regulations other than a Division 2.2 gas, are not subject to these Regulations when carried as cargo unless their release could cause extreme annoyance or discomfort to crew members so as to prevent the correct performance of duties.

The words "Not Restricted" and the Special Provision number must be included in the description of the substance on the Air Waybill as required by 8.2.6, when an Air Waybill is issued.

A99 Irrespective of the per package quantity limit for cargo aircraft specified in Column L of the List of Dangerous Goods (Subsection 4.2), and in Section I of Packing Instructions 965, 966, 967, 968, 969 or 970, a lithium battery or battery assembly (UN 3090 or UN 3480), including when packed with, or contained in equipment (UN 3091 or UN 3481) that meets the other requirements of Section I of the applicable packing instruction may have a mass exceeding 35 kg, 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 (e.g. in automobiles, stationary engines and other engines) must be assigned to this entry regardless of variation in volatility.

A101 (227) When phlegmatized with water and inorganic inert material, the content of urea nitrate may not exceed 75% by weight 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 Regulations if containing less than 100 g of flammable, non-toxic, liquefied gas.

A104 A toxic subsidiary risk label, although not required by these Regulations, may be applied.

A105 (242) Sulphur is not subject to these Regulations 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. For instructions on shipping such samples contact the national competent authority.

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 Subsection 4.2—List of Dangerous Goods.

A108 The provisions of Special Provision A1 apply to this entry for Packing Group I only.

A109 Not used.

A110 (226) Formulations of these substances containing 30% or more non-volatile, non-flammable phlegmatizer are not subject to these Regulations.

A111 Oxygen generators, chemical, which have passed their expiration date, are unserviceable, or which 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 these Regulations.

A114 (283) Articles, containing gas intended to function as shock absorbers, including impact energy absorbing devices or pneumatic springs are not subject to these Regulations provided:

- (a) each article has a gas space capacity not exceeding 1.6 L 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 L gas space and 160 bar charge pressure, 1 L gas space and 80 bar charge pressure, 1.6 L gas space and 50 bar charge pressure, 0.28 L 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 L gas space capacity and 5 times

charge pressure for products greater than 0.5 L 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 life saving 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 are 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 receptacle and no projection hazard nor thermal effect which would significantly hinder fire-fighting 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 3.1.1(b) of these Regulations.

△ **A117** Wastes containing Category A infectious substances must be assigned to UN 2814 or UN 2900. Wastes transported under UN 3291 are wastes containing infectious substances in Category B or wastes that are reasonably believed to have a low probability of containing infectious substances. Decontaminated wastes, which previously contained infectious substances, may be considered as not subject to these Regulations unless the criteria of another Class or Division are met.

A118 Items classified as explosives must be removed from vehicles and transported in accordance with the provisions of these Regulations 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), etc. 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 L of Subsection 4.2—List of Dangerous Goods, Dedicated Handling Devices (DHD) meeting the requirements of Packing Instruction 961 as prepared for transport, may have a gross weight 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 Regulations when contained individually in an article or a sealed packet.

A123 This entry applies to Batteries, electric storage, not otherwise listed in Subsection 4.2–List of Dangerous Goods. Examples of such batteries are: alkalimanganese, 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) accidental activation.

The words "Not Restricted" and the Special Provision number must be included in the description of the substance on the Air Waybill as required by 8.2.6, when an Air Waybill is issued.

A124 Not used.

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% combustible material, in a concentration not exceeding 80% are not subject to these Regulations when carried as cargo.

A130 When this radioactive material meets the definitions and criteria of other classes or divisions as defined in Section 3, it must be classified in accordance with the following:

- (a) where the substance meets the criteria for dangerous goods in excepted quantities as set out in 2.6, the packagings must be in accordance with 2.6.5 and meet the testing requirements of 2.6.6. All other requirements applicable to radioactive material,

excepted packages as set out in 10.0.1.5 apply without reference to the other class or division;

(b) where the quantity exceeds the limits specified in 2.6.4 the substance must be classified in accordance with the predominant subsidiary risk. The Shipper's Declaration must describe the substance with the proper shipping name and UN number applicable to the other class supplemented with the name applicable to the radioactive excepted package according to Column B in Subsection 4.2–List of Dangerous Goods, and must be transported in accordance with the provisions applicable to that UN number. An example of the sequence of information shown on the Shipper's Declaration is:

UN 1993, Flammable liquid, n.o.s. (ethanol and toluene mixture), Radioactive material, excepted package—limited quantity of material, Class 3, PG II; The radioactive material, excepted package label (Figure 10.7.8.A) is not required on packages meeting the conditions set out in this sub-paragraph. In addition, to aid acceptance Special Provision A130 must be shown in the authorizations column on the Shipper's Declaration. In addition, the requirements of 10.3.11.1 apply;

- (c) substances classified in accordance with subparagraph (b) are not permitted to be shipped in accordance with the limited quantity provisions set out in 2.7;
- (d) when the substance meets a special provision that exempts this substance from all dangerous goods provisions of the other classes it must be classified in accordance with the applicable UN number of class 7 and all requirements specified in 10.0.1.5 apply.

A131 Glass inner receptacles (such as ampoules or capsules) intended only for use in sterilization devices, when containing less than 30 mL of ethylene oxide per inner packaging with not more than 300 mL per outer packaging, may be transported in accordance with the provisions in Subsection 2.6, irrespective of the indication of "E0" in Column F of Table 4.2 provided that:

- (a) after filling, each glass inner receptacle has been determined to be leak-tight by placing the glass inner receptacle 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 glass inner receptacle showing evidence of leakage, distortion or other defect under this test must not be transported under the terms of this special provision;
- (b) in addition to the packaging required by 2.6.5, each glass inner receptacle is placed in a sealed plastic bag compatible with ethylene oxide and capable of containing the contents in the event of breakage or leakage of the glass inner receptacle; and
- (c) each glass inner receptacle is protected by a means of preventing puncture of the plastic bag (e.g. sleeves or cushioning) in the event of damage to the packaging (e.g. by 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 (311) 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 or machinery powered by a fuel cell engine must be consigned under the entries UN 3166 **Vehicle, fuel cell, flammable gas powered** or UN 3166 **Vehicle, fuel cell, flammable liquid powered**, or UN 3166 **Engine, fuel cell, flammable gas powered** or UN 3166 **Engine, fuel cell, flammable liquid powered**, as appropriate. These entries include hybrid electric vehicles powered by both a fuel cell and an internal combustion engine with wet batteries, sodium batteries or lithium metal batteries or lithium ion batteries, transported with the battery(ies) installed.

Other 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 metal batteries or lithium ion batteries, transported with the battery(ies) installed.

A135 Not used.

A136 (314) 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).

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 3.6.1.5.3.2.

A138 (316) This entry applies only to calcium hypochlorite, dry, when transported in non friable tablet form.

A139 (317) "Fissile-exempted" applies only to those packages complying with section 10.6.2.8.

A140 (318) Notwithstanding the "★" against the proper shipping name in Column B, the 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 assigned 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 Shipper's Declaration for Dangerous Goods, 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 air crew members may be transported on passenger aircraft in accordance with Packing Instruction 565 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 2 PBEs may be contained in a package;
- (d) the statement "Air crew Protective Breathing Equipment (smoke hood) in accordance with Special Provision A144" must be:
 - 1. included on the Shipper's Declaration for Dangerous Goods;
 - 2. marked adjacent to the proper shipping name on the package.

If the above conditions are met, the requirements of Special Provision A1 do not apply. 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 forbidden 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 during 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 m drop test onto an unyielding surface in the orientation most likely to result in failure of the containment system with no loss of contents.

- When lithium metal or lithium ion batteries are contained in the fuel cell system, the consignment must be consigned under this entry and under the appropriate entries for UN 3091 **Lithium metal batteries contained in equipment** or UN 3481 **Lithium ion batteries contained in equipment**.

A147 Not used.

A148 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 C.2.

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 J and L in Section 4.2 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 conforming to the requirements of Packing Instruction 202 containing refrigerated liquid nitrogen fully absorbed in a porous material are not subject to these Regulations 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 and any outer packaging or overpack used is closed in a way that will not allow the build-up of pressure within that packaging or overpack.

When used to contain substances not subject to these Regulations the words "Not Restricted" and the Special Provision number must be included in the description of the substance on the Air Waybill as required by 8.2.6, 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 Regulations.

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 Regulations and liquids or solids classified by the shipper as environmentally hazardous substances (UN 3077 and UN 3082) 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 Regulations.

A159 (336) A single package of non-combustible solid LSA-II or LSA-III material must not contain an activity greater than 3,000 A₂.

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: 3,000 A₁ or 100,000 A₂, whichever is the lower; or
- (c) for all other radioactive material: 3,000 A₂.

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 times the equilibrium pressure of the contents at 55°C;
- (b) not contain more than 200 mL of liquefied flammable gas the vapour pressure of which must not exceed 1,000 kPa at 55°C; and
- (c) pass the hot water bath test prescribed in 6.4.4.1.

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 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% 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% rated hydrogen capacity to not less than 95% rated hydrogen capacity and back to not more than 5% 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% capacity and pressurized to 75% 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 F of Table 4.2 may be transported in accordance with 2.6. Division 5.2 substances, although not

individually authorized as excepted quantities in Table 4.2, are authorized in such kits and are assigned Code E2 (see 2.6.4.1).

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.

A165 This entry may only be used if the results of Test Series 6(d) of Part I of the UN Manual of Tests and Criteria have demonstrated that any hazardous effects arising from functioning are confined within the package (see 3.1.4.3).

A166 (343) This entry applies to crude oil containing hydrogen sulphide in sufficient concentration that vapours evolved from the crude oil can present an inhalation hazard. The packing group assigned must be determined by the flammability hazard and inhalation hazard, in accordance with the degree of danger presented.

A167 (344) The provisions of 6.4.4 must be met.

A168 Not used.

A169 (349) Mixtures of a hypochlorite with an ammonium salt are forbidden for transport. UN 1791 Hypochlorite solution is a substance of Class 8.

A170 (350) Ammonium bromate and its aqueous solutions and mixtures of a bromate with an ammonium salt are forbidden for transport.

A171 (351) Ammonium chlorate and its aqueous solutions and mixtures of a chlorate with an ammonium salt are forbidden for transport.

A172 (352) Ammonium chlorite and its aqueous solutions and mixtures of a chlorite with an ammonium salt are forbidden for transport.

A173 (353) Ammonium permanganate and its aqueous solutions and mixtures of a permanganate with an ammonium salt are forbidden for transport.

A174 (354) This substance is toxic by inhalation.

A175 (355) Oxygen cylinders for emergency use transported under this entry may include installed actuating cartridges (cartridges, power device of Division 1.4, Compatibility Group C or S), without changing the classification of Division 2.2 provided the total quantity of deflagrating (propellant) explosives does not exceed 3.2 g per oxygen cylinder. The cylinders with the installed actuating cartridges as prepared for transport must have an effective means of preventing inadvertent activation.

△ **A176** (356) Metal hydride storage system(s) installed in vehicles, vessels or aircraft or in completed components or intended to be installed in vehicles, vessels or aircraft must be approved by the appropriate national authority before acceptance for transport. The Shipper's Declaration must include an indication that the package was approved by the appropriate national authority or a copy of the approval must accompany each consignment.

A177 (357) Petroleum crude oil containing hydrogen sulphide in sufficient concentration that vapours evolved from the crude oil can present an inhalation hazard must be consigned under the entry UN 3494 Petroleum sour crude oil, flammable, toxic.

A178 Security type equipment such as attaché cases, cash boxes, cash bags, etc., incorporating dangerous goods, for example lithium batteries, gas cartridges and/or pyrotechnic material, are not subject to these Regulations if the equipment complies with the following:

- (a) the equipment must be equipped with an effective means of preventing accidental activation;
- (b) if the equipment contains an explosive or pyrotechnic substance or an explosive article, this article or substance must be excluded from Class 1 by the appropriate national authority of the State of Manufacture in compliance with 3.1.7.1;
- (c) if the equipment contains lithium cells or batteries, these cells or batteries must comply with the following restrictions:
 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. for lithium ion cells, the Watt-hour rating is not more than 20 Wh;
 4. for lithium ion batteries, the Watt-hour rating is not more than 100 Wh;
 5. 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;
- (d) if the equipment contains gases to expel dye or ink, only gas cartridges and receptacles, small, containing gas with a capacity not exceeding 50 mL, containing no constituents subject to these Regulations other than a Division 2.2 gas, are allowed. The release of gas must not cause extreme annoyance or discomfort to crew members so as to prevent the correct performance of assigned duties. In case of accidental activation all hazardous effects must be confined within the equipment and must not produce extreme noise.
- (e) security type equipment that is defective or that has been damaged is forbidden for transport.

The words "not restricted" and the special provision number must be included in the description of the substance on the Air Waybill as required by 8.2.6, when an Air Waybill is issued.

A179 For UN 3077, irrespective of the maximum net quantities specified in Columns J and L of Table 4.2, intermediate bulk containers (IBCs) with a maximum net quantity not exceeding 1,000 kg are permitted in accordance with Packing Instruction 956.

A180 Non-infectious specimens, such as specimens of mammals, birds, amphibians, reptiles, fish, insects and other invertebrates containing small quantities of UN 1170, UN 1198, UN 1987, or UN 1219 are not subject

to these Regulations provided the following packing and marking requirements are met:

- (a) specimens are:
 1. wrapped in paper towel and/or cheesecloth moistened with alcohol or an alcohol solution and then placed in a plastic bag that is heat-sealed. Any free liquid in the bag must not exceed 30 mL; or
 2. placed in vials or other rigid containers with no more than 30 mL of alcohol or an alcohol solution;
- (b) the prepared specimens are then placed in a plastic bag that is then heat-sealed;
- (c) the bagged specimens are then placed inside a another plastic bag with absorbent material then heat sealed;
- (d) the finished bag is then placed in a strong outer packaging with suitable cushioning material;
- (e) the total quantity of flammable liquid per outer packaging must not exceed 1 L; and
- (f) the completed package is marked "scientific research specimens, not restricted Special Provision A180 applies".

The words "not restricted" and the special provision number A180 must be included in the description of the substance on the Air Waybill as required by 8.2.6, when an Air Waybill is issued.

A181 When a package contains a combination of lithium batteries contained in equipment and lithium batteries packed with equipment, the package must be marked UN 3091 Lithium metal batteries packed with equipment, or UN 3481 Lithium ion batteries packed with equipment as appropriate. If a package contains both lithium ion batteries and lithium metal batteries, the package must be marked as required for both battery types. However, button cell batteries installed in equipment (including circuit boards) need not be considered.

A182 Equipment containing only lithium batteries must be classified as either UN 3091 or UN 3481.

A183 Waste batteries and batteries being shipped for recycling or disposal are forbidden from air transport unless approved by the appropriate national authority of the State of Origin and the State of the Operator.

- A184** (304) This entry may only be used for the transport of non-activated batteries which contain dry potassium hydroxide and which are intended to be activated prior to use by the addition of an appropriate amount of water to the individual cells.
- A185** (360) Vehicles only powered by lithium metal batteries or lithium ion batteries must be consigned under the entry UN 3171, **Battery-powered vehicle**.
- A186** (361) This entry applies to electric double layer capacitors with an energy storage capacity greater than 0.3 Wh. Capacitors with an energy storage capacity of 0.3 Wh or less are not subject to these Regulations. Energy storage capacity means the energy held by a capacitor, as calculated using the nominal voltage and capacitance. All capacitors to which this entry applies, including capacitors containing an electrolyte that does

not meet the classification criteria of any class or division of dangerous goods, must meet the following conditions:

- (a) capacitors not installed in equipment must be transported in an uncharged state. Capacitors installed in equipment must be transported either in an uncharged state or protected against short circuit;
- (b) each capacitor must be protected against a potential short circuit hazard in transport as follows:
 1. when a capacitor's energy storage capacity is less than or equal to 10 Wh or when the energy storage capacity of each capacitor in a module is less than or equal to 10 Wh, the capacitor or module must be protected against short circuit or be fitted with a metal strap connecting the terminals; and
 2. when the energy storage capacity of a capacitor or a capacitor in a module is more than 10 Wh, the capacitor or module must be fitted with a metal strap connecting the terminals.
- (c) capacitors containing dangerous goods must be designed to withstand a 95 kPa pressure differential;
- (d) capacitors must be designed and constructed to safely relieve pressure that may build up in use, through a vent or a weak point in the capacitor casing. Any liquid which is released upon venting must be contained by packaging or by equipment in which a capacitor is installed; and
- (e) capacitors must be marked with the energy storage capacity in Wh. Capacitors containing an electrolyte not meeting the classification criteria of any class or division of dangerous goods, including when installed in equipment, are not subject to other provisions of these Regulations.

Capacitors containing an electrolyte meeting the classification criteria of any class or division of dangerous goods, with an energy storage capacity of 10 Wh or less are not subject to other provisions of these Regulations when they are capable of withstanding a 1.2 m drop test unpackaged on an unyielding surface without loss of contents.

Capacitors containing an electrolyte meeting the classification criteria of any class or division of dangerous goods that are not installed in equipment and with an energy storage capacity of more than 10 Wh are subject to these Regulations.

Capacitors installed in equipment and containing an electrolyte meeting the classification criteria of any class or division of dangerous goods are not subject to other provisions of these Regulations provided the equipment is packaged in a strong outer packaging constructed of suitable material and of adequate strength and design in relation to the packaging's intended use and in such a manner as to prevent accidental functioning of capacitors during transport. Large robust equipment containing capacitors may be offered for transport unpackaged or on pallets when capacitors are afforded equivalent protection by the equipment in which they are contained.

Note:

Capacitors which by design maintain a terminal voltage (e.g. asymmetrical capacitors) do not belong to this entry.

- A187** (362) This entry applies to liquids, pastes or powders, pressurized with a propellant which meets the definition of a gas in 3.2.1.1 and 3.2.1.2(a) or (b).

Note:

A chemical under pressure in an aerosol dispenser must be transported under UN 1950.

The following provisions apply:

- (a) the chemical under pressure must be classified based on the hazard characteristics of the components in the different states:
 1. the propellant;
 2. the liquid; or
 3. the solid.
- (b) If one of the components in (a), which can be a pure substance or a mixture, needs to be classified as flammable, the chemical under pressure must be classified as flammable in Division 2.1. Flammable components are flammable liquids and liquid mixtures, flammable solids and solid mixtures or flammable gases and gas mixtures meeting the following criteria:
 1. a flammable gas is a gas which meets the criteria in 3.2.2.1 of these Regulations;
 2. a flammable liquid is a liquid having a flashpoint of not more than 93°C;
 3. a flammable solid is a solid which meets the criteria in 3.4.1.1 of these Regulations.
- (c) gases of Division 2.3 and gases with a subsidiary risk of 5.1 must not be used as a propellant in a chemical under pressure;
- (d) where the liquid or solid components are classified as dangerous goods of Division 6.1, Packing Groups II or III, or Class 8, Packing Groups II or III, the chemical under pressure must be assigned a subsidiary risk of Division 6.1 or Class 8 and the appropriate UN number must be assigned. Components classified in Division 6.1, Packing Group I, or Class 8, Packing Group I, must not be used for transport under this proper shipping name;
- (e) in addition, chemicals under pressure with components meeting the properties of: Class 1, explosives; Class 3, liquid desensitized explosives; Division 4.1, self-reactive substances and solid desensitized explosives; Division 4.2, substances liable to spontaneous combustion; Division 4.3, substances which, in contact with water, emit flammable gases; Division 5.1 oxidizing substances; Division 5.2, organic peroxides; Division 6.2, Infectious substances or Class 7, Radioactive material, must not be used for transport under this proper shipping name.

- A188** (359) Nitroglycerin solution in alcohol with more than 1% but not more than 5% nitroglycerin must be classified in Class 1 and assigned to UN 0144 if not all the requirements of Packing Instruction 371 are complied with.

A189 Except where the defining criteria of another class or division are met, concentrations of formaldehyde solution:

- (a) with 10% or more, but less than 25% formaldehyde must be classified as UN 3334 **Aviation regulated liquid, n.o.s.★**; and
- (b) with less than 10% formaldehyde are not subject to these Regulations.

A190 Neutron radiation detectors containing non-pressurized boron trifluoride gas in excess of 1 g and radiation detection systems containing such neutron radiation detectors as components may be transported on cargo aircraft in accordance with these Regulations irrespective of the indication of "forbidden" in Columns K/L of Table 4.2, provided:

- (a) the pressure in each neutron radiation detector must not exceed 105 kPa absolute at 20°C;
- (b) the amount of gas must not exceed 12.8 g per detector and the amount per outer packaging or per radiation detection system must not exceed 51.2 g;
- (c) each neutron radiation detector must be of welded metal construction with brazed metal to ceramic feed through assemblies. They must have a minimum burst pressure of 1,800 kPa;
- (d) each neutron radiation detector must be packed in a sealed intermediate plastic liner with sufficient absorbent material to absorb the entire gas contents. Neutron radiation detectors must be packed in strong outer packagings that are capable of withstanding a 1.8 m drop test without leakage. Radiation detector systems containing neutron radiation detectors must also include absorbent material sufficient to absorb the entire gas contents of the neutron radiation detectors. Absorbent material must be surrounded by a liner or liners, as appropriate. They must be packed in strong outer packagings unless neutron radiation detectors are afforded equivalent protection by the radiation detection system; and
- (e) transport in accordance with this special provision need not be noted on the Shipper's Declaration and a packing instruction must not be shown on the Shipper's Declaration. The package must be labelled with "Toxic gas" and "Corrosive" hazard labels.

When transported as cargo, neutron radiation detectors containing not more than 1 g of boron trifluoride, including those with solder glass joints, and radiation detection systems containing such detectors where the neutron radiation detectors meet and are packed in accordance with the above conditions, are not subject to these Regulations irrespective of the indication of "forbidden" in Columns J/K and L/M of Table 4.2.

The words "Not Restricted" and the Special Provision number must be included in the description of the substance on the Air Waybill as required by 8.2.6, when an Air Waybill is issued.

A191 Notwithstanding the Division 6.1 subsidiary risk shown in Column C of Table 4.2, the toxic subsidiary risk label and an indication of this subsidiary risk on the Shipper's Declaration are not required when the manufactured articles contain not more than 5 kg of mercury.

Transport in accordance with this special provision must be noted on the Shipper's Declaration.

A202 For the purposes of providing life support for aquatic animals during transport, the appropriate authorities of the States of origin, destination and of the operator may approve the carriage of cylinders containing **Oxygen compressed**, UN 1072 or **Air compressed**, UN 1002, with the valves open to supply a controlled quantity of oxygen or air through a regulator into water containing the aquatic animals. The cylinder or cylinder valve must be fitted with a self-sealing device to prevent uncontrolled release of gas should the regulator malfunction or be broken or damaged. The cylinder must meet those parts of Packing Instruction 200 that apply, except for the need for valves to be closed. In addition, the following conditions apply as a minimum:

- (a) the water container with the attached cylinder must be designed and constructed to withstand all anticipated loads;
- (b) the water container with the gas supply operating must be tilt-tested at an angle of 45° in four directions from the upright, for a minimum duration of 10 minutes in each direction, without leakage of water;
- (c) the cylinder and regulator must be restrained and protected within the equipment;
- (d) the regulator used must have a maximum flow rate of not more than 5 L per minute;
- (e) the flow rate to the container must be limited to that sufficient to provide life support to the aquatic animals;
- (f) the quantity of gas provided must not exceed 150% of the oxygen required for the normal duration of air transport; and
- (g) only one cylinder may be carried for each 15 m³ of gross cargo hold volume. Under no circumstances may the rate of gas flow from the cylinder exceed 1 L per minute per 5 m³ of gross cargo hold volume.

A224 For the purpose of transporting a symbolic flame, the appropriate authority of the States of origin, of destination and of the operator may approve the carriage of lamps fuelled by UN 1223—**Kerosene**, or UN 3295—**Hydrocarbons, liquid, n.o.s.**, carried by a passenger as carry on baggage only.

Lamps must be of a "Davy" type or similar apparatus. In addition, the following conditions apply as a minimum:

- (a) no more than four lamps may be carried on board the aircraft;
- (b) lamps may contain no more fuel than the quantity adequate for the duration of the flight and the fuel must be contained in a leakproof reservoir;
- (c) lamps must be adequately secured;
- (d) whilst on board the aircraft, the lamps must be under the constant supervision of an accompanying person, who must not be a member of the operating crew;
- (e) lamps may be lit by the accompanying person, but must not be refilled on board the aircraft;
- (f) at least one fire extinguisher must be kept within reach of the accompanying person at all times. The accompanying person must be trained in the use of the extinguisher;

- (g) the crew members of the aircraft must be given a verbal briefing about the carriage of the lamps and the pilot-in-command must be provided with a copy of the approval; and
- (h) 9.5.1.1.1b), c), e), 9.5.1.2, 9.5.1.3 and 9.6.1 of these Regulations must apply.

A801 A technical name is not needed for this entry if it is a controlled substance and a national law or international Convention prohibits its disclosure (see 4.1.2.1(d)).

A802 Notwithstanding the absence of a packing group in column E, substances and articles assigned to these entries must be packed in UN Specification packagings that meet packing group II performance standards. This does not apply when aerosols are prepared for transport in accordance with the limited quantity provisions.

A803 Notwithstanding the assignment of a packing group III in column E, substances assigned to these entries must be packed in UN Specification packagings that meet packing group II performance standards. This does not apply when the substances are prepared for transport in accordance with the limited quantity provisions.

A804 Notwithstanding the assignment of a packing group III in column E, substances assigned to these entries must be packed in UN Specification packagings that meet packing group I performance standards.

A805 Notwithstanding the requirement to package UN 1845 in accordance with Packing Instruction 954, Carbon dioxide, solid (dry ice) may be placed directly within an overpack that meets the requirements of Packing Instruction 954 to cool other dangerous goods. The other dangerous goods must be packaged in accordance with the relevant packing instructions. See Figure 8.1.J

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SECTION 5—PACKING

5.0 General

5.0.1 Shipper's Responsibility

5.0.1.1 General

The shipper is responsible for all aspects of the packing of dangerous goods in compliance with these Regulations.

Note:

A nomenclature of some packaging terms used in these Regulations is given in Appendix A.

5.0.1.2 Specific

When preparing each package of dangerous goods, the shipper must:

- (a) comply with the set of packing requirements appropriate to the type of packaging to be used;
- (b) use only the packagings permitted by the applicable packing instruction specified in Columns G, I and K of the List of Dangerous Goods;
- (c) for all packagings, restrict the overall quantity per package to the limits specified in Columns H, J or L of the List of Dangerous Goods (as applicable) or to the design limit for the package whichever is more restrictive. In addition, for combination packaging, the quantity limit per inner packaging must not exceed the limits specified in the applicable packing instruction;
- (d) assemble and secure all components of the packaging exactly in the manner intended;
- (e) ensure that external surfaces of assembled package(s) are clean of contamination arising from the filling process itself or from contamination from the environment surrounding the filling/assembly area; and
- (f) ensure that his responsibilities for packing are completely fulfilled when the package is presented to the operator for shipment.

5.0.1.3 Use of Freight Containers and Unit Load Devices

The shipper must ensure that the dangerous goods are not included in any freight container or unit load device except for the following:

- a freight container for radioactive material (see Appendix A);
- a unit load device or other type of pallet containing consumer commodities when prepared according to Packing Instruction Y963;
- a unit load device or other type of pallet containing Carbon dioxide, solid (dry ice) used as a refrigerant

- for other than dangerous goods, provided prior approval has been obtained from the operator; or
- a unit load device or other type of pallet containing magnetized material, provided prior approval has been obtained from the operator.

5.0.1.4 Package/Overpack Re-use

The shipper must ensure that before a packaging authorized for re-use, or an overpack is re-used, all inappropriate dangerous goods markings and labels are removed or completely obliterated.

Note:

Not all packages are intended to be re-used for shipments of dangerous goods. When a package meets the conditions of 5.0.2.5 and may be re-used, the shipper must have access to the information required by 6.0.1.4.

5.0.1.5 Overpacks

OPERATOR VARIATIONS: AY-04, CA-10, DL-04, EI-01, EY-03, JL-09, KC-06, KZ-07, OK-04, SK-04, TG-02, UA-01

The shipper must ensure that where an overpack is used to enclose packages of dangerous goods, the requirements of 5.0.1.5.1 to 5.0.1.5.4 must be met:

- 5.0.1.5.1 The overpack must not contain packages enclosing different substances which might react dangerously with each other or packages of dangerous goods which require segregation according to Table 9.3.A.

- 5.0.1.5.2 Each package contained within an overpack must be properly packed, marked, labelled and be free of any indication of damage or leakage and in all respects be properly prepared as required in these Regulations. Packages must be secured within the overpack.

- 5.0.1.5.3 The overpack must not contain packages bearing the "Cargo Aircraft Only" label except where:

- (a) only one package is contained in the overpack; or
- (b) two or more packages are contained in the overpack and the packages are assembled in such a way that clear visibility and easy access to them is possible; or
- △ (c) the packages contain substances of:

- flammable liquids (Class 3), Packing Group III, other than those with a subsidiary risk of Class 8;
- toxic substances (Division 6.1) with no subsidiary risk other than Class 3;
- infectious substances (Division 6.2);
- radioactive materials (Class 7);
- miscellaneous dangerous goods (Class 9).

Note:

For cooling purposes, an overpack may contain carbon dioxide, solid (dry ice), provided that the

overpack meets the requirements of Packing Instruction 954.

5.0.1.5.4 The intended function of each package must not be impaired by the overpack.

5.0.1.6 Salvage Packaging

OPERATOR VARIATIONS: 9W-05, AA-04, AC-03, EI-03, EY-06, JX-04, KQ-06, KZ-08, ME-05, MH-03, MP-02, OM-07, OU-08, SV-06, UX-09

5.0.1.6.1 Damaged, defective, leaking or non-conforming packages, or dangerous goods that have spilled or leaked may be transported in salvage packagings (see SALVAGE PACKAGING in Appendix A) meeting the requirements of 5.0.1.6.2 and Subsection 6.7. 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. The shipper must also ensure that all applicable requirements of these Regulations are met. Prior approval from the appropriate national authority must be obtained to ship salvage packagings.

5.0.1.6.2 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.

5.0.1.6.3 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.

5.0.1.6.4 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.

5.0.1.7 Portable Tanks

STATE VARIATION: ITG-07

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.

△ 5.0.1.8 Carriage of Oxygen with Live Animals

With the approval of the appropriate authorities of the States of origin, destination and of the operator, for the purpose of providing life support to aquatic animals during transport, a cylinder containing oxygen compressed, UN 1072 or air compressed, UN 1002, may be carried to oxygenate the water in accordance with the provisions of Special Provision A202.

5.0.1.9 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).

5.0.1.10 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.

□ 5.0.1.11 Open External Carriage

When dangerous goods are prepared for open external carriage (e.g. suspended from a helicopter or in open external carrying devices), consideration should be given to the type of packaging used and, where necessary, protection of those packagings from the effects of airflow and weather (e.g. by damage from rain or snow).

5.0.2 General Packing Requirements

STATE VARIATION: JPG-24

OPERATOR VARIATION: FX-02

5.0.2.1 Packing Groups

5.0.2.1.1 For packing purposes, Packing Group numbers I, II or III are assigned to substances other than those in Classes 1, 2 and 7, self-reactive substances of Division 4.1, Divisions 5.2 and 6.2, according to the relative degree of danger presented by the substance.

- *Packing Group I*—Substances presenting high danger.
- *Packing Group II*—Substances presenting medium danger.
- *Packing Group III*—Substances presenting low danger.

5.0.2.1.2 Some substances in Class 9 and liquids in Division 5.1 have been assigned to packing groups by experience rather than through the application of any technical criteria and these are shown in the List of Dangerous Goods in Subsection 4.2. The packing group to which a listed substance is assigned is given in the List of Dangerous Goods. The packing group criteria for the classes and divisions are given in Section 3.

5.0.2.2 Class 7

The general packing requirements of this Subsection are not applicable to Class 7 Radioactive Materials. When packing radioactive materials, the shipper must comply with the packing instructions, packaging specifications and performance testing in Section 10.

5.0.2.3 Performance Test Requirements

Unless otherwise provided for, the UN specification packagings detailed in the packing instructions must meet the performance test requirements of the relevant packing

group shown in Column E of the List of Dangerous Goods for the particular article or substance.

5.0.2.4 Packaging Quality

5.0.2.4.1 Dangerous goods must be packed in good quality packagings which must be strong enough to withstand the shocks and loadings normally encountered in transport, including removal from a pallet, unit load device or overpack for subsequent manual or mechanical handling. Packages must be constructed and closed as to prevent any loss of contents when prepared for transport which might be caused under normal conditions of transport, by vibration or by changes in temperature, humidity or pressure (resulting from altitude, for example). Packages (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, reconditioned or remanufactured packagings.

Note:

The nature of transport dictates that many packages are likely to be moved between different modes of transport with attendant increases 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 abrasive effects experienced in loading the aircraft through overpacking, palletization or another means 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.

5.0.2.4.2 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 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 Subsections 6.3 to 6.6 and the pressure differential requirements of 5.0.2.9, as applicable.

5.0.2.5 Packaging Test Requirements

New, remanufactured, reused or reconditioned packagings, which are listed in Table 5.0.C, must meet the applicable requirements of Section 6 of these Regulations. 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 Subsection 6.3, 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 5.0.2.12.2 and 6.3.1.2. 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. For definitions of remanufactured packages and reconditioned packages as used in these Regulations, see Appendix A.

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.

5.0.2.6 Compatibility Requirements

5.0.2.6.1 Direct Contact of Packagings

5.0.2.6.1.1 Parts of packagings which are in direct contact with dangerous goods:

- (a) must not be affected or significantly weakened by those dangerous goods;
- (b) must not cause a dangerous effect, e.g. catalyzing a reaction or reacting with the dangerous goods; and
- (c) must not allow permeation of the dangerous goods that could constitute a danger under normal conditions of transport.

5.0.2.6.1.2 Where necessary, they must be provided with a suitable inner coating or treatment.

5.0.2.6.1.3 Shippers must also ensure that any absorbent materials and the materials of intermediate packagings for liquids do not react dangerously with the liquid.

5.0.2.6.2 Materials of Construction

Materials, such as some plastics, which can be significantly softened or rendered brittle or permeable by the temperatures likely to be experienced during transport (see 5.0.4.1) 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 ageing and brittleness.

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;

- (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.

5.0.2.6.3 Evidence of Compatibility

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.

5.0.2.7 Temperature and Vibration Resistance

5.0.2.7.1 The body and the 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. The closure device must be so designed that it

- (a) 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;
- (b) remains closed during transport.

△ 5.0.2.7.2 In addition, for inner packagings containing liquids, 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. When secondary means of closure cannot be applied, the inner packaging must be securely closed and placed in a leakproof liner and then placed in an outer packaging.

5.0.2.8 Ullage

OPERATOR VARIATION: KZ-03

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.

5.0.2.9 Internal Pressure Standards

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 (0.95 bar), not less than 75 kPa (0.75 bar) 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 by one of the methods described in 5.0.2.9.1 to 5.0.2.9.3.

5.0.2.9.1 Method 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 (1 bar), 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 5.0.2.8 and a filling temperature of 15°C; or

5.0.2.9.2 Method B—1.75 times the vapour pressure at 50°C less 100 kPa (1 bar) but with a minimum of 95 kPa (0.95 bar).

This is expressed as:

$$P = (V_{p50} \times 1.75) - 100 \text{ kPa, with a minimum of 95 kPa}$$

where:

P = Pressure requirement in kPa (gauge)

V_{p50} = Vapour pressure at 50°C; or

5.0.2.9.3 Method C—1.5 times the vapour pressure at 55°C less 100 kPa but with a minimum of 95 kPa.

This is expressed as:

$$P = (V_{p55} \times 1.5) - 100 \text{ kPa, with a minimum of 95 kPa}$$

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 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 III of Class 3 or Division 6.1).

5.0.2.9.4 Supplementary Packaging—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 5.0.2 and the applicable packing instruction.

TABLE 5.0.A
Test Pressure Marking Examples (5.0.2.14.2(c)) (see also 5.0.2.14 and 6.3.5.3)

UN No.	Name	Class or Division	Packing Group	V_{p55} (kPa)	$V_{p55} \times 1.5$ (kPa)	($V_{p55} \times 1.5$) minus 100 (kPa)	Minimum Test Pressure (gauge) under 6.3.5.3 Method C	Minimum Test Pressure (gauge) to be Marked on the Packaging (kPa) under 6.3.5.3
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	Diethylether	3	I	199	299	199	199	250

Notes:

1. For pure liquids, the vapour pressure at 55°C, V_{p55} , can often be obtained from scientific tables.
2. The maximum vapour pressures in 5.0.2.14.2 (b) and (c) refer to the basis of the formula while the minimum hydraulic test pressure in the last sentence of 5.0.2.14 refers to the aircraft altitude.
3. Table 5.0.A refers to the use of 5.0.2.14.2(c) only. When, for example, the test pressure for n-Decane is determined according to 6.3.5.3 Method A the minimum of 80 kPa (0.80 bar) applies.
4. For Diethylether the required minimum test pressure under 6.3.5.4 is 250 kPa (2.5 bar).
5. Test pressure to be marked on package must be rounded down to the nearest 10 kPa (see 6.0.4.2).

5.0.2.10 Change of Phase

Packagings used for solids, which may become liquid at temperatures likely to be encountered during air transport, must also be capable of containing that substance in the liquid state.

Notes:

1. 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.
2. Where single packagings are permitted for such substances, only single packagings approved for solid materials may be used.

△ 5.0.2.11 Different Dangerous Goods Packed in One Outer Packaging

STATE VARIATION: IRG-02

OPERATOR VARIATIONS: DL-04, VT-06

An outer packaging may contain more than one item of dangerous goods or other goods provided that:

- (a) the dangerous goods do not react dangerously with each other or with the other goods and cause:
 - combustion and/or evolution of considerable heat,
 - evolution of flammable, toxic or asphyxiant gases,
 - the formation of corrosive substances, or
 - the formation of unstable substances;
- (b) the dangerous goods do not require segregation according to Table 9.3.A, except as otherwise provided for in these Regulations;

- (c) an outer packaging containing Division 6.2 (Infectious Substances) may contain material for refrigeration or freezing or packaging material such as absorbent material as provided in Packing Instruction 620;
- (d) 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;
- (e) the outer packagings used are permitted by all the packing instructions applicable to each item of dangerous goods;
- (f) 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;
- (g) 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:

$$Q = \frac{n_1}{M_1} + \frac{n_2}{M_2} + \frac{n_3}{M_3} + \dots$$

where n_1 , n_2 etc. are the net quantities per package of the different dangerous goods and M_1 , M_2 etc. are the maximum net quantities per package for these different dangerous goods according to the List of Dangerous Goods, for passenger or cargo aircraft, as applicable; and

- (h) the following dangerous goods do not need to be taken into account in the calculation of the "Q" value:
 - Carbon dioxide, solid (dry ice) UN 1845;
 - those where Columns J or L of the List of Dangerous Goods indicate "No limit";
 - those with the same UN number, packing group and physical state (i.e. solid or liquid), provided

they are the only dangerous goods in the package and the total net quantity does not exceed the maximum net quantity shown in the List of Dangerous Goods.

Notes:

1. For packages containing radioactive material, see Subsection 10.5.
2. The calculated "Q" value must be rounded up to the first decimal place and entered on the Shipper's Declaration (see 8.1.6.9.2(g)).
3. UN 3316 is not permitted in the same outer packaging with other dangerous goods (see PI 960).

5.0.2.12 Inner Packagings

5.0.2.12.1 Cushioning Material

Inner packagings must be 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 7.2.4.4 of these Regulations. 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, etc., must be secured in the outer packagings with suitable cushioning material. Any leakage of contents must not substantially impair the protective properties of the cushioning material or of the outer packaging.

Note:

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 not therefore an "inner packaging".

5.0.2.12.2 Different Inner Packagings

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. 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, etc.;
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, e.g. 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.

- (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.

5.0.2.13 Other Packaging Requirements

5.0.2.13.1 Friction

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.

5.0.2.13.2 Venting

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 Regulations.

△ 5.0.2.13.3 Orientation

STATE VARIATION: JPG-20

OPERATOR VARIATIONS: ME-09, SV-04

- 5.0.2.13.3.1** Except as provided in 5.0.2.13.3.2, combination packagings having inner packagings containing liquid dangerous goods 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 Figure 7.4.D and Figure 7.4.E. The words "This Side Up" or "This End Up" may also be displayed on the top cover of the package.

- 5.0.2.13.3.2** Orientation arrows are not required on outer packagings containing:

- dangerous goods in inner packagings each containing 120 mL or less with sufficient absorbent material between the inner and outer packagings to completely absorb the liquid contents;
- dangerous goods in gas tight inner packagings such as tubes, bags or vials which are opened by breaking or puncturing. Each inner packaging must not contain more than 500 mL;
- infectious substances in primary receptacles not exceeding 50 mL; or
- radioactive material.

5.0.2.13.4 Minimum Size

A package must be of such size that there is adequate space to affix all required markings and labels (see 7.0.1 and 7.2.6.1).

5.0.2.13.5 Empty Packagings

5.0.2.13.5.1 An empty packaging that has contained dangerous goods must be treated in the same manner as is required by these Regulations for a package filled with that substance unless adequate measures have been taken to nullify any hazard.

5.0.2.13.5.2 Other than 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 non-dangerous goods are taken to nullify any hazard.

5.0.2.13.5.3 Before an empty packaging which had previously contained an infectious substance is referred to the shipper, or sent elsewhere, it must be thoroughly disinfected or sterilized and any label or marking indicating that it had contained an infectious substance must be removed or obliterated.

Notes:

1. Purging and thorough flushing of the packaging with a neutralizing agent is an acceptable method of nullifying the hazard.
2. Packages having previously contained Class 7 Radioactive Material must comply with the provisions of 10.5.9.7.

5.0.2.13.6 Wet Ice as Coolant

Where ice is used as a coolant it must not affect the integrity of the packaging.

5.0.2.14 Packagings for Liquids

OPERATOR VARIATIONS: CI-04, KE-07

5.0.2.14.1 Every packaging intended to contain liquids must successfully undergo a suitable leak-proofness test and be capable of meeting the appropriate test level indicated in 6.3.4.2.

- (a) before it is first used for transport;
- (b) after remanufacturing or reconditioning, before it is used 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.

5.0.2.14.2 Packagings for liquids tested as prescribed in 6.3.5 and marked with the hydraulic test pressure 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 5.0.2.8 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 5.0.A).

However, where the packaging is selected on the basis of 5.0.2.14.2(a) above the hydraulic test pressure marked in accordance with 6.0.4.2 must be 100 kPa or more (80 kPa or more for liquids in Packing Group III of Class 3 or Division 6.1).

Notes:

1. The maximum vapour pressures in (b) and (c) above refer to the basis of the formula. The minimum hydraulic test pressure refers to the aircraft altitude.
2. Table 5.0.A appearing under 5.0.2.9 refers to the use of (c) above 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 6.3.5.3.1, Method A, the minimum marked test pressure of 80 kPa applies.
3. Definitions for the packaging nomenclature are given in Appendix A.
4. Details of packaging codes are given in 6.0.3.

5.0.2.14.3 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.

5.0.2.15 Plastic Drums, Jerricans and Intermediate Bulk Containers (IBC)

For plastic drums and jerricans and rigid plastic IBC and composite IBC with plastic inner receptacles, 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.

5.0.2.16 Self-reactive Substances and Organic Peroxides

Packagings for self-reactive substances of Division 4.1 and organic peroxides must conform to the applicable requirements of Chapter 6 and must meet the test requirements for Packing Group II.

5.0.3 Limited Quantities

5.0.3.1 Dangerous goods being shipped under the provisions for Limited Quantities must be packed in accordance with 2.7.5 and 5.0.2 to 5.0.4 except 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2.

5.0.4 Conditions Normal to Air Transport

5.0.4.1 Temperature

For the information of users of these Regulations, 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 requirements of 5.0.2.9.

5.0.4.2 Pressure

Due to altitude, the ambient pressure experienced by a package during flight will be lower than standard atmospheric pressure at sea level. Since receptacles and packagings will generally be filled at a standard atmospheric pressure of approximately 100 kPa (1 bar), this lower ambient pressure will result in a pressure differential between the contents of the receptacle or package and the cargo compartment. For pressurized cargo compartments, the pressure differential may be approximately 25 kPa, while for non-pressurized or partially pressurized cargo compartments, the pressure differential may be as much as 75 kPa. This pressure differential 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.

5.0.4.3 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).

5.0.5 Transitional Packaging Arrangements

5.0.5.1 For arrangements for the use of packagings for Class 7, Radioactive Material manufactured under earlier requirements, see 10.5.7.

5.0.6 Format of Packing Instructions

5.0.6.1 The packing instructions in this section appear in class number sequence, but this sequence does not indicate any precedence of hazard:

- Class 1—Explosives
- Class 2—Gases
- Class 3—Flammable liquids
- Class 4—Flammable solids; substances liable to spontaneous combustion; substances, which in contact with water, emit flammable gases
- Class 5—Oxidizing substances; Organic peroxides
- Class 6—Toxic and Infectious substances
- Class 7—Radioactive material (see Subsection 10.5)
- Class 8—Corrosives
- Class 9—Miscellaneous dangerous goods.

5.0.6.2 Each packing instruction shows, where applicable, the acceptable single and combination packagings. For combination packagings, tables show the acceptable outer packagings and associated inner packagings together with the maximum quantity permitted in each inner packaging. Where provisions for particular substances or articles apply, a table shows the inner packagings with associated quantity limitations, the

permitted quantity per package and, where applicable an indication if single packagings are permitted. Where appropriate, additional packing requirements are shown in some packing instructions. These additional packing requirements may impose a higher standard of packaging than would normally apply to the packing group, or may require specific packaging considerations.

5.0.6.3 Unless otherwise specified, each packaging must conform to the applicable requirements of Section 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.

5.0.6.4 The following packagings must not be used as single packagings 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

5.0.6.5 Where the packing instructions in this section authorize the use of a particular type of 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 6.0.3.6, (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.

5.0.6.6 Cylinders may be used for liquids and solids when indicated in a packing instruction. The cylinder must meet the standards set out below.

5.0.6.6.1 Unless otherwise indicated in these Regulations, cylinders conforming to:

- (a) the applicable requirements of Subsection 6.4; 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 5.0.6.6 and 6.4.3.3 are met.

5.0.6.6.2 Every design type of cylinder must be approved by the competent authority of the country of manufacture or as indicated in Subsection 6.4.

5.0.6.6.3 Unless otherwise indicated, cylinders having a minimum test pressure of 0.6 MPa must be used.

5.0.6.6.4 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 5.2.0.8(a) to (e).

5.0.6.6.5 The level of filling must not exceed 95% 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.

5.0.6.6.6 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 5.2.0.11.

5.0.6.6.7 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 Regulations have been met. Shut-off valves must be closed after filling and remain closed during transport. The consignor must verify that the closures and equipment are not leaking.

5.0.6.6.8 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.

5.0.6.6.9 Marking of cylinders for liquids and solids according to 5.0.6.6 (not conforming to the requirements of 6.0.4) must be in accordance with the requirements of the competent authority of the country of manufacturing.

5.0.6.7 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

Subsection 4.2—List of Dangerous Goods for listed dangerous goods provided:

- (a) the alternative packaging complies with the general requirements of 5.0.2 to 5.0.4;
- (b) when the particular packing instruction indicated in Subsection 4.2—List of Dangerous Goods specifies packagings which are listed in Table 5.0.C, the alternative packaging must meet the applicable requirements of Section 6;
- (c) for the type of alternative packaging, the expressions "Not used in these Regulations" or "Specialized use only" do not appear in Table 5.0.C;
- (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 Subsection 4.2—List of Dangerous Goods;
- (e) the maximum net quantity of dangerous goods in the packaging does not exceed the quantity specified in the appropriate column of Subsection 4.2—List of Dangerous Goods; and
- (f) a copy of the document of approval accompanies each consignment.

5.0.6.8 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 Subsections 6.0, 6.1, 6.2 and 6.3, where they have to be transported empty, uncleared and unpackaged, providing they comply with the requirements imposed by the competent authority.

5.0.7 List of Packagings

Table 5.0.B contains a list of the inner packagings referenced in the packing instructions. Table 5.0.C lists the UN specification packagings used in air transport by type and description together with their specification codes. Also included are the reference paragraph numbers in which the design criteria are specified.



TABLE 5.0.B
List of Inner Packagings

Description	Codes	Cross-Reference
INNER PACKAGINGS		
glass		6.1.1
plastic		6.1.2
metal cans, tins or tubes		6.1.3
paper bags		6.1.4
plastic bags		6.1.5
fibre cans or boxes		6.1.6
metal receptacles (aerosols) non-refillable	IP7	6.1.7
metal receptacles (aerosols) non-refillable	IP7A	6.1.7
metal receptacles (aerosols) non-refillable	IP7B	6.1.8
plastic aerosols	IP7C	6.1.9
metal or plastic flexible tubes		6.1.10

TABLE 5.0.C
List of UN Specification Packagings

Description	Codes	Cross-Reference
OUTER AND SINGLE PACKAGINGS		
STEEL DRUMS		
non-removable head	1A1	6.2.1
removable head	1A2	6.2.1
ALUMINIUM DRUMS		
non-removable head	1B1	6.2.2
removable head	1B2	6.2.2
PLYWOOD DRUMS	1D	6.2.3
FIBRE DRUMS	1G	6.2.4
STEEL JERRICANS		
non-removable head	3A1	6.2.5
removable head	3A2	6.2.5
ALUMINIUM JERRICANS		
non-removable head	3B1	6.2.5
removable head	3B2	6.2.5
PLASTIC DRUMS AND JERRICANS		
drums, non-removable head	1H1	6.2.6
drums, removable head	1H2	6.2.6
jerricans, non-removable head	3H1	6.2.6
jerricans, removable head	3H2	6.2.6
METAL DRUMS (other than steel or aluminium/drums)		
non-removable head	1N1	6.2.7
removable head	1N2	6.2.7
△ STEEL, ALUMINIUM OR OTHER METAL BOXES		
steel	4A	6.2.8
aluminium	4B	6.2.8
other metal	4N	6.2.8

TABLE 5.0.C
List of UN Specification Packagings *(continued)*

Description	Codes	Cross-Reference
BOXES OF NATURAL WOOD OR WOODEN BOX ordinary with sift-proof walls	4C1 4C2	6.2.9 6.2.9
PLYWOOD BOXES	4D	6.2.10
RECONSTITUTED WOOD BOXES	4F	6.2.11
FIBREBOARD BOXES	4G	6.2.12
PLASTIC BOXES expanded plastic boxes solid plastic boxes	4H1 4H2	6.2.13 6.2.13
TEXTILE BAGS sift-proof water-resistant	5L2 5L3	6.2.14 6.2.14
WOVEN PLASTIC BAGS without inner lining or coating sift-proof water-resistant	5H1 5H2 5H3	6.2.15 6.2.15 6.2.15
PLASTIC FILM BAGS	5H4	6.2.16
COMPOSITE PACKAGINGS (plastic material) plastic receptacle with outer steel drum plastic receptacle with outer steel crate*/or box plastic receptacle with outer aluminium drum plastic receptacle with outer aluminium crate*/or box plastic receptacle with outer wooden box plastic receptacle with outer plywood drum plastic receptacle with outer plywood box plastic receptacle with outer fibre drum plastic receptacle with outer fibreboard box plastic receptacle with outer plastic drum plastic receptacle with outer solid plastic box	6HA1 6HA2 6HB1 6HB2 6HC 6HD1 6HD2 6HG1 6HG2 6HH1 6HH2	6.2.17 6.2.17 6.2.17 6.2.17 6.2.17 6.2.17 6.2.17 6.2.17 6.2.17 6.2.17 6.2.17
PAPER, BAGS multi-wall multi-wall, water-resistant	5M1 5M2	6.2.18 6.2.18

* Crates are outer packagings with incomplete surfaces. For air transport, crates may not be used as outer packagings of composite packagings.

5.1 Packing Instructions— Class 1—Explosives

STATE VARIATIONS: BEG-02/03, BHG-02/03, CAG-12, DQG-02, EGG-01, GBG-01, HKG-03, ITG-05, MYG-03, SAG-04, USG-05/16, ZAG-01

OPERATOR VARIATIONS: AH-02, AM-01, AV-01, BR-03, BZ-01, CM-01, D5-01, FX-01, GF-01/02, IJ-01, IR-04, JJ-01, JU-02, KL-01, LY-04, MH-11, OU-11, PL-01, PR-01, PZ-01, SQ-01, TU-01, VN-05, XK-01

5.1.0 General Requirements

5.1.0.1 The General Packing Requirements of 5.0.2 must also be met.

5.1.0.2 Unless otherwise specified in these Regulations, packagings must conform to the applicable requirements of Chapter 6 and must meet the test requirements of 6.3.1 for Packing Group II.

5.1.0.3 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.

5.1.0.4 All explosive substances and articles, as prepared for transport, must have been classified in accordance with the procedures detailed in 3.1.5.

5.1.1 General Packing Provisions

5.1.1.1 The general provisions detailed below are in addition to those in 5.0.2.

5.1.1.2 The closure device of packagings containing liquid explosives must ensure a double protection against leakage.

5.1.1.3 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.

5.1.1.4 Packagings for water-soluble substances must be water resistant.

5.1.1.5 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.

5.1.1.6 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.

5.1.1.7 Inner packagings, fittings and cushioning materials and the placing of explosive articles or substances in packages must be accomplished in a manner which prevents the explosive articles or substances 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.

5.1.1.8 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.

5.1.1.9 The ingress of explosive substances into the recesses of seamed metal packagings must be prevented.

5.1.1.10 Plastic packagings must not be liable to generate or accumulate sufficient static electricity so that a discharge could cause the packaged explosive articles or substances to initiate, ignite or function.

5.1.1.11 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.

5.1.1.12 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 5.0.2.6).

5.1.1.13 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 a packing instruction assignment in Subsection 4.2—List of Dangerous Goods.

5.1.1.14 Electro-explosive devices must be adequately protected against electro-magnetic radiation and stray currents.

5.1.1.15 Large and robust explosive articles, normally intended for military use, with 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.

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 Regulations and

such tests have been successfully undertaken, the appropriate national authority may approve such articles to be transported under these Regulations.

Note:

For an explanation of the term "Receptacle", "Reels", "Trays" and other terms used in the explosives Packing Instructions 101 to 143, see Appendix A.

PACKING INSTRUCTION 101

STATE VARIATIONS: AEG-09, BEG-02, BHG-02/03, CAG-12, DQG-02, EGG-01, GBG-01, HKG-03, ITG-05, KGG-02, MYG-03, SAG-04, USG-05/13, ZAG-01

OPERATOR VARIATIONS: 5X-02/04, AH-02, AI-01, AM-01, AV-01, BR-03, BZ-01, CA-11, CI-01, CM-01, D0-04, D5-01, FX-01, GF-01/02, IG-01, IJ-01, IR-04, JJ-01, JU-02, KL-01, LY-04, MD-04, MH-11, OU-11, PL-01, PR-01, PZ-01, QY-04, SQ-01, TU-01, UL-03, V3-01, VN-05, XK-01

Packagings as specified by the appropriate national authority.

Unless otherwise provided for in these Regulations, packagings must meet Packing Group II requirements.

The following statement must be marked on the Shipper's Declaration for Dangerous Goods: "Packaging approved by the competent authority of XXX"; where "XXX" is the International Vehicle Registration Code (VRI Code) of the country for which the authority acts.

Note:

In this instance the term "competent authority" is used for intermodal compatibility; it refers to the appropriate national authority.

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PACKING INSTRUCTION 114

STATE VARIATIONS: AEG-09, BEG-02, BHG-02/03, CAG-12, DQG-02, EGG-01, GBG-01, HKG-03, ITG-05, KGG-02, MYG-03, SAG-04, USG-05/13, ZAG-01

OPERATOR VARIATIONS: 5X-02/04, AH-02, AI-01, AM-01, AV-01, BR-03, BZ-01, CA-11, CI-01, CM-01, D0-04, D5-01, FX-01, GF-01/02, IG-01, IJ-01, IR-04, JJ-01, JU-02, KL-01, LY-04, MD-04, MH-11, OU-11, PL-01, PR-01, PZ-01, QY-04, SQ-01, TU-01, UL-03, V3-01, VN-05, XK-01

This instruction applies to UN 0407, UN 0448 and UN 0509 on Cargo Aircraft Only.

The General Packing Requirements of Subsection 5.0.2, 5.1.0 and 5.1.1 must be met.

Unless otherwise provided for in these Regulations, packagings must meet Packing Group II requirements.

Wetted Solid:

Wetted solid explosives may only be packed in accordance with this Packing Instruction under an exemption issued by the appropriate national authority of the State of origin.

Dry Solid:

Intermediate packagings are not required.

Additional Packing Requirements

For UN 0509 metal packagings must not be used.



COMBINATION PACKAGINGS

INNER PACKAGINGS

Type	Bags					Receptacles				
Desc.	Paper, kraft	Plastic	Textile, sift proof	Woven plastic, sift proof	Fibreboard	Metal	Paper	Plastic	Woven plastic, sift proof	Wood



OUTER PACKAGINGS

Type	Drums						Boxes				
Desc.	Steel	Aluminium	Plywood	Fibre	Plastic	Other metal	Wood	Plywood	Reconsti- tuted wood	Fibreboard	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4C1 4C2	4D	4F	4G	4N

PACKING INSTRUCTION 130

STATE VARIATIONS: AEG-09, BEG-02, BHG-02/03, CAG-12, DQG-02, EGG-01, GBG-01, HKG-03, ITG-05, KGG-02, MYG-03, SAG-04, USG-05/13, ZAG-01

△ OPERATOR VARIATIONS: 5X-02/04, 9W-10, AA-01, AH-02, AI-01, AM-01, AS-02, AV-01, BR-03, BW-01, BZ-01, CA-11, CI-01, CM-01, D0-04, D5-01, FX-01/16, GF-01/02, HA-01, IG-01, IJ-01, IR-04, JJ-01, JU-02, KL-01, LY-04, MD-04, MH-11, OU-11, PL-01, PR-01, PZ-01, QY-04, SQ-01, TU-01, UA-01, UL-03, UX-04, V3-01, VN-05, XK-01

This instruction applies to explosives on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of Subsection 5.0.2, 5.1.0 and 5.1.1 must be met.

Unless otherwise provided for in these Regulations, packagings must meet Packing Group II requirements.

Inner packagings are not required.

Intermediate packagings are not required.

Particular Packing Requirements or Exceptions:

The following applies to UN 0006, UN 0009, UN 0010, UN 0015, UN 0016, UN 0018, UN 0019, UN 0034, UN 0035, UN 0038, UN 0039, UN 0048, UN 0056, UN 0137, UN 0138, UN 0168, UN 0169, UN 0171, UN 0181, UN 0182, UN 0183, UN 0186, UN 0221, UN 0238, UN 0243, UN 0244, UN 0245, UN 0246, UN 0254, UN 0280, UN 0281, UN 0286, UN 0287, UN 0297, UN 0299, UN 0300, UN 0301, UN 0303, UN 0321, UN 0328, UN 0329, UN 0344, UN 0345, UN 0346, UN 0347, UN 0362, UN 0363, UN 0370, UN 0412, UN 0424, UN 0425, UN 0434, UN 0435, UN 0436, UN 0437, UN 0438, UN 0451, UN 0459, UN 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 (*UN Recommendations on the Transport of Dangerous Goods: Manual of Tests and Criteria*) 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 Regulations and such tests have been successfully undertaken, the appropriate national authority may approve such articles to be transported under these Regulations.

For UN 0457, UN 0458, UN 0459 and UN 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.



OUTER PACKAGINGS

Type	Drums						Boxes							
	Steel	Alumin-ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Wood	Plywood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Desc.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N
Spec.														

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PACKING INSTRUCTION 131

STATE VARIATIONS: AEG-09, BEG-02, BHG-02/03, CAG-12, DQG-02, EGG-01, GBG-01, HKG-03, ITG-05, KGG-02, MYG-03, SAG-04, USG-05/13, ZAG-01

OPERATOR VARIATIONS: 5X-02/04, AH-02, AI-01, AM-01, AV-01, BR-03, BZ-01, CA-11, CI-01, CM-01, D0-04, D5-01, FX-01, GF-01/02, IG-01, IJ-01, IR-04, JJ-01, JU-02, KL-01, LY-04, MD-04, MH-11, OU-11, PL-01, PR-01, PZ-01, QY-04, SQ-01, TU-01, UL-03, V3-01, VN-05, XK-01

This instruction applies to Div. 1.4B explosives on CAO and Div. 1.4S explosives on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of Subsection 5.0.2, 5.1.0 and 5.1.1 must be met.

Unless otherwise provided for in these Regulations, packagings must meet Packing Group II requirements.



PACKING INSTRUCTION 131 *(continued)*

Intermediate packagings are not required.

Particular Packing Requirements or Exceptions.

For UN 0029, UN 0267 and UN 0455, bags and reels must not be used as inner packagings.

COMBINATION PACKAGINGS											
INNER PACKAGINGS											
Type	Bags			Receptacles					Reels		
Desc.	Paper	Plastic		Fibreboard	Metal	Plastic	Wood		Reels		
OUTER PACKAGINGS											
Type	Drums					Boxes					
Desc.	Steel	Alumin-ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Wood	Plywood	Reconsti-tuted wood
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F
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Spec.	4G	4N									

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PACKING INSTRUCTION 133

STATE VARIATIONS: AEG-09, BEG-02, BHG-02/03, CAG-12, DQG-02, EGG-01, GBG-01, HKG-03, ITG-05, KGG-02, MYG-03, SAG-04, USG-05/13, ZAG-01

OPERATOR VARIATIONS: 5X-02/04, AH-02, AI-01, AM-01, AV-01, BR-03, BZ-01, CA-11, CI-01, CM-01, D0-04, D5-01, FX-01, GF-01/02, IG-01, IJ-01, IR-04, JJ-01, JU-02, KL-01, LY-04, MD-04, MH-11, OU-11, PL-01, PR-01, PZ-01, QY-04, SQ-01, TU-01, UL-03, V3-01, VN-05, XK-01

This instruction applies to Div. 1.4B and Div. 1.4G explosives on CAO and Div. 1.4S explosives on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of Subsection 5.0.2, 5.1.0 and 5.1.1 must be met.

Unless otherwise provided for in these Regulations, packagings must meet Packing Group II requirements.

Particular Packing Requirements or Exceptions.

For UN 0043, UN 0212, UN 0225, UN 0268 and UN 0306, trays must not be used as inner packagings.

Receptacles are only required as intermediate packagings when the inner packagings are trays.

COMBINATION PACKAGINGS											
INNER PACKAGINGS											
Type	Receptacles				Trays, fitted with dividing partitions						
Desc.	Fibreboard	Metal	Plastic	Wood	Fibreboard	Plastic	Wood				
INTERMEDIATE PACKAGINGS											
Type	Receptacles										
Desc.	Fibreboard	Metal	Plastic	Wood	Fibreboard	Plastic	Wood				
OUTER PACKAGINGS											
Type	Boxes										
Desc.	Steel	Aluminium	Wood	Plywood	Reconstituted wood	Fibreboard	Plastic	Other metal			
Spec.	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N			

PACKING INSTRUCTION 134

STATE VARIATIONS: AEG-09, BEG-02, BHG-02/03, CAG-12, DQG-02, EGG-01, GBG-01, HKG-03, ITG-05, KGG-02, MYG-03, SAG-04, USG-05/13, ZAG-01

OPERATOR VARIATIONS: 5X-02/04, AH-02, AI-01, AM-01, AV-01, BR-03, BZ-01, CA-11, CI-01, CM-01, D0-04, D5-01, FX-01/16, GF-01/02, IG-01, IJ-01, IR-04, JJ-01, JU-02, KL-01, LY-04, MD-04, MH-11, OU-11, PL-01, PR-01, PZ-01, QY-04, SQ-01, TU-01, UL-03, V3-01, VN-05, XK-01

This instruction applies to Div. 1.3C and Div. 1.4C explosives on CAO and Div. 1.4S explosives on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of Subsection 5.0.2, 5.1.0 and 5.1.1 must be met.

Unless otherwise provided for in these Regulations, packagings must meet Packing Group II requirements.

Intermediate packagings are not required.

COMBINATION PACKAGINGS												
INNER PACKAGINGS												
Type	Bags		Receptacles					Sheets		Tubes		
Desc.	Water resistant	Fibreboard	Metal	Plastic	Wood	Fibreboard, corrugated	Fibreboard					
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F	4G

OUTER PACKAGINGS												
Type	Drums					Boxes						
Desc.	Steel	Alumin-ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Wood	Plywood	Reconstituted wood	Fibre-board
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F	4G

PACKING INSTRUCTION 135

STATE VARIATIONS: AEG-09, BEG-02, BHG-02/03, CAG-12, DQG-02, EGG-01, GBG-01, HKG-03, ITG-05, KGG-02, MYG-03, SAG-04, USG-05/13/16, ZAG-01

OPERATOR VARIATIONS: 5X-02/04, AH-02, AI-01, AM-01, AV-01, BR-03, BZ-01, CA-09/11, CI-01, CM-01, D0-04, D5-01, FX-01/16, GF-01/02, IG-01, IJ-01, IR-04, JJ-01, JU-02, KL-01, LY-04, MD-04, MH-11, MK-02, MU-04, OU-11, PL-01, PR-01, PZ-01, QY-04, SQ-01, TU-01, UL-03, V3-01, VN-05, XK-01

This instruction applies to Div. 1.3G and Div. 1.4G explosives on CAO and Div. 1.4S explosives on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of Subsection 5.0.2, 5.1.0 and 5.1.1 must be met.

Unless otherwise provided for in these Regulations, packagings must meet Packing Group II requirements.

Intermediate packagings are not required.

COMBINATION PACKAGINGS												
INNER PACKAGINGS												
Type	Bags		Receptacles					Sheets		Tubes		
Desc.	Paper	Plastic	Fibreboard	Metal	Plastic	Wood	Fibreboard	Paper	Plastic			
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F	4G

OUTER PACKAGINGS												
Type	Drums					Boxes						
Desc.	Steel	Alumin-ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Wood	Plywood	Reconstituted wood	Fibre-board
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F	4G



PACKING INSTRUCTION 136

STATE VARIATIONS: AEG-09, BEG-02, BHG-02/03, CAG-12, DQG-02, EGG-01, GBG-01, HKG-03, ITG-05, KGG-02, MYG-03, SAG-04, USG-05/13, ZAG-01

OPERATOR VARIATIONS: 5X-02/04, AH-02, AI-01, AM-01, AV-01, BR-03, BZ-01, CA-11, CI-01, CM-01, D0-04, D5-01, FX-01, GF-01/02, IG-01, IJ-01, IR-04, JJ-01, JU-02, KL-01, LY-04, MD-04, MH-11, OU-11, PL-01, PR-01, PZ-01, QY-04, SQ-01, TU-01, UL-03, V3-01, VN-05, XK-01

This instruction applies to Div. 1.4C explosives on CAO and Div. 1.4S explosives on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of Subsection 5.0.2, 5.1.0 and 5.1.1 must be met.

Unless otherwise provided for in these Regulations, packagings must meet Packing Group II requirements.

Dividing partitions in the outer packagings may be used as an alternative to an inner packaging.

Intermediate packagings are not required.

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COMBINATION PACKAGINGS

INNER PACKAGINGS

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Type	Bags			Boxes		
Desc.	Plastic	Textile	Fibreboard	Plastic	Wood	

OUTER PACKAGINGS

Type	Drums						Boxes							
Desc.	Steel	Alumin-ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Wood	Plywood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N

PACKING INSTRUCTION 137

STATE VARIATIONS: AEG-09, BEG-02, BHG-02/03, CAG-12, DQG-02, EGG-01, GBG-01, HKG-03, ITG-05, KGG-02, MYG-03, SAG-04, USG-05/13, ZAG-01

OPERATOR VARIATIONS: 5X-02/04, AH-02, AI-01, AM-01, AV-01, BR-03, BZ-01, CA-11, CI-01, CM-01, D0-04, D5-01, FX-01, GF-01/02, IG-01, IJ-01, IR-04, JJ-01, JU-02, KL-01, LY-04, MD-04, MH-11, OU-11, PL-01, PR-01, PZ-01, QY-04, SQ-01, TU-01, UL-03, V3-01, VN-05, XK-01

This instruction applies to Div. 1.4D explosives on CAO and Div. 1.4S explosives on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of Subsection 5.0.2, 5.1.0 and 5.1.1 must be met.

Unless otherwise provided for in these Regulations, packagings must meet Packing Group II requirements.

Dividing partitions in the outer packagings may be used as an alternative to an inner packaging.

Intermediate packagings are not required.

Particular Packing Requirements or Exceptions.

For UN 0059, UN 0439, UN 0440 and UN 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 minimise the jetting effect in the event of accidental initiation.

COMBINATION PACKAGINGS

INNER PACKAGINGS

Type	Bags	Boxes		Tubes		
Desc.	Plastic	Fibreboard	Wood	Fibreboard	Metal	Plastic

PACKING INSTRUCTION 137 (continued)



OUTER PACKAGINGS

Type	Boxes						
Desc.	Steel	Aluminium	Wood	Plywood	Reconstituted wood	Fibreboard	Other metal
Spec.	4A	4B	4C1 4C2	4D	4F	4G	4N

PACKING INSTRUCTION 138

STATE VARIATIONS: AEG-09, BEG-02, BHG-02/03, CAG-12, DQG-02, EGG-01, GBG-01, HKG-03, ITG-05, KGG-02, MYG-03, SAG-04, USG-05/13, ZAG-01

OPERATOR VARIATIONS: 5X-02/04, AH-02, AI-01, AM-01, AV-01, BR-03, BZ-01, CA-11, CI-01, CM-01, D0-04, D5-01, FX-01, GF-01/02, IG-01, IJ-01, IR-04, JJ-01, JU-02, KL-01, LY-04, MD-04, MH-11, OU-11, PL-01, PR-01, PZ-01, QY-04, SQ-01, TU-01, UL-03, V3-01, VN-05, XK-01

This instruction applies to UN 0237 on CAO.

The General Packing Requirements of Subsection 5.0.2, 5.1.0 and 5.1.1 must be met.

Unless otherwise provided for in these Regulations, packagings must meet Packing Group II requirements.

Intermediate packagings are not required.

Particular Packing Requirements or Exceptions.

Where inner packagings are required, only Plastic Bags are permitted; if the ends of the articles are sealed, inner packagings are not required.



OUTER PACKAGINGS

Type	Drums						Boxes							
	Steel	Alumin-ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Wood	Plywood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Desc.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N

PACKING INSTRUCTION 139

STATE VARIATIONS: AEG-09, BEG-02, BHG-02/03, CAG-12, DQG-02, EGG-01, GBG-01, HKG-03, ITG-05, KGG-02, MYG-03, SAG-04, USG-05/13, ZAG-01

OPERATOR VARIATIONS: 5X-02/04, AH-02, AI-01, AM-01, AV-01, BR-03, BZ-01, CA-11, CI-01, CM-01, D0-04, D5-01, FX-01, GF-01/02, IG-01, IJ-01, IR-04, JJ-01, JU-02, KL-01, LY-04, MD-04, MH-11, OU-11, PL-01, PR-01, PZ-01, QY-04, SQ-01, TU-01, UL-03, V3-01, VN-05, XK-01

This instruction applies to explosives in compatibility group D on CAO.

The General Packing Requirements of Subsection 5.0.2, 5.1.0 and 5.1.1 must be met.

Unless otherwise provided for in these Regulations, packagings must meet Packing Group II requirements.

Intermediate packagings are not required.

Particular Packing Requirements or Exceptions:

For UN 0065, UN 0102, UN 0104, UN 0289 and UN 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 UN 0289, inner packagings are not required when they are in coils.



Dangerous Goods Regulations

PACKING INSTRUCTION 139 (continued)

COMBINATION PACKAGINGS											
INNER PACKAGINGS											
Type	Bags	Receptacles						Reels	Sheets		
Desc.	Plastic	Fibreboard	Metal	Plastic	Wood			Reels	Paper	Plastic	
OUTER PACKAGINGS											
Type	Drums					Boxes					
Desc.	Steel	Alumin-ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Wood	Plywood	Reconstituted wood
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F
											4G
											4H2
											4N

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PACKING INSTRUCTION 140

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STATE VARIATIONS: AEG-09, BEG-02, BHG-02/03, CAG-12, DQG-02, EGG-01, GBG-01, HKG-03, ITG-05, KGG-02, MYG-03, SAG-04, USG-05/13, ZAG-01

OPERATOR VARIATIONS: 5X-02/04, AH-02, AI-01, AM-01, AV-01, BR-03, BZ-01, CA-11, CI-01, CM-01, D0-04, D5-01, FX-01, GF-01/02, IG-01, IJ-01, IR-04, JJ-01, JU-02, KL-01, LY-04, MD-04, MH-11, OU-11, PL-01, PR-01, PZ-01, QY-04, SQ-01, TU-01, UL-03, V3-01, VN-05, XK-01

This instruction applies to Div. 1.4G explosives on CAO and Div. 1.4S explosives on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of Subsection 5.0.2, 5.1.0 and 5.1.1 must be met.

Unless otherwise provided for in these Regulations, packagings must meet Packing Group II requirements.

Intermediate packagings are not required.

Particular Packing Requirements or Exceptions.

If the ends of UN 0105 are sealed, no inner packagings are required.

COMBINATION PACKAGINGS																	
INNER PACKAGINGS																	
Type	Bags	Receptacles						Reels	Sheets								
Desc.	Plastic	Wood			Reels			Paper, kraft			Plastic						
OUTER PACKAGINGS																	
Type	Drums					Boxes											
Desc.	Steel	Alumin-ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Wood	Plywood	Reconstituted wood						
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F						
											4G						
											4H2						
											4N						

PACKING INSTRUCTION 141

STATE VARIATIONS: AEG-09, BEG-02, BHG-02/03, CAG-12, DQG-02, EGG-01, GBG-01, HKG-03, ITG-05, KGG-02, MYG-03, SAG-04, USG-05/13, ZAG-01

OPERATOR VARIATIONS: 5X-02/04, AH-02, AI-01, AM-01, AV-01, BR-03, BZ-01, CA-11, CI-01, CM-01, D0-04, D5-01, FX-01, GF-01/02, IG-01, IJ-01, IR-04, JJ-01, JU-02, KL-01, LY-04, MD-04, MH-11, OU-11, PL-01, PR-01, PZ-01, QY-04, SQ-01, TU-01, UL-03, V3-01, VN-05, XK-01

This instruction applies to Div. 1.4 compatibility group B, D and G explosives on CAO and Div. 1.4S explosives on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of Subsection 5.0.2, 5.1.0 and 5.1.1 must be met.

PACKING INSTRUCTION 141 (continued)

Unless otherwise provided for in these Regulations, packagings must meet Packing Group II requirements.

Dividing partitions in the outer packagings may be used as an alternative to an inner packaging.

Intermediate packagings are not required.

COMBINATION PACKAGINGS																								
INNER PACKAGINGS																								
Type	Receptacles						Trays, fitted with dividing partitions																	
Desc.	Fibreboard		Metal		Plastic		Wood		Plastic		Wood													
OUTER PACKAGINGS																								
Type	Drums						Boxes																	
Desc.	Steel	Alumin-ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Wood	Plywood	Reconstituted wood	Fibre-board	Plastic	Other metal										
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N										

PACKING INSTRUCTION 142

STATE VARIATIONS: AEG-09, BEG-02, BHG-02/03, CAG-12, DQG-02, EGG-01, GBG-01, HKG-03, ITG-05, KGG-02, MYG-03, SAG-04, USG-05/13, ZAG-01

OPERATOR VARIATIONS: 5X-02/04, AH-02, AI-01, AM-01, AV-01, BR-03, BZ-01, CA-11, CI-01, CM-01, D0-04, D5-01, FX-01, GF-01/02, IG-01, IJ-01, IR-04, JJ-01, JU-02, KL-01, LY-04, MD-04, MH-11, OU-11, PL-01, PR-01, PZ-01, QY-04, SQ-01, TU-01, UL-03, V3-01, VN-05, XK-01

This instruction applies to Div. 1.4G explosives on CAO and Div. 1.4S explosives on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of Subsection 5.0.2, 5.1.0 and 5.1.1 must be met.

Unless otherwise provided for in these Regulations, packagings must meet Packing Group II requirements.

Intermediate packagings are not required.

COMBINATION PACKAGINGS																								
INNER PACKAGINGS																								
Type	Bags			Receptacles						Sheets		Trays, fitted with dividing partitions												
Desc.	Paper		Plastic		Fibreboard		Metal		Plastic		Wood		Paper											
OUTER PACKAGINGS																								
Type	Drums						Boxes																	
Desc.	Steel	Alumin-ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Wood	Plywood	Reconstituted wood	Fibre-board	Plastic	Other metal										
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N										

PACKING INSTRUCTION 143

STATE VARIATIONS: AEG-09, BEG-02, BHG-02/03, CAG-12, DQG-02, EGG-01, GBG-01, HKG-03, ITG-05, KGG-02, MYG-03, SAG-04, USG-05/13, ZAG-01

OPERATOR VARIATIONS: 5X-02/04, AH-02, AI-01, AM-01, AV-01, BR-03, BZ-01, CA-11, CI-01, CM-01, D0-04, D5-01, FX-01, GF-01/02, IG-01, IR-04, JJ-01, JU-02, KL-01, LY-04, MD-04, MH-11, OU-11, PL-01, PR-01, PZ-01, QY-04, SQ-01, TU-01, UL-03, V3-01, VN-05, XK-01

This instruction applies to explosives in compatibility group C on CAO.

The General Packing Requirements of Subsection 5.0.2, 5.1.0 and 5.1.1 must be met.

Unless otherwise provided for in these Regulations, packagings must meet Packing Group II requirements.

Intermediate packagings are not required.

Particular Packing Requirements or Exceptions.

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For UN 0271, UN 0272, UN 0415 and UN 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 inner and outer packagings below, composite packagings (6HH2) (plastic receptacle with outer solid box) may be used.



COMBINATION PACKAGINGS

INNER PACKAGINGS

Type	Bags				Receptacles				Trays, fitted with dividing partitions	
Desc.	Paper, kraft	Plastic	Textile	Textile, rubberized	Fibreboard	Metal	Plastic	Wood	Plastic	



OUTER PACKAGINGS

Type	Drums						Boxes							
Desc.	Steel	Alumin-ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Wood	Plywood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N

5.2 Packing Instructions— Class 2—Gases

STATE VARIATIONS: CAG-17, USG-06

OPERATOR VARIATIONS: AS-03, BR-10, CM-02,
HA-02, JU-03, TU-02/03

5.2.0 General Requirements

5.2.0.1 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**). Except as provided by 5.0.1.8, cylinders and closed cryogenic receptacles must be constructed and closed to prevent any loss of contents, which might be caused under normal conditions of transport, including vibration, or by changes in temperature, humidity or pressure (resulting from change in altitude, for example).

5.2.0.2 Parts of cylinders and closed cryogenic receptacles which 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.

5.2.0.3 Cylinders and closed cryogenic receptacles, including their closures, must be selected to contain a gas or a mixture of gases according to the requirements of 6.4.1.2 and the requirements of the specific packing instructions of this Section.

5.2.0.4 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 liquified 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 6.4.1.4 have been performed.

5.2.0.5 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 are authorized for the gas to be transported and that the provisions of these Regulations 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.

5.2.0.6 Cylinders and closed cryogenic receptacles must be filled according to the working pressures, filling ratios and provisions specified below, in 6.4.1.1.5 and in the appropriate packing instruction for the specific substance being filled. 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.

5.2.0.6.1 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 may be imposed by particular provisions contained in Tables 200.A and 200.B. 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 Tables 200.A and 200.B is permitted provided that the above criterion is met, except where Particular Packing Provision "h" 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)

$R = 8.31451 \times 10^{-2}$ 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)

5.2.0.7 Cylinders and closed cryogenic receptacles, including their closures, must conform to the design, construction, inspection and testing requirements detailed in Subsection 6.4. 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.

5.2.0.8 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 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 6.3.3 at the Packing Group I performance standards.

5.2.0.8.1 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 A of ISO 10297:2006 must be met. For metal hydride storage systems, the valve protection requirements specified in ISO 16111:2008 must be met.

5.2.0.9 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 be repaired after being put into service.

5.2.0.10 Refillable cylinders, other than closed cryogenic receptacles, must be periodically inspected according to the provisions of 6.4.1.6 and Packing Instruction 200 or 214. 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.

5.2.0.11 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 6.4.1.6. 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.

5.2.0.12 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 has been examined and found to be in good working order; or
- (c) unless the required certification, retest, and filling markings are legible.

5.2.0.13 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 has been examined and found to be in good working order; or
- (d) unless the required certification, retest, and filling markings are legible.

PACKING INSTRUCTION 200

STATE VARIATIONS: BHG-02, CAG-17, USG-02/04/06/13/15/18

OPERATOR VARIATIONS: 5X-02/06, AA-05, AM-02, AS-03, AV-04, BR-10, CA-11, CI-01, CM-02, CZ-06, FX-02/13/15, HA-02, IJ-02, IR-06, KQ-04, LY-04/05, SQ-03, TN-03, TU-02/03/04, VN-06

This instruction applies to gases in Divisions 2.1, 2.2 and 2.3 on passenger aircraft and Cargo Aircraft Only.

For cylinders, the general packing requirements of 5.0.2 and 5.2.0 must be met.

Cylinders constructed as specified in subsection 6.4 are authorised for the transport of a specific substance when specified in Tables 200.A and 200.B. 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. The substances contained must be permitted in cylinders and permitted for air transport according to these Regulations. 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 1 L 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. The cylinders must be secured or cushioned so as to prevent significant movement within the outer packaging during normal conditions of transport.

For some substances the Particular Packing Provisions of Tables 200.A and 200.B 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. Tables 200.A and 200.B provide:
 - (a) the UN number, and for Table 200.B, the name and description of the substance;
 - (b) the LC₅₀ for toxic substances;
 - (c) the maximum test period for periodic inspection of the cylinders;
 - (d) the minimum test pressure of the cylinders;
 - (e) 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;
 - (f) particular packing provisions that are specific to a substance.
3. Gas mixtures containing any of the following gases must not be offered for transport in aluminium cylinders unless approved by the appropriate national authority of the State of origin and the State of the operator:
 - UN 1037 Ethyl chloride
 - UN 1063 Methyl chloride
 - UN 1063 Refrigerant gas R40
 - UN 1085 Vinyl bromide, stabilized
 - UN 1086 Vinyl chloride, stabilized
 - UN 1860 Vinyl fluoride, stabilized
 - UN 1912 Methyl chloride and methylene chloride mixture.

△ **Note:**

The carriage of oxygen compressed and air compressed to provide life support to aquatic animals must comply with 5.0.1.8 of these Regulations.



PACKING INSTRUCTION 200 (continued)

**TABLE 200.A
Compressed Gases (6.4.1.1.5)**

UN Numbers	Test Period	
	5 Years	10 Years
UN 1071	X	
UN 1002, UN 1006, UN 1046, UN 1049, UN 1056, UN 1065, UN 1066, UN 1072, UN 1954, UN 1956, UN 1957, UN 1964, UN 1971, UN 2034, UN 3156		X

Particular Packing Provisions

- 5
200
1. For all compressed gases, the working pressure must not exceed two thirds of the test pressure.
 - △ 2. UN 1049, UN 1957: When steel cylinders are used, only those bearing the "H" mark in accordance with 6.4.2.7.2 (p) are permitted.
 3. UN 1072: 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.
 4. UN 1954, UN 1956, UN 1964 and UN 3156: 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 5.2.0.6. The necessary steps must be taken to prevent dangerous reactions (i.e. polymerisation or decomposition) during transport. If necessary, stabilization or addition of an inhibitor must be required.

**TABLE 200.B
Liquefied Gases and Dissolved Gases (6.4.1.1.5)**

UN No.	Name and Description	LC ₅₀ mL/m ³	Test Period, (years)	Test Pressure (Bar)	Filling Ratio	Particular Packing Provisions
1001	Acetylene, dissolved		10	60 52		c, i
1009	Bromotrifluoromethane (Refrigerant gas R 13B1)		10	42 120 250	1.13 1.44 1.60	
1010	Butadienes, stabilized (1,2-butadiene) or		10	10	0.59	
1010	Butadienes, stabilized (1,3-butadiene) or		10	10	0.55	m
1010	Butadienes and hydrocarbon mixture, stabilized (containing more than 40% butadienes)		10			l, m
1011	Butane		10	10	0.52	l
1012	Butylene (butylenes mixture) or		10	10	0.50	m
1012	Butylene (1-butylene) or		10	10	0.53	
1012	Butylene (cis-2-butylene) or		10	10	0.55	
1012	Butylene (trans-2 butylene)		10	10	0.54	
1013	Carbon dioxide		10	190 250	0.68 0.76	
1018	Chlorodifluoromethane (Refrigerant gas R 22)		10	27	1.03	
1020	Chloropentafluoroethane (Refrigerant gas R 115)		10	25	1.05	
1021	1-Chloro-1,2,2,2-tetrafluoroethane (Refrigerant gas R 124)		10	11	1.20	
1022	Chlorotrifluoromethane (Refrigerant gas R 13)		10	100 120 190 250	0.83 0.90 1.04 1.11	
1027	Cyclopropane		10	18	0.55	
1028	Dichlorodifluoromethane (Refrigerant gas R 12)		10	16	1.15	
1029	Dichlorofluoromethane (Refrigerant gas R 21)		10	10	1.23	

PACKING INSTRUCTION 200 (continued)

TABLE 200.B
Liquefied Gases and Dissolved Gases (6.4.1.1.5) (continued)

UN No.	Name and Description	LC ₅₀ mL/m ³	Test Period, (years)	Test Pressure (Bar)	Filling Ratio	Particular Packing Provisions
1030	1,1-Difluoroethane (Refrigerant gas R 152a)		10	16	0.79	
1032	Dimethylamine, anhydrous		10	10	0.59	b
1033	Dimethyl ether		10	18	0.58	
1035	Ethane		10	95 120 300	0.25 0.30 0.40	
1036	Ethylamine		10	10	0.61	b
1037	Ethyl chloride		10	10	0.80	a, j
1039	Ethyl methyl ether		10	10	0.64	
1041	Ethylene oxide and carbon dioxide mixture with more than 9% but not more than 87% ethylene oxide		10	190 250	0.66 0.75	
1043	Fertilizer ammoniating solution with free ammonia		5			b, m
1055	Isobutylene		10	10	0.52	
1058	Liquefied gases, non-flammable, charged with nitrogen, carbon dioxide or air		10	Test pressure = 1.5 × working pressure		
1060	Methylacetylene and propadiene mixture, stabilized or		10			c, m
	Methylacetylene and propadiene mixture, stabilized (Propadiene with 1% to 4% methylacetylene)		10	22	0.52	c
1061	Methylamine, anhydrous		10	13	0.58	b
1063	Methyl chloride (Refrigerant gas R 40)		10	17	0.81	a
1070	Nitrous oxide		10	180 225 250	0.68 0.74 0.75	
1075	Petroleum gases, liquefied		10			l, m
1077	Propylene		10	27	0.43	
1078	Refrigerant gas, n.o.s.★		10			m
1080	Sulphur hexafluoride		10	70 140 160	1.06 1.34 1.38	
1081	Tetrafluoroethylene, stabilized		10	200		f, h
1083	Trimethylamine, anhydrous		10	10	0.56	b
1085	Vinyl bromide, stabilized		10	10	1.37	a
1086	Vinyl chloride, stabilized		10	12	0.81	a
1087	Vinyl methyl ether, stabilized		10	10	0.67	
1858	Hexafluoropropylene (Refrigerant gas R 1216)		10	22	1.11	
1860	Vinyl fluoride, stabilized		10	250	0.64	a
1912	Methyl chloride and methylene chloride mixture		10	17	0.81	a
1952	Ethylene oxide and carbon dioxide mixture with not more than 9% ethylene oxide		10	190 250	0.66 0.75	
1958	1,2-Dichloro-1,1,2,2-Tetrafluoroethane (Refrigerant gas R 114)		10	10	1.30	
1959	1,1-Difluoroethylene (Refrigerant gas R 1132a)		10	250	0.77	
1962	Ethylene		10	225 300	0.34 0.38	
1965	Hydrocarbon gas mixture, liquefied, n.o.s.★		10			l, m
1968	Insecticide gas, n.o.s.★		10			m
1969	Isobutane		10	10	0.49	l
1973	Chlorodifluoromethane and chloropentafluoroethane mixture with fixed boiling point, with approximately 49% chlorodifluoromethane (Refrigerant gas R 502)		10	31	1.01	

PACKING INSTRUCTION 200 (continued)

TABLE 200.B
Liquefied Gases and Dissolved Gases (6.4.1.1.5) (continued)

UN No.	Name and Description	LC ₅₀ mL/m ³	Test Period, (years)	Test Pressure (Bar)	Filling Ratio	Particular Packing Provisions
1974	Chlorodifluorobromomethane (Refrigerant gas R 12B1)		10	10	1.61	
1976	Octafluorocyclobutane (Refrigerant gas R C318)		10	11	1.32	
1978	Propane		10	23	0.43	I
1982	Tetrafluoromethane (Refrigerant gas R 14)		10	200 300	0.71 0.90	
1983	1-Chloro-2,2,2-trifluoroethane (Refrigerant gas R 133a)		10	10	1.18	
1984	Trifluoromethane (Refrigerant gas R 23)		10	190 250	0.88 0.96	
2035	1,1,1-Trifluoroethane (Refrigerant gas R 143a)		10	35	0.73	
2036	Xenon		10	130	1.28	
2044	2,2-Dimethylpropane		10	10	0.53	
2073	Ammonia solution, relative density less than 0.880 at 15°C in water, with more than 35% but not more than 40% ammonia with more than 40% but not more than 50% ammonia		5 5	10 12	0.80 0.77	b b
2193	Hexafluorethane (Refrigerant gas R 116)		10	200	1.13	
2200	Propadiene, stabilized		10	22	0.50	
2419	Bromotrifluoroethylene		10	10	1.19	
2422	Octafluorobut-2-ene (Refrigerant gas R 1318)		10	12	1.34	
2424	Octafluoropropane (Refrigerant gas R 218)		10	25	1.04	
2451	Nitrogen trifluoride		10	200 300	0.50 0.75	
2452	Ethylacetylene, stabilized		10	10	0.57	c
2453	Ethyl fluoride (Refrigerant gas R 161)		10	30	0.57	
2454	Methyl fluoride (Refrigerant gas R 41)		10	300	0.63	
2517	1-Chloro-1,1-difluoroethane (Refrigerant gas R 142b)		10	10	0.99	
2599	Chlorotrifluoromethane and trifluoromethane azeotropic mixture with approximately 60% chlorotrifluoromethane (Refrigerant gas R 503)		10	31 42 100	0.12 0.17 0.64	
2601	Cyclobutane		10	10	0.63	
2602	Dichlorodifluoromethane and difluoroethane azeotropic mixture with approximately 74% dichlorodifluoromethane (Refrigerant gas R 500)		10	22	1.01	
3070	Ethylene oxide and dichlorodifluoromethane mixture with not more than 12.5% ethylene oxide		10	18	1.09	
3153	Perfluoro (methyl vinyl ether)		10	20	0.75	
3154	Perfluoro (ethyl vinyl ether)		10	10	0.98	
3157	Liquefied gas, oxidizing, n.o.s.*		10			m
3159	1,1,1,2-Tetrafluoroethane (Refrigerant gas R 134a)		10	18	1.05	
3161	Liquefied gas, flammable, n.o.s.*		10			m
3163	Liquefied gas, n.o.s.*		10			m
3220	Pentafluoroethane (Refrigerant gas R 125)		10	49 35	0.95 0.87	

PACKING INSTRUCTION 200 (continued)

TABLE 200.B
Liquefied Gases and Dissolved Gases (6.4.1.1.5) (continued)

UN No.	Name and Description	LC ₅₀ mL/m ³	Test Period, (years)	Test Pressure (Bar)	Filling Ratio	Particular Packing Provisions
3252	Difluoromethane (Refrigerant gas R 32)		10	48	0.78	
3296	Heptafluoropropane (Refrigerant gas R 227)		10	13	1.21	
3297	Ethylene oxide and chlorotetrafluoroethane mixture with not more than 8.8% ethylene oxide		10	10	1.16	
3298	Ethylene oxide and pentafluoroethane mixture with not more than 7.9% ethylene oxide		10	26	1.02	
3299	Ethylene oxide and tetrafluoroethane mixture with not more than 5.6% ethylene oxide		10	17	1.03	
3337	Refrigerant gas R 404A		10	36	0.82	
3338	Refrigerant gas R 407A		10	32	0.94	
3339	Refrigerant gas R 407B		10	33	0.93	
3340	Refrigerant gas R 407C		10	30	0.95	
3354	Insecticide gas, flammable, n.o.s.*		10			m
3374	Acetylene, solvent free		5	60 52		c, i

Particular 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% copper.

△ (d) When steel cylinders are used, only those bearing the "H" mark in accordance with 6.4.2.7.2(p) are permitted.

Gas specific provisions

- (e) Not used.
- (f) Cylinders must be filled to a working pressure not exceeding 5 bar.
- (g) Not used.
- (h) In no case must the working pressure or filling ratio shown in the table be exceeded.
- (i) For UN 1001 and UN 3374:
 1. 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;
 2. for UN 1001, 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 with pressure relief devices must be transported vertically;
 3. the test pressure of 52 bar only applies to cylinders conforming to ISO 3807-2:2000.
- (j) UN 1037 may be carried in securely sealed glass ampoules containing not more than 5 g of ethyl chloride and filled with an ullage of not less than 7.5% at 21°C. Ampoules must be cushioned with efficient non-combustible material in partitioned cartons to the extent of 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 standards of Subsection 6.3 at the Packing Group II performance level. Not more than 300 g of ethyl chloride is permitted per package.

Periodic inspection

- (k) 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.
- (l) The interval between periodic tests may be extended to 15 years for steel cylinders if approved by the appropriate national authority of the country of use.

PACKING INSTRUCTION 200 *(continued)*

Requirements for n.o.s. descriptions and mixtures

(m) 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 5.2.0.6.

The necessary steps must be taken to prevent dangerous reactions (i.e. polymerisation or decomposition) during transport. If necessary, stabilization or addition of an inhibitor must be required.

PACKING INSTRUCTION 201

STATE VARIATION: USG-07

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OPERATOR VARIATIONS: BR-09, CI-01, CM-02, IJ-02, LY-04, SQ-03, TU-02, VN-06

200

This instruction applies to UN 1057 and UN 3150 on passenger aircraft and Cargo Aircraft Only.

to

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The General Packing Requirements of 5.0.2 must be met.

The devices, lighters and/or refills, must be tightly packed to prevent inadvertent operation in boxes of Packing Group II as shown below.

- (a) Hydrocarbon gas powered small devices, including replacement cartridges, and lighters for cigarettes and lighter refills must comply with the requirements of the State in which they are filled. They must be provided with protection against inadvertent discharge. Lighters must contain 10 g or less of liquefied petroleum gas. Hydrocarbon gas powered small devices and lighter refills must contain 65 g or less of liquefied petroleum gas. The liquid portion of the gas must not exceed 85% of the capacity of the fuel vessel at 15°C. The articles, including closures, must be capable of withstanding an internal pressure which is twice the pressure in the fuel vessel at 55°C. 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 meeting 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.
- (b) 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 functioning or failure of the article during transport. Such consignments must be carried on cargo aircraft.
- (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 paragraphs (b) to (e) of Packing Instruction 203 must be met.

OUTER PACKAGINGS

Type	Boxes				
Desc.	Wood	Plywood	Reconstituted wood	Fibreboard	Plastic
Spec.	4C1 4C2	4D	4F	4G	4H1 4H2

PACKING INSTRUCTION 202

STATE VARIATION: USG-13

OPERATOR VARIATIONS: CI-01, FX-08, IJ-02, LY-04, SQ-03, TU-04

This instruction applies to Division 2.2 refrigerated liquefied gases in open and closed cryogenic receptacles on passenger aircraft and Cargo Aircraft Only.

Requirements for closed cryogenic receptacles

- (a) the General Packing Requirements of 5.0.2 and 5.2 must be met;
- (b) the requirements of 6.4 must be met;
- (c) the closed cryogenic receptacles must be so insulated that they do not become coated with frost;

PACKING INSTRUCTION 202 *(continued)*

(d) test pressure. Refrigerated liquids must be filled in closed cryogenic receptacles with the following minimum test pressures:

1. 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);
2. 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.

(e) degree of filling. For non-flammable, non-toxic 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% of the water capacity of the pressure receptacle;

(f) pressure-relief devices

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.

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 6.4.1.3.6.3. 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 6.4.1.3.6.3 and 6.4.1.3.6.4.

(g) 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.

(h) periodic inspection

The periodic inspection and test frequencies of pressure relief valves must not exceed five years.

Requirements for open cryogenic receptacles

Open cryogenic receptacles must be constructed to meet the following requirements:

- (a) the receptacles 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 their normal use and during normal conditions of transport;
- (b) the maximum water capacity for metal receptacles is 50 L and for glass receptacles is 5 L;
- (c) the receptacle must have a double wall construction with the space between the inner and outer wall being evacuated (vacuum insulation). The insulation must prevent the formation of hoar frost on the exterior of the receptacle;
- (d) the materials of construction must have suitable mechanical properties at the service temperature;
- (e) materials which are in direct contact with the dangerous goods must not be affected or weakened by the dangerous goods intended to be transported and must not cause a dangerous effect, e.g. catalysing a reaction or reacting with the dangerous goods;
- (f) 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 the openings must be fitted with devices allowing gases to escape, preventing any splashing out of liquid and so configured that they remain in place during transport;
- (g) the receptacle must be designed to remain in an upright position during transport (e.g. have a base whose smaller horizontal dimension is greater than the height of the centre of gravity when filled to capacity or be mounted on gimbals);
- (h) receptacles of glass double wall construction must have an outer packaging with suitable cushioning or absorbent materials which withstand the pressures and impacts liable to occur under normal conditions of transport;
- (i) open cryogenic receptacles must bear the following marks permanently affixed e.g. by stamping, engraving or etching:
 - the manufacturer's name and address;
 - the model number or name;
 - the serial or batch number;
 - the UN number and proper shipping name of gases for which the receptacle is intended;
 - the capacity of the receptacle in litres.



Note:

The size of the marking must be as set out for cylinders in 6.4.2.7.1. Open cryogenic receptacles manufactured prior to 1 January 2012 are not required to be so marked.

PACKING INSTRUCTION 202 (continued)

- (j) open cryogenic receptacles are permitted for argon, krypton, neon, nitrogen and xenon refrigerated liquids.



Note:

Insulated packagings containing refrigerated liquid nitrogen fully absorbed in a porous material are not subject to these Regulations when carried as cargo, provided they meet the requirements of Special Provision A152.

PACKING INSTRUCTION 203

STATE VARIATIONS: USG-06/13

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to
203

OPERATOR VARIATIONS: AA-01, AS-02, BW-01, CI-01, CM-02, FX-02, HA-02, IJ-02, IR-06, LY-04, SQ-03, TU-02, UX-04, VN-06

This instruction applies to aerosols in Division 2.1 and 2.2 and UN 2037 on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

The valves, if fitted, must be protected by a cap or other suitable means during transport to prevent accidental activation.

Receptacles must be tightly packed, so as to prevent movement.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards.

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 L capacity. The following conditions must be met:

- the pressure in the receptacle must not exceed 1,500 kPa at 55°C (15.00 bar) 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;
- if the pressure in the receptacle exceeds 970 kPa at 55°C (9.7 bar) but does not exceed 1,105 kPa at 55°C (11.05 bar), one of the following metal receptacles must be used:
 - IP7, IP7A, IP7B;
- if the pressure in the receptacle exceeds 1,105 kPa at 55°C (11.05 bar) but does not exceed 1,245 kPa at 55°C (12.45 bar), one of the following metal receptacles must be used:
 - IP7A, IP7B;
- if the pressure in the receptacle exceeds 1,245 kPa at 55°C (12.45 bar), an IP7B metal receptacle must be used;
- IP7B 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) above do not apply to the pressure within the capsule for an aerosol. The quantity of gas contained in the capsule must be so limited 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;
- the liquid content must not completely fill the closed receptacle at 55°C;
- 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 these Regulations, in which case the quantity must not exceed 500 mL.

The following conditions must be met:

1. the contents must not completely fill the closed receptacle at 55°C;
2. the pressure in the container may not exceed 970 kPa at 55°C; and
3. each receptacle must be leak tested in accordance with the provisions of 6.1.9.2.4.

PACKING INSTRUCTION 203 *(continued)*

OUTER PACKAGINGS

Type	Boxes				
Desc.	Wood	Plywood	Reconstituted wood	Fibreboard	Plastic
Spec.	4C1 4C2	4D	4F	4G	4H1 4H2

PACKING INSTRUCTION Y203

STATE VARIATIONS: USG-06/13

OPERATOR VARIATIONS: AA-01, AS-02, BW-01, CI-01, CM-02, FX-02, GA-03, GF-04, HA-01, IJ-12, IR-06, KQ-08, LH-01, LX-02, LY-04, MH-14, OS-03, OU-04, PX-10, SW-02, TN-04, TU-02, UX-02, VN-06, VO-03, XK-03

This instruction applies to Limited Quantities of aerosols and UN 2037.

The General Packing Requirements of Subsection 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

The requirements of Subsection 2.7 must be met.

The valves, if fitted, must be protected by a cap or other suitable means during transport to prevent accidental activation.

Receptacles must be tightly packed, so as to prevent movement.

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) containing toxic substances must not exceed 120 mL capacity.

All other non-refillable metal aerosols and non-refillable receptacles, containing gas (gas cartridges) must not exceed 1 L capacity. The following conditions must be met:

- (a) the pressure in the receptacle must not exceed 1,245 kPa at 55°C (12.45 bar) 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 (9.7 bar) but does not exceed 1,105 kPa at 55°C (11.05 bar), one of the following metal receptacles must be used:
 - IP7, IP7A, IP7B;
- (c) if the pressure in the receptacle exceeds 1,105 kPa at 55°C (11.05 bar), one of the following metal receptacles must be used:
 - IP7A, IP7B;
- (d) if the pressure in the receptacle exceeds 1,245 kPa at 55°C, the following metal receptacle must be used:
 - IP7B;
- (e) the liquid content must not completely fill the closed receptacle at 55°C;
- (f) IP7B 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) above do not apply to the pressure within the capsule for an aerosol. The quantity of gas contained in the capsule must be so limited 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;
- (g) each receptacle exceeding 120 mL capacity must have been heated until the pressure 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 these Regulations, in which case the quantity must not exceed 500 mL.

PACKING INSTRUCTION Y203 (continued)

The following conditions must be met:

1. the contents must not completely fill the closed receptacle at 55°C;
2. the pressure in the container may not exceed 970 kPa at 55°C; and
3. each receptacle must be leak tested in accordance with the provisions of 6.1.9.2.4.

The maximum quantity in each outer package must not exceed the quantity shown in Column H of the List of Dangerous Goods.

The gross weight of the completed package must not exceed 30 kg.

OUTER PACKAGINGS

Type	Boxes				
Desc.	Wood	Plywood	Reconstituted wood	Fibreboard	Plastic

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Y203

to

Y204

PACKING INSTRUCTION 204

STATE VARIATIONS: USG-06/13

OPERATOR VARIATIONS: CI-01, LY-04

This instruction applies to UN 1950, non-flammable aerosols containing heat sensitive products or preparations on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Non-flammable aerosols 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 (9.7 bar);
- (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 to prevent accidental activation;
- (e) aerosols must be tightly packed, so as to prevent movement in boxes of Packing Group II, as indicated below.

OUTER PACKAGINGS

Type	Boxes				
Desc.	Wood	Plywood	Reconstituted wood	Fibreboard	Plastic
Spec.	4C1 4C2	4D	4F	4G	4H1 4H2

PACKING INSTRUCTION Y204

STATE VARIATIONS: USG-06/13

OPERATOR VARIATIONS: CI-01, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, LY-04, MH-14, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, XK-03

For Limited Quantities of UN 1950, non-flammable aerosols containing heat sensitive products or preparations.

The General Packing Requirements of Subsection 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

The requirements of Subsection 2.7 must be met.

Single packagings are not permitted.

PACKING INSTRUCTION Y204 *(continued)*

Non-flammable aerosols 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 (9.7 bar);
- (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 to prevent accidental activation;
- (e) aerosols must be tightly packed so as to prevent movement in one of the following boxes.

The maximum quantity in each outer package must not exceed the quantity shown in Column H of the List of Dangerous Goods.

The gross weight of the completed package must not exceed 30 kg.

OUTER PACKAGINGS

Type	Boxes				
Desc.	Wood	Plywood	Reconstituted wood	Fibreboard	Plastic

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PACKING INSTRUCTION 206

STATE VARIATIONS: BHG-02, USG-02

OPERATOR VARIATIONS: 5X-02/04, AM-02, AS-03, AV-04, BR-10, CA-11, CI-01, CM-02, CZ-06, HA-02, IJ-02, KQ-04, LY-04/05, SQ-03, TU-02/03, VN-06

This instruction applies to Gas samples, non-pressurized in Division 2.3 on CAO and in Division 2.1 on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 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.

Cylinders and gas receptacles conforming to the construction, testing and filling requirements approved by the appropriate national authority are permitted

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards;
- inner packaging(s) must be packed so as to prevent movement in the outer packaging.

Single packagings are not permitted.

COMBINATION PACKAGINGS

INNER PACKAGINGS

UN number	Inner Packaging (see 6.1)	Net quantity per inner packaging Passenger Aircraft	Net quantity per inner packaging Cargo Aircraft Only	Total net quantity per package Passenger Aircraft	Total net quantity per package Cargo Aircraft Only
UN 3167 Gas sample, non-pressurized, flammable, n.o.s.	Glass	1.0 L	2.5 L	1.0 L	5.0 L
	Metal	1.0 L	2.5 L		
UN 3168 Gas sample, non-pressurized, toxic, flammable, n.o.s.	Glass	Forbidden	1.0 L	Forbidden	1.0 L
	Metal		1.0 L		
UN 3169 Gas sample, non-pressurized, toxic, n.o.s.	Glass	Forbidden	1.0 L	Forbidden	1.0 L
	Metal		1.0 L		

PACKING INSTRUCTION 206 (continued)



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 208

STATE VARIATION: USG-13

OPERATOR VARIATIONS: CI-01, LY-04

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This instruction applies to UN 3164 on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 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 five times their charged pressure at 21°C when shipped.

Note:

For 208(a), *Labelling, Marking, Shipper's Declaration and information to pilot-in-command are not required. See 8.2.3 for Air Waybill requirements.*

- (b) when tightly packed to prevent movement in strong outer packagings and when charged to not more than 1,380 kPa at 21°C (13.8 bar), 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 three times its charged pressure at 21°C, but not less than 830 kPa (8.3 bar) before initial shipment and before each refilling and reshipment;
- (c) when tightly packed to prevent movement in strong outer packagings and when charged with a pressure exceeding 1,380 kPa at 21°C (13.8 bar), 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 three times its charged pressure at 21°C, but not less than 830 kPa (8.3 bar) before initial shipment and before each refilling and reshipment,
 3. each article must be designed and constructed with a burst pressure of not less than five times its charged pressure at 21°C when shipped.

PACKING INSTRUCTION 211

STATE VARIATIONS: USG-12/13

OPERATOR VARIATIONS: CI-01, LY-04

This instruction applies to UN 2857, Refrigerating machines, on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 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 a 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 a subsidiary risk or more than 45 kg of Ammonia solution (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;

PACKING INSTRUCTION 211 *(continued)*

- (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.

PACKING INSTRUCTION 212

STATE VARIATIONS: USG-06/13

OPERATOR VARIATIONS: AA-01, AS-02, BW-01, CI-01, FX-02, HA-01, LY-04, UX-04

This instruction applies to UN 1950 Aerosols, non-flammable (tear gas devices) on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards.

Aerosols, non-flammable, which are tear gas devices are permitted in inner non-refillable metal receptacles not exceeding 1,000 mL providing all the following conditions are met:

- (a) the pressure in the receptacle must not exceed 1,500 kPa at 55°C (15.00 bar) 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 (11.05 bar), one of the following metal receptacles must be used:
 - IP7, IP7A, IP7B;
- (c) if the pressure in the receptacle exceeds 1,105 kPa at 55°C (11.05 bar) but does not exceed 1,245 kPa at 55°C (12.45 bar), one of the following metal receptacles must be used:
 - IP7A, IP7B;
- (d) if the pressure in the aerosol exceeds 1,245 kPa at 55°C (12.45 bar), an IP7B metal receptacle must be used;
- (e) IP7B 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) above do not apply to the pressure within the capsule for an aerosol. The quantity of gas contained in the capsule must be so limited 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 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, if fitted, must be protected by a cap or other suitable means during transport to prevent accidental activation;
- (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 one of the boxes shown below;
- (j) the maximum net quantity per package is 50 kg.

OUTER PACKAGINGS

Type	Boxes				
	Wood	Plywood	Reconstituted wood	Fibreboard	Plastic
Spec.	4C1 4C2	4D	4F	4G	4H1 4H2

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PACKING INSTRUCTION 213

STATE VARIATIONS: CAG-17, USG-02/06/13

OPERATOR VARIATIONS: BZ-01, CI-01, LY-04

This instruction applies to UN 1044, Fire extinguishers, on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Fire extinguishers with compressed or liquefied gas must be packed, so that they cannot be activated, in strong outer packagings.

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) explosive does not exceed 3.2 g per extinguishing unit.

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PACKING INSTRUCTION 214

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OPERATOR VARIATIONS: CI-01, CM-02, LY-04, SQ-03, TU-02, VN-06

This instruction applies to UN 3468, Hydrogen in a metal hydride storage system, individually or when contained in equipment and apparatus when transported on Cargo Aircraft Only.

The storage systems must meet the following design, construction and test requirements:

- (a) for metal hydride storage systems, the general packing requirements of 5.2 must be met;
- (b) only cylinders not exceeding 150 L in water capacity and having a maximum developed pressure not exceeding 25 MPa are covered by this packing instruction;
- (c) metal hydride storage systems meeting the applicable requirements of 6.4 for the construction and testing of cylinders containing gas may be used for the transport of hydrogen only;
- (d) when steel cylinders or composite cylinders with steel liners are used, only those bearing the "H" mark, in accordance with 6.4.2.9(j) are permitted;
- (e) metal hydride storage systems must meet the service conditions, design criteria, rated capacity, type tests, batch tests, routine tests, test pressure, rated charging pressure and provisions for pressure relief devices for transportable metal hydride storage systems specified in ISO 16111:2008 and their conformity and approval must be assessed in accordance with 6.4.2.5;
- (f) metal hydride storage systems must be filled with hydrogen at a pressure not exceeding the rated charging pressure shown in the permanent markings on the system as specified by ISO 16111:2008;
- (g) the periodic test requirements for a metal hydride storage system must be in accordance with ISO 16111:2008 and carried out in accordance with 6.4.2.6, and the interval between periodic inspections must not exceed five years;
- (h) 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;
- (i) maximum net quantity per package for cargo aircraft is 100 kg of metal hydride storage systems, including when such storage systems are packed with equipment or contained in equipment.

PACKING INSTRUCTION 215

This instruction applies to UN 3478 and UN 3479 on passenger aircraft and Cargo Aircraft Only.

The requirements of 5.0.2.4, 5.0.2.5, 5.0.2.6 and 5.0.6 must be met, as appropriate.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Additional Packing Requirements

- fuel cell cartridges must be securely cushioned in the outer packagings;
- packagings must meet Packing Group II performance standards.

Single packagings are not permitted.

PACKING INSTRUCTION 215 (continued)

COMBINATION PACKAGINGS												
UN number				Net quantity per package Passenger Aircraft					Net quantity per package Cargo Aircraft Only			
UN 3478, Fuel cell cartridges				1.0 kg of fuel cell cartridges					15.0 kg of fuel cell cartridges			
UN 3479, Fuel cell cartridges												

△ OUTER PACKAGINGS

Type	Drums				Jerricans				Boxes							
Desc.	Steel	Alumin-ium	Ply-wood	Fibre	Plastic	Steel	Alumin-ium	Plastic	Steel	Alumin-ium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A2	1B2	1D	1G	1H2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

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PACKING INSTRUCTION Y215

OPERATOR VARIATIONS: DE-01, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to UN 3478 and UN 3479 in limited quantities.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

For the purpose of this packing instruction, a fuel cell cartridge is considered an inner packaging.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Additional Packing Requirements

- fuel cell cartridges must not exceed 120 mL water capacity each;
- fuel cell cartridges must be securely cushioned in the outer packagings.

Single packagings are not permitted.

UN Number									Maximum Quantity per package						
UN 3478 Fuel cell cartridges, containing liquefied flammable gas									0.5 kg of fuel cell cartridges						
UN 3479 Fuel cell cartridges, containing hydrogen in metal hydride															

△ OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION 216

This instruction applies to UN 3478 and UN 3479 contained in equipment on passenger aircraft and Cargo Aircraft Only. The requirements of 5.0.2.4.1 and 5.0.2.11 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

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 strong 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 62282-6-100 Ed. 1 or a standard approved by the appropriate authority of the State of Origin.

Single packagings are not permitted.

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COMBINATION PACKAGINGS										
UN number				Net quantity per package Passenger Aircraft				Net quantity per package Cargo Aircraft Only		
UN 3478, Fuel cell cartridges				1.0 kg of fuel cell cartridges				15.0 kg of fuel cell cartridges		
UN 3479, Fuel cell cartridges										

OUTER PACKAGINGS—Strong outer packagings, such as:

Type	Drums						Jerricans				Boxes					
Desc.	Steel	Alumin- ium	Ply- wood	Fibre	Plastic	Other metal	Steel	Alumin- ium	Plastic	Steel	Alumin- ium	Wood	Ply- wood	Recon- stituted wood	Fibre- board	Plastic

PACKING INSTRUCTION 217

This instruction applies to UN 3478 and UN 3479 packed with equipment on passenger aircraft and Cargo Aircraft Only. The requirements of 5.0.2.4.1 and 5.0.2.11 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

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.

Single packagings are not permitted.

COMBINATION PACKAGINGS										
UN number				Net quantity per package Passenger Aircraft				Net quantity per package Cargo Aircraft Only		
UN 3478, Fuel cell cartridges				1.0 kg of fuel cell cartridges				15.0 kg of fuel cell cartridges		
UN 3479, Fuel cell cartridges										

OUTER PACKAGINGS

Type	Drums	Jerricans	Boxes
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PACKING INSTRUCTION 218

This instruction applies to UN 3500, UN 3501, UN 3502, UN 3503, UN 3504 and UN 3505 on passenger aircraft and Cargo Aircraft Only.

The requirements of 5.0.2.4.1 and 5.2.0 must be met. 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. The substances contained must be permitted in cylinders and permitted for air transport according to these Regulations. Cylinders for which prescribed periodic tests have become due must not be charged and offered for transport until such retests have been successfully completed.

Unless otherwise indicated in these Regulations, cylinders conforming to the applicable requirements of Subsection 6.4 are permitted.

Compatibility Requirements

- 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 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.

Periodic Inspection

- the maximum test period for periodic inspection must be 5 years.

Additional Packing Requirements

- cylinders must be so filled that at 50°C the non-gaseous phase does not exceed 95% of their water capacity and they are not completely filled at 60°C. When filled, the internal pressure at 65°C must not exceed the test pressure of the cylinders. The vapour pressures and volumetric expansion of all substances in the cylinders must be taken into account;
- the minimum test pressure must be in accordance with Packing Instruction 200 for the propellant but must not be less than 20 bar;
- non-refillable cylinders used may have a water capacity in litres not exceeding 1,000 L divided by the test pressure expressed in bars provided capacity and pressure restrictions of the construction standard comply with ISO 11118:1999, which limits the maximum capacity to 50 L;
- cylinders must not be offered for transport when connected with spray application equipment such as a hose and wand assembly;
- cylinders must be packed in strong outer packagings.

OUTER PACKAGINGS—Strong outer packagings, such as:

Type	Drums						Jerricans			Boxes						
	Steel	Alumin-ium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Plastic	Steel	Alumin-ium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic
Desc.																

5.3 Packing Instructions—Class 3—Flammable Liquids

PACKING INSTRUCTION Y340

OPERATOR VARIATIONS: 5X-02, AA-01, AM-03, AS-02, BW-01, CX-02, DE-01, FX-02/17, GA-03, GF-04, HA-01, IJ-12, JJ-07, KA-02, KE-07, KQ-08, LD-02, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of flammable liquids with a Class 8 or a Class 8 and Division 6.1 subsidiary risk in Packing Group II.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- inner packagings for liquids must be capable of passing a pressure differential test (5.0.2.9);
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS																			
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package											
Glass				0.5 L				0.5 L											
Metal				0.5 L															
Plastic				0.5 L															



OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Desc.																	

PACKING INSTRUCTION Y341

STATE VARIATIONS: BEG-03, SAG-01

OPERATOR VARIATIONS: 5X-02, AA-01, AM-03, AS-02, BW-01, CX-02, DE-01, FX-02/17, GA-03, GF-04, HA-01, IJ-12, IR-06, JJ-07, KA-02, KE-07, KQ-08, LD-02, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of flammable liquids with no subsidiary risk or a subsidiary risk of Division 6.1 in Packing Group II.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

PACKING INSTRUCTION Y341 (continued)

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- inner packagings for liquids must be capable of passing a pressure differential test (5.0.2.9);
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS																				
Inner Packaging (see 6.1)			Net quantity per inner packaging						Total net quantity per package											
Glass			0.5 L						1.0 L											
Metal			0.5 L																	
Plastic			0.5 L																	



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes								
	Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION Y342

OPERATOR VARIATIONS: AM-03, CX-02, DE-01, FX-17, GA-03, GF-04, IJ-12, JJ-07, KA-02, KE-07, KQ-08, LD-02, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of flammable liquids with a Class 8 subsidiary risk in Packing Group III.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- inner packagings for liquids must be capable of passing a pressure differential test (5.0.2.9);
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS																				
Inner Packaging (see 6.1)			Net quantity per inner packaging						Total net quantity per package											
Glass			1.0 L						1.0 L											
Metal			1.0 L																	
Plastic			1.0 L																	

PACKING INSTRUCTION Y342 (continued)



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION Y343

OPERATOR VARIATIONS: 5X-02, AA-01, AM-03, AS-02, BW-01, CX-02, DE-01, FX-02/17, GA-03, GF-04, HA-01, IJ-12, JJ-07, KA-02, KE-07, KQ-08, LD-02, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of flammable liquids with a Division 6.1 subsidiary risk in Packing Group III.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

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Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- inner packagings for liquids must be capable of passing a pressure differential test (5.0.2.9);
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS																					
Inner Packaging (see 6.1)				Net quantity per inner packaging						Total net quantity per package											
Glass				1.0 L						2.0 L											
Metal				1.0 L																	
Plastic				1.0 L																	



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION Y344

STATE VARIATIONS: BEG-03, SAG-01, USG-04

OPERATOR VARIATIONS: AM-03, CX-02, DE-01, FX-17, GA-03, GF-04, IJ-12, JJ-07, KA-02, KE-07, KQ-08, LD-02, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of flammable liquids with no subsidiary risk in Packing Group III.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

PACKING INSTRUCTION Y344 (continued)

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- inner packagings for liquids must be capable of passing a pressure differential test (5.0.2.9);
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS		
Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
Glass	2.5 L	10.0 L
Metal	5.0 L	
Plastic	5.0 L	

OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION 350

STATE VARIATION: BEG-03

OPERATOR VARIATIONS: AI-02, AM-03, BR-02, CX-02/05, FX-17, JJ-07, KA-02/05, KZ-07, LD-02/06, LY-04, OZ-04, TU-05, VN-04

This instruction applies to flammable liquids with a Class 8 subsidiary risk in Packing Group I on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- △ • inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Single packagings are not permitted.

COMBINATION PACKAGINGS		
Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
Glass	0.5 L	0.5 L
Metal	0.5 L	
Plastic	Forbidden	



PACKING INSTRUCTION 350 *(continued)*



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 351

STATE VARIATION: BEG-03

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This instruction applies to flammable liquids in Packing Group I on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- △ • inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Single packagings are not permitted.

COMBINATION PACKAGINGS

Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
Glass	0.5 L	1.0 L
Metal	1.0 L	
Plastic	Forbidden	



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 352

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, AA-01, AM-03, AS-02, BW-01, CX-02/05, FX-02/17, JJ-07, KA-02/05, KZ-07, LD-02/06, LY-04, UX-04

This instruction applies to flammable liquids with a Class 8 and/or Division 6.1 subsidiary risk in Packing Group II on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

PACKING INSTRUCTION 352 (continued)

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.

COMBINATION PACKAGINGS																		
Inner Packaging (see 6.1)					Net quantity per inner packaging				Total net quantity per package									
Glass					1.0 L				1.0 L									
Metal					1.0 L													
Plastic					1.0 L													

OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

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PACKING INSTRUCTION 353

STATE VARIATION: BEG-03

OPERATOR VARIATIONS: AM-03, CX-02, FX-17, IR-06, JJ-07, KA-02, KZ-07, LD-02, LY-04

This instruction applies to flammable liquids without a subsidiary risk in Packing Group II on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.

COMBINATION PACKAGINGS																		
Inner Packaging (see 6.1)					Net quantity per inner packaging				Total net quantity per package									
Glass					1.0 L				5.0 L									
Metal					5.0 L													
Plastic					5.0 L													

OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 354

OPERATOR VARIATIONS: AM-03, AY-04, CA-10, CI-04, CX-02/03/05, EI-01, EY-03, FX-17, JJ-07, JL-09, KA-02/03/05, KC-06, KE-07, KZ-07, LD-02/03/06, LY-04, MK-12, NH-06, OK-04, OZ-08, SK-04, TG-02, UA-01

This instruction applies to flammable liquids with a Class 8 subsidiary risk in Packing Group III on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards.

Combination and single packagings are permitted.

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COMBINATION PACKAGINGS																			
Inner Packaging (see 6.1)					Net quantity per inner packaging					Total net quantity per package									
Glass					2.5 L					5.0 L									
					Metal														
					Plastic														



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS

Type	Drums				Jerricans			Composites		Cylinders
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	
Spec.	1A1 1A2	1B1 1B2	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	All	As permitted in 5.0.6.6	

PACKING INSTRUCTION 355

STATE VARIATIONS: BEG-03, USG-04/13

OPERATOR VARIATIONS: 5X-02, AA-01, AM-03, AS-02, AY-04, BA-01, BW-01, CA-10, CX-02/03, EI-01, EY-03, FX-02/17, JJ-07, JL-09, KA-02/03, KC-06, KE-07, KZ-07, LD-02/03, LY-04, MK-12, NH-06, OK-04, SK-04, TG-02, UA-01, UX-04

This instruction applies to flammable liquids with no subsidiary risk or a subsidiary risk of Division 6.1 in Packing Group III on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Combination and single packagings are permitted.

PACKING INSTRUCTION 355 (continued)

COMBINATION PACKAGINGS																	
Inner Packaging (see 6.1)						Net quantity per inner packaging				Total net quantity per package							
Glass						2.5 L				60.0 L							
Metal						10.0 L											
Plastic						10.0 L											

⚠ **OUTER PACKAGINGS**

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS												
Type	Drums				Jerricans				Composites		Cylinders	
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	Cylinders		
Spec.	1A1 1A2	1B1 1B2	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2		All		As permitted in 5.0.6.6	

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PACKING INSTRUCTION 360

OPERATOR VARIATIONS: 5X-02, AY-04, BR-02, CA-10, CI-04, CX-02/05, EY-03, FX-02/17, JL-09, KA-02/05, KE-07, KZ-07, LD-02/06, MK-12, NH-06, OZ-08, TG-02

This instruction applies to flammable liquids with a Class 8 subsidiary risk in Packing Group I on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- ⚠ • inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS																	
Inner Packaging (see 6.1)						Net quantity per inner packaging				Total net quantity per package							
Glass						1.0 L				2.5 L							
Metal						2.5 L											
Plastic						Forbidden											

⚠ **OUTER PACKAGINGS**

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N



PACKING INSTRUCTION 360 *(continued)*

SINGLE PACKAGINGS							
Type	Drums			Jerricans		Composites	Cylinders
Desc.	Steel	Aluminium	Other metal	Steel	Aluminium	Plastic	
Spec.	1A1	1B1	1N1	3A1	3B1	All	As permitted in 5.0.6.6

PACKING INSTRUCTION 361

STATE VARIATIONS: BEG-03, USG-04

OPERATOR VARIATIONS: 5X-02, AY-04, BR-02, CA-10, CX-02, EY-03, FX-02/15/17, JL-09, KA-02, KE-07, KZ-07, LD-02, MK-12, NH-06, OZ-08, TG-02

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This instruction applies to flammable liquids with no subsidiary risk or a subsidiary risk of Division 6.1 in Packing Group I on Cargo Aircraft Only.

360

The General Packing Requirements of 5.0.2 must be met.

to

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- △ • inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS									
Inner Packaging (see 6.1)			Net quantity per inner packaging			Total net quantity per package			
Glass			1.0 L			30.0 L			
Metal			5.0 L						
Plastic			Forbidden						

△

OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS									
Type	Drums				Jerricans			Composites	Cylinders
Desc.	Steel	Aluminium	Other metal	Steel	Aluminium	Plastic			
Spec.	1A1		1B1		1N1		3A1	3B1	All

PACKING INSTRUCTION 362

OPERATOR VARIATIONS: AY-04, CA-10, CI-04, CX-02/05, EY-03, FX-17, JL-09, KA-02/05, KE-07, KZ-07, LD-02/06, MK-12, NH-06, OZ-08, TG-02

This instruction applies to flammable liquids with a Class 8 subsidiary risk in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS											
Inner Packaging (see 6.1)					Net quantity per inner packaging			Total net quantity per package			
Glass					1.0 L			5.0 L			
Metal					1.0 L						
Plastic					1.0 L						



OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS											
Type	Drums				Jerricans				Composites	Cylinders	
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic		
Spec.	1A1	1B1	1H1	1N1	3A1	3B1	3H1	All	As permitted in 5.0.6.6		

PACKING INSTRUCTION 363

OPERATOR VARIATIONS: 5X-02, AY-04, CA-10, CI-04, CX-02/05, EY-03, FX-02/17, JL-09, KA-02/05, KE-07, KZ-07, LD-02/06, MK-12, NH-06, OZ-08, TG-02

This instruction applies to flammable liquids with a Class 8 or a Class 8 and Division 6.1 subsidiary risk in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS											
Inner Packaging (see 6.1)					Net quantity per inner packaging			Total net quantity per package			
Glass					2.5 L			5.0 L			
Metal					5.0 L						
Plastic					2.5 L						

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PACKING INSTRUCTION 363 (continued)



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS

Type	Drums				Jerricans			Composites		Cylinders
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	
Spec.	1A1	1B1	1H1	1N1	3A1	3B1	3H1	All	As permitted in 5.0.6.6	

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PACKING INSTRUCTION 364

STATE VARIATION: BEG-03

OPERATOR VARIATIONS: 5X-02, AY-04, BA-01, CA-10, CX-02, EY-03, FX-02/17, IR-06, JL-09, KA-02, KE-07, KZ-07, LD-02, MK-12, NH-06, OZ-08, TG-02

This instruction applies to flammable liquids with no subsidiary risk or a subsidiary risk of Division 6.1 in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS

Inner Packaging (see 6.1)		Net quantity per inner packaging			Total net quantity per package		
Glass		2.5 L					
Metal		10.0 L					
Plastic		5.0 L					60.0 L



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS

Type	Drums				Jerricans			Composites		Cylinders
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	
Spec.	1A1	1B1	1H1	1N1	3A1	3B1	3H1	All	As permitted in 5.0.6.6	

PACKING INSTRUCTION 365

OPERATOR VARIATIONS: AY-04, CA-10, CI-04, CX-02/05, EY-03, FX-17, JL-09, KA-02/05, KE-07, KZ-07, LD-02/06, MK-12, NH-06, OZ-08, TG-02

This instruction applies to flammable liquids with a Class 8 subsidiary risk in Packing Group III on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards if the substance has a Class 8 subsidiary risk.

Combination and single packagings are permitted.

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COMBINATION PACKAGINGS											
Inner Packaging (see 6.1)					Net quantity per inner packaging			Total net quantity per package			
Glass					5.0 L			60.0 L			
Metal					25.0 L						
Plastic					10.0 L						



OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS

Type	Drums				Jerricans				Composites		Cylinders
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	All	
Spec.	1A1 1A2	1B1 1B2	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	As permitted in 5.0.6.6		All	

PACKING INSTRUCTION 366

STATE VARIATIONS: BEG-03, USG-04

OPERATOR VARIATIONS: 5X-02, AY-04, BA-01, CA-10, CX-02, EY-03, FX-02/17, JL-09, KA-02, KE-07, KZ-07, LD-03, MK-12, NH-06, OZ-08, TG-02

This instruction applies to flammable liquids with no subsidiary risk or a subsidiary risk of Division 6.1 in Packing Group III on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Combination and single packagings are permitted.



PACKING INSTRUCTION 366 (continued)

COMBINATION PACKAGINGS															
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package							
Glass				5.0 L				220.0 L							
Metal				25.0 L											
Plastic				10.0 L											

OUTER PACKAGINGS

Type	Drums				Jerricans				Boxes								
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

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SINGLE PACKAGINGS

Type	Drums				Jerricans				Composites		Cylinders
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	Plastic	
Spec.	1A1 1A2	1B1 1B2	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	3H1 3H2	All	All	As permitted in 5.0.6.6

PACKING INSTRUCTION 370

OPERATOR VARIATIONS: AM-03, CX-02, KA-02, KZ-07, LD-02, LY-04

This instruction applies to UN 3269, Polyester resin kit, on passenger and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Polyester resin kits and fibreglass repair kits consist of two components: a base material in Class 3, Packing Group II or III, and an activator (organic peroxide).

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- outer packagings must be Packing Group II or III according to the criteria for Class 3, applied to the base material.

Single packagings are not permitted.

COMBINATION PACKAGINGS					
Polyester resin kits	Inner Packag-ing (see 6.1)	Net quantity per inner packaging (BASE MATERIAL)	Net quantity per inner packaging (LIQUID ACTIVATOR)	Net quantity per inner packaging (SOLID ACTIVATOR)	Total net quantity per package
Activator (Organic Peroxide)	Metal ¹	N/A	125 mL	500 g	5.0 kg
	Plastic ¹	N/A	125 mL	500 g	
Base material (Class 3, PG II)	Glass	1.0 L	N/A	N/A	10.0 kg
	Metal	5.0 L	N/A	N/A	
	Plastic	5.0 L	N/A	N/A	
Activator (Organic Peroxide)	Metal ¹	N/A	125 mL	500 g	10.0 kg
	Plastic ¹	N/A	125 mL	500 g	
Base material (Class 3, PG III)	Glass	2.5 L	N/A	N/A	10.0 kg
	Metal	10.0 L	N/A	N/A	
	Plastic	10.0 L	N/A	N/A	

¹ Including tubes

PACKING INSTRUCTION 370 (continued)

The total quantity of dangerous goods in kits in each package is to be calculated such that liquids are treated as solids on a one-to-one basis of their volume, i.e. 1 L equals 1 kg, see also 8.1.6.9.2, Step 6(e).

OUTER PACKAGINGS

Type	Drums					Jerricans			Boxes								
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

△ PACKING INSTRUCTION Y370

OPERATOR VARIATIONS: AM-03, CX-02, DE-01, GA-03, GF-04, IJ-12, KA-02, KE-07, KQ-08, LD-02, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of flammable liquid and organic peroxide in polyester resin kits (UN 3269).

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Polyester resin kits and fibreglass repair kits consist of two components: a base material in Class 3, Packing Group II or III, and an activator (organic peroxide).

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- inner packagings for liquids must be capable of passing a pressure differential test (5.0.2.9);
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

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COMBINATION PACKAGINGS

Polyester resin kits	Inner Packaging (see 6.1)	Net quantity per inner packaging (BASE MATERIAL)	Net quantity per inner packaging (LIQUID ACTIVATOR)	Net quantity per inner packaging (SOLID ACTIVATOR)	Total net quantity per package
Activator (Organic Peroxide)	Metal ¹	N/A	30 mL	100 g	1.0 kg
	Plastic ¹	N/A	30 mL	100 g	
Base material (Class 3, PG II)	Glass	1.0 L	N/A	N/A	
	Metal	1.0 L	N/A	N/A	
	Plastic	1.0 L	N/A	N/A	
Activator (Organic Peroxide)	Metal ¹	N/A	30 mL	100 g	5.0 kg
	Plastic ¹	N/A	30 mL	100 g	
Base material (Class 3, PG III)	Glass	2.5 L	N/A	N/A	
	Metal	5.0 L	N/A	N/A	
	Plastic	5.0 L	N/A	N/A	

¹ Including tubes

The total quantity of dangerous goods in kits in each package is to be calculated such that liquids are treated as solids on a one-to-one basis of their volume, i.e. 1 L equals 1 kg, see also 8.1.6.9.2, Step 6(e).



PACKING INSTRUCTION Y370 (continued)

OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION 371

STATE VARIATION: BEG-03

OPERATOR VARIATIONS: AM-03, CX-02, FX-17, KA-02, KZ-07, LD-02, LY-04

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This instruction applies to UN 1204 and UN 3064, Nitroglycerin solution in alcohol, on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- inner packagings must be completely surrounded with absorbent cushioning material of sufficient quantity to absorb the entire liquid content;
- Nitroglycerin solution, UN 3064, must be packed in wooden boxes (4C1, 4C2, 4D or 4F) as the outer packaging and must be lined with a suitable material impervious to water, alcohol and nitroglycerin.

Single packagings are not permitted.

COMBINATION PACKAGINGS

UN Numbers		Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package Passenger aircraft	Total net quantity per package Cargo Aircraft Only
UN 1204 Nitroglycerin solution in alcohol with 1% or less nitroglycerin	Glass	1.0 L	5.0 L	60.0 L	
	Metal	1.0 L			
	Plastic	1.0 L			
UN 3064 Nitroglycerin solution in alcohol with 5% or less but more than 1% nitroglycerin		Metal	1.0 L	Forbidden	5.0 L



OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 372

OPERATOR VARIATIONS: BR-02, CI-01, FX-02, TU-05

This instruction applies to UN 3165, Aircraft hydraulic power unit fuel tank, on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

PACKING INSTRUCTION 372 (continued)

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

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 receptacle made from tubing and having welded heads. Primary containment of the fuel within this receptacle must consist of a *welded aluminium bladder* having a maximum internal volume of 46 L. The outer receptacle must have a minimum design gauge pressure of 1,275 kPa (12.75 bar) and a minimum burst gauge pressure of 2,755 kPa (27.55 bar). Each receptacle must be leak-checked during manufacture and before shipment and must be found leak-proof. 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 receptacle. Primary containment of the fuel within this receptacle must consist of a welded hermetically sealed fuel compartment with an *elastomeric bladder* having a maximum internal volume of 46 L. The pressure receptacle must have a minimum design gauge pressure of 2,860 kPa (28.6 bar) and a minimum burst gauge pressure of 5,170 kPa (51.7 bar). Each receptacle must be leak-checked during manufacture and before shipment and must be found leak-proof. 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.

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PACKING INSTRUCTION 373

OPERATOR VARIATIONS: 5X-02, AA-01, AM-03, AS-02, AY-04, BW-01, CA-10, CX-02/03, DE-07, EY-03, FX-02/17, JJ-07, JL-09, KA-02/03, KE-07, KZ-07, LD-02/03, LY-04, MK-12, NH-06, OZ-08, UX-04, TG-02

This instruction applies to UN 1228, Mercaptans, liquid, flammable, toxic, n.o.s. in Packing Group II and III on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- glass inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Single packagings are permitted for Cargo Aircraft Only.

COMBINATION PACKAGINGS																	
UN Numbers		Inner Packaging (see 6.1)		Net quantity per inner packaging Passenger aircraft		Net quantity per inner packaging Cargo Aircraft Only		Total net quantity per package Passenger aircraft		Total net quantity per package Cargo Aircraft Only							
UN 1228 Mercaptans, liquid, flammable, toxic, n.o.s.★ PG II		Glass		Forbidden		5.0 L		Forbidden		60.0 L							
		Metal				5.0 L											
		Plastic				5.0 L											
UN 1228 Mercaptans, liquid, flammable, toxic, n.o.s.★ PG III		Glass		1.0 L		5.0 L		5.0 L		220.0 L							
		Metal		1.0 L		5.0 L											
		Plastic		1.0 L		5.0 L											



OUTER PACKAGINGS

Type	Drums				Jerricans				Boxes								
Desc.	Steel	Alu-minum	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minum	Plastic	Steel	Alu-minum	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N



PACKING INSTRUCTION 373 (continued)

SINGLE PACKAGINGS—CARGO AIRCRAFT ONLY										
Type	Drums				Jerricans				Composites	Cylinders
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic		
Spec.	1A1 1A2	1B1 1B2	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	All	As permitted in 5.0.6.6	

PACKING INSTRUCTION Y373

OPERATOR VARIATIONS: 5X-02, AA-01, AM-03, AS-02, BW-01, CX-02, DE-01, FX-02, GA-03, GF-04, HA-01, IJ-12, JJ-07, KA-02, KE-07, KQ-08, LD-02, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

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This instruction applies to **Mercaptans, liquid, flammable, toxic, n.o.s.**, (UN 1228) packed in Limited Quantities, in Packing Group III.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- glass inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- inner packagings for liquids must be capable of passing a pressure differential test (5.0.2.9);
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS												
			Inner Packaging (see 6.1)			Net quantity per inner packaging			Total net quantity per package			
UN 1228 Mercaptans, liquid, flammable, toxic, n.o.s.★ PG III			Glass			0.5 L			1.0 L			
			Metal			0.5 L						
			Plastic			0.5 L						

OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION 374

OPERATOR VARIATIONS: AM-03, LY-04, OU-04

This instruction applies to UN 3473 on passenger aircraft and Cargo Aircraft Only.

The requirements of 5.0.2.4, 5.0.2.5, 5.0.2.6 and 5.0.6 must be met, as appropriate.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Additional Packing Requirements

- fuel cell cartridges must be securely cushioned in the outer packagings;
- packagings must meet Packing Group II performance standards.

Single packagings are not permitted.

COMBINATION PACKAGINGS														
UN number					Net quantity per package Passenger Aircraft					Net quantity per package Cargo Aircraft Only				
UN 3473, Fuel cell cartridges					5.0 kg of fuel cell cartridges					50.0 kg of fuel cell cartridges				



OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

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PACKING INSTRUCTION Y374

OPERATOR VARIATIONS: AM-03, DE-01, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to UN 3473 in limited quantities.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

For the purpose of this packing instruction, a fuel cell cartridge is considered an inner packaging.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Additional Packing Requirements

- fuel cell cartridges must not contain more than 0.5 L of flammable liquid per cartridge;
- fuel cell cartridges must be securely cushioned in the outer packagings.

Single packagings are not permitted.

UN Number	Maximum Quantity per package
UN 3473 Fuel cell cartridges, containing flammable liquid	2.5 kg of fuel cell cartridges



PACKING INSTRUCTION Y374 (continued)



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION 375

OPERATOR VARIATIONS: AM-03, LY-04, OU-04

This instruction applies to UN 3473 contained in equipment on passenger aircraft and Cargo Aircraft Only.

The requirements of 5.0.2.4.1 and 5.0.2.11 must be met.

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Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

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 strong 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 62282-6-100 Ed. 1 or a standard approved by the appropriate authority of the State of Origin.

Single packagings are not permitted.

COMBINATION PACKAGINGS

INNER PACKAGINGS

		Net quantity per package Passenger Aircraft	Net quantity per package Cargo Aircraft Only
UN 3473, Fuel cell cartridges contained in equipment		5.0 kg of fuel cell cartridges	50.0 kg of fuel cell cartridges

OUTER PACKAGINGS—Strong outer packagings, such as:

Type	Drums						Jerricans			Boxes						
Desc.	Steel	Alumin-ium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Plastic	Steel	Alumin-ium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic

PACKING INSTRUCTION 376

OPERATOR VARIATIONS: AM-03, LY-04, OU-04

This instruction applies to UN 3473 packed with equipment on passenger aircraft and Cargo Aircraft Only.

The requirements of 5.0.2.4.1 and 5.0.2.11 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

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.

PACKING INSTRUCTION 376 (continued)

Single packagings are not permitted.

COMBINATION PACKAGINGS		
UN number	Net quantity per package Passenger Aircraft	Net quantity per package Cargo Aircraft Only
UN 3473, Fuel cell cartridges packed with equipment	5.0 kg of fuel cell cartridges	50.0 kg of fuel cell cartridges

OUTER PACKAGINGS

Type	Drums	Jerricans	Boxes
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△ PACKING INSTRUCTION 377

OPERATOR VARIATIONS: AS-12, AY-04, CA-10, CX-02/05, EY-03, FX-15/17, JL-09, KE-07, KZ-07, LD-02/06, LY-04, NH-06, OZ-08, TG-02

This instruction applies to chlorosilanes, liquid, flammable, corrosive in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS				
UN Numbers		Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
UN 1162, UN 1196, UN 1250, UN 1298, UN 1305, UN 2985	Glass	1.0 L	5.0 L	5.0 L
	Steel	5.0 L		
	Plastic	Forbidden		

OUTER PACKAGINGS

Type	Drums				Boxes					
	Desc.	Steel	Plywood	Fibre	Plastic	Steel	Wood	Plywood	Reconstituted wood	Fibreboard
Spec.	1A1 1A2	1D	1G	1H1 1H2	4A	4C1 4C2	4D	4F	4G	4H1 4H2

SINGLE PACKAGINGS

Type	Drums	Jerricans	Composites	Cylinders
Desc.	Steel	Steel	Plastic	Steel
Spec.	1A1	3A1	6HA1	As permitted in 5.0.6.6

5.4 Packing Instructions—Class 4—Flammable Solids; Substances Liable to Spontaneous Combustion; Substances which, in Contact with Water, Emit Flammable Gases

PACKING INSTRUCTION Y440

OPERATOR VARIATIONS: 5X-02, AA-01, AM-04, AS-02, BW-01, DE-01, FX-02, GA-03, GF-04, HA-01, IJ-12, KQ-08, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of flammable solids with a Division 6.1 subsidiary risk in Packing Group II.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

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Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS		
Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
Glass	0.5 kg	1.0 kg
Metal	0.5 kg	
Plastic	0.5 kg	
Plastic bag	0.5 kg	



OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION Y441

STATE VARIATION: BEG-03

OPERATOR VARIATIONS: AM-04, DE-01, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of flammable solids with no subsidiary risk or a Class 8 subsidiary risk in Packing Group II.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

PACKING INSTRUCTION Y441 (continued)

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a subsidiary risk of Class 8.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

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COMBINATION PACKAGINGS														Total net quantity per package			
Inner Packaging (see 6.1)		Net quantity per inner packaging															
Glass		0.5 kg												5.0 kg			
Metal		0.5 kg															
Plastic		0.5 kg															
Plastic bag		0.5 kg															



OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
	Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic

PACKING INSTRUCTION Y442

OPERATOR VARIATIONS: AM-04, DE-01, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of flammable solids with no subsidiary risk or a Class 8 subsidiary risk in Packing Group III.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a subsidiary risk of Class 8.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.



PACKING INSTRUCTION Y442 (continued)

COMBINATION PACKAGINGS											
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package			
Glass				1.0 kg				5.0 kg			
Metal				1.0 kg							
Plastic				1.0 kg							
Plastic bag				1.0 kg							



OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal

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STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, AA-01, AM-04, AS-02, BW-01, DE-01, FX-02, GA-03, GF-04, HA-01, IJ-12, KQ-08, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of flammable solids with no subsidiary risk or a Division 6.1 subsidiary risk in Packing Group III.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS											
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package			
Glass				1.0 kg				10.0 kg			
Metal				1.0 kg							
Plastic				1.0 kg							
Plastic bag				1.0 kg							



OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION 445

STATE VARIATION: BEG-03

OPERATOR VARIATIONS: 5X-02, AA-01, AM-04, AS-02, BW-01, CX-03, FX-02, KA-03, KZ-07, LD-03, LY-04, UX-05

This instruction applies to flammable solids in Packing Group II on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.

COMBINATION PACKAGINGS		
Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
Glass	1.0 kg	15.0 kg
Metal	2.5 kg	
Plastic	2.5 kg	
Plastic bag	1.0 kg	



OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

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PACKING INSTRUCTION 446

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, AA-01, AM-04, AS-02, BW-01, CX-03, FX-02, KA-03, KZ-07, LD-03, LY-04, UX-05

This instruction applies to flammable solids in Packing Group III on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards.

Single packagings are not permitted.



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PACKING INSTRUCTION 446 (continued)

COMBINATION PACKAGINGS										
Inner Packaging (see 6.1)					Net quantity per inner packaging				Total net quantity per package	
Glass					5.0 kg				25.0 kg	
Metal					10.0 kg					
Plastic					10.0 kg					
Plastic bag					5.0 kg					

OUTER PACKAGINGS																	
Type	Drums					Jerricans			Boxes								
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

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PACKING INSTRUCTION 448

STATE VARIATION: BEG-03

OPERATOR VARIATIONS: 5X-02, CX-03, EY-03, FX-02, IJ-02, JL-09, KA-03, KZ-07, LD-03, MK-12, NH-06, SQ-03, TG-02

This instruction applies to flammable solids in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- △ • fibre, fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS										
Inner Packaging (see 6.1)					Net quantity per inner packaging				Total net quantity per package	
Glass					2.5 kg				50.0 kg	
Metal					5.0 kg					
Plastic					5.0 kg					
Plastic bag					2.5 kg					

OUTER PACKAGINGS																	
Type	Drums					Jerricans			Boxes								
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 448 (continued)



SINGLE PACKAGINGS

Type	Drums					Jerricans			Boxes							Composites	Cylinders		
Desc.	Steel	Aluminum	Plywood	Fibre	Plastic	Other metal	Steel	Aluminum	Plastic	Steel	Aluminum	Wood	Plywood	Reconstructed wood	Fibreboard	Plastic	Other metal	Plastic	
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N	All	As permitted in 5.0.6.6

PACKING INSTRUCTION 449

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, CX-03, EY-03, FX-02, IJ-02, JL-09, KA-03, KZ-07, LD-03, MK-12, NH-06, SQ-03, TG-02

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This instruction applies to flammable solids in Packing Group III on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards;
- fibre, fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS

Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package															
Glass				5.0 kg				100.0 kg															
Metal				10.0 kg																			
Plastic				10.0 kg																			
Plastic bag				5.0 kg																			



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Aluminum	Plywood	Fibre	Plastic	Other metal	Steel	Aluminum	Plastic	Steel	Aluminum	Wood	Plywood	Reconstructed wood	Fibreboard	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N



SINGLE PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Aluminum	Plywood	Fibre	Plastic	Other metal	Steel	Aluminum	Plastic	Steel	Aluminum	Wood	Plywood	Reconstructed wood	Fibreboard	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N

PACKING INSTRUCTION 451

STATE VARIATION: BEG-03

OPERATOR VARIATIONS: AM-04, BR-02, CX-03, KA-03, KZ-07, LD-03, LY-04, TU-06, UX-05, VN-04

This instruction applies to wetted explosives in Packing Group I on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- 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 3.1.7 and may be less than the limits shown below;
- 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.

Single packagings are not permitted.

COMBINATION PACKAGINGS				
UN Number	Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package Passenger Aircraft	Total net quantity per package Cargo Aircraft Only
UN 1354, UN 1355, UN 1356, UN 3364, UN 3365, UN 3366, UN 3367, UN 3368, UN 3369, UN 3370	Glass	0.5 kg	0.5 kg	0.5 kg
	Metal	0.5 kg		
	Plastic	0.5 kg		
	Plastic bag	0.5 kg		
UN 1336, UN 1337, UN 1357	Glass	0.5 kg	1.0 kg	15.0 kg
	Metal	0.5 kg		
	Plastic	0.5 kg		
	Plastic bag	0.5 kg		
UN 1310 ¹	Glass	0.5 kg	0.5 kg	0.5 kg
	Metal	0.5 kg		
	Plastic	0.5 kg		
	Plastic bag	0.5 kg		
UN 1349 ¹	Glass	0.5 kg	Forbidden	15.0 kg
	Metal	0.5 kg		
	Plastic	0.5 kg		
	Plastic bag	0.5 kg		
UN 1320, UN 1321, UN 1322, UN 1344, UN 1348, UN 1517, UN 3317 ¹	Glass	0.5 kg	1.0 kg	15.0 kg
	Metal	0.5 kg		
	Plastic	0.5 kg		
	Plastic bag	0.5 kg		
UN 1571, UN 2852	Glass	0.25 kg	Forbidden	0.5 kg
	Plastic	0.25 kg		
UN 3474	Glass	0.5 kg	0.5 kg	0.5 kg
	Plastic	0.5 kg		

¹ Packagings must be lead free for UN 1310, UN 1320, UN 1321, UN 1322, UN 1344, UN 1348, UN 1349, UN 1517 & UN 3317.

PACKING INSTRUCTION 451 (continued)



OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal	
Spec.	1A2	1B2	1D	1G	1H1 1H2	1N2	3A2	3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N	

PACKING INSTRUCTION 452

STATE VARIATION: BEG-03

OPERATOR VARIATIONS: AM-04, CX-03, KA-03, KZ-07, LD-03, LY-04, UX-05

This instruction applies to nitrocellulose (UN 2555, UN 2556 & UN 2557) on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- 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).

Single packagings are not permitted.

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COMBINATION PACKAGINGS

UN Number		Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package Passenger Aircraft							
UN 2555, Nitrocellulose with water		Glass				1.0 kg				15.0 kg							
		Metal				1.0 kg											
		Plastic				1.0 kg											
		Plastic bag				1.0 kg											
UN 2556, Nitrocellulose with alcohol		Glass				1.0 kg				1.0 kg							
		Metal				1.0 kg											
		Plastic				1.0 kg											
		Plastic bag				1.0 kg											
UN 2557, Nitrocellulose with or without plasticizer		Glass				1.0 kg				1.0 kg							
		Metal				1.0 kg											
		Plastic				1.0 kg											
		Plastic bag				1.0 kg											



OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal	
Spec.	1A2	1B2	1D	1G	1H1 1H2	1N2	3A2	3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N	



PACKING INSTRUCTION 453

STATE VARIATION: BEG-03

OPERATOR VARIATIONS: CX-03, EY-03, IJ-02, JL-09, KA-03, KZ-07, LD-03, MK-12, NH-06, SQ-03, TG-02

This instruction applies to nitrocellulose (UN 2555, UN 2556 & UN 2557) on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- 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, fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

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Combination and single packagings are permitted.

COMBINATION PACKAGINGS												
UN Number			Inner Packaging (see 6.1)			Net quantity per inner packaging			Total net quantity per package Cargo Aircraft			
UN 2555, Nitrocellulose with water			Glass			1.0 kg			50.0 kg			
			Metal			1.0 kg						
			Plastic			1.0 kg						
			Plastic bag			1.0 kg						
UN 2556, Nitrocellulose with alcohol			Glass			1.0 kg			15.0 kg			
			Metal			1.0 kg						
			Plastic			1.0 kg						
			Plastic bag			1.0 kg						
UN 2557, Nitrocellulose with or without plasticizer			Glass			1.0 kg			15.0 kg			
			Metal			1.0 kg						
			Plastic			1.0 kg						
			Plastic bag			1.0 kg						

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OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes											
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal				
Spec.	1A2	1B2	1D	1G	1H1	1H2	1N2	3A2	3B2	3H1	3H2	4A	4B	4C1	4C2	4D	4F	4G	4H1	4H2	4N

SINGLE PACKAGINGS

Type	Drums						Jerricans			Boxes						Composites	Cylinders	
Desc.	Steel	Alumin-ium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Plastic	Steel	Alumin-ium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal	As per-mitted in 5.0.6.6
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	All	As per-mitted in 5.0.6.6

PACKING INSTRUCTION 454

OPERATOR VARIATIONS: AM-04, CX-03, IJ-02, KA-03, KZ-07, LD-03, LY-04, SQ-03, UX-05

This instruction applies to **Films, nitrocellulose base (UN 1324)** on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- each reel must be placed in a tightly closed metal or strong cardboard or fibreboard inner packaging with a cover held in place by adhesive tape or paper;
- packagings must meet Packing Group II performance standards;
- fibre drums (1G), plastic drums (1H2), plastic jerricans (3H2), fibreboard boxes (4G) and plastic boxes (4H1, 4H2) may only contain 600 m of film.

Single packagings are not permitted.

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COMBINATION PACKAGINGS

UN number		Total net quantity per package Passenger Aircraft						Total net quantity per package Cargo Aircraft Only					
UN 1324, Films, nitrocellulose base		25.0 kg						100.0 kg					



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes								
	Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N	

PACKING INSTRUCTION Y454

OPERATOR VARIATIONS: AM-04, DE-01, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to **Films, nitrocellulose base (UN 1324)** packed in Limited Quantity.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.



PACKING INSTRUCTION Y454 (continued)

Additional Packing Requirements

- each reel must be placed in a tightly closed metal or strong cardboard or fibreboard inner packaging with a cover held in place by adhesive tape or paper;
- fibre drums, plastic drums, plastic jerricans, fibreboard boxes and plastic boxes may only contain 600 m of film or 1 kg of film, whichever is the most restrictive, in one outer packaging.

Single packagings are not permitted.

COMBINATION PACKAGINGS														
UN number				Total net quantity per inner packaging					Total net quantity per package					
UN 1324, Films, nitrocellulose base				1.0 kg					10.0 kg					

△ OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

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PACKING INSTRUCTION 455

OPERATOR VARIATIONS: AM-04, CX-03, IJ-02, KA-03, KZ-07, LD-03, LY-04, SQ-03, UX-05

This instruction applies to **Matches, safety** (UN 1944) and **Matches, wax vesta** (UN 1945) on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- inner packagings must be securely packed in one of the outer packagings shown below, meeting Packing Group II performance standards;
- 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 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.

Single packagings are not permitted.

COMBINATION PACKAGINGS														
UN number				Total net quantity per package Passenger Aircraft					Total net quantity per package Cargo Aircraft Only					
UN 1944, Matches, safety UN 1945, Matches, wax vesta				25.0 kg					100.0 kg					

△ OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G 4H1 4H2	4N	

PACKING INSTRUCTION Y455

OPERATOR VARIATIONS: AM-04, DE-01, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to **Matches, safety** (UN 1944) and **Matches, wax vesta** (UN 1945) packed in Limited Quantity.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Additional Packing Requirements

- inner packagings must be securely packed in one of the outer packagings shown below;
- 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 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.

Single packagings are not permitted.

COMBINATION PACKAGINGS									
UN number				Total net quantity per package					
UN 1944, Matches, safety				10.0 kg					
UN 1945, Matches, wax vesta									



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes								
	Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION 456

OPERATOR VARIATIONS: AM-04, IJ-02, LY-04, SQ-03, UX-05

This instruction applies to **Celluloid** (UN 2000) on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

COMBINATION PACKAGINGS									
UN number				Total net quantity per package Passenger Aircraft				Total net quantity per package Cargo Aircraft Only	
UN 2000, Celluloid				25.0 kg				100.0 kg	

PACKING INSTRUCTION 457

OPERATOR VARIATIONS: AM-04, CX-03, IJ-02, JL-09, KA-03, KZ-07, LD-03, LY-04, MK-12, NH-06, SQ-03, TG-02, UX-05

This instruction applies to **2-Bromo-2-nitropropane-1,3-diol** (UN 3241) on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS												
UN Number		Inner Packaging (see 6.1)		Net quantity per inner packaging				Total net quantity per package Passenger Aircraft		Total net quantity per package Cargo Aircraft Only		
5 457 to Y457	UN 3241, 2-Bromo-2-nitropropane-1,3-diol		Glass		0.5 kg				25.0 kg	50.0 kg		
			Plastic		1.0 kg							
			Plastic bag		1.0 kg							

OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes						
Desc.	Steel	Aluminium	Ply-wood	Fibre	Plastic	Steel	Alumin-ium	Plastic	Steel	Alumin-ium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N

SINGLE PACKAGINGS

Type	Drums				Jerricans				Composites						
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Steel	Aluminium	Plastic	Plastic	Plastic	Plastic	All
Spec.	1A1 1A2	1B1 1B2	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	3H1 3H2	3A1 3A2	3B1 3B2	3H1 3H2	3H1 3H2	3H1 3H2	3H1 3H2	All

PACKING INSTRUCTION Y457

OPERATOR VARIATIONS: AM-04, DE-01, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to **2-Bromo-2-nitropropane-1,3-diol** (UN 3241) packed in Limited Quantity.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

PACKING INSTRUCTION Y457 (continued)

COMBINATION PACKAGINGS																			
UN Number		Inner Packaging (see 6.1)					Net quantity per inner packaging			Total net quantity per package									
UN 3241, 2-Bromo-2-Nitropropane-1,3-diol		Glass					0.5 kg			10.0 kg									
		Plastic					0.5 kg												
		Plastic bag					0.5 kg												



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION 458

OPERATOR VARIATIONS: AM-04, CX-03, IJ-02, KA-03, KZ-07, LD-03, LY-04, SQ-03, UX-05

This instruction applies to **Nitrocellulose membrane filters** (UN 3270) on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

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Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- any packaging from the table below may be used provided that explosion is not possible by reason of increased internal pressure.

Single packagings are not permitted.

COMBINATION PACKAGINGS														
UN number					Total net quantity per package Passenger Aircraft					Total net quantity per package Cargo Aircraft Only				
UN 3270, Nitrocellulose membrane filters					1.0 kg					15.0 kg				



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION Y458

OPERATOR VARIATIONS: AM-04, DE-01, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to **Nitrocellulose membrane filters** (UN 3270) packed in Limited Quantity.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

PACKING INSTRUCTION Y458 (continued)

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Additional Packing Requirements

- any packaging from the table below may be used provided that explosion is not possible by reason of increased internal pressure.

Single packagings are not permitted.

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		COMBINATION PACKAGINGS									
		UN number		Total net quantity per package							
		UN 3270, Nitrocellulose membrane filters		1.0 kg							



OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal	

PACKING INSTRUCTION 459

OPERATOR VARIATIONS: AM-04, CX-03, IJ-02, KA-03, KZ-07, LD-03, LY-04, SQ-03, UX-05

This instruction applies to self-reactive substances on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards.

Single packagings are not permitted.

PACKING INSTRUCTION 459 (continued)

COMBINATION PACKAGINGS									
LIQUIDS									
UN number	Inner Packaging (see 6.1)	Net quantity per inner packaging Passenger Aircraft	Net quantity per inner packaging Cargo Aircraft Only	Total net quantity per package Passenger Aircraft	Total net quantity per package Cargo Aircraft Only				
UN 3223	Plastic	0.5 L	1.0 L	5.0 L	10.0 L				
UN 3225	Plastic	0.5 L	1.0 L						
UN 3227	Plastic	1.0 L	2.5 L						
UN 3229	Plastic	1.0 L	2.5 L	10.0 L	25.0 L				
SOLIDS									
UN 3224	Plastic	0.5 kg	1.0 kg	5.0 kg	10.0 kg				
	Plastic bag	0.5 kg	1.0 kg						
UN 3226	Plastic	0.5 kg	1.0 kg						
	Plastic bag	0.5 kg	1.0 kg						
UN 3228	Plastic	1.0 kg	2.5 kg	10.0 kg	25.0 kg				
	Plastic bag	1.0 kg	2.5 kg						
UN 3230	Plastic	1.0 kg	2.5 kg						
	Plastic bag	1.0 kg	2.5 kg						
OUTER PACKAGINGS									
Type	Drums		Jerricans	Boxes					
Desc.	Plywood	Fibre	Plastic	Plastic	Wood	Plywood	Reconstituted wood	Fibreboard	Plastic
Spec.	1D	1G	1H1 1H2	3H1 3H2	4C1 4C2	4D	4F	4G	4H1 4H2

PACKING INSTRUCTION 462

OPERATOR VARIATIONS: 5X-02, AA-01, AM-04, AS-02, BW-01, CX-02/03/05, FX-02/17, JJ-07, KA-02/03/05, KZ-07, LD-02/03/06, LY-04, UX-05

This instruction applies to Division 4.2 liquids in Packing Group II on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.

COMBINATION PACKAGINGS																	
Inner Packaging (see 6.1)			Net quantity per inner packaging		Total net quantity per package												
Glass			1.0 L		1.0 L												
Metal			1.0 L														
Plastic			1.0 L														
OUTER PACKAGINGS																	
Type	Drums			Jerricans			Boxes										
Desc.	Steel	Alu- minium	Ply- wood	Fibre	Plastic	Other metal	Steel	Alu- minium	Plastic	Steel	Alu- minium	Wood	Ply- wood	Recon- stituted wood	Fibre- board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N



PACKING INSTRUCTION 463

OPERATOR VARIATIONS: 5X-02, AA-01, AM-04, AS-02, AY-04, BW-01, CI-04, CX-02/03/05, EY-03, FX-02/17, JJ-07, JL-09, KA-02/03/05, KC-06, KE-07, KZ-07, LD-02/03/06, LY-04, MK-12, NH-06, OK-04, OZ-08, TG-02, UA-01, UX-05

This instruction applies to Division 4.2 liquids in Packing Group III on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards.

Combination and single packagings are permitted.

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COMBINATION PACKAGINGS										
Inner Packaging (see 6.1)					Net quantity per inner packaging				Total net quantity per package	
Glass					2.5 L				5.0 L	
Metal					5.0 L					
Plastic					2.5 L					



OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS

Type	Drums				Jerricans				Composites		Cylinders
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	All	
Spec.	1A1	1B1	1H1	1N1	3A1	3B1	3H1	As permitted in 5.0.6.6		All	

PACKING INSTRUCTION 464

OPERATOR VARIATIONS: 5X-02, CX-02/03/05, EY-03, FX-02/17, IJ-02, KA-02/03/05, KZ-07, LD-02/03/06, OZ-08, SQ-03

This instruction applies to Division 4.2 liquids in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.

PACKING INSTRUCTION 464 (continued)

COMBINATION PACKAGINGS														
Inner Packaging (see 6.1)					Net quantity per inner packaging				Total net quantity per package					
Glass					2.5 L				5.0 L					
Metal					5.0 L									
Plastic					2.5 L									

△ OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 465

OPERATOR VARIATIONS: 5X-02, AY-02, CA-10, CI-04, CX-02/03/05, EY-03, FX-02/17, IJ-02, JL-09, KA-02/03/05, KE-07, KZ-07, LD-02/03/06, MK-12, NH-06, OZ-08, SQ-03, TG-02

This instruction applies to Division 4.2 liquids in Packing Group III on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS														
Inner Packaging (see 6.1)					Net quantity per inner packaging				Total net quantity per package					
Glass					5.0 L				60.0 L					
Metal					10.0 L									
Plastic					5.0 L									

△ OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS

Type	Drums					Jerricans				Composites			Cylinders		
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Steel	Aluminium	Plastic	Steel	Aluminium	Plastic	Steel	Aluminium
Spec.	1A1	1B1	1H1	1N1	3A1	3B1	3H1	All	All	All	As permitted in 5.0.6.6				



PACKING INSTRUCTION 466

OPERATOR VARIATIONS: 5X-02, AA-01, AM-04, AS-02, BW-01, CX-03, FX-02, KA-03, KZ-07, LD-03, LY-04, UX-05

This instruction applies to Division 4.2 solids with a Division 6.1 or Class 8 subsidiary risk in Packing Group II on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.

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COMBINATION PACKAGINGS																		
Inner Packaging (see 6.1)						Net quantity per inner packaging					Total net quantity per package							
Glass						1.0 kg					15.0 kg							
Metal						1.0 kg												
Plastic						1.0 kg												



OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 467

OPERATOR VARIATIONS: 5X-02, AM-04, CX-03, KA-03, KZ-07, LD-03, LY-04, UX-05

This instruction applies to Division 4.2 solids without a subsidiary risk in Packing Group II on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.



COMBINATION PACKAGINGS																		
Inner Packaging (see 6.1)						Net quantity per inner packaging					Total net quantity per package							
Glass						1.0 kg					15.0 kg							
Metal						2.5 kg												
Plastic						2.5 kg												
Plastic bag						1.0 kg												

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 468

OPERATOR VARIATIONS: 5X-02, AA-01, AM-04, AS-02, BW-01, CX-03, FX-02, KA-03, KZ-07, LD-03, LY-04, UX-05

This instruction applies to Division 4.2 solids with subsidiary risks in Packing Group III on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards.

Single packagings are not permitted.

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COMBINATION PACKAGINGS											
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package			
Glass				2.5 kg				25.0 kg			
Metal				5.0 kg							
Plastic				2.5 kg							



OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 469

OPERATOR VARIATIONS: 5X-02, AM-04, CX-03, KA-03, KZ-07, LD-03, LY-04, UX-05

This instruction applies to Division 4.2 solids without a subsidiary risk in Packing Group III on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards.

Single packagings are not permitted.

COMBINATION PACKAGINGS											
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package			
Glass				5.0 kg				25.0 kg			
Metal				10.0 kg							
Plastic				10.0 kg							
Plastic bag				5.0 kg							



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PACKING INSTRUCTION 469 (continued)



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 470

OPERATOR VARIATIONS: 5X-02, CX-03, EY-03, FX-02, IJ-02, JL-09, KA-03, KZ-07, LD-03, MK-12, NH-06, SQ-03, TG-02

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This instruction applies to Division 4.2 solids in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- △ • fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS

Inner Packaging (see 6.1)		Net quantity per inner packaging			Total net quantity per package					
Glass		2.5 kg			50.0 kg					
Metal		5.0 kg								
Plastic		5.0 kg								
Plastic bag		2.5 kg								



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N



SINGLE PACKAGINGS

Type	Drums				Jerricans			Boxes								Composites	Cylinders
Desc.	Steel	Alu-minium	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal	Plastic	
Spec.	1A1 1A2	1B1 1B2	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N	All	As permitted in 5.0.6.6

PACKING INSTRUCTION 471

OPERATOR VARIATIONS: 5X-02, CX-03, EY-03, FX-02, IJ-02, JL-09, KA-03, KZ-07, LD-03, MK-12, NH-06, SQ-03, TG-02

This instruction applies to Division 4.2 solids in Packing Group III on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards;
- △ fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS																			
Inner Packaging (see 6.1)					Net quantity per inner packaging					Total net quantity per package									
Glass					5.0 kg					100.0 kg									
Metal					10.0 kg														
Plastic					10.0 kg														
Plastic bag					5.0 kg														

△ OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

△ SINGLE PACKAGINGS

Type	Drums				Jerricans			Boxes								Composites	Cylinders
Desc.	Steel	Alu-minium	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal	Plastic	
Spec.	1A1 1A2	1B1 1B2	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N	All	As permitted in 5.0.6.6

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PACKING INSTRUCTION 472

OPERATOR VARIATIONS: 5X-02, AM-04, CX-03, IJ-02, KA-03, KZ-07, LD-03, LY-04, SQ-03, UX-05

This instruction applies to Carbon, activated (UN 1362) on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.



PACKING INSTRUCTION 472 (continued)

COMBINATION PACKAGINGS					
UN Number		Inner Packaging (see 6.1)		Net quantity per inner packaging	Total net quantity per package
UN 1362, Carbon, activated		Plastic		0.1 kg	0.5 kg

OUTER PACKAGINGS

Type	Drums		Jerricans		Boxes	
Desc.	Steel	Aluminium	Steel	Aluminium	Steel	Aluminium
Spec.	1A1 1A2	1B1 1B2	3A1 3A2	3B1 3B2	4A	4B

PACKING INSTRUCTION 473

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472

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OPERATOR VARIATIONS: 5X-02, AM-04, CX-03, IJ-02, JL-09, KA-03, KZ-07, LD-03, LY-04, MK-12, NH-06, SQ-03, TG-02, UX-05

This instruction applies to UN 1378 in Packing Group II and UN 2881 in Packing Group II and III on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings for UN 2881 in Packing Group III must meet Packing Group II performance standards.

Single packagings are only permitted for UN 2881 in Packing Group III on Cargo Aircraft Only.

COMBINATION PACKAGINGS					
UN number	Inner Packaging (see 6.1)		Net quantity per inner packaging Passenger Aircraft	Net quantity per inner packaging Cargo Aircraft Only	Total net quantity per package Passenger Aircraft
UN 1378, Metal catalyst, wetted ★, PG II	Glass		Forbidden	1.0 kg	Forbidden
	Metal			1.0 kg	
UN 2881, Metal catalyst, dry ★, PG II	Glass		Forbidden	1.0 kg	Forbidden
	Metal			1.0 kg	
UN 2881, Metal catalyst, dry ★, PG III	Glass		1.0 kg	2.5 kg	25.0 kg
	Metal		1.0 kg	5.0 kg	

OUTER PACKAGINGS

Type	Drums						Jerricans						Boxes					
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal	
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N	

SINGLE PACKAGINGS—PG III CARGO AIRCRAFT ONLY

Type	Drums						Jerricans					
Desc.	Steel						Steel					
Spec.	1A1 1A2						1A1 3A2					

PACKING INSTRUCTION Y474

OPERATOR VARIATIONS: 5X-02, AA-01, AI-03, AM-04, AS-02, BW-01, DE-01, FX-02, GA-03, GF-04, HA-01, IJ-12, KQ-08, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VN-07, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of Division 4.3 solids with a Division 6.1 subsidiary risk in Packing Group II.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Additional Packing Requirements

- for wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means for intermediate containment must be provided.

Single packagings are not permitted.

COMBINATION PACKAGINGS											
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package			
Glass				0.5 kg				1.0 kg			
Metal				0.5 kg							
Plastic				0.5 kg							
Plastic bag				0.5 kg							



OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION Y475

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, AI-03, AM-04, DE-01, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VN-07, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of Division 4.3 solids in Packing Group II.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

PACKING INSTRUCTION Y475 *(continued)*

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Additional Packing Requirements

- for wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means for intermediate containment must be provided.

Single packagings are not permitted.

COMBINATION PACKAGINGS																
Inner Packaging (see 6.1)		Net quantity per inner packaging													Total net quantity per package	
Glass		0.5 kg													5.0 kg	
Metal		0.5 kg														
Plastic		0.5 kg														
Plastic bag		0.5 kg														

OUTER PACKAGINGS																	
Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
△																	

PACKING INSTRUCTION Y476

OPERATOR VARIATIONS: 5X-02, AI-03, AM-04, DE-01, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VN-07, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of Division 4.3 solids in Packing Group III.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Additional Packing Requirements

- for wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means for intermediate containment must be provided.

Single packagings are not permitted.

PACKING INSTRUCTION Y476 (continued)

COMBINATION PACKAGINGS											Total net quantity per package					
Inner Packaging (see 6.1)		Net quantity per inner packaging									5.0 kg					
Glass		1.0 kg														
Metal		1.0 kg														
Plastic		1.0 kg														
Plastic bag		1.0 kg														

OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION Y477

OPERATOR VARIATIONS: 5X-02, AA-01, AI-03, AM-04, AS-02, BW-01, DE-01, FX-02, GA-03, GF-04, HA-01, IJ-12, KQ-08, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VN-07, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of Division 4.3 solids with no subsidiary risk or Division 6.1 subsidiary risk in Packing Group III.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Additional Packing Requirements

- for wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means for intermediate containment must be provided.

Single packagings are not permitted.

COMBINATION PACKAGINGS											Total net quantity per package					
Inner Packaging (see 6.1)		Net quantity per inner packaging									10.0 kg					
Glass		1.0 kg														
Metal		1.0 kg														
Plastic		1.0 kg														
Plastic bag		1.0 kg														

OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal



PACKING INSTRUCTION 478

OPERATOR VARIATIONS: 5X-02, AI-03, AM-04, CX-02/03, KA-02/03, KZ-07, LD-02/03, LY-04, UX-05, VN-07

This instruction applies to Division 4.3 liquids in Packing Group II on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- 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.

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Single packagings are not permitted.

COMBINATION PACKAGINGS																			
478	Inner Packaging (see 6.1)				Net quantity per inner packaging					Total net quantity per package									
to	Glass				1.0 L					1.0 L									
479	Metal				1.0 L														
	Plastic				1.0 L														



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 479

OPERATOR VARIATIONS: 5X-02, AA-01, AI-03, AM-04, AS-02, AY-04, BW-01, CA-10, CI-04, CX-02/03/05, EI-01, EY-03, FX-02, JJ-07, JL-09, KA-02/03/05, KC-06, KE-07, KZ-07, LD-02/03/06, LY-04, MK-12, NH-06, OK-04, OZ-08, SK-04, TG-02, UA-01, UX-05, VN-07

This instruction applies to Division 4.3 liquids in Packing Group III on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS																				
Inner Packaging (see 6.1)				Net quantity per inner packaging					Total net quantity per package											
Glass				2.5 L					5.0 L											
Metal				5.0 L																
Plastic				2.5 L																

PACKING INSTRUCTION 479 (continued)



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS																
Type	Drums						Jerricans			Composites				Cylinders		
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	All	As permitted in 5.0.6.6					
Spec.	1A1	1B1	1H1	1N1	3A1	3B1	3H1	3H1	3H1	All	As permitted in 5.0.6.6					

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PACKING INSTRUCTION 480

OPERATOR VARIATIONS: 5X-02, AY-02, BR-02, CA-10, CI-04, CX-02/03/05, EY-03, FX-02, IJ-02, JL-09, KA-02/03/05, KE-07, KZ-07, LD-02/03/06, MK-12, NH-06, OZ-08, SQ-03, TG-02

This instruction applies to Division 4.3 liquids in Packing Group I on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- 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;
- cylinders as provided for in 5.0.6.6 may be used as single packagings. Cylinders must be made of steel and subjected to an initial test and period tests every 10 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).

Combination and single packagings are permitted.

COMBINATION PACKAGINGS																					
Inner Packaging (see 6.1)						Net quantity per inner packaging						Total net quantity per package									
Glass						1.0 L						1.0 L									
Metal						1.0 L															
Plastic						Forbidden															



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS																
Type	Cylinders															
Desc.	Steel															
Spec.	As permitted in 5.0.6.6															

PACKING INSTRUCTION 481

OPERATOR VARIATIONS: 5X-02, AY-02, CA-10, CI-04, CX-02/03/05, EY-03, FX-02, IJ-02, JL-09, KA-02/03/05, KE-07, KZ-07, LD-02/03/06, MK-12, NH-06, OZ-08, SQ-03, TG-02

This instruction applies to Division 4.3 liquids in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- 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;
- cylinders as provided for in 5.0.6.6 may be used as single packagings. Cylinders must be made of steel and subjected to an initial test and period tests every 10 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).

Combination and single packagings are permitted.

COMBINATION PACKAGINGS																				
Inner Packaging (see 6.1)				Net quantity per inner packaging					Total net quantity per package											
Glass				2.5 L					5.0 L											
Metal				5.0 L																
Plastic				2.5 L																

OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS

Type	Cylinders													
Desc.	Steel													
Spec.	As permitted in 5.0.6.6													

PACKING INSTRUCTION 482

OPERATOR VARIATIONS: 5X-02, AY-02, CA-10, CI-04, CX-02/03/05, EY-03, FX-02, IJ-02, JL-09, KA-02/03/05, KE-07, KZ-07, LD-02/03/06, MK-12, NH-06, OZ-08, SQ-03, TG-02

This instruction applies to Division 4.3 liquids in Packing Group III on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

PACKING INSTRUCTION 482 (continued)

Additional Packing Requirements

- packagings must meet Packing Group II performance standards.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS																		
Inner Packaging (see 6.1)					Net quantity per inner packaging				Total net quantity per package									
Glass					5.0 L				60.0 L									
Metal					10.0 L													
Plastic					5.0 L													

OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS										Composites	
Type	Drums				Jerricans				Plastic	Cylinders	
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	Cylinders	
Spec.	1A1	1B1	1H1	1N1	3A1	3B1	3H1	As permitted in 5.0.6.6	All		

PACKING INSTRUCTION 483

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, AA-01, AI-03, AM-04, AS-02, BW-01, FX-02, KZ-07, LD-03, UX-05, VN-07

This instruction applies to Division 4.3 solids in Packing Group II on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.

COMBINATION PACKAGINGS										Total net quantity per package								
Inner Packaging (see 6.1)					Net quantity per inner packaging				15.0 kg									
Glass					1.0 kg													
Metal					1.0 kg													
Plastic					1.0 kg													

OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 484

OPERATOR VARIATIONS: 5X-02, AI-03, AM-04, KZ-07, LY-04, UX-05, VN-07

This instruction applies to Division 4.3 solids without a subsidiary risk in Packing Group II on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.

COMBINATION PACKAGINGS										
Inner Packaging (see 6.1)					Net quantity per inner packaging				Total net quantity per package	
Glass					1.0 kg				15.0 kg	
Metal					2.5 kg					
Plastic					2.5 kg					
Plastic bag					1.0 kg					

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OUTER PACKAGINGS																	
Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 485

OPERATOR VARIATIONS: 5X-02, AA-01, AI-03, AM-04, AS-02, BW-01, FX-02, KZ-07, LY-04, UX-05, VN-07

This instruction applies to Division 4.3 solids in Packing Group III on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards;
- for wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means for intermediate containment must be provided.

Single packagings are not permitted.

COMBINATION PACKAGINGS										
Inner Packaging (see 6.1)					Net quantity per inner packaging				Total net quantity per package	
Glass					2.5 kg				25.0 kg	
Metal					5.0 kg					
Plastic					2.5 kg					

PACKING INSTRUCTION 485 (continued)



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 486

OPERATOR VARIATIONS: 5X-02, AA-01, AI-03, AM-04, AS-02, BW-01, FX-02, KZ-07, LY-04, UX-05, VN-07

This instruction applies to Division 4.3 solids in Packing Group III on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

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Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards;
- for wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means for intermediate containment must be provided.

Single packagings are not permitted.

COMBINATION PACKAGINGS

Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
Glass	5.0 kg	25.0 kg
Metal	10.0 kg	
Plastic	10.0 kg	
Plastic bag	5.0 kg	



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 487

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, BR-02, EY-03, FX-02, IJ-02, JL-09, KZ-07, MK-12, NH-06, SQ-03, TG-02

This instruction applies to Division 4.3 solids in Packing Group I on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

PACKING INSTRUCTION 487 (continued)

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- inner packagings must be hermetically sealed, e.g. by taping or by threaded closures;
- for wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means of intermediate containment must be provided;
- △ fibre, fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS															
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package							
Glass				1.0 kg				15.0 kg							
Metal				1.0 kg											
Plastic				1.0 kg											

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Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS										
Type	Drums				Jerricans				Composites	Cylinders
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	As permitted in 5.0.6.6
Spec.	1A1 1A2	1B1 1B2	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	All		

PACKING INSTRUCTION 488

OPERATOR VARIATIONS: 5X-02, BR-02, EY-03, FX-02, IJ-02, JL-09, KZ-07, MK-12, NH-06, SQ-03, TG-02

This instruction applies to Division 4.3 solids in Packing Group I on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- inner packagings must be hermetically sealed, e.g. by taping or by threaded closures;
- for wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means of intermediate containment must be provided;
- △ fibre, fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.

PACKING INSTRUCTION 488 (continued)

COMBINATION PACKAGINGS														
Inner Packaging (see 6.1)					Net quantity per inner packaging				Total net quantity per package					
Glass					1.0 kg				15.0 kg					
Metal					2.5 kg									
Plastic					2.5 kg									
Plastic bag					2.5 kg									

△ OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS										Composites	
Type	Drums				Jerricans				Cylinders		
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Steel	Plastic	Cylinders	
Spec.	1A1 1A2	1B1 1B2	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	All	As permitted in 5.0.6.6

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PACKING INSTRUCTION 489

OPERATOR VARIATIONS: 5X-02, EY-03, FX-02, IJ-02, JL-09, KZ-07, MK-12, NH-06, SQ-03, TG-02

This instruction applies to Division 4.3 solids in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- for wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means of intermediate containment must be provided;
- △ • fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS														
Inner Packaging (see 6.1)					Net quantity per inner packaging				Total net quantity per package					
Glass					2.5 kg				50.0 kg					
Metal					5.0 kg									
Plastic					2.5 kg									

△ OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N



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PACKING INSTRUCTION 489 (continued)



SINGLE PACKAGINGS																		
Type	Drums				Jerricans			Boxes									Composites	Cylinders
Desc.	Steel	Alu-minium	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal	Plastic		
Spec.	1A1 1A2	1B1 1B2	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N	All	As permitted in 5.0.6.6	

PACKING INSTRUCTION 490

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STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, BR-02, EY-03, FX-02, IJ-02, JL-09, KZ-07, MK-12, NH-06, SQ-03, TG-02

This instruction applies to Division 4.3 solids in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- for wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means of intermediate containment must be provided;
- fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.



COMBINATION PACKAGINGS																									
Inner Packaging (see 6.1)					Net quantity per inner packaging					Total net quantity per package															
Glass					2.5 kg					50.0 kg															
Metal					5.0 kg																				
Plastic					5.0 kg																				
Plastic bag					2.5 kg																				



OUTER PACKAGINGS

Type	Drums					Jerricans			Boxes								
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N



Type	Drums					Jerricans			Boxes								
Desc.	Steel	Alu-minium	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal	Plastic	
Spec.	1A1 1A2	1B1 1B2	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N	All	As permitted in 5.0.6.6

PACKING INSTRUCTION 491

OPERATOR VARIATIONS: 5X-02, BR-02, EY-03, FX-02, IJ-02, JL-09, KZ-07, MK-12, NH-06, SQ-03, TG-02

This instruction applies to Division 4.3 solids in Packing Group III on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards;
- for wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means of intermediate containment must be provided;
- △ fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.

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COMBINATION PACKAGINGS												
Inner Packaging (see 6.1)					Net quantity per inner packaging				Total net quantity per package			
Glass					5.0 kg				100.0 kg			
Metal					10.0 kg							
Plastic					10.0 kg							
Plastic bag					5.0 kg							

△ OUTER PACKAGINGS

Type	Drums					Jerricans			Boxes								
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

△ SINGLE PACKAGINGS

Type	Drums					Jerricans			Boxes							Composites	Cylinders
Desc.	Steel	Alu-minium	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal	Plastic	
Spec.	1A1 1A2	1B1 1B2	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N	All	As permitted in 5.0.6.6

PACKING INSTRUCTION 492

OPERATOR VARIATIONS: 5X-02, AI-03, AM-04, IJ-02, KZ-07, LY-04, SQ-03, UX-05, VN-07

This instruction applies to Cells, containing sodium and Batteries, containing sodium (UN 3292) on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

PACKING INSTRUCTION 492 (continued)

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- cells must be packed in outer packagings with sufficient cushioning material to prevent contact between cells and between cells and the internal surfaces of the outer packaging and to ensure that no dangerous movement of the cells within the outer packaging occurs in transport;
- batteries must be protected against short circuit and must be isolated in such a manner as to prevent short circuits.

Single packagings are not permitted.

COMBINATION PACKAGINGS

UN Number		Total quantity per package Passenger aircraft	Total quantity per package Cargo Aircraft Only
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 Section 6	Forbidden	No limit
UN 3292, Cells, containing sodium		25.0 kg	No limit

OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 493

OPERATOR VARIATIONS: 5X-02, AI-03, AM-04, CX-02, KA-02, KZ-07, LD-02, LY-04, UX-05, VN-07

This instruction applies to Organometallic substance, liquid, water reactive, flammable (UN 3399) in Packing Group II and III on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards;
- glass inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Single packagings are not permitted.

COMBINATION PACKAGINGS

UN Number	Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
UN 3399, Organometallic substance, liquid, water reactive, flammable ★, PG II	Glass	1.0 L	1.0 L
	Cylinders (see 5.0.6.6)	1.0 L	
UN 3399, Organometallic substance, liquid, water reactive, flammable ★, PG III	Glass	5.0 L	5.0 L
	Cylinders (see 5.0.6.6)	5.0 L	

PACKING INSTRUCTION 493 (continued)

OUTER PACKAGINGS																	
Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 494

OPERATOR VARIATIONS: 5X-02, AY-02, CA-10, CX-02, EY-03, IJ-02, JL-09, KA-02, KE-07, KZ-07, LD-02, MK-12, NH-06, OZ-08, SQ-03, TG-02

This instruction applies to Organometallic substance, liquid, water reactive, flammable (UN 3399) in Packing Group I, II and III on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- *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 sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.
- *Packing Group III*
- packagings must meet Packing Group II performance standards;
- cylinders, as provided in 5.0.6.6, maybe used as single packagings.

Single packagings are not permitted for Packing Group I and Packing Group II.

COMBINATION PACKAGINGS																
UN Number			Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package					
UN 3399, Organometallic substance, liquid, water reactive, flammable ★, PG I			Glass				1.0 L				1.0 L					
			Cylinders (see 5.0.6.6)				1.0 L									
UN 3399, Organometallic substance, liquid, water reactive, flammable ★, PG II			Glass				2.5 L				5.0 L					
			Cylinders (see 5.0.6.6)				2.5 L									
UN 3399, Organometallic substance, liquid, water reactive, flammable ★, PG III			Glass				5.0 L				60.0 L					
			Cylinders (see 5.0.6.6)				5.0 L									

OUTER PACKAGINGS																	
Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

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PACKING INSTRUCTION 494 *(continued)*

SINGLE PACKAGINGS—PACKING GROUP III ONLY	
Type	Cylinders
Desc.	
Spec.	As permitted in 5.0.6.6

PACKING INSTRUCTION 495

OPERATOR VARIATIONS: 5X-02, AI-03, AM-04, IJ-02, KA-03, KZ-07, LY-04, SQ-03, UX-05, VN-07

This instruction applies to UN 3476 on passenger aircraft and Cargo Aircraft Only.

The requirements of 5.0.2.4, 5.0.2.5, 5.0.2.6 and 5.0.6 must be met, as appropriate.

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Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Additional Packing Requirements

- the weight of each fuel cell cartridge must not exceed 1 kg;
- fuel cell cartridges must be securely cushioned in the outer packagings;
- packagings must meet Packing Group II performance standards.

Single packagings are not permitted.

COMBINATION PACKAGINGS											
UN number				Net quantity per package Passenger Aircraft				Net quantity per package Cargo Aircraft Only			
UN 3476, Fuel cell cartridges				5.0 kg of fuel cell cartridges				50.0 kg of fuel cell cartridges			



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Desc.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N
Spec.																	

PACKING INSTRUCTION Y495

OPERATOR VARIATIONS: 5X-02, AI-03, AM-04, DE-01, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VN-07, VO-03, VT-01, XK-03

This instruction applies to UN 3476 in limited quantities.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

For the purpose of this packing instruction, a fuel cell cartridge is considered an inner packaging.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

PACKING INSTRUCTION Y495 (continued)

Additional Packing Requirements

- fuel cell cartridges containing liquid water-reactive fuels are not permitted in limited quantities;
- fuel cell cartridges containing solid water-reactive fuels must not contain more than 0.2 kg of water-reactive substances per cartridge;
- fuel cell cartridges must be securely cushioned in the outer packagings.

Single packagings are not permitted.

UN Number							Maximum Quantity per package						
UN 3476 Fuel cell cartridges, containing water-reactive substances							2.5 kg of fuel cell cartridges						

OUTER PACKAGINGS																	
Type	Drums					Jerricans			Boxes								
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION 496

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OPERATOR VARIATIONS: 5X-02, AI-03, AM-04, IJ-02, KZ-07, LY-04, SQ-03, UX-05, VN-07

This instruction applies to UN 3476 contained in equipment on passenger aircraft and Cargo Aircraft Only.

The requirements of 5.0.2.4.1 and 5.0.2.11 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

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 strong outer packagings;
- the weight 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 62282-6-100 Ed. 1 or a standard approved by the appropriate authority of the State of Origin.

Single packagings are not permitted.

COMBINATION PACKAGINGS														
UN number					Net quantity per package Passenger Aircraft					Net quantity per package Cargo Aircraft Only				
UN 3476, Fuel cell cartridges contained in equipment					5.0 kg of fuel cell cartridges					50.0 kg of fuel cell cartridges				

OUTER PACKAGINGS—Strong outer packagings, such as:

Type	Drums					Jerricans			Boxes							
Desc.	Steel	Alumin-ium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Plastic	Steel	Alumin-ium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic

PACKING INSTRUCTION 497

OPERATOR VARIATIONS: 5X-02, AI-03, AM-04, IJ-02, KZ-07, LY-04, SQ-03, UX-05, VN-07

This instruction applies to UN 3476 packed with equipment on passenger aircraft and Cargo Aircraft Only.

The requirements of 5.0.2.4.1 and 5.0.2.11 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

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 weight of each fuel cell cartridge must not exceed 1 kg;
- 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.

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Single packagings are not permitted.

COMBINATION PACKAGINGS		
UN number	Net quantity per package Passenger Aircraft	Net quantity per package Cargo Aircraft Only
UN 3476, Fuel cell cartridges packed with equipment	5.0 kg of fuel cell cartridges	50.0 kg of fuel cell cartridges

OUTER PACKAGINGS

Type	Drums	Jerricans	Boxes

PACKING INSTRUCTION 499

STATE VARIATIONS: BEG-03, USG-06

OPERATOR VARIATIONS: AM-04, CI-01, IJ-02, SQ-03, TU-06, UX-05

This instruction applies to UN 3319 on Cargo Aircraft Only.

Only packagings which are approved by the appropriate national authority for these substances may be used (see 5.0.6.7). A copy of this approval must accompany each consignment or an annotation that it has been granted must be shown in the authorizations column on the Shipper's Declaration.

5.5 Packing Instructions—Class 5—Oxidizing Substances; Organic Peroxides

PACKING INSTRUCTION Y540

OPERATOR VARIATIONS: 5X-02, AA-01, AM-05, AS-02, BW-01, CM-03, CX-02, DE-01, FX-02/17, GA-03, GF-04, HA-01, IJ-12, JJ-07, KA-02, KE-07, KQ-08, LD-02, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of Division 5.1 liquids in Packing Group II.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- inner packagings for liquids must be capable of passing a pressure differential test (5.0.2.9);
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS											
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package			
Glass				0.1 L				0.5 L			
Metal				0.1 L							
Plastic				0.1 L							



OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Desc.																	

PACKING INSTRUCTION Y541

OPERATOR VARIATIONS: 5X-02, AA-01, AM-05, AS-02, BW-01, CM-03, CX-02, DE-01, FX-02/17, GA-03, GF-04, HA-01, IJ-12, JJ-07, KA-02, KE-07, KQ-08, LD-02, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of Division 5.1 liquids in Packing Group III.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

PACKING INSTRUCTION Y541 *(continued)*

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- inner packagings for liquids must be capable of passing a pressure differential test (5.0.2.9);
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

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COMBINATION PACKAGINGS		
Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
Glass	0.5 L	1.0 L
Metal	0.5 L	
Plastic	0.5 L	



OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION Y543

OPERATOR VARIATIONS: 5X-02, AA-01, AM-05, AS-02, BW-01, CM-03, DE-01, FX-02, GA-03, GF-04, HA-01, IJ-12, KE-07, KQ-08, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of Division 5.1 solids with a Division 6.1 subsidiary risk in Packing Group II.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

PACKING INSTRUCTION Y543 (continued)

COMBINATION PACKAGINGS		
Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
Fibre	0.5 kg	
Glass	0.5 kg	
Metal	0.5 kg	
Paper bag	0.5 kg	1.0 kg
Plastic	0.5 kg	
Plastic bag	0.5 kg	

OUTER PACKAGINGS

Type	Drums					Jerricans			Boxes								
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION Y544

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, AM-05, CM-03, DE-01, GA-03, GF-04, HA-01, IJ-12, KE-07, KQ-08, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of Division 5.1 solids with no subsidiary risk or a Class 8 subsidiary risk in Packing Group II.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS		
Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
Fibre	0.5 kg	
Glass	0.5 kg	
Metal	0.5 kg	
Paper bag	0.5 kg	2.5 kg
Plastic	0.5 kg	
Plastic bag	0.5 kg	



PACKING INSTRUCTION Y544 *(continued)*



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
	Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic

PACKING INSTRUCTION Y545

OPERATOR VARIATIONS: 5X-02, AM-05, CM-03, DE-01, GA-03, GF-04, HA-01, IJ-12, KE-07, KQ-08, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of Division 5.1 solids with a Class 8 subsidiary risk in Packing Group III.

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Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS

Inner Packaging (see 6.1)		Net quantity per inner packaging						Total net quantity per package											
Fibre		1.0 kg						5.0 kg											
Glass		1.0 kg																	
Metal		1.0 kg																	
Paper bag		1.0 kg																	
Plastic		1.0 kg																	
Plastic bag		1.0 kg																	

OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
	Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic

PACKING INSTRUCTION Y546

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, AA-01, AM-05, AS-02, BW-01, CM-03, DE-01, FX-02, GA-03, GF-04, HA-01, IJ-12, KE-07, KQ-08, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of Division 5.1 solids with no subsidiary risk or a Division 6.1 subsidiary risk in Packing Group III.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

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COMBINATION PACKAGINGS		
Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
Fibre	1.0 kg	10.0 kg
Glass	1.0 kg	
Metal	1.0 kg	
Paper bag	1.0 kg	
Plastic	1.0 kg	
Plastic bag	1.0 kg	



OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION 550

OPERATOR VARIATIONS: 5X-02, AA-01, AM-05, AS-02, BW-01, CM-03, CX-02/05, FX-02/17, JJ-07, KA-02/05, KZ-07, LD-02/06, LY-04, UX-04

This instruction applies to Division 5.1 liquids in Packing Group II on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.



PACKING INSTRUCTION 550 *(continued)*

COMBINATION PACKAGINGS							
Inner Packaging (see 6.1)			Net quantity per inner packaging			Total net quantity per package	
Glass			1.0 L			1.0 L	
Metal			1.0 L				
Plastic			1.0 L				

△ **OUTER PACKAGINGS**

Type	Drums						Boxes							
Desc.	Steel	Alumin-ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Wood	Plywood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

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PACKING INSTRUCTION 551

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OPERATOR VARIATIONS: 5X-02, AA-01, AM-05, AS-02, BW-01, CM-03, CX-02/05, FX-02/17, JJ-07, KA-02/05, KZ-07, LD-02/06, LY-04, UX-04

This instruction applies to Division 5.1 liquids in Packing Group III on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards.

Single packagings are not permitted.

COMBINATION PACKAGINGS							
Inner Packaging (see 6.1)			Net quantity per inner packaging			Total net quantity per package	
Glass			2.5 L			2.5 L	
Metal			2.5 L				
Plastic			2.5 L				

△ **OUTER PACKAGINGS**

Type	Drums						Boxes							
Desc.	Steel	Alumin-ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Wood	Plywood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 553

OPERATOR VARIATIONS: 5X-02, BR-02, CX-02/05, FX-02/15/17, IJ-02, KA-02/05, KZ-07, LD-02/06

This instruction applies to Division 5.1 liquids in Packing Group I on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- △
- inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings;
 - UN 1873 only glass inner packagings are permitted.

Single packagings are not permitted.

COMBINATION PACKAGINGS			
Inner Packaging (see 6.1)		Net quantity per inner packaging	Total net quantity per package
Glass		1.0 L	2.5 L
	Metal	1.0 L	
	Plastic	1.0 L	

△

OUTER PACKAGINGS														
Type	Drums						Boxes							
Desc.	Steel	Alumin- ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin- ium	Wood	Plywood	Recon- stituted wood	Fibre- board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 554

OPERATOR VARIATIONS: 5X-02, CX-02/05, FX-02/15/17, IJ-02, KA-02/05, KZ-07, LD-02/06

This instruction applies to Division 5.1 liquids in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.

COMBINATION PACKAGINGS			
Inner Packaging (see 6.1)		Net quantity per inner packaging	Total net quantity per package
Glass		2.5 L	5.0 L
	Metal	2.5 L	
	Plastic	2.5 L	



PACKING INSTRUCTION 554 (continued)



OUTER PACKAGINGS

Type	Drums						Boxes							
Desc.	Steel	Alumin-ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Wood	Plywood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 555

OPERATOR VARIATIONS: 5X-02, AY-04, CA-10, CI-04, CX-02/05, EY-03, FX-02/15/17, IJ-02, JL-09, KA-02/05, KE-07, KZ-07, LD-02/06, MK-12, NH-06, OZ-08, TG-02

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This instruction applies to Division 5.1 liquids in Packing Group III on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

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Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS

Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
Glass	5.0 L	30.0 L
Metal	5.0 L	
Plastic	5.0 L	



OUTER PACKAGINGS

Type	Drums						Boxes							
Desc.	Steel	Alumin-ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Wood	Plywood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS

Type	Drums				Jerricans				Composites	
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	All	
Spec.	1A1	1B1	1H1	1N1	3A1	3B1	3H1	Plastic	All	

PACKING INSTRUCTION 557

OPERATOR VARIATIONS: 5X-02, AA-01, AM-05, AS-02, BR-02, BW-01, CM-03, FX-02/17, KZ-07, LY-04, TU-08, UX-04, VN-04

This instruction applies to Division 5.1 solids in Packing Group I on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- for wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means of intermediate containment must be provided.

Single packagings are not permitted.

COMBINATION PACKAGINGS		
Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
Glass	1.0 kg	1.0 kg
Metal	1.0 kg	
Plastic	1.0 kg	



OUTER PACKAGINGS

Type	Drums						Boxes							
	Steel	Alumin-ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Wood	Plywood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

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PACKING INSTRUCTION 558

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, AA-01, AM-05, AS-02, BW-01, CM-03, FX-02/17, KZ-07, LD-03, TU-08, UX-04

This instruction applies to Division 5.1 solids in Packing Group II on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- for wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means of intermediate containment must be provided.

Single packagings are not permitted.



Dangerous Goods Regulations

PACKING INSTRUCTION 558 (continued)

COMBINATION PACKAGINGS																	
Inner Packaging (see 6.1)						Net quantity per inner packaging				Total net quantity per package							
Fibre						1.0 kg				5.0 kg							
Glass						1.0 kg											
Metal						1.0 kg											
Paper bag						1.0 kg											
Plastic						1.0 kg											
Plastic bag						1.0 kg											

△ OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

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PACKING INSTRUCTION 559

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, AA-01, AM-05, AS-02, BW-01, CM-03, FX-02/17, KZ-07, LY-04, TU-08, UX-04

This instruction applies to Division 5.1 solids in Packing Group III on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards;
- for wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means for intermediate containment must be provided.

Single packagings are not permitted.

COMBINATION PACKAGINGS																	
Inner Packaging (see 6.1)						Net quantity per inner packaging				Total net quantity per package							
Fibre						2.5 kg				25.0 kg							
Glass						2.5 kg											
Metal						2.5 kg											
Paper bag						2.5 kg											
Plastic						2.5 kg											
Plastic bag						2.5 kg											

△ OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 561

OPERATOR VARIATIONS: 5X-02, BR-02, EY-03, FX-02/15/17, IJ-02, JL-09, KZ-07, MK-12, NH-06, TG-02

This instruction applies to Division 5.1 solids in Packing Group I on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- for wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means of intermediate containment must be provided.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS														
Inner Packaging (see 6.1)			Net quantity per inner packaging				Total net quantity per package							
Glass			1.0 kg				15.0 kg							
Metal			1.0 kg											
Plastic			1.0 kg											



OUTER PACKAGINGS

Type	Drums						Boxes							
Desc.	Steel	Alumin- ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin- ium	Wood	Plywood	Recon- stituted wood	Fibre- board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS														
Type	Drums						Boxes							
Desc.	Steel						Aluminium						Other metal	
Spec.	1A1 1A2						1B1 1B2						1N1 1N2	

PACKING INSTRUCTION 562

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, EY-03, FX-02/15/17, IJ-02, JL-09, KZ-07, MK-12, NH-06, TG-02

This instruction applies to Division 5.1 solids in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- fibre, fibreboard, wood and plywood single packagings must be fitted with a suitable liner;
- for wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means of intermediate containment must be provided.

Combination and single packagings are permitted.

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PACKING INSTRUCTION 562 (continued)

COMBINATION PACKAGINGS										
Inner Packaging (see 6.1)					Net quantity per inner packaging				Total net quantity per package	
Fibre					2.5 kg				25.0 kg	
Glass					2.5 kg					
Metal					5.0 kg					
Paper bag					2.5 kg					
Plastic					2.5 kg					
Plastic bag					2.5 kg					

△ OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal	
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N	

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△ SINGLE PACKAGINGS

Type	Drums						Jerricans				Boxes								Composites	Cylinders
Desc.	Steel	Alumin-ium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Plastic	Steel	Alumin-ium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal	Plastic		
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N	All	As per-mitted in 5.0.6.6	

PACKING INSTRUCTION 563

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, EY-03, FX-02/15/17, IJ-02, JL-09, KZ-07, MK-12, NH-06, TG-02

This instruction applies to Division 5.1 solids in Packing Group III on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards;
- for wetted substances where the outer packaging is not leakproof, a leakproof liner or equally effective means for intermediate containment must be provided;
- fibre, fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.

PACKING INSTRUCTION 563 (continued)

COMBINATION PACKAGINGS											
Inner Packaging (see 6.1)					Net quantity per inner packaging			Total net quantity per package			
Fibre					5.0 kg			100.0 kg			
Glass					5.0 kg						
Metal					5.0 kg						
Paper bag					5.0 kg						
Plastic					5.0 kg						
Plastic bag					5.0 kg						

△ OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

△ SINGLE PACKAGINGS

Type	Drums						Jerricans			Boxes								Composites	Cylinders
Desc.	Steel	Alumin-ium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Plastic	Steel	Alumin-ium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal	Plastic	
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N	All	As per-mitted in 5.0.6.6

PACKING INSTRUCTION 565

STATE VARIATIONS: USG-03/13/18

OPERATOR VARIATIONS: 5X-06, AM-05, AS-01, BA-07, BR-08, CI-01, CM-03, IJ-02/05, IR-05, LA-05, LY-04, ME-07, OU-07, SQ-06, TU-08

This instruction applies to Oxygen generator, chemical (UN 3356) on Cargo Aircraft Only.

The General Packing Requirements of Subsection 5.0.2, except for 5.0.2.13.2, must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

Oxygen generator, chemical containing oxidizing substances, including when fitted in associated equipment e.g. passenger service units (PSUs), protective breathing equipment (PBE) etc, 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;

PACKING INSTRUCTION 565 (continued)

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- (b) when a generator is equipped with an actuating device it must have at least two positive means of preventing unintentional actuation as follows:
1. mechanically actuated devices:
 - (i) two pins, installed so that each is independently capable of preventing the actuator from striking the primer;
 - (ii) one pin and one retaining ring, each installed so that each is independently capable of preventing the actuator from striking the primer; or
 - (iii) a cover securely installed over the primer and a pin installed so as to prevent the actuator from striking the primer and cover.
 2. electrically actuated devices: The electrical leads must be mechanically shorted and the mechanical short must be shielded in metal foil.
 3. For PBE:
 - (i) a pin so as to prevent the actuator from striking the primer; and
 - (ii) placed in protective packaging such as a vacuum-sealed bag.
- (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 in the package.

COMBINATION PACKAGINGS

UN Number		Total quantity per package Passenger aircraft	Total quantity per package Cargo Aircraft Only
UN 3356, Oxygen generator, chemical	The generators must be tightly packed in one of the outer packagings listed below	Forbidden	25 kg

OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes						
Desc.	Steel	Alumin-ium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Plastic	Steel	Alumin-ium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic
Spec.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2

PACKING INSTRUCTION 570

OPERATOR VARIATIONS: 5X-02, AM-05, CM-03, CX-02, FX-17, IJ-02, JW-04, KA-02, LD-02, LY-04, TU-08, UX-06

This instruction applies to Division 5.2 organic peroxides on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards.

PACKING INSTRUCTION 570 (continued)

Single packagings are not permitted.

COMBINATION PACKAGINGS

LIQUIDS

UN number	Inner Packaging (see 6.1)	Net quantity per inner packaging Passenger Aircraft	Net quantity per inner packaging Cargo Aircraft Only	Total net quantity per package Passenger Aircraft	Total net quantity per package Cargo Aircraft Only
UN 3103	Plastic	0.5 L	1.0 L		
UN 3105	Plastic	0.5 L	1.0 L	5.0 L	10.0 L
UN 3107	Plastic	1.0 L	2.5 L		
UN 3109	Plastic	1.0 L	2.5 L	10.0 L	25.0 L

SOLIDS

UN 3104	Plastic	0.5 kg	1.0 kg		
UN 3106	Plastic	0.5 kg	1.0 kg	5.0 kg	10.0 kg
UN 3108	Plastic	1.0 kg	2.5 kg		
UN 3110	Plastic	1.0 kg	2.5 kg	10.0 kg	25.0 kg



OUTER PACKAGINGS

Type	Drums			Jerricans	Boxes						
	Desc.	Plywood	Fibre		Plastic	Wood	Plywood	Reconstituted wood	Fibreboard	Plastic	Other metal
Spec.	1D	1G	1H1 1H2	3H1 3H2	4C1 4C2	4D	4F	4G	4H1 4H2	4N	

5.6 Packing Instructions—Class 6—Toxic and Infectious Substances

PACKING INSTRUCTION 620

STATE VARIATIONS: AUG-03, BHG-02, CAG-05/10/11, DQG-03, GBG-05, VCG-04, VUG-02

△ OPERATOR VARIATIONS: 4C-04, 4M-04, AF-02, AM-06/10, AS-08, BR-14, BZ-07, CA-11, CI-01, FX-09, HA-03, IJ-06, IP-03, JJ-04, KC-08, L7-04, LA-14, LP-04, LU-04, M3-04, M7-04, MS-06, OU-12/16, SV-12, TK-07, UC-04, UU-05, XL-04

This instruction applies to UN 2814 and UN 2900.

Packagings must meet the requirements of 6.5 and must be marked as required by 6.5.3.1.

General Requirements

Shippers of infectious substances must comply with these Regulations and 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.

The packagings must include:

(a) **inner packagings**, comprising of:

- leakproof primary receptacle(s);
- a leakproof secondary packaging;
- other than for solid infectious substances, absorbent material, such as cotton wool, 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 must be either individually wrapped or separated so as to prevent contact between them;

(b) an **itemized list of contents**, enclosed between the secondary packaging and the outer packaging; and

(c) a **rigid outer packaging**. The smallest external dimension must be not less than 100 mm.

Alternative packagings for the transport of animal material may be authorized by the competent authority in accordance with the provisions in 5.0.6.7.

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 (0.95 bar) and temperatures in the range of -40°C to 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 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 a absolute atmospheric pressure lower than 95 kPa.

Additional Requirements

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 5.0.1.5.

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 Classes 3, 8, or 9 may be packed in each primary receptacle containing infectious substances provided these substances meet the requirements of 2.6. When these small quantities of dangerous goods are packed with infectious substances in accordance with this packing instruction, no other requirements in these Regulations need be met.

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.

PACKING INSTRUCTION 620 (continued)

☞ All packages containing infectious substances must be marked durably and legibly on the outside of the package with the NAME and TELEPHONE NUMBER OF A PERSON RESPONSIBLE.

Specific Requirements

Other than for exceptional consignments, for example, large body parts and whole organs which require special packaging, the following specific requirements apply:

Substances consigned at ambient or higher temperatures: Primary receptacles must be of glass, metal or plastic. Positive means of ensuring a leak-proof seal must be provided, such as heat seal, skirted stopper or metal crimp seal. If screw caps are used, these must be secured by positive means, e.g. tape, paraffin sealing tape or manufactured locking closure.

Substances consigned refrigerated or frozen (wet ice, prefrozen packs, Carbon dioxide, solid [dry ice]): Ice, Carbon dioxide, solid (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 6.5.3.1. Interior support must be provided to secure the secondary packaging(s) or packages in the original position after the ice or Carbon dioxide, solid (dry ice) has dissipated. If ice is used, the outer packaging or overpack must be leak-proof. If Carbon dioxide, solid (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.

Substances consigned in liquid nitrogen: Plastic primary receptacles capable of withstanding very low temperatures must be used. The secondary packaging must 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 refrigerant used.

Lyophilized substances: Primary receptacles must be either flame-sealed glass ampoules or rubber-stoppered glass vials fitted with metal seals.

Before an empty packaging is returned to the consignor, or sent elsewhere, it must be disinfected or sterilised to nullify any hazard and any label or marking indicating that it contained an infectious substance must be removed or obliterated.

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PACKING INSTRUCTION 622

STATE VARIATIONS: AUG-03, BHG-02, CAG-05, DQG-03, GBG-05, USG-13, VCG-04, VUG-02

OPERATOR VARIATIONS: 7H-02, 9W-06, AA-02, AM-06, AS-07/08, AV-03, BA-04, BR-14, C8-02, CI-01, CV-02, DL-02, E8-04, FX-05/09, HA-03, LA-07, ME-06, UX-08

This instruction applies to UN 3291 on passenger and cargo aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 except 5.0.2.15 must be met.

Consignments must be packed in one of the outer packagings shown below, meeting Packing Group II performance Standards.

Consignments of clinical waste and medical waste 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.

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.



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes								
	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal	
Desc.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N	
Spec.																		

PACKING INSTRUCTION Y640

OPERATOR VARIATIONS: 5X-02, AA-01, AM-06, AS-02, BW-01, CX-02, DE-01, E8-01, FX-02, GA-03, GF-04, HA-01, IJ-12, KA-02, KE-07, KQ-08, LA-06, LD-02, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UA-02, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of Division 6.1 liquids with a Class 8 or a Class 3 and Class 8 subsidiary risk in Packing Group II.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

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Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- inner packagings for liquids must be capable of passing a pressure differential test (5.0.2.9);
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS		
Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
Glass	0.1 L	0.5 L
Metal	0.1 L	
Plastic	0.1 L	



OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
	Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic

PACKING INSTRUCTION Y641

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, AA-01, AM-06, AS-02, BW-01, CX-02, DE-01, E8-01, FX-02, GA-03, GF-04, HA-01, IJ-12, KA-02, KE-07, KQ-08, LA-06, LD-02, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UA-02, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of Division 6.1 liquids in Packing Group II.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

PACKING INSTRUCTION Y641 (continued)

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- inner packagings for liquids must be capable of passing a pressure differential test (5.0.2.9);
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS																				
Inner Packaging (see 6.1)				Net quantity per inner packaging					Total net quantity per package											
Glass				0.1 L					1.0 L											
Metal				0.1 L																
Plastic				0.1 L																



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes								
	Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

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PACKING INSTRUCTION Y642

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, AA-01, AM-06, AS-02, BW-01, CX-02, DE-01, FX-02, GA-03, GF-04, HA-01, IJ-12, KA-02, KE-07, KQ-08, LA-06, LD-02, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UA-02, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of Division 6.1 liquids in Packing Group III.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- inner packagings for liquids must be capable of passing a pressure differential test (5.0.2.9);
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.



PACKING INSTRUCTION Y642 (continued)

COMBINATION PACKAGINGS															
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package							
Glass				0.5 L				2.0 L							
Metal				0.5 L											
Plastic				0.5 L											



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal

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PACKING INSTRUCTION Y644

Y642

STATE VARIATION: USG-04

to

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OPERATOR VARIATIONS: 5X-02, AA-01, AM-06, AS-02, BW-01, DE-01, E8-01, FX-02, GA-03, GF-04, HA-01, IJ-12, KE-07, KQ-08, LA-06, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UA-02, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of Division 6.1 solids in Packing Group II.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS															
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package							
Fibre				0.5 kg				1.0 kg							
Glass				0.5 kg											
Metal				0.5 kg											
Paper bag				0.5 kg											
Plastic				0.5 kg											
Plastic bag				0.5 kg											



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION Y645

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, AA-01, AM-06, AS-02, BW-01, DE-01, FX-02, GA-03, GF-04, HA-01, IJ-12, KE-07, KQ-08, LA-06, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UA-02, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of Division 6.1 solids in Packing Group III.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

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to
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COMBINATION PACKAGINGS		
Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
Fibre	1.0 kg	10.0 kg
Glass	1.0 kg	
Metal	1.0 kg	
Paper bag	1.0 kg	
Plastic	1.0 kg	
Plastic bag	1.0 kg	



OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes							
	Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION 650

STATE VARIATIONS: BHG-02, CAG-05, DQG-03, GBG-05, VCG-04

OPERATOR VARIATIONS: 4C-04, 4M-04, AF-02, AM-06/10, AR-02, AS-08, BR-14, BZ-07, CI-01, FX-09, GH-02, IJ-06/10, IP-03, JJ-04, KC-08, KE-06, L7-04, LA-07, LH-05, LP-04, LU-04, M3-04, M7-04, MN-03, MS-06, OO-01, OU-12/16, PX-08, S7-02, SQ-10, SV-12, TN-05, UC-04, UU-05, XL-04

This instruction applies to UN 3373 on passenger and cargo aircraft and Cargo Aircraft Only.

General Requirements

The packagings must be of good quality, strong enough to withstand the shocks and loadings normally encountered during transport, including trans-shipment 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 so as 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.

PACKING INSTRUCTION 650 *(continued)*

The packaging must consist of three components:

- (a) a primary receptacle(s);
- (b) a secondary packaging; and
- (c) a rigid outer packaging.

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.

Packages must be prepared as follows:

(a) For liquid substances:

1. The primary receptacle(s) must be leakproof and must not contain more than 1 L;
2. The secondary packaging must be leakproof;
3. 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;
4. Absorbent material must be placed between the primary receptacle and the secondary packaging. The absorbent material, such as cotton wool, must be in sufficient quantity 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;
5. The primary receptacle or the secondary packaging must be capable of withstanding, without leakage, an internal pressure of 95 kPa in the range of -40°C to 55°C.
6. The outer packaging must not contain more than 4 L. 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 a absolute atmospheric pressure lower than 95 kPa.

(b) For solid substances:

1. The primary receptacle(s) must be siftproof and must not exceed the outer packaging weight limit;
2. The secondary packaging must be siftproof;
3. 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;
4. Except for packages containing body parts, organs or whole bodies, the outer packaging must not contain more than 4 kg. This quantity excludes ice, dry ice or liquid nitrogen when used to keep specimens cold;
5. 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.

 An itemized list of contents must be enclosed between the secondary packaging and the outer packaging.

At least one surface of the outer packaging must have a minimum dimension of 100 mm × 100 mm.

The completed package must be capable of successfully passing the drop test described in 6.5.4.4 as specified in 6.5.4.2 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.

PACKING INSTRUCTION 650 *(continued)*

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.


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- ☞ Unless all package markings are clearly visible, the following conditions apply when packages are placed in an overpack:
 - the overpack must be marked with the word "Overpack"; and
 - the package markings must be reproduced on the outside of the overpack.

A Shipper's Declaration for Dangerous Goods is not required.

Alternative packagings for the transport of animal material may be authorized by the competent authority in accordance with the provisions in 5.0.6.7.

Specific Requirements

Refrigerated or frozen specimens: Ice, dry ice and liquid nitrogen:

- When dry ice or liquid nitrogen is used to keep specimens cold, all applicable requirements of these Regulations 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 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.
- 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 to be lost.

Infectious substances assigned to UN 3373 which are packed and marked in accordance with this packing instruction are not subject to any other requirement of these Regulations 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 the air waybill or on the package;
- (c) the classification must be in accordance to 3.6.2;
- (d) the incident reporting requirements in 9.6.1 must be met; and
- (e) the inspection for damage or leakage requirements in 9.4.1 and 9.4.2.

Note:

When the shipper or consignee is also the 'person responsible' as referred to in b) above, the name and address need be marked only once in order to satisfy the name and address marking provisions in both a) and b), above.

Passengers and crew members are prohibited from transporting infectious substances as or in carry-on baggage, checked baggage or on their person.

- ☞ If an Air Waybill is used, the "Nature and Quantity of Goods" box must show "UN 3373", the text "BIOLOGICAL SUBSTANCE, CATEGORY B" and the number of packages.

Clear instructions on filling and closing such packages must be provided by packaging manufacturers and subsequent distributors to the shipper or to the person who prepares the package (e.g. patient) to enable the package to be correctly prepared for transport.



PACKING INSTRUCTION 650 *(continued)*

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 Classes 3, 8 or 9 may be packed in each primary receptacle containing infectious substances provided these substances meet the requirements of 2.6. When these small quantities of dangerous goods are packed with infectious substances in accordance with this packing instruction, no other requirements in these Regulations need be met.

PACKING INSTRUCTION 651

OPERATOR VARIATIONS: 5X-02, AA-01, AM-06, AS-02, BR-02, BW-01, CA-11, CX-02/05, E8-01, FX-02, HA-01, JJ-07, JL-08, KA-02/05, KZ-07, LA-06, LD-02/06, LY-04, TU-09, UA-02, UX-04, VN-04

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This instruction applies to Division 6.1 liquids with a Class 8 subsidiary risk in Packing Group I on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- △ • inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Single packagings are not permitted.

COMBINATION PACKAGINGS													
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package					
Glass				0.5 L				0.5 L					
Metal				0.5 L									
Plastic				0.5 L									



OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 652

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 4C-03, 4M-03, 5X-02, AA-01, AM-06, AS-02, BR-02, BW-01, CA-11, CX-02, E8-01, FX-02, HA-01, JJ-03, JL-08, KA-02, KZ-07, L7-03, LA-06, LD-02, LP-03, LU-03, LY-04, M3-03, M7-03, TU-09, UA-02, UC-03, UX-04, VN-04, XL-03

This instruction applies to Division 6.1 liquids in Packing Group I on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;

PACKING INSTRUCTION 652 (continued)

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- ⚠ • inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Single packagings are not permitted.

COMBINATION PACKAGINGS																			
Inner Packaging (see 6.1)					Net quantity per inner packaging					Total net quantity per package									
Glass					0.5 L					1.0 L									
Metal					1.0 L														
Plastic					0.5 L														

OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 653

OPERATOR VARIATIONS: 5X-02, AA-01, AM-06, AS-02, BW-01, CM-03, CX-02/05, E8-01, FX-02, HA-01, JJ-07, KA-02/05, KZ-07, LA-06, LD-02/06, LY-04, TU-09, UA-02, UX-04

This instruction applies to Division 6.1 liquids in Packing Group II on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.

COMBINATION PACKAGINGS																			
Inner Packaging (see 6.1)					Net quantity per inner packaging					Total net quantity per package									
Glass					1.0 L					1.0 L									
Metal					1.0 L														
Plastic					1.0 L														

OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N



PACKING INSTRUCTION 654

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, AA-01, AM-06, AS-02, BW-01, CX-02, E8-01, FX-02, HA-01, JJ-07, KA-02, KZ-07, LA-06, LD-02, LY-04, TU-09, UA-02, UX-04

This instruction applies to Division 6.1 liquids with no subsidiary risk or a Class 3 subsidiary risk in Packing Group II on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.

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COMBINATION PACKAGINGS											
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package			
Glass				1.0 L				5.0 L			
Metal				2.5 L							
Plastic				1.0 L							



OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 655

STATE VARIATIONS: USG-04/13

OPERATOR VARIATIONS: 5X-02, AA-01, AM-06, AS-02, AY-04, BW-01, CA-10, CX-02/05, E8-01, EI-01, EY-03, FX-02, HA-01, JJ-07, JL-09, KA-02/05, KC-06, KE-07, KZ-07, LA-06, LD-02/06, LY-04, MK-12, NH-06, OK-04, OZ-08, SK-04, TG-02, TU-09, UA-01/02, UX-04

This instruction applies to Division 6.1 liquids in Packing Group III on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS											
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package			
Glass				2.5 L				60.0 L			
Metal				5.0 L							
Plastic				2.5 L							

PACKING INSTRUCTION 655 (continued)

△ OUTER PACKAGINGS																	
Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS																
Type	Drums				Jerricans				Composites			Cylinders				
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	All	As permitted in 5.0.6.6					
Spec.	1A1 1A2	1B1 1B2	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2			All	As permitted in 5.0.6.6					

PACKING INSTRUCTION 657

OPERATOR VARIATIONS: 5X-02, AY-04, BR-02, CA-11, CI-04, CM-03, CX-02/05, E8-01, EY-03, FX-02, JL-08, KA-02/05, KE-07, KZ-07, LA-06, LD-02/06, NH-06, OZ-08, TG-02

This instruction applies to Division 6.1 liquids with a Division 5.1 or Class 8 subsidiary risk in Packing Group I on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- △ • inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS																								
Inner Packaging (see 6.1)					Net quantity per inner packaging				Total net quantity per package															
Glass					1.0 L				2.5 L															
Metal					2.5 L																			
Plastic					1.0 L																			

△ OUTER PACKAGINGS																	
Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS																
Type	Drums				Jerricans				Composites			Cylinders				
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	All	As permitted in 5.0.6.6					
Spec.	1A1	1B1	1H1	1N1	3A1	3B1	3H1	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N	As permitted in 5.0.6.6

PACKING INSTRUCTION 658

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 4C-03, 4M-03, 5X-02, AY-04, BR-02, CA-11, CX-02, E8-01, EY-03, FX-02, JJ-03, JL-08, KA-02, KE-07, KZ-07, L7-03, LA-06, LD-02/03, LP-03, LU-03, M3-03, M7-03, NH-06, OZ-08, TG-02, UC-03, XL-03

This instruction applies to Division 6.1 liquids with no subsidiary risk or a Class 3 subsidiary risk in Packing Group I on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- 5** △ • inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

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Combination and single packagings are permitted.

COMBINATION PACKAGINGS

Inner Packaging (see 6.1)		Net quantity per inner packaging	Total net quantity per package
Glass		1.0 L	30.0 L
Metal		2.5 L	
Plastic		1.0 L	

OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS

Type	Drums				Jerricans				Composites		Cylinders			
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	Plastic	Plastic			
Spec.	1A1	1B1	1H1	1N1	3A1	3B1	3H1	4A	4B	4C1 4C2	4D	All	As permitted in 5.0.6.6	

PACKING INSTRUCTION 659

OPERATOR VARIATIONS: 5X-02, AY-04, BR-02, CA-10, CM-03, CX-02, E8-01, EY-03, FX-02, JL-08, KA-02, KE-07, KZ-07, LA-06, LD-02, NH-06, OZ-08, TG-02

This instruction applies to Division 6.1 liquids in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Combination and single packagings are permitted.

PACKING INSTRUCTION 659 (continued)

COMBINATION PACKAGINGS														
Inner Packaging (see 6.1)					Net quantity per inner packaging				Total net quantity per package					
Glass					1.0 L				5.0 L					
Metal					5.0 L									
Plastic					1.0 L									

△ **OUTER PACKAGINGS**

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS												
Type	Drums				Jerricans				Composites		Cylinders	
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Steel	Plastic	Cylinders		
Spec.	1A1	1B1	1H1	1N1	3A1	3B1	3H1	3A1	3B1	3H1	All	As permitted in 5.0.6.6

PACKING INSTRUCTION 660

OPERATOR VARIATIONS: 5X-02, AY-04, BR-02, CA-10, CI-04, CX-02/05, E8-01, EY-03, FX-02, JL-08, KA-02/05, KE-07, KZ-07, LA-06, LD-02/06, NH-06, OZ-08, TG-02

This instruction applies to Division 6.1 liquids with a Class 8 or a Class 3 and Class 8 subsidiary risk in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS														
Inner Packaging (see 6.1)					Net quantity per inner packaging				Total net quantity per package					
Glass					1.0 L				30.0 L					
Metal					2.5 L									
Plastic					1.0 L									

△ **OUTER PACKAGINGS**

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS												
Type	Drums				Jerricans				Composites		Cylinders	
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Steel	Plastic	Cylinders		
Spec.	1A1	1B1	1H1	1N1	3A1	3B1	3H1	3A1	3B1	3H1	All	As permitted in 5.0.6.6



PACKING INSTRUCTION 661

OPERATOR VARIATIONS: 5X-02, AY-04, BR-02, CA-10, CX-02, E8-01, EY-03, FX-02, JL-08, KA-02, KE-07, KZ-07, LA-06, LD-02, NH-06, OZ-08, TG-02

This instruction applies to Division 6.1 liquids with no subsidiary risk or a Class 3 subsidiary risk in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Combination and single packagings are permitted.

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COMBINATION PACKAGINGS										
Inner Packaging (see 6.1)					Net quantity per inner packaging				Total net quantity per package	
Glass					1.0 L				60.0 L	
Metal					2.5 L					
Plastic					1.0 L					

OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS

Type	Drums				Jerricans				Composites		Cylinders
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	Plastic	
Spec.	1A1	1B1	1H1	1N1	3A1	3B1	3H1	3H1	All	As permitted in 5.0.6.6	

PACKING INSTRUCTION 662

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, AY-04, BR-02, CA-10, CX-02, E8-01, EY-03, FX-02, JL-08, KA-02, KE-07, KZ-07, LA-06, LD-02, NH-06, OZ-08, TG-02

This instruction applies to Division 6.1 liquids with no subsidiary risk or a Class 3 subsidiary risk in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS			
Inner Packaging (see 6.1)		Net quantity per inner packaging	Total net quantity per package
Glass		2.5 L	60.0 L
Metal		5.0 L	
Plastic		2.5 L	

PACKING INSTRUCTION 662 (continued)



OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal	
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N	

SINGLE PACKAGINGS

Type	Drums				Jerricans			Composites		Cylinders
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	
Spec.	1A1	1B1	1H1	1N1	3A1	3B1	3H1	All	As permitted in 5.0.6.6	

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PACKING INSTRUCTION 663

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, AY-04, BR-02, CA-10, CX-02, E8-01, FX-02, JL-08, KA-02, KE-07, KZ-07, LA-06, LD-02, NH-06, OZ-08, TG-02

This instruction applies to Division 6.1 liquids in Packing Group III on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS

Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
Glass	5.0 L	220.0 L
Metal	10.0 L	
Plastic	5.0 L	



OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal	
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N	

SINGLE PACKAGINGS

Type	Drums				Jerricans				Composites		Cylinders
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	Plastic	
Spec.	1A1 1A2	1B1 1B2	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	All	As permitted in 5.0.6.6		



PACKING INSTRUCTION 665

OPERATOR VARIATIONS: 5X-02, AA-01, AM-06, AS-02, BR-02, BW-01, CA-11, CM-03, E8-01, FX-02, HA-01, JL-08, KZ-07, LA-06, LY-04, TU-09, UA-02, UX-04, VN-04

This instruction applies to Division 6.1 solids in Packing Group I on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.

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COMBINATION PACKAGINGS											
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package			
Glass				0.5 kg				1.0 kg			
Metal				1.0 kg							
Plastic				1.0 kg							



OUTER PACKAGINGS

Type	Drums						Jerricans						Boxes					
	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal	
Desc.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N	
Spec.																		

PACKING INSTRUCTION 666

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 4C-03, 4M-03, 5X-02, AA-01, AM-06, AS-02, BR-02, BW-01, CA-11, E8-01, FX-02, HA-01, JJ-03, JL-08, KZ-07, L7-03, LA-06, LP-03, LU-03, LY-04, M3-03, M7-03, TU-09, UA-02, UC-03, UX-04, VN-04, XL-03

This instruction applies to Division 6.1 solids without a subsidiary risk in Packing Group I on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.

COMBINATION PACKAGINGS											
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package			
Glass				0.5 kg				5.0 kg			
Metal				1.0 kg							
Plastic				1.0 kg							

PACKING INSTRUCTION 666 (continued)

OUTER PACKAGINGS																	
Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 667

OPERATOR VARIATIONS: 5X-02, AA-01, AM-06, AS-02, BW-01, CM-03, E8-01, FX-02, HA-01, KZ-07, LA-06, LY-04, UA-02, UX-04

This instruction applies to Division 6.1 solids with a Division 5.1 subsidiary risk in Packing Group II on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.

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COMBINATION PACKAGINGS

Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
Fibre	1.0 kg	5.0 kg
Glass	1.0 kg	
Metal	2.5 kg	
Paper bag	1.0 kg	
Plastic	2.5 kg	
Plastic bag	1.0 kg	

OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 668

OPERATOR VARIATIONS: 5X-02, AA-01, AM-06, AS-02, BW-01, E8-01, FX-02, HA-01, KZ-07, LA-06, LY-04, UA-02, UX-04

This instruction applies to Division 6.1 solids with subsidiary risks in Packing Group II on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.



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PACKING INSTRUCTION 668 (continued)

COMBINATION PACKAGINGS																	
Inner Packaging (see 6.1)						Net quantity per inner packaging				Total net quantity per package							
Fibre						1.0 kg				15.0 kg							
Glass						1.0 kg											
Metal						2.5 kg											
Paper bag						1.0 kg											
Plastic						2.5 kg											
Plastic bag						1.0 kg											

△ OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

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PACKING INSTRUCTION 669

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, AA-01, AM-06, AS-02, BW-01, E8-01, FX-02, HA-01, KZ-07, LA-06, LY-04, UA-02, UX-04

This instruction applies to Division 6.1 solids without a subsidiary risk in Packing Group II on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.

COMBINATION PACKAGINGS																	
Inner Packaging (see 6.1)						Net quantity per inner packaging				Total net quantity per package							
Fibre						1.0 kg				25.0 kg							
Glass						1.0 kg											
Metal						2.5 kg											
Paper bag						1.0 kg											
Plastic						2.5 kg											
Plastic bag						1.0 kg											

△ OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 670

STATE VARIATIONS: USG-04/13

OPERATOR VARIATIONS: 5X-02, AA-01, AM-06, AS-02, BW-01, CM-03, E8-01, EY-03, FX-02, HA-01, JL-09, KZ-07, LA-06, LY-04, MK-12, NH-06, TG-02, UA-02, UX-04

This instruction applies to Division 6.1 solids in Packing Group III on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- △ • fibre, fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS											
Inner Packaging (see 6.1)						Net quantity per inner packaging				Total net quantity per package	
Fibre						5.0 kg				100.0 kg	
Glass						5.0 kg					
Metal						10.0 kg					
Paper bag						5.0 kg					
Plastic						10.0 kg					
Plastic bag						5.0 kg					

△ **OUTER PACKAGINGS**

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N



SINGLE PACKAGINGS

Type	Drums						Jerricans			Boxes						Bags			Composites	Cylinders		
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal	Textile	Paper	Plastic		
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N	5L3	5H3 5H4	5M2	All	As permitted in 5.0.6.6

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PACKING INSTRUCTION 672

OPERATOR VARIATIONS: 4C-03, 4M-03, 5X-02, BR-02, CA-11, CM-03, E8-01, EY-03, FX-02, JJ-03, JL-08, KZ-07, L7-03, LA-06, LP-03, LY-04, M3-03, M7-03, NH-06, TG-02, UC-03, XL-03

This instruction applies to Division 6.1 solids in Packing Group I on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.



PACKING INSTRUCTION 672 (continued)

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- △ • fibre, fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS			
Inner Packaging (see 6.1)		Net quantity per inner packaging	Total net quantity per package
Fibre		1.0 kg	15.0 kg
Glass		1.0 kg	
Metal		2.5 kg	
Paper bag		1.0 kg	
Plastic		2.5 kg	
Plastic bag		1.0 kg	

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Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alum- inium	Ply- wood	Fibre	Plastic	Other metal	Steel	Alu- minium	Plastic	Steel	Alu- minium	Wood	Ply- wood	Recon- stituted wood	Fibre- board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS								Jerricans			Compos- ites		Cylinders			
Type	Drums						Jerricans			Compos- ites		Cylinders				
Desc.	Steel	Aluminium	Plywood	Fibre	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	Plastic	Plastic	Plastic	Plastic	Plastic
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	All	As permit- ted in 5.0.6.6					

PACKING INSTRUCTION 673

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 4C-03, 4M-03, 5X-02, BR-02, CA-11, CM-03, E8-01, EY-03, FX-02, JJ-03, JL-08, KZ-07, L7-03, LA-06, LP-03, LY-04, M3-03, M7-03, NH-06, TG-02, UC-03, XL-03

This instruction applies to Division 6.1 solids without a subsidiary in Packing Group I on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- △ • fibre, fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.

PACKING INSTRUCTION 673 *(continued)*

COMBINATION PACKAGINGS																	
Inner Packaging (see 6.1)						Net quantity per inner packaging				Total net quantity per package							
Fibre						1.0 kg				50.0 kg							
Glass						1.0 kg											
Metal						2.5 kg											
Paper bag						1.0 kg											
Plastic						2.5 kg											
Plastic bag						1.0 kg											

△ OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS													
Type	Drums						Jerricans			Compos-ites			Cylinders
Desc.	Steel	Aluminium	Plywood	Fibre	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	As permit-ted in 5.0.6.6	
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	All			

PACKING INSTRUCTION 674

OPERATOR VARIATIONS: 5X-02, CM-03, E8-01, EY-03, FX-02, JL-09, KZ-07, LA-06, NH-06, TG-02

This instruction applies to Division 6.1 solids in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- △ • fibre, fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS																	
Inner Packaging (see 6.1)						Net quantity per inner packaging				Total net quantity per package							
Fibre						2.5 kg				25.0 kg							
Glass						2.5 kg											
Metal						5.0 kg											
Paper bag						2.5 kg											
Plastic						5.0 kg											
Plastic bag						2.5 kg											

△ OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N



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PACKING INSTRUCTION 674 (continued)



SINGLE PACKAGINGS

Type	Drums					Jerricans			Boxes							Composites	Cylinders		
Desc.	Steel	Aluminum	Plywood	Fibre	Plastic	Other metal	Steel	Aluminum	Plastic	Steel	Aluminum	Wood	Plywood	Reconstructed wood	Fibreboard	Plastic	Other metal	Plastic	
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N	All	As permitted in 5.0.6.6

PACKING INSTRUCTION 675

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OPERATOR VARIATIONS: 5X-02, E8-01, EY-03, FX-02, JL-09, KZ-07, LA-06, NH-06, TG-02

This instruction applies to Division 6.1 solids in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- △ • fibre, fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS

Inner Packaging (see 6.1)		Net quantity per inner packaging			Total net quantity per package		
Fibre		2.5 kg					
Glass		2.5 kg					
Metal		5.0 kg					
Paper bag		2.5 kg					
Plastic		5.0 kg					
Plastic bag		2.5 kg					

50.0 kg



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstructed wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N



SINGLE PACKAGINGS

Type	Drums						Jerricans			Boxes							Composites	Cylinders	
Desc.	Steel	Alumin-ium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Plastic	Steel	Alumin-ium	Wood	Ply-wood	Reconstructed wood	Fibre-board	Plastic	Other metal	Plastic	
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N	All	As permitted in 5.0.6.6

PACKING INSTRUCTION 676

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, E8-01, EY-03, FX-02, JL-09, KZ-07, LA-06, NH-06, TG-02

This instruction applies to Division 6.1 solids without a subsidiary risk in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- △ • fibre, fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.

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COMBINATION PACKAGINGS															
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package							
Fibre				2.5 kg				100.0 kg							
Glass				2.5 kg											
Metal				5.0 kg											
Paper bag				2.5 kg											
Plastic				5.0 kg											
Plastic bag				2.5 kg											

△ **OUTER PACKAGINGS**

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

△

SINGLE PACKAGINGS

Type	Drums						Jerricans			Boxes						Composites	Cylinders
Desc.	Steel	Alumin-ium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Plastic	Steel	Alumin-ium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N

As per-mitted in 5.0.6.6

PACKING INSTRUCTION 677

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, EY-03, FX-02, JL-09, KZ-07, LA-06, NH-06, TG-02

This instruction applies to Division 6.1 solids in Packing Group III on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion for substances with a Class 8 subsidiary risk.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.



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PACKING INSTRUCTION 677 (continued)

Additional Packing Requirements

- △ • fibre, fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS		200.0 kg
Inner Packaging (see 6.1)	Net quantity per inner packaging	
Fibre	5.0 kg	
Glass	5.0 kg	
Metal	10.0 kg	
Paper bag	5.0 kg	
Plastic	10.0 kg	
Plastic bag	5.0 kg	

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△ OUTER PACKAGINGS

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Type	Drums						Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal	
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N	

△

SINGLE PACKAGINGS

Type	Drums						Jerricans				Boxes								Bags			Composites	Cylinders
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal	Textile	Plastic	Paper	Plastic		
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N	5L3	5H3 5H4	5M2	All	As permitted in 5.0.6.6	

PACKING INSTRUCTION 679

OPERATOR VARIATIONS: 5X-02, E8-01, EY-03, FX-02, JL-09, KZ-07, LA-06, NH-06, TG-02

This instruction applies to UN 1700, UN 2016 and UN 2017 on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing 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.

Single packagings are not permitted.

PACKING INSTRUCTION 679 (continued)

COMBINATION PACKAGINGS												
UN number		Total 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.										
UN 2016, Ammunition, toxic, non-explosive												
UN 2017, Ammunition, tear producing, non-explosive												

△ **OUTER PACKAGINGS**

Type	Drums						Boxes							
Desc.	Steel	Alumin-ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Wood	Plywood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N

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PACKING INSTRUCTION 680

STATE VARIATION: USG-13

OPERATOR VARIATIONS: 5X-02, AA-01, AM-06, AS-02, AY-04, BW-01, CA-10, CX-02, E8-01, EY-03, FX-02, HA-01, JL-09, KA-02, KC-06, KE-07, KZ-07, LA-06, LD-02, LY-04, MK-12, NH-06, OK-04, OZ-08, TG-02, TU-09, UA-02, UX-04

This instruction applies to UN 1888, Chloroform on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- △ • where combination packagings are used, inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Single packagings are permitted for Cargo Aircraft Only.

COMBINATION PACKAGINGS															
UN number		Inner Packaging (see 6.1)		Net quantity per inner packaging Passenger Aircraft		Net quantity per inner packaging Cargo Aircraft Only		Total net quantity per package Passenger Aircraft		Total net quantity per package Cargo Aircraft Only					
UN 1888, Chloroform		Glass		1.0 L		2.5 L		60.0 L		220.0 L					
		Metal		2.5 L		5.0 L									
		Plastic		1.0 L		2.5 L									

△ **OUTER PACKAGINGS**

Type	Drums						Jerricans						Boxes					
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal	
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N	



PACKING INSTRUCTION 680 *(continued)*

SINGLE PACKAGINGS—CARGO AIRCRAFT ONLY										
Type	Drums				Jerricans				Composites	Cylinders
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic		
Spec.	1A1 1A2	1B1 1B2	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	All	As permitted in 5.0.6.6	

PACKING INSTRUCTION Y680

OPERATOR VARIATIONS: 5X-02, AA-01, AM-06, AS-02, BW-01, CX-02, DE-01, FX-02, GA-03, GF-04, HA-01, IJ-12, KA-02, KE-07, KQ-08, LA-06, LD-02, LH-01, LX-02, LY-04, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UA-02, UX-02, VO-03, VT-01, XK-03

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This instruction applies to UN 1888, Chloroform packed in Limited Quantity.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- glass inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS												
UN Number			Inner Packaging (see 6.1)			Net quantity per inner packaging			Total net quantity per package			
UN 1888, Chloroform			Glass			0.1 L			2.0 L			
			Metal			0.1 L						
			Plastic			0.1 L						

OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

△ PACKING INSTRUCTION 681

OPERATOR VARIATIONS: 5X-02, AS-02, AY-04, CA-10, CX-02, E8-01, EY-03, FX-02, JL-09, KE-07, KZ-07, LD-02/06, LY-04, NH-06, OZ-08, TG-02

This instruction applies to Chlorosilanes, liquid, toxic on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Combination and single packagings are permitted..

COMBINATION PACKAGINGS				
UN number	Inner Packaging (see 6.1)		Net quantity per inner packaging	Total net quantity per package
UN 3361, Chlorosilanes, toxic, corrosive, n.o.s. ★ UN 3362, Chlorosilanes, toxic, corrosive, flammable, n.o.s. ★	Glass		1.0 L	30.0 L
	Steel		5.0 L	
	Plastic		Forbidden	

OUTER PACKAGINGS										
Type	Drums				Boxes					
Desc.	Steel	Plywood	Fibre	Plastic	Steel	Wood	Plywood	Reconsti-tuted wood	Fibreboard	Plastic
Spec.	1A1 1A2	1D	1G	1H1 1H2	4A	4C1 4C2	4D	4F	4G	4H1 4H2

SINGLE PACKAGINGS				
Type	Drums	Jerricans	Composites	Cylinders
Desc.	Steel	Steel	Plastic	Steel
Spec.	1A1	3A1	6HA1	As permitted in 5.0.6.6

PACKING INSTRUCTION 699

OPERATOR VARIATIONS: 5X-02, AA-01, AM-06, AS-02, BR-02, BW-01, CA-11, CX-02, E8-01, FX-02, HA-01, JL-08, KA-02, KZ-07, LA-06, LD-02, LY-04, TU-09, UA-02, UX-04, VN-04

This instruction applies to UN 3123 and UN 3125 in Packing Group I.

Only packagings which are approved by the appropriate national authority for these substances may be used (see 5.0.6.7). A copy of this approval must accompany each consignment or an annotation that it has been granted must be shown in the authorizations column on the Shipper's Declaration.

5.7 Packing Instructions—Class 7—Radioactive Material

See Section 10 for the packing instructions for Class 7, Radioactive Material.

5.8 Packing Instructions—Class 8—Corrosives

PACKING INSTRUCTION Y840

OPERATOR VARIATIONS: 5X-02, AA-01, AM-08, AS-02, BW-01, CI-04, CM-03, CX-02, DE-01, FX-02/17, GA-03, GF-04, HA-01, IJ-12, KA-02, KE-07, KQ-08, LD-02, LH-01, LX-02, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of Class 8 liquids in Packing Group II.

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The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion;
- substances of Class 8 are permitted in glass inner packagings only if the substance is free from hydrofluoric acid.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- inner packagings for liquids must be capable of passing a pressure differential test (5.0.2.9);
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS

Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
Glass	0.1 L	0.5 L
Metal	0.1 L	
Plastic	0.1 L	

OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION Y841

OPERATOR VARIATIONS: 5X-02, AA-01, AM-08, AS-02, BW-01, CI-04, CX-02, DE-01, FX-02/17, GA-03, GF-04, HA-01, IJ-12, KA-02, KE-07, KQ-08, LD-02, LH-01, LX-02, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of Class 8 liquids in Packing Group III.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion;
- substances of Class 8 are permitted in glass inner packagings only if the substance is free from hydrofluoric acid.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- inner packagings for liquids must be capable of passing a pressure differential test (5.0.2.9);
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS		
Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
Glass	0.5 L	1.0 L
Metal	0.5 L	
Plastic	0.5 L	

OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
	Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic

PACKING INSTRUCTION Y843

OPERATOR VARIATIONS: AM-08, DE-01, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of UN 2430 in Packing Group II.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion;
- substances of Class 8 are permitted in glass inner packagings only if the substance is free from hydrofluoric acid.

PACKING INSTRUCTION Y843 (continued)

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS														Total net quantity per package			
Inner Packaging (see 6.1)		Net quantity per inner packaging															
Glass		0.5 kg												1.0 kg			
Metal		0.5 kg															
Plastic		0.5 kg															
Plastic bag		0.5 kg															

OUTER PACKAGINGS																	
Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION Y844

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, AA-01, AM-08, AS-02, BW-01, CM-03, DE-01, FX-02, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of Class 8 solids in Packing Group II.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion;
- substances of Class 8 are permitted in glass inner packagings only if the substance is free from hydrofluoric acid.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

PACKING INSTRUCTION Y844 (continued)

COMBINATION PACKAGINGS															
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package							
Glass				0.5 kg				5.0 kg							
Metal				0.5 kg											
Plastic				0.5 kg											
Plastic bag				0.5 kg											

△ OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION Y845

OPERATOR VARIATIONS: 5X-02, AA-01, AM-08, AS-02, BW-01, DE-01, FX-02, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of Class 8 solids in Packing Group III.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion;
- substances of Class 8 are permitted in glass inner packagings only if the substance is free from hydrofluoric acid.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS															
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package							
Glass				1.0 kg				5.0 kg							
Metal				1.0 kg											
Plastic				1.0 kg											
Plastic bag				1.0 kg											

△ OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION 850

OPERATOR VARIATIONS: 5X-02, AA-01, AM-08, AS-02, BR-02, BW-01, CI-04, CX-02/05, E8-02, FX-02/17, JJ-07, KA-02/05, KE-07, LD-02/06, TU-11, UX-04, VN-04

This instruction applies to Class 8 liquids in Packing Group I on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion;
- substances of Class 8 are permitted in glass inner packagings only if the substance is free from hydrofluoric acid.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- 5** △ • inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

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Single packagings are not permitted.

COMBINATION PACKAGINGS

Inner Packaging (see 6.1)		Net quantity per inner packaging						Total net quantity per package											
Glass		0.5 L						0.5 L											
Metal		0.5 L																	
Plastic		0.5 L																	



OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Desc.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N
Spec.																	

PACKING INSTRUCTION 851

OPERATOR VARIATIONS: 5X-02, AA-01, AM-08, AS-02, BR-12, BW-01, CI-04, CM-03, CX-02/05, E8-02, FX-02/17, JJ-07, KA-02/05, KE-07, LD-02/06, TU-11, UX-04

This instruction applies to Class 8 liquids in Packing Group II on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion;
- substances of Class 8 are permitted in glass inner packagings only if the substance is free from hydrofluoric acid.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.

COMBINATION PACKAGINGS

Inner Packaging (see 6.1)		Net quantity per inner packaging						Total net quantity per package											
Glass		1.0 L						1.0 L											
Metal		1.0 L																	
Plastic		1.0 L																	

PACKING INSTRUCTION 851 (continued)



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 852

OPERATOR VARIATIONS: 5X-02, AA-01, AM-08, AS-02, BR-12, BW-01, CI-04, CX-02/05, FX-02/17, JJ-07, KA-02, KE-07, LD-02/06, UX-04

This instruction applies to Class 8 liquids in Packing Group III on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion;
- substances of Class 8 are permitted in glass inner packagings only if the substance is free from hydrofluoric acid.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards.

Single packagings are not permitted.

COMBINATION PACKAGINGS																							
Inner Packaging (see 6.1)						Net quantity per inner packaging						Total net quantity per package											
Glass						2.5 L						5.0 L											
Metal						5.0 L																	
Plastic						2.5 L																	



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 854

OPERATOR VARIATIONS: 5X-02, AF-01, BR-02, CI-04, CM-03, CX-02/05, E8-02, FX-02/04/17, KA-02/05, KE-07, LD-02/06

This instruction applies to Class 8 liquids in Packing Group I on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion;
- substances of Class 8 are permitted in glass inner packagings only if the substance is free from hydrofluoric acid.

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PACKING INSTRUCTION 854 (continued)

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- △ • inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Single packagings are not permitted.

COMBINATION PACKAGINGS																			
Inner Packaging (see 6.1)					Net quantity per inner packaging					Total net quantity per package									
Glass					1.0 L					2.5 L									
Metal					1.0 L														
Plastic					1.0 L														

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OUTER PACKAGINGS

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Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 855

OPERATOR VARIATIONS: 5X-02, AY-04, BR-12, CA-10, CI-04, CM-03, CX-02/05, E8-02, EY-03, FX-02/04/17, JL-09, KA-02/05, KE-07, LD-02/06, MK-12, NH-06, OZ-08, TG-02

This instruction applies to Class 8 liquids in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion;
- substances of Class 8 are permitted in glass inner packagings only if the substance is free from hydrofluoric acid.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS																			
Inner Packaging (see 6.1)					Net quantity per inner packaging					Total net quantity per package									
Glass					2.5 L					30.0 L									
Metal					2.5 L														
Plastic					2.5 L														



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 855 (continued)

SINGLE PACKAGINGS										
Type	Drums				Jerricans				Composites	Cylinders
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic		
Spec.	1A1	1B1	1H1	1N1	3A1	3B1	3H1	All	As permitted in 5.0.6.6	

PACKING INSTRUCTION 856

OPERATOR VARIATIONS: 5X-02, AY-04, BR-12, CA-10, CI-04, CX-02/05, E8-02, EY-03, FX-02/17, JL-09, KA-02/05, KE-07, LD-02/06, MK-12, NH-06, OZ-08, TG-02

This instruction applies to Class 8 liquids in Packing Group III on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

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Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion;
- substances of Class 8 are permitted in glass inner packagings only if the substance is free from hydrofluoric acid.

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Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS													
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package					
Glass				5.0 L				60.0 L					
Metal				10.0 L									
Plastic				5.0 L									



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS											
Type	Drums					Jerricans				Composites	Cylinders
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic		
Spec.	1A1 1A2	1B1 1B2	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	All	As permitted in 5.0.6.6	

PACKING INSTRUCTION 858

OPERATOR VARIATIONS: 5X-02, AA-01, AM-08, AS-02, BR-02, BW-01, CM-03, E8-02, FX-02, KE-07, TU-11, UX-04, VN-04

This instruction applies to Class 8 solids in Packing Group I on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion;
- substances of Class 8 are permitted in glass inner packagings only if the substance is free from hydrofluoric acid.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.

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COMBINATION PACKAGINGS											
Inner Packaging (see 6.1)				Net quantity per inner packaging				Total net quantity per package			
Glass				0.5 kg				1.0 kg			
Metal				0.5 kg							
Plastic				0.5 kg							



OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 859

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, AA-01, AM-08, AS-02, BW-01, CM-03, E8-02, FX-02, KE-07, UX-04

This instruction applies to Class 8 solids in Packing Group II on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion;
- substances of Class 8 are permitted in glass inner packagings only if the substance is free from hydrofluoric acid.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Single packagings are not permitted.

COMBINATION PACKAGINGS			
Inner Packaging (see 6.1)		Net quantity per inner packaging	Total net quantity per package
Glass		1.0 kg	15.0 kg
Metal		2.5 kg	
Plastic		2.5 kg	
Plastic bag		1.0 kg	

PACKING INSTRUCTION 859 (continued)



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 860

OPERATOR VARIATIONS: 5X-02, AA-01, AM-08, AS-02, BW-01, FX-02, KE-07, UX-04

This instruction applies to Class 8 solids in Packing Group III on passenger aircraft.

The General Packing Requirements of 5.0.2 must be met.

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Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion;
- substances of Class 8 are permitted in glass inner packagings only if the substance is free from hydrofluoric acid.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards.

Single packagings are not permitted.

COMBINATION PACKAGINGS																							
Inner Packaging (see 6.1)						Net quantity per inner packaging						Total net quantity per package											
Glass						2.5 kg						25.0 kg											
Metal						5.0 kg																	
Plastic						2.5 kg																	
Plastic bag						2.5 kg																	



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 862

OPERATOR VARIATIONS: 5X-02, BR-02, CM-03, E8-02, EY-03, FX-02, JL-09, MK-12, NH-06, TG-02

This instruction applies to Class 8 solids in Packing Group I on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion;
- substances of Class 8 are permitted in glass inner packagings only if the substance is free from hydrofluoric acid.



PACKING INSTRUCTION 862 (continued)

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- fibre, fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS																			
Inner Packaging (see 6.1)					Net quantity per inner packaging					Total net quantity per package									
Glass					1.0 kg					25.0 kg									
Metal					2.5 kg														
Plastic					2.5 kg														

5

OUTER PACKAGINGS

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to
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Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS												
Type	Drums						Jerricans			Compos-ites		Cylinders
Desc.	Steel	Aluminium	Plywood	Fibre	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	As permit-ted in 5.0.6.6
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	All		

PACKING INSTRUCTION 863

STATE VARIATION: USG-04

OPERATOR VARIATIONS: 5X-02, CM-03, E8-02, EY-03, FX-02, JL-09, MK-12, NH-06, TG-02

This instruction applies to Class 8 solids in Packing Group II on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion;
- substances of Class 8 are permitted in glass inner packagings only if the substance is free from hydrofluoric acid.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- △
- fibre, fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS																			
Inner Packaging (see 6.1)					Net quantity per inner packaging					Total net quantity per package									
Glass					2.5 kg					50.0 kg									
Metal					5.0 kg														
Plastic					5.0 kg														
Plastic bag					2.5 kg														

PACKING INSTRUCTION 863 (continued)

△ OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

△ SINGLE PACKAGINGS

Type	Drums						Jerricans			Boxes								Composites	Cylinders
Desc.	Steel	Alumin-ium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Plastic	Steel	Alumin-ium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal	Plastic	
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N	All	As per-mitted in 5.0.6.6

PACKING INSTRUCTION 864

OPERATOR VARIATIONS: 5X-02, CM-03, E8-02, EY-03, FX-02, JL-09, MK-12, NH-06, TG-02

This instruction applies to Class 8 solids in Packing Group III on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion;
- substances of Class 8 are permitted in glass inner packagings only if the substance is free from hydrofluoric acid.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards;
- △ fibre, fibreboard, wood and plywood single packagings must be fitted with a suitable liner.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS

Inner Packaging (see 6.1)		Net quantity per inner packaging			Total net quantity per package					
Glass		5.0 kg			100.0 kg					
Metal		10.0 kg								
Plastic		5.0 kg								
Plastic bag		5.0 kg								

△ OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N



PACKING INSTRUCTION 864 *(continued)*



SINGLE PACKAGINGS

Type	Drums					Jerricans			Boxes							Composites	Cylinders		
Desc.	Steel	Alumin-ium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Plastic	Steel	Alumin-ium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal	Plastic	
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N	All	As per-mitted in 5.0.6.6

PACKING INSTRUCTION 866

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OPERATOR VARIATION: E8-02

This instruction applies to UN 2028 on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- the articles must be individually packaged and separated from each other using partitions, dividers, inner packagings or cushioning material.

COMBINATION PACKAGINGS

UN number		Total net quantity per package
UN 2028, Bombs, smoke, non-explosive	Bombs, smoke may be carried provided they are without ignition elements, bursting charges, detonating fuses or other explosive components.	50.0 kg



OUTER PACKAGINGS

Type	Drums						Boxes							
Desc.	Steel	Alumin-ium	Plywood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Wood	Plywood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A2	1B2	1D	1G	1H2	1N2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION 867

OPERATOR VARIATIONS: AM-08, BR-12, MH-08, QR-05

This instruction applies to UN 2803, Gallium, on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of Subsection 5.0.2 for packagings intended to contain liquids must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

PACKING INSTRUCTION 867 (continued)

Additional Packing Requirements

- packagings must meet Packing Group I performance standards;
- plastic inner packagings must be enclosed in liners or bags of strong leak-proof 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.

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 contains 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.

Single packagings are not permitted.

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to
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COMBINATION PACKAGINGS

UN Number	Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
UN 2803, Gallium	Plastic	3.5 kg	20.0 kg



OUTER PACKAGINGS

Type	Drums					Boxes						
	Steel	Plywood	Fibre	Plastic	Other metal	Steel	Wood	Plywood	Reconstituted wood	Fibre-board	Plastic	Other metal
Desc.	1A1 1A2	1D	1G	1H1 1H2	1N1 1N2	4A	4C1 4C2	4D	4F	4G	4H2	4N
Spec.												

PACKING INSTRUCTION 868

STATE VARIATION: USG-04

OPERATOR VARIATIONS: AM-08, CX-05, KA-05, QR-05, QT-02

This instruction applies to UN 2809, Mercury, on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group I performance standards;
- inner packagings must be enclosed in liners or bags of strong leak-proof 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;
- mercury may also be packed in single packagings, which must 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.

Combination and single packagings are permitted.

COMBINATION PACKAGINGS

UN Number	Inner Packaging (see 6.1)	Net quantity per inner packaging	Total net quantity per package
UN 2809, Mercury	Glass	2.5 kg	35.0 kg
	Plastic	2.5 kg	



PACKING INSTRUCTION 868 (continued)



OUTER PACKAGINGS

Type	Drums					Boxes						
Desc.	Steel	Plywood	Fibre	Plastic	Other metal	Steel	Wood	Plywood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1D	1G	1H1 1H2	1N1 1N2	4A	4C1 4C2	4D	4F	4G	4H2	4N

SINGLE PACKAGINGS

Type	Bottle
Desc.	Steel
Spec.	As per additional packing requirements.

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PACKING INSTRUCTION 869

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OPERATOR VARIATIONS: AM-08, QR-05

to

This instruction applies to UN 3506, Mercury contained in manufactured articles, on passenger aircraft and Cargo Aircraft Only.

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The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- manufactured articles or apparatus of which metallic mercury is a component part, such as manometers, pumps, thermometers and switches must be packed in sealed inner liners or bags of strong leak-proof and puncture-resistant material impervious to mercury and which will prevent escape of mercury from the package irrespective of the position of the package. The inner liners or bags must be packed in strong outer packagings;

Note:

Mercury switches and relays are excepted from the requirement for a sealed inner liner or bag providing they are of the totally enclosed, leak-proof type in sealed metal or plastic units.

- electron tubes, mercury vapour tubes (tubes with not exceeding a total net quantity of 450 g of mercury) 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 packed according to the requirements for manufactured articles or apparatus (above).

- electron tubes which are packed in sealed leakproof metal cases may be shipped in the manufacturer's original packagings.

COMBINATION PACKAGINGS

UN Number	>Net quantity ¹ per package passenger aircraft	Net quantity ¹ per package Cargo Aircraft Only
UN 3506, Mercury contained in manufactured articles	No limit	No limit

¹ for the purposes of 8.1.6.9.2, Step 6 (a) the "net quantity" shown on the Shipper's Declaration is the net weight of the manufactured articles in each package.

PACKING INSTRUCTION 869 (continued)

OUTER PACKAGINGS—Strong outer packagings, such as:

Type	Drums						Jerricans			Boxes						
Desc.	Steel	Alumin- ium	Ply- wood	Fibre	Plastic	Other metal	Steel	Alumin- ium	Plastic	Steel	Alumin- ium	Wood	Ply- wood	Recon- stituted wood	Fibre- board	Plastic

PACKING INSTRUCTION 870

OPERATOR VARIATION: AM-08

This instruction applies to UN 2794 and UN 2795 on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards;
- for batteries, electric storage, packed with battery fluid in the same outer packaging, see UN 2796 and UN 2797.

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COMBINATION PACKAGINGS

UN Number	Combination Packagings	Net quantity per package Passenger aircraft	Net quantity per package Cargo Aircraft Only
UN 2794, Batteries, wet, filled with acid UN 2795, Batteries, wet, filled with alkali	Batteries must be packed in one of the outer packagings shown below 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 are incapable of short-circuiting and they are securely cushioned in the packagings. The upright position of the package must be indicated on it by the "Package Orientation" labels as shown in 7.2.4.4. The words "THIS SIDE UP" or "THIS END UP" may also be displayed on the top of the package.	30 kg	No limit
UN 2794, UN 2795 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.		

OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes						
Desc.	Steel	Alumin- ium	Ply- wood	Fibre	Plastic	Other metal	Steel	Alumin- ium	Plastic	Steel	Alumin- ium	Wood	Ply- wood	Recon- stituted wood	Fibre- board	Plastic
Spec.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2

PACKING INSTRUCTION 871

OPERATOR VARIATION: AM-08

This instruction applies to UN 3028 on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- packagings must meet Packing Group II performance standards.

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COMBINATION PACKAGINGS

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UN Number		Net quantity per package Passenger aircraft	Net quantity per package Cargo Aircraft Only
UN 3028, Batteries, dry, containing potassium hydroxide	Batteries must be packed in one of the outer packagings shown below and must securely cushioned in the packagings.	25 kg	230 kg

Type	Boxes						
Desc.	Steel	Aluminium	Wood	Plywood	Reconstituted wood	Fibreboard	Plastic
Spec.	4A	4B	4C1 4C2	4D	4F	4G	4H2

PACKING INSTRUCTION 872

STATE VARIATION: USG-11

OPERATOR VARIATION: AM-08

This instruction applies to UN 2800, Batteries, wet, non-spillable on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

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.

PACKING INSTRUCTION 872 (continued)

Pressure differential test—Following the vibration test, the battery is stored for six hours at $24^{\circ}\text{C} \pm 4^{\circ}\text{C}$ 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 as to prevent damage and short circuits.

COMBINATION PACKAGINGS												
UN Number		Quantity per package										
UN 2800, Batteries, wet, non-spillable		Batteries must be protected against short circuits and must be securely packed in strong outer packagings.										

OUTER PACKAGINGS—Strong outer packagings, such as:

Type	Drums						Jerricans			Boxes						
Desc.	Steel	Aluminium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Plastic	Steel	Alumin-ium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic

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PACKING INSTRUCTION 873

OPERATOR VARIATION: AM-08

This instruction applies to UN 3477 on passenger aircraft and Cargo Aircraft Only.

The requirements of 5.0.2.4, 5.0.2.5, 5.0.2.6 and 5.0.6 must be met, as appropriate.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Additional Packing Requirements

- the weight of each fuel cell cartridge must not exceed 1 kg;
- fuel cell cartridges must be securely cushioned in the outer packagings.
- packagings must meet Packing Group II performance standards.

Single packagings are not permitted.

COMBINATION PACKAGINGS												
UN number						Net quantity per package Passenger Aircraft				Net quantity per package Cargo Aircraft Only		
UN 3477, Fuel cell cartridges						5.0 kg of fuel cell cartridges				50.0 kg of fuel cell cartridges		



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Other metal	
Spec.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N

PACKING INSTRUCTION Y873

OPERATOR VARIATIONS: AM-08, DE-01, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, MH-14, OM-04, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to UN 3477 in limited quantities.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

For the purpose of this packing instruction, a fuel cell cartridge is considered an inner packaging.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Additional Packing Requirements

- fuel cell cartridges must not contain more than 0.2 L of liquid corrosive fuel or 0.2 kg of solid corrosive fuel per cartridge;
- fuel cell cartridges must be securely cushioned in the outer packagings.

Single packagings are not permitted.

UN Number							Maximum Quantity per package						
UN 3477 Fuel cell cartridges, containing corrosive substances							2.5 kg of fuel cell cartridges						



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes								
	Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION 874

OPERATOR VARIATION: AM-08

This instruction applies to UN 3477 contained in equipment on passenger aircraft and Cargo Aircraft Only.

The requirements of 5.0.2.4.1 and 5.0.2.11 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

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 strong outer packagings;
- the weight 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 62282-6-100 Ed. 1 or a standard approved by the appropriate authority of the State of Origin.

Single packagings are not permitted.

PACKING INSTRUCTION 874 *(continued)*

COMBINATION PACKAGINGS											
UN number				Net quantity per package Passenger Aircraft				Net quantity per package Cargo Aircraft Only			
UN 3477, Fuel cell cartridges contained in equipment				5.0 kg of fuel cell cartridges				50.0 kg of fuel cell cartridges			

OUTER PACKAGINGS—Strong outer packagings, such as:

Type	Drums						Jerricans			Boxes						
Desc.	Steel	Alumin-ium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Plastic	Steel	Alumin-ium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic

PACKING INSTRUCTION 875

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OPERATOR VARIATION: AM-08

This instruction applies to UN 3477 packed with equipment on passenger aircraft and Cargo Aircraft Only.

The requirements of 5.0.2.4.1 and 5.0.2.11 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

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 weight of each fuel cell cartridge must not exceed 1 kg;
- 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.

Single packagings are not permitted.

COMBINATION PACKAGINGS											
UN number				Net quantity per package Passenger Aircraft				Net quantity per package Cargo Aircraft Only			
UN 3477, Fuel cell cartridges packed with equipment				5.0 kg of fuel cell cartridges				50.0 kg of fuel cell cartridges			

OUTER PACKAGINGS

Type	Drums	Jerricans	Boxes
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PACKING INSTRUCTION 876

OPERATOR VARIATIONS: AY-04, CA-10, CI-04, CX-02/05, E8-02, EY-03, FX-17, JL-09, KA-02/05, KE-07, LD-02/06, MK-12, NH-06, OZ-08, TG-02

This instruction applies to Chlorosilanes, liquid, corrosive on Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6;
- metal packagings must be corrosion resistant or with protection against corrosion.

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**PACKING INSTRUCTION 876 (continued)****Closure Requirements**

- closures must meet the requirements of 5.0.2.7.

Combination and single packagings are permitted.

**COMBINATION PACKAGINGS**

UN number	Inner Packaging (see 6.1)	Net quantity per inner packaging Cargo Aircraft Only	Total net quantity per package Cargo Aircraft Only
UN 1724, UN 1728, UN 1747, UN 1753, UN 1762, UN 1763, UN 1766, UN 1767, UN 1769, UN 1771, UN 1781, UN 1784, UN 1799, UN 1800, UN 1801, UN 1804, UN 1816, UN 1818, UN 2434, UN 2437, UN 2986, UN 2987	Glass	1.0 L	30.0 L
	Steel	5.0 L	
	Plastic	Forbidden	

5**876****OUTER PACKAGINGS**

Type	Drums				Boxes					
Desc.	Steel	Plywood	Fibre	Plastic	Steel	Wood	Plywood	Reconstituted wood	Fibreboard	Plastic
Spec.	1A1 1A2	1D	1G	1H1 1H2	4A	4C1 4C2	4D	4F	4G	4H1 4H2

SINGLE PACKAGINGS

Type	Drums	Jerricans	Composites	Cylinders
Desc.	Steel	Steel	Plastic	Steel
Spec.	1A1	3A1	6HA1	As permitted in 5.0.6.6

5.9 Packing Instructions—Class 9—Miscellaneous Dangerous Goods

PACKING INSTRUCTION 950

OPERATOR VARIATIONS: AC-04/05, AM-09, AS-05, KE-06, ME-04, MH-12

This instruction applies to UN 3166 **Engine, internal combustion, flammable liquid powered, Engine, fuel cell, flammable liquid powered, Vehicle, flammable liquid powered** and **Vehicle, fuel cell, flammable liquid powered** on passenger aircraft and Cargo Aircraft Only (see PI 951 for Engine, internal combustion, flammable gas powered, Engine, fuel cell, flammable gas powered, Vehicle, flammable gas powered and Vehicle, fuel cell, flammable gas powered).

Vehicles, machines or equipment containing internal combustion engines or fuel cell engines powered by a flammable liquid must meet the following requirements:

- (a) **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, outboard motors, etc., 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;
- (b) **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;
- (c) **Batteries.** All batteries must be installed and securely fastened in the battery holder of the vehicle, machinery or equipment and be protected in such a manner 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*, unless otherwise approved by the appropriate national authority of the State of origin, must be securely fastened in the vehicle, machinery or equipment and must be protected in such a manner as to prevent damage and short circuits;
 3. if sodium batteries are installed they must conform to the requirements of Special Provision A94.
- (d) **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, etc., 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 Subsection 4.2—List of Dangerous Goods as forbidden on passenger aircraft may only be transported on cargo aircraft;
 2. vehicles equipped with theft-protection devices, installed radio communications equipment or navigational system must have such devices, equipment or system disabled.

Note:

Replacements for the dangerous goods permitted in paragraphs (c) and (d) must not be carried under this packing instruction.

Internal combustion or fuel cell engines shipped separately (not installed)

When internal combustion engines or fuel cell 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 leak-proof caps, which are positively retained.

This requirement also applies to vehicles, machines or equipment containing internal combustion engines or fuel cell engines that are being shipped in a dismantled state such that fuel lines have been disconnected.

PACKING INSTRUCTION 950 *(continued)*

UN number	Total quantity Passenger aircraft	Total quantity Cargo Aircraft Only
UN 3166, Engine, internal combustion, flammable liquid powered, Engine, fuel cell, flammable liquid powered, Vehicle, flammable liquid powered or Vehicle, fuel cell, flammable liquid powered	No limit	No limit

PACKING INSTRUCTION 951

OPERATOR VARIATIONS: AM-09, KE-06, ME-04, MH-12

This instruction applies to UN 3166 **Engine, internal combustion, flammable gas powered, Engine, fuel cell, flammable gas powered, Vehicle, flammable gas powered** and **Vehicle, fuel cell, flammable gas powered** on Cargo Aircraft Only (see PI 950 for Engine, internal combustion, flammable liquid powered, Engine, fuel cell, flammable liquid powered, Vehicle, flammable liquid powered and Vehicle, fuel cell, flammable liquid powered).

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Vehicles, machines or equipment containing internal combustion engines or fuel cells engines powered by a flammable gas must meet the following requirements:

(a) Flammable gas pressure vessels (fuel tanks):

1. For flammable gas powered vehicles, machines or equipment, pressurised 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 which have pressure receptacles (fuel tanks) that are equipped with electrically operated valves which close automatically in case the power is disconnected or with manual shut-off valves, may be transported under the following conditions:
 - (i) the tank shut-off 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 tank shut-off 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% of the maximum allowable working pressure of the pressure receptacle (fuel tank) 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.

(b) Batteries. All batteries must be installed and securely fastened in the battery holder of the vehicle, machinery or equipment and be protected in such a manner 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*, unless otherwise approved by the appropriate national authority of the State of origin, must be securely fastened in the vehicle, machinery or equipment and must be protected in such a manner as to prevent damage and short circuits;
3. if sodium batteries are installed they must conform to the requirements of Special Provision A94.

(c) 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, etc., 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 Subsection 4.2—List of Dangerous Goods as forbidden on passenger aircraft may only be transported on cargo aircraft;

PACKING INSTRUCTION 951 *(continued)*

2. vehicles equipped with theft-protection devices, installed radio communications equipment or navigational system must have such devices, equipment or system disabled.
- (d) 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.

Note:

Replacements for the dangerous goods permitted in paragraphs (b) and (c) must not be carried under this packing instruction.

Internal combustion or fuel cell engines shipped separately (not installed)

When internal combustion engines or fuel cell 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 leak-proof caps, which are positively retained.

This requirement also applies to vehicles, machines or equipment containing internal combustion engines or fuel cell engines that are being shipped in a dismantled state such that fuel lines have been disconnected.

UN number	Total quantity Passenger aircraft	Total quantity Cargo Aircraft Only
UN 3166, Engine, internal combustion, flammable gas powered, Engine, fuel cell, flammable gas powered, Vehicle, flammable gas powered or Vehicle, fuel cell, flammable gas powered	Forbidden	No limit

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PACKING INSTRUCTION 952

OPERATOR VARIATIONS: AM-09, KE-06, MH-12

This instruction applies to UN 3171 **Battery-powered equipment** and **Battery-powered vehicle** on passenger aircraft and Cargo Aircraft Only. This applies to vehicles and equipment that are powered by wet batteries or sodium batteries and to vehicles powered by 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 or fuel cell engine must be consigned under UN 3166 (see PI 950 or PI 951).

Note:

As set out in Special Provision A182 equipment powered only by lithium batteries must be classified as either UN 3091, Lithium metal batteries contained in equipment, or UN 3481, Lithium ion batteries contained in equipment.

Battery-powered vehicles, machines or equipment must meet the following requirements:

- (a) **Batteries.** All batteries must be installed and securely fastened in the battery holder of the vehicle, machinery or equipment and be protected in such a manner 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 in a vehicle, 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*, unless otherwise approved by the appropriate national authority of the State of origin, must be securely fastened in the vehicle, machinery or equipment and must be protected in such a manner as to prevent damage and short circuits;
3. if sodium batteries are installed they must conform to the requirements of Special Provision A94.

(b) **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, etc., 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 Subsection 4.2—List of Dangerous Goods as forbidden on passenger aircraft may only be transported on cargo aircraft;

PACKING INSTRUCTION 952 *(continued)*

2. vehicles equipped with theft-protection devices, installed radio communications equipment or navigational system must have such devices, equipment or system disabled.

Note:

Replacements for the dangerous goods permitted in paragraphs (a) and (b) must not be carried under this packing instruction.

UN number	Quantity per package Passenger aircraft	Quantity per package Cargo Aircraft Only
UN 3171, Battery-powered equipment, or Battery-powered vehicle	No limit	No limit

PACKING INSTRUCTION 953

OPERATOR VARIATIONS: 5X-02/07, AM-09, BZ-06, JL-06, KZ-01, US-01, VN-11

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This instruction applies to UN 2807, Magnetized material on passenger aircraft and Cargo Aircraft Only.

Magnetized materials with field strengths causing a compass deflection of more than 2 degrees at a distance of 2.1 m but not more than 2 degrees at a distance of 4.6 m (equivalent to 0.418 A/m or 0.00525 Gauss measured at a distance of 4.6 m) are not subject to any other requirements in these Regulations when carried as cargo except for the following:

- △ (a) the shipper must make prior arrangements with the operator identifying the magnetized material. A Shipper's Declaration for Dangerous Goods is not required provided the words "magnetized material" and number of packages (unless these are the only packages within the consignment) are shown in the "Nature and Quantity of Goods" box on the air waybill when used, or in the appropriate location on alternate transport documentation. Where an agreement exists with the operator, the shipper may provide the information by EDP or EDI techniques;
- (b) the package must bear the magnetized material handling label;
- (c) the operator must stow the packaged magnetized material in accordance with 9.3.11; and:
- (d) the incident reporting requirements of 9.6 must be met.

Magnetized material with field strength sufficient to cause a compass deflection of more than 2 degrees at a distance of 4.6 m may only be transported with the prior approval of the appropriate authority of the State of origin and the State of the operator.

UN number	Quantity per package Passenger aircraft	Quantity per package Cargo Aircraft Only
UN 2807, Magnetized material	No limit	No limit

PACKING INSTRUCTION 954

OPERATOR VARIATIONS: AI-05, AM-09, AS-11, CA-08, CZ-04, FX-19, IP-06, JJ-08, KE-06, US-01, VN-11

This instruction applies to UN 1845, Carbon dioxide, solid (dry ice) on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Additional Packing Requirements

In packages:

- (a) must be in packaging designed and constructed to permit the release of carbon dioxide gas and 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 ventilation safety procedures are followed;
- (c) the Shipper's Declaration requirements of Subsections 8.1 and 10.8.1 are only applicable when the Carbon dioxide, solid (dry ice) is used as a refrigerant for dangerous goods that require a Shipper's Declaration;

PACKING INSTRUCTION 954 *(continued)*

- (d) when a Shipper's Declaration is not required, the following information, as required by 8.2.3 for the Carbon dioxide, solid (dry ice), must be contained in the "Nature and Quantity of Goods" box on the air waybill when used, or in the appropriate location on alternate transport documentation. Where an agreement exists with the operator, the shipper may provide the information by EDP or EDI techniques. The information should be shown in the following order:
- UN 1845;
 - proper shipping name (**Dry ice or Carbon dioxide, solid**);
 - the number of packages; and
 - the net weight of dry ice in each package.
- (e) the net weight of the Carbon dioxide, solid (dry ice) must be marked on the outside of each package.

Dry ice used as a refrigerant for other than dangerous goods:

- (a) 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 and the following information must be contained in the "Nature and Quantity of Goods" box on the air waybill when used, or in the appropriate location on alternate transport documentation. Where an agreement exists with the operator, the shipper may provide the information by EDP or EDI techniques. The information should be shown in the following order:
- UN 1845;
 - proper shipping name (**Dry ice or Carbon dioxide, solid**);
 - the number of packages and the net weight of dry ice in each package if the ULD includes the packages that contain dry ice; or
 - the identification number of the ULD and the net quantity of dry ice in each ULD if the dry ice is placed in the dry ice bunker of the ULD or loose in the ULD.
- (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 (the marking and labelling requirements of Section 7 do not apply to the unit load device);

Notes:

1. Refer to the relevant airline's loading procedures for Carbon dioxide, solid (dry ice) limitations.
2. For Air Waybill requirements see 8.2.3. For loading instructions see 9.3.12.
3. For cooling purposes, an overpack may contain Carbon dioxide, solid (dry ice), provided that the overpack meets the requirements of this packing instruction.

UN number	Quantity per package Passenger aircraft	Quantity per package Cargo Aircraft Only
UN 1845, Carbon dioxide, solid, or Dry ice	200 kg	200 kg

PACKING INSTRUCTION 955

OPERATOR VARIATIONS: AM-09, OU-15

This instruction applies to UN 2990, Life-saving appliances, self-inflating and UN 3072, Life-saving appliances, not self-inflating on passenger aircraft and Cargo Aircraft Only.

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 g per unit. When the cylinders are shipped separately, they must 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;

PACKING INSTRUCTION 955 *(continued)*

- (c) small quantities of flammable substances, corrosive solids and organic peroxides (Classes 3 and 8, Divisions 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 packed in strong rigid outer packagings with a total maximum gross weight of 40 kg, containing no dangerous goods other than Division 2.2 compressed or liquefied gases with no subsidiary risk in receptacles with a capacity not exceeding 120 mL, installed solely for the purpose of the activation of the appliance, are not subject to these Regulations when carried as cargo.

UN number	Quantity per package Passenger aircraft	Quantity per package Cargo Aircraft Only
UN 2990, Life-saving appliances, self-inflating, or UN 3072, Life-saving appliances, not self-inflating	No limit	No limit

Life-saving appliances may also include articles and substances, not subject to these Regulations, which are an integral part of the appliance.

PACKING INSTRUCTION 956

STATE VARIATIONS: CAG-13, USG-04

OPERATOR VARIATIONS: 5X-07, AM-09, AY-04, BA-01, EY-03, FX-06, JL-09, KE-07, LH-07, OK-04, TG-02, US-01

This instruction applies to UN 1841, UN 1931, UN 2969, UN 3077, UN 3152, UN 3335 and UN 3432 on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- △
- fibre, fibreboard, wood and plywood single packagings must be fitted with a suitable liner;
 - for UN 3077, **Environmentally hazardous substance, solid, n.o.s.**, irrespective of the maximum net quantities specified in Columns J and L in Table 4.2, intermediate bulk containers (IBC) with a maximum net quantity not exceeding 1,000 kg are permitted as shown below. Each IBC must be in accordance with Subsection 6.8 and Chapter 6.5 of the *UN Model Regulations* and must bear the required UN mark;
 - flexible IBCs must be sift-proof and water-resistant or must be fitted with a sift-proof and water-resistant liner.

Combination and single packagings are permitted.

PACKING INSTRUCTION 956 (continued)
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COMBINATION PACKAGINGS	
Inner Packaging (see 6.1)	Net quantity per inner packaging
Fibre	50.0 kg
Glass	10.0 kg
Metal	50.0 kg
Paper bag	50.0 kg
Plastic	50.0 kg
Plastic bag	50.0 kg



UN number	Quantity per package Passenger aircraft	Quantity per package Cargo Aircraft Only
UN 1931, Zinc dithionite Zinc hydrosulphite, or Zinc hydrosulphite	100 kg	200 kg
UN 3152, Polyhalogenated biphenyls, solid, or Polyhalogenated terphenyls, solid	200 kg	200 kg
UN 3432, Polychlorinated biphenyls, solid	400 kg	400 kg
UN 1841, Acetaldehyde ammonia	No limit	No limit
UN 3077, Environmentally hazardous substance, solid, n.o.s.*		
UN 3335, Aviation regulated solid, n.o.s.★		
UN 2969, Castor bean, Castor flake, Castor meal or Castor pomace		



Type	Drums						Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal	
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N	



SINGLE PACKAGINGS																			Composites	Cylinders	
Type	Drums						Jerricans				Boxes								Bags		
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal	Textile	Plastic	Paper	Plastic
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N	5L3 5H4	5M2	All	As permitted in 5.0.6.6

INTERMEDIATE BULK CONTAINERS (IBC) FOR UN 3077 ONLY																		
Desc.	Steel	Aluminium	Plastic	Other metal	Composite	Wood	Plywood	Reconstituted wood	Fibreboard	Flexible								
Spec.	11A 21A	11B 21B	11H1 11H2 21H1 21H2	11N 21N	11HZ1 11HZ2 21HZ1 21HZ2	11C	11D	11F	11G		13H2 13H3 13H4 13H5 13L2 13L3 13L4 13M1 13M2							

PACKING INSTRUCTION Y956

STATE VARIATIONS: CAG-13, USG-04

OPERATOR VARIATIONS: AM-09, DE-01, FX-06, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, MH-14, OS-03, OU-04, PX-10, SW-02, TN-04, US-01, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of UN 3077 and UN 3335.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

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The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS		
Inner Packaging (see 6.1)	Net quantity per inner packaging	Total quantity per package
Fibre	5.0 kg	30.0 kg G
Glass	5.0 kg	
Metal	5.0 kg	
Paper bag	5.0 kg	
Plastic	5.0 kg	
Plastic bag	5.0 kg	

OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION 957

OPERATOR VARIATIONS: AM-09, AS-06, BR-13, EY-03, MH-09, TU-04, US-01, VN-11

This instruction applies to UN 2211 and UN 3314 on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of Subsection 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- for other than metal packagings a sealed plastic liner must be used.

Single packagings are permitted.

PACKING INSTRUCTION 957 *(continued)*

UN Number		Net quantity per package Passenger aircraft					Net quantity per package Cargo Aircraft Only				
UN 2211, Polymeric beads, expandable		100.0 kg					200.0 kg				
UN 3314, Plastics moulding compound											



SINGLE PACKAGINGS

Type	Drums				Boxes				
Desc.	Steel	Aluminium	Plywood	Fibre	Wood	Plywood	Reconstituted wood	Fibreboard	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	4C1 4C2	4D	4F	4G	4N

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PACKING INSTRUCTION 958

OPERATOR VARIATIONS: AM-09, EY-03, TU-04

This instruction applies to UN 2071 and UN 2590 on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of Subsection 5.0.2 must be met.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- all rigid packagings must be sift-proof;
- for UN 2590 bags must be palletised and unitised by methods such as shrink wrapping in plastic film or wrapping in fibreboard secured by strapping.

Single packagings are permitted.

COMBINATION PACKAGINGS											
UN Number			Quantity per package Passenger aircraft						Quantity per package Cargo Aircraft Only		
UN 2071, Ammonium nitrate fertilizers			200.0 kg						200.0 kg		
UN 2590, White asbestos											



SINGLE PACKAGINGS

Type	Drums					Jerricans					Boxes					Bags			
Desc.	Steel	Alumin- ium	Ply- wood	Fibre	Plastic	Other metal	Steel	Alumin- ium	Plastic	Steel	Alumin- ium	Wood	Ply- wood	Recon- stituted wood	Fibre- board	Plastic	Other metal	Plastic	Textile
Spec.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N	5H3 5H4	5L3

PACKING INSTRUCTION Y958

OPERATOR VARIATIONS: AM-09, DE-01, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, MH-14, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of UN 2071.

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

PACKING INSTRUCTION Y958 (continued)

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

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COMBINATION PACKAGINGS		
Inner Packaging (see 6.1)	Net quantity per inner packaging	Total quantity per package
Fibre	5.0 kg	30.0 kg G
Glass	5.0 kg	
Metal	5.0 kg	
Paper bag	5.0 kg	
Plastic	5.0 kg	
Plastic bag	5.0 kg	



OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
	Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic

PACKING INSTRUCTION 959

OPERATOR VARIATIONS: 5X-07, AM-09/12

This instruction applies to UN 3245 on passenger aircraft and Cargo Aircraft Only.

General Requirements

The packagings must be of good quality, strong enough to withstand the shocks and loadings normally encountered during transport, including trans-shipment 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 so as 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.

Packagings must meet the provisions of 5.0.2.4.1, 5.0.2.6.1, 5.0.2.8 and 5.0.6 and be so designed that they meet the construction requirements of 6.1 and 6.2. Outer packagings constructed of suitable material of adequate strength and designed in relation to the packaging capacity and its intended use must be used. Where this packing instruction is used for the transport of inner packagings of combination packagings, the packaging must be designed and constructed to prevent inadvertent discharge during normal conditions of transport.

Packagings which need not conform to the packaging test requirements of Chapter 6, but conforming to the following:

(a) an inner packaging comprising:

1. primary receptacle(s) and a secondary packaging, the primary receptacle(s) must be leakproof for liquids or siftproof for solids;
2. for liquids, absorbent material placed between the primary receptacle(s) and the secondary packaging. The absorbent material must be in a quantity sufficient to absorb the entire contents of the primary receptacle(s) so that any release of liquid substance will not compromise the integrity of the cushioning material or of the outer packaging;

PACKING INSTRUCTION 959 (continued)

3. if multiple fragile primary receptacles are placed in a single secondary they must be individually wrapped or separated to prevent contact between them.
- (b) a rigid outer packaging, which must be strong enough for its capacity, weight and intended use, and with a smallest external dimension of at least 100 mm.

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.



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When packages are placed in an overpack, the package markings required by this packing instruction must either clearly be visible or the markings must be reproduced on the outside of the overpack and the overpack must be marked with the word "Overpack".

GMOs or GMMOs assigned to UN 3245 which are packed and marked in accordance with this packing instruction are not subject to any other requirement in these Regulations except for the following:

- (a) the name and address of the shipper and of the consignee must be provided on each package;
- (b) classification must be in accordance with 3.9.2.5;
- (c) the inspection for damage or leakage requirements in 9.4.1 and 9.4.2;
- (d) the incident reporting requirements in 9.6 must be met;
- (e) passengers and crew members are prohibited from transporting UN 3245 either as, or in, carry-on baggage or checked baggage or on their person;
- (f) if an air waybill is used, the "Nature and Quantity of Goods" box must show "UN 3245", the text "GMO" or "GMMO" and the number of packages (unless these are the only packages within the consignment).

Additional Packing Requirements**Refrigerated or frozen specimens: Ice, dry ice and liquid nitrogen:**

- When dry ice or liquid nitrogen is used to keep specimens cold, all applicable requirements of these Regulations 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 dry ice is used, the requirements in Packing Instruction 954 must be met.
- 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 to be lost.



PACKING INSTRUCTION 960

OPERATOR VARIATION: AM-09

This instruction applies to UN 3316 on passenger aircraft and Cargo Aircraft Only.

The description "Chemical Kit" and/or "First Aid Kit" is intended to apply to boxes, cases, etc., containing small amounts of various dangerous goods which are used for example for medical, analytical, testing or repair purposes. Components must not react dangerously (see 5.0.2.11(a)).

The General Packing Requirements of Subsection 5.0.2 must be met, except that the requirements of 5.0.2.11(b) through 5.0.2.11(h) and 5.0.2.14 do not apply.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- kits may contain dangerous goods which require segregation according to Table 9.3.A;
- packagings must meet the performance standards of the most stringent packing group assigned to any individual substance in the kit. Where the kit contains dangerous goods to which no packing group is assigned, packagings must meet Packing Group II performance standards;
- 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 provisions of Packing Instruction 954 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS			
UN Number	Inner Packaging (see 6.1)	Maximum net quantity of dangerous goods per kit	Net quantity per package
UN 3316, Chemical kit, or First aid kit	Liquids: 250 mL	Liquids: 1.0 L	10.0 kg
	Solids: 250 g	Solids: 1.0 kg	



OUTER PACKAGINGS

Type	Boxes							
Desc.	Steel	Aluminium	Wood	Plywood	Reconstituted wood	Fibreboard	Plastic	Other metal
Spec.	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

PACKING INSTRUCTION Y960

OPERATOR VARIATIONS: AM-09, DE-01, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, MH-14, OS-03, OU-04, PX-10, SW-02, TN-04, UX-02, VO-03, VT-01, XK-03

This instruction applies to Limited Quantities of dangerous goods in Chemical kits or First aid kits.

The description "Chemical Kit" and/or "First Aid Kit" is intended to apply to boxes, cases, etc., containing small amounts of various dangerous goods which are used for example for medical, analytical, testing or repair purposes. Components must not react dangerously (see 5.0.2.11(a)).

The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

PACKING INSTRUCTION Y960 *(continued)*

Limited Quantity Requirements

The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Additional Packing Requirements

- kits may contain dangerous goods which require segregation according to Table 9.3.A;
- 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 provisions of Packing Instruction 954 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS			
UN Number	Inner Packaging (see 6.1)	Maximum net quantity of dangerous goods per kit	Net quantity per package
UN 3316, Chemical kit, or First aid kit	Liquids: 30 mL	1.0 kg	1.0 kg
	Solids: 100 g		

OUTER PACKAGINGS								
Type	Boxes							
Desc.	Steel	Aluminium	Wood	Plywood	Reconstituted wood	Fibreboard	Plastic	Other metal

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PACKING INSTRUCTION 961

STATE VARIATIONS: BEG-03, USG-16

OPERATOR VARIATION: AM-09

This instruction applies to UN 3268 on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met.

Additional Packing Requirements

- packagings must meet Packing Group III performance standards;
- the packagings must be designed and constructed to prevent movement of the articles and inadvertent operation during normal conditions of transport;
- any pressure receptacle must be in accordance with the requirements of the appropriate national authority for the substance(s) contained therein.

Cargo Aircraft Only

Air bag inflators, air bag modules and seat-belt pretensioners may also be transported unpackaged on Cargo Aircraft Only in dedicated handling devices when they are transported from where they are manufactured to vehicle assembly plants. When transported in dedicated handling devices the following conditions must be met:

- (a) air bag inflators, air bag modules or seat-belt pretensioners as fitted in the dedicated handling device must be capable of meeting the test criteria prescribed in Special Provision A115;
- (b) the dedicated handling device must be completely enclosed;
- (c) each air bag inflator, air bag module or seat-belt pretensioner unit must be secured within the dedicated handling device to prevent movement in transport;
- (d) irrespective of the limit specified in Column L of Table 4.2, a handling device meeting these requirements may have a gross weight not exceeding 1,000 kg.



PACKING INSTRUCTION 961 (continued)

COMBINATION PACKAGINGS											
UN Number			Quantity per package Passenger aircraft						Quantity per package Cargo Aircraft Only		
UN 3268, Air bag inflators, Air bag modules or Seat belt pretensioners			25.0 kg						100.0 kg		



OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

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PACKING INSTRUCTION 962

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OPERATOR VARIATIONS: AM-09, TU-09

This instruction applies to UN 3363 on passenger aircraft and Cargo Aircraft Only.

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 exists in Table 4.2. For other than fuel system components, machinery or apparatus may only contain one or more of the following: dangerous goods permitted under 2.7.1 or magnetized material meeting the requirements of Packing Instruction 953 or gases of Division 2.2 without subsidiary risk, but excluding refrigerated liquefied gases.

Note:

If machinery or apparatus contains only magnetised material meeting the requirements of Packing Instruction 953, 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.

The General Packing Requirements of 5.0.2 must be met except that 5.0.2.5, 5.0.2.11, 5.0.2.13.3 and 5.0.2.14 do not apply.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Additional Packing Requirements

- 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;
- package orientation ("This Way Up") labels (see 7.4.4 and 7.4.5) or preprinted orientation labels meeting the same specifications must be affixed on at least two 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 7.2.3.10, machinery or apparatus containing magnetized material meeting the requirements of Packing Instruction 953 must have both a "Miscellaneous" and a "Magnetized Material" label (see figure 7.4.A);
- for Division 2.2 gases, cylinders for gases, their contents and filling ratios, must conform to the requirements of Packing Instruction 200;
- 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.

PACKING INSTRUCTION 962 *(continued)*

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:

- (a) 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;
- (b) in strong outer packagings.

COMBINATION PACKAGINGS	
UN Number	Maximum net quantity of dangerous goods per package (excluding magnetized material)
UN 3363, Dangerous goods in apparatus, or Dangerous goods in machinery	Liquids: 0.5 L
	Solids: 1.0 kg
	Gases (Div. 2.2 only): 0.5 kg

OUTER PACKAGINGS—Strong outer packagings, such as:

Type	Drums						Jerricans				Boxes					
Desc.	Steel	Alumin-ium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alumin-ium	Plastic	Steel	Alumin-ium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic

PACKING INSTRUCTION Y963

OPERATOR VARIATIONS: AM-09, GF-04, IJ-12, KQ-08, MH-14, OU-04, SW-02, XK-03

This instruction applies to ID 8000, Consumer commodities on passenger aircraft and Cargo Aircraft Only.

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 Subsection 5.0 or Section 6 of these Regulations; 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;
- (c) completed packages must be capable of withstanding a 1.2 m drop on solid concrete in the position most likely to cause damage. 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);
- (d) 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% 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 (0.75 bar) 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 5.0.2.9. Tests on sample receptacles must be carried out to demonstrate the capability of the primary packaging to withstand the above pressure;
- (e) 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;

PACKING INSTRUCTION Y963 (continued)

- (f) 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 the 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 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;
- (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 weight of 30 kg;
- (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 (15.0 bar) 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 (9.7 bar) but does not exceed 1,105 kPa at 55°C (11.0 bar), a metal IP7, IP7A or IP7B must be used;
 3. if the pressure in the aerosol exceeds 1,105 kPa at 55°C (11.05 bar) but does not exceed 1,245 kPa at 55°C (12.45 bar), a metal IP7A or IP7B must be used;
 4. if the pressure in the aerosol exceeds 1,245 kPa at 55°C (12.45 bar), a metal IP7B must be used;
 5. IP7B 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 pressure 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 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 content 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;
 8. the valves must be protected by a cap or other suitable means during transport to prevent accidental activation.
- (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 (9.7 bar);
 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;
 4. the valves must be protected by a cap or other suitable means during transport to prevent accidental activation.
- (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 when 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 and the total gross weight of ID 8000 contained in each unit load device;
- (m) The gross weight on the Shipper's Declaration for Dangerous Goods must be shown as:
1. for one package, the actual gross weight of the package;
 2. for more than one package, either the actual gross weight of each package or as the average weight of the packages. For example, if there are 10 packages and the total gross weight of them is 100 kg, the Shipper's Declaration for Dangerous Goods may show this as "average gross weight per package 10 kgG".

PACKING INSTRUCTION Y963 (continued)

- (n) Packages prepared in accordance with these provisions must be durably and legibly marked with the mark shown in Figure 7.1.A.

PACKING INSTRUCTION 964

STATE VARIATIONS: CAG-13, USG-04

OPERATOR VARIATIONS: AM-09, AY-04, BA-01, CA-10, EI-01, EY-03, FX-06, JL-09, KE-07, LD-02, OK-04, OZ-08, SK-04, TG-02, UA-01, US-01

This instruction applies to UN 1941, UN 1990, UN 2315, UN 3151, UN 3082 and UN 3334 on passenger aircraft and Cargo Aircraft Only.

The General Packing Requirements of 5.0.2 must be met, except for UN 3082, when the requirements of 5.0.2.9 do not apply.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Combination and single packagings are permitted.

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COMBINATION PACKAGINGS	
Inner Packaging (see 6.1)	Net quantity per inner packaging
Glass	10.0 L
Metal	40.0 L
Plastic	30.0 L



UN number	Total net quantity per package Passenger aircraft	Total net quantity per package Cargo Aircraft Only
UN 1941, Dibromodifluoromethane		
UN 1990, Benzaldehyde		
UN 2315, Polychlorinated biphenyls, liquid	100 L	220 L
UN 3151, Polyhalogenated biphenyls, liquid or Polyhalogenated terphenyls, liquid		
UN 3082, Environmentally hazardous substance, liquid, n.o.s.★	450 L	450 L
UN 3334, Aviation regulated liquid, n.o.s.★		



Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minum	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minum	Plastic	Steel	Alu-minum	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Spec.	1A1 1A2	1B1 1B2	1D	1G	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	4A	4B	4C1 4C2	4D	4F	4G	4H1 4H2	4N

SINGLE PACKAGINGS

Type	Drums				Jerricans				Composites		Cylinders
Desc.	Steel	Aluminium	Plastic	Other metal	Steel	Aluminium	Plastic	Plastic	Plastic	Plastic	Plastic
Spec.	1A1 1A2	1B1 1B2	1H1 1H2	1N1 1N2	3A1 3A2	3B1 3B2	3H1 3H2	All	As permitted in 5.0.6.6		

PACKING INSTRUCTION Y964

STATE VARIATIONS: CAG-13, USG-04

OPERATOR VARIATIONS: AM-09, DE-01, FX-06, GA-03, GF-04, IJ-12, KQ-08, LH-01, LX-02, MH-14, OS-03, OU-04, PX-10, SW-02, TN-04, US-01, UX-02, VT-01, XK-03

This instruction applies to Limited Quantities of UN 1941, UN 1990, UN 3082 and UN 3334.

Except for UN 3082, when the requirements of 5.0.2.9 do not apply; The General Packing Requirements of Subsections 2.7.5, 5.0.2 to 5.0.4 (with the exception of 5.0.2.3, 5.0.2.5, 5.0.2.11 and 5.0.2.14.2) must be met except that the packagings do not have to meet the marking and testing requirements of 6.0.4 and Subsection 6.3. Packagings must meet the construction criteria specified in Subsections 6.1 and 6.2 and the test criteria specified in Subsection 6.6.

Compatibility Requirements

- substances must be compatible with their packagings as required by 5.0.2.6.

Closure Requirements

- closures must meet the requirements of 5.0.2.7.

Limited Quantity Requirements

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The requirements of Subsection 2.7 must be met including:

- the capability of the package to pass a drop test of 1.2 m;
- a 24 hour stacking test;
- the gross weight of the completed package must not exceed 30 kg.

Single packagings are not permitted.

COMBINATION PACKAGINGS		
Inner Packaging (see 6.1)	Net quantity per inner packaging	Total quantity per package
Glass	5.0 L	30.0 kg G
Metal	5.0 L	
Plastic	5.0 L	



OUTER PACKAGINGS

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

PACKING INSTRUCTION 965

OPERATOR VARIATIONS: 5X-02/07, AC-06, AM-09, CI-01, D0-03, EY-04, QY-03, US-01

Introduction

This instruction applies to lithium ion or lithium polymer cells and batteries (UN 3480) on passenger and Cargo Aircraft Only.

The general requirements apply to all lithium ion cells and batteries prepared for transport according to this packing instruction:

- Section IA applies to lithium ion cells with a Watt-hour rating in excess of 20 Wh and lithium ion batteries with a Watt-hour rating in excess of 100 Wh, or to quantities of lithium ion cells or batteries in excess of those permitted in Section IB of this packing instruction which must be assigned to Class 9 and are subject to all of the applicable requirements of these Regulations;
- Section IB applies to lithium ion cells with a Watt-hour rating not exceeding 20 Wh and lithium ion batteries with a Watt-hour rating not exceeding 100 Wh packed in quantities that exceed the allowance permitted in Section II, Table 965-II; and
- Section II applies to lithium ion cells with a Watt-hour rating not exceeding 20 Wh and lithium ion batteries with a Watt-hour rating not exceeding 100 Wh packed in quantities not exceeding the allowance permitted in Section II, Table 965-II.

PACKING INSTRUCTION 965 (continued)

△ General Requirements

The following requirements apply to all lithium ion or lithium polymer cells and batteries:

- (a) each cell and battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, subsection 38.3. However, batteries and cells manufactured before 1 January 2014 conforming to a design type tested according to the requirements of the 5th revised edition of the UN *Manual of Tests and Criteria*, Part III, subsection 38.3 may continue to be transported;

Note:

Batteries, including those which have been refurbished or otherwise altered, are subject to these tests irrespective of whether the cells of which they are composed have been so tested.

- (b) cells and batteries must be manufactured under a quality management program as described in 3.9.2.6(e);
 (c) cells and 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);
 (d) waste lithium batteries and lithium batteries being shipped for recycling or disposal are forbidden from air transport unless approved by the appropriate national authority of the State of origin and the State of the operator;
 (e) 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.

Section IA

These requirements apply to lithium ion cells with a Watt-hour rating in excess of 20 Wh and lithium ion batteries with a Watt-hour rating in excess of 100 Wh that have been determined to meet the criteria for assignment to Class 9.

The General Packing Requirements of 5.0.2 must be met.

Each cell or battery must:

1. meet the General Requirements, above;
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 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).

Additional Requirements—Section IA

- lithium ion cells and batteries must be placed in inner packagings that completely enclose the cell or battery then placed in an outer packaging. The completed package for the cells or batteries must meet the Packing Group II performance standards;
- 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 or protective enclosures (e.g. in fully enclosed or wooden slatted crates). The packagings need not meet the requirements of Section 6 of these Regulations. The packagings must be approved by the appropriate authority of the State of origin. A copy of the document of approval must accompany the consignment;
- batteries manufactured after 31 December 2011 must be marked with the Watt-hour rating on the outside case.



TABLE 965-IA

UN number		Net quantity per package Passenger aircraft						Net quantity per package Cargo Aircraft Only					
UN 3480 Lithium ion batteries		5 kg						35 kg					

OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N

PACKING INSTRUCTION 965 (continued) **Section IB**

Section IB requirements apply to lithium ion cells with a Watt-hour rating not exceeding 20 Wh and lithium ion batteries with a Watt-hour rating not exceeding 100 Wh packed in quantities that exceed the allowance permitted in Section II, Table 965-II.

Quantities of lithium ion cells or batteries that exceed the allowance permitted in Section II, Table 965-II must be assigned to Class 9 and are subject to all of the applicable provisions of these Regulations (including the General Requirements of this packing instruction), except for the following:

- (a) the provisions of Section 6; and
(b) a Shipper's Declaration is not required, provided that the following information must be contained on the air waybill when used, or in the appropriate location on alternative transport documentation. The information required by 2, 3 and 4 below must be shown in the "Nature and Quantity of Goods" box of the air waybill. Where an agreement exists with the operator, the shipper may provide the information by electronic data processing (EDP) or electronic data interchange (EDI) techniques. The information required is as follows and should be shown in the following order:
1. the name and address of the shipper and consignee;
2. UN 3480;
3. Lithium ion batteries, PI 965, IB;
4. the number of packages and the gross weight of each package.

Lithium ion cells and batteries may be offered for transport if they meet all of the following:

- (a) for cells, the Watt-hour rating is not more than 20 Wh; and
(b) for 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 those manufactured before 1 January 2009.

Cells and batteries must be packed in strong outer packagings that conform to 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1.

Additional Requirements—Section IB

Cells and batteries must be packed in inner packagings that completely enclose the cell or battery then placed in a strong outer packaging.

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 consignment must be accompanied with a document 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 must be followed in the event the package is damaged, to include inspection and repacking if necessary; and
- a telephone number for additional information.

Each package must be labelled with a lithium battery handling label (Figure 7.4.H) in addition to the Class 9 hazard label (Figure 7.3.V).

Each package must be marked in accordance with the requirements of 7.1.5.1(a) and (b) and in addition the gross weight as required by 7.1.5.1(c) must be marked on the package.

TABLE 965-IB

	Quantity per package Passenger aircraft	Quantity per package Cargo Aircraft Only		
Lithium ion cells and batteries	10 kg G	10 kg G		
OUTER PACKAGINGS	Type	Drums	Jerricans	Boxes

PACKING INSTRUCTION 965 (continued)

Section II

Lithium ion cells and batteries meeting the requirements in this section are not subject to other additional requirements of these Regulations except for:

- (a) dangerous goods in passenger and crew baggage (Subsection 2.3). Only those lithium ion batteries as specifically permitted may be carried in carry-on baggage;
- (b) dangerous goods in air mail (Subsection 2.4);
- (c) reporting of dangerous goods accidents, incidents and other occurrences (9.6.1 and 9.6.2).

Lithium ion cells and batteries offered for transport must meet the General Requirements of this packing instruction and:

- (a) for cells, the Watt-hour rating is not more than 20 Wh; and
- (b) for batteries, Watt-hour rating is not more than 100 Wh. The Watt-hour rating must be marked on the outside of the battery case except those manufactured before 1 January 2009;

Cells and batteries must be packed in strong outer packagings that conform to 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1.

Additional Requirements—Section II

Cells and batteries must be packed in inner packagings that completely enclose the cell or battery then placed in a strong outer packaging.

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 consignment must be accompanied with a document 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 must be followed in the event the package is damaged, to include inspection and repacking if necessary; and
- a telephone number for additional information.

Each package must be labelled with a lithium battery handling label (Figure 7.4.H).

A Shipper's Declaration for Dangerous Goods is not required.

△ The words "Lithium ion batteries in compliance with Section II of PI 965" must be included on the air waybill, when an air waybill is used. The information should be shown in the "Nature and Quantity of Goods" box of the air waybill.

Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

Overpacks—Section II

Individual packages each complying with the requirements of Section II may be placed in an overpack. The overpack may also contain packages of dangerous goods or goods not subject to these Regulations provided that there are no packages enclosing different substances which might react dangerously with each other. An overpack must be marked with the word "Overpack" and labelled with the lithium battery label (Figure 7.4.H), unless the label(s) on the package(s) inside the overpack are visible.



TABLE 965-II

Contents	Lithium ion cells and/or batteries with a Watt-hour rating of 2.7 Wh or less	Lithium ion cells with a Watt-hour rating of more than 2.7 Wh but not more than 20 Wh	Lithium ion batteries with a Watt-hour rating of more than 2.7 Wh but not more than 100 Wh
1	2	3	4
Maximum number of cells/batteries per package	No limit	8 cells	2 Batteries
Maximum net quantity per package	2.5 kg	N/A	N/A

Cells and/or batteries specified in columns 2, 3 and 4 of Table 965-II must not be combined in the same package.

OUTER PACKAGINGS

Type	Drums	Jerricans	Boxes

PACKING INSTRUCTION 966

OPERATOR VARIATIONS: 5X-07, AC-06, AM-09, CI-01, D0-03, EY-04, QY-03, US-01

Introduction

This instruction applies to lithium ion or lithium polymer cells and batteries packed with equipment (UN 3481) on passenger and Cargo Aircraft Only.

The general requirements apply to all lithium ion cells and batteries packed with equipment prepared for transport according to this packing instruction:

- Section I applies where the equipment is packed with lithium ion cells with a Watt-hour rating in excess of 20 Wh or lithium ion batteries with a Watt-hour rating in excess of 100 Wh, which must be assigned to Class 9 and are subject to all of the applicable requirements of these Regulations; and
- Section II applies where the equipment is packed with lithium ion cells with a Watt-hour rating not exceeding 20 Wh or lithium ion batteries with a Watt-hour rating not exceeding 100 Wh.

△ General Requirements

The following requirements apply to all lithium ion or lithium polymer cells and batteries:

- (a) each cell and battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, subsection 38.3. However, batteries and cells manufactured before 1 January 2014 conforming to a design type tested according to the requirements of the 5th revised edition of the UN *Manual of Tests and Criteria*, Part III, subsection 38.3 may continue to be transported;

Note:

Batteries, including those which have been refurbished or otherwise altered, are subject to these tests irrespective of whether the cells of which they are composed have been so tested.

- (b) cells and batteries must be manufactured under a quality management program as described in 3.9.2.6(e);
(c) cells and 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);
(d) 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.

Section I

These requirements apply to lithium ion cells with a Watt-hour rating in excess of 20 Wh and lithium ion batteries with a Watt-hour rating in excess of 100 Wh that have been determined to meet the criteria for assignment to Class 9.

The General Packing Requirements of 5.0.2 must be met.

Each cell or battery must:

1. meet the General Requirements, above;
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 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).

Additional Requirements—Section I

- lithium ion cells or batteries must:
 - be placed in inner packagings that completely enclose the cell or battery then placed in an outer packaging. The completed package for the cells or batteries must meet the Packing Group II performance standards; or
 - be placed in inner packagings that completely enclose the cell or battery, then placed with equipment in a package that meets the Packing Group II performance standards.
- the equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation;
- for the purpose of this packing instruction, “equipment” means apparatus requiring the lithium batteries with which it is packed for its operation;
- batteries manufactured after 31 December 2011 must be marked with the Watt-hour rating on the outside case.

PACKING INSTRUCTION 966 (continued)

TABLE 966-I

UN number						Net quantity per package Passenger aircraft				Net quantity per package Cargo Aircraft Only					
UN 3481 Lithium ion batteries packed with equipment						5 kg				35 kg					

OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N

Section II

Lithium ion cells and batteries meeting the requirements in this section are not subject to other additional requirements of these Regulations except for:

- (a) dangerous goods in passenger and crew baggage (Subsection 2.3). Only those lithium ion batteries as specifically permitted may be carried in carry-on baggage;
- (b) dangerous goods in air mail (Subsection 2.4);
- (c) reporting of dangerous goods accidents, incidents and other occurrences (9.6.1 and 9.6.2).

Lithium ion cells and batteries offered for transport must meet the General Requirements of this packing instruction and:

1. for cells, the Watt-hour rating is not more than 20 Wh; and
2. for batteries, Watt-hour rating is not more than 100 Wh. The Watt-hour rating must be marked on the outside of the battery case except those manufactured before 1 January 2009;

Cells and batteries must be packed in strong outer packagings that conform to 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1.

Additional Requirements—Section II

lithium ion cells and batteries must:

- be placed in inner packagings that completely enclose the cell or battery then placed in a strong outer packaging; or
- be placed in inner packagings that completely enclose the cell or battery, then placed with equipment in a strong outer packaging.

The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.

The maximum number of batteries in each package must be the minimum number required to power the equipment plus two spares.

Each package of cells or batteries, or the completed 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 consignment must be accompanied with a document 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 must be followed in the event the package is damaged, to include inspection and repacking if necessary; and
- a telephone number for additional information.

PACKING INSTRUCTION 966 (continued)

Each package must be labelled with a lithium battery handling label (Figure 7.4.H).

A Shipper's Declaration for Dangerous Goods is not required.

△ The words "Lithium ion batteries in compliance with Section II of PI 966" must be included on the air waybill, when an air waybill is used. The information should be shown in the "Nature and Quantity of Goods" box of the air waybill.

Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

Overpacks—Section II

Individual packages each complying with the requirements of Section II may be placed in an overpack. The overpack may also contain packages of dangerous goods or goods not subject to these Regulations provided that there are no packages enclosing different substances which might react dangerously with each other. An overpack must be marked with the word "Overpack" and labelled with the lithium battery label (Figure 7.4.H), unless the label(s) on the package(s) inside the overpack are visible.

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TABLE 966-II

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	Passenger aircraft	Cargo Aircraft Only
Net quantity of lithium ion cells or batteries per package	5 kg	5 kg

OUTER PACKAGINGS			
Type	Drums	Jerricans	Boxes

PACKING INSTRUCTION 967

OPERATOR VARIATIONS: 5X-07, AC-06, AM-09, CX-08, D0-03, EY-04, KA-08, LD-07, QY-03, US-01

Introduction

This instruction applies to lithium ion or lithium polymer cells and batteries contained in equipment (UN 3481) on passenger and Cargo Aircraft Only.

The general requirements apply to all lithium ion cells and batteries contained in equipment prepared for transport according to this packing instruction:

- Section I applies where the equipment contains lithium ion cells with a Watt-hour rating in excess of 20 Wh or lithium ion batteries with a Watt-hour rating in excess of 100 Wh, which must be assigned to Class 9 and are subject to all of the applicable requirements of these Regulations; and
- Section II applies where the equipment contains lithium ion cells with a Watt-hour rating not exceeding 20 Wh or lithium ion batteries with a Watt-hour rating not exceeding 100 Wh.

△ General Requirements

The following requirements apply to all lithium ion or lithium polymer cells and batteries:

- (a) each cell and battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, subsection 38.3. However, batteries and cells manufactured before 1 January 2014 conforming to a design type tested according to the requirements of the 5th revised edition of the UN *Manual of Tests and Criteria*, Part III, subsection 38.3 may continue to be transported;

Note:

Batteries, including those which have been refurbished or otherwise altered, are subject to these tests irrespective of whether the cells of which they are composed have been so tested.

- (b) cells and batteries must be manufactured under a quality management program as described in 3.9.2.6(e);
 (c) cells and 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);
 (d) 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;
 (e) equipment must be equipped with an effective means of preventing accidental activation;

PACKING INSTRUCTION 967 *(continued)*

- (f) equipment containing batteries must be packed in strong outer packagings that conform to 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1;
- (g) the equipment containing the cells or batteries must be secured against movement within the outer packaging and be packed so as to prevent accidental operation during air transport;

Section I

These requirements apply to lithium ion cells with a Watt-hour rating in excess of 20 Wh and lithium ion batteries with a Watt-hour rating in excess of 100 Wh that have been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

1. meet the General Requirements, above;
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 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).

Additional Requirements—Section I

- 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;
- batteries manufactured after 31 December 2011 must be marked with the Watt-hour rating on the outside case.

TABLE 967-I

UN number		Net quantity per package Passenger aircraft						Net quantity per package Cargo Aircraft Only					
UN 3481 Lithium ion batteries contained in equipment		5 kg						35 kg					

OUTER PACKAGINGS—Strong outer packagings, such as:

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

Section II

Lithium ion cells and batteries meeting the requirements in this section are not subject to other additional requirements of these Regulations except for:

- (a) dangerous goods in passenger and crew baggage (Subsection 2.3). Only those lithium ion batteries as specifically permitted may be carried in carry-on and checked baggage;
- (b) dangerous goods in air mail (Subsection 2.4);
- (c) reporting of dangerous goods accidents, incidents and other occurrences (9.6.1 and 9.6.2).

Lithium ion cells and batteries offered for transport must meet the General Requirements of this packing instruction and:

1. for cells, the Watt-hour rating is not more than 20 Wh; and
2. for batteries, Watt-hour rating is not more than 100 Wh. The Watt-hour rating must be marked on the outside of the battery case except those manufactured before 1 January 2009.

Devices such as radio frequency identification (RFID) tags, watches and temperature loggers, which are not capable of generating a dangerous evolution of heat, may be transported when intentionally active. When active, these devices must meet defined standards for electromagnetic radiation to ensure that the operation of the device does not interfere with aircraft systems.

Additional Requirements—Section II

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 cell or 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 7.4.H), except for button cell batteries installed in equipment (including circuit boards);

PACKING INSTRUCTION 967 *(continued)*

Each consignment with packages bearing the lithium battery handling label must be accompanied with a document 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 must be followed in the event the package is damaged, to include inspection and repacking if necessary; and
- a telephone number for additional information.

A Shipper's Declaration for Dangerous Goods is not required.

△ Where a consignment includes packages bearing the lithium battery handling label, the words "Lithium ion batteries in compliance with Section II of PI 967" must be included on the air waybill, when an air waybill is used. The information should be shown in the "Nature and Quantity of Goods" box of the air waybill.

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Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

Overpacks—Section II

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Individual packages each complying with the requirements of Section II may be placed in an overpack. The overpack may also contain packages of dangerous goods or goods not subject to these Regulations provided that there are no packages enclosing different substances which might react dangerously with each other. An overpack must be marked with the word "Overpack" and labelled with the lithium battery label (Figure 7.4.H), unless the label(s) on the package(s) inside the overpack are visible, or a label is not required.



TABLE 967-II

	Passenger aircraft	Cargo Aircraft Only
Net quantity of lithium ion cells or batteries per package	5 kg	5 kg

OUTER PACKAGINGS			
Type	Drums	Jerricans	Boxes

PACKING INSTRUCTION 968

STATE VARIATIONS: USG-02/03

△ OPERATOR VARIATIONS: 5X-02/07, AC-06, AM-09, BA-02, CI-01, CZ-08, D0-03, EY-04, QR-04, QY-03, SK-01, US-01, UX-07

Introduction

This instruction applies to lithium metal or lithium alloy cells and batteries (UN 3090) on passenger and Cargo Aircraft Only.

△ The general requirements apply to all lithium metal batteries prepared for transport according to this packing instruction:

- Section IA applies to lithium metal cells with a lithium metal content in excess of 1 g and lithium metal batteries with a lithium metal content in excess of 2 g, or to quantities of lithium metal cells or batteries in excess of those permitted in Section IB of this packing instruction which must be assigned to Class 9 and are subject to all of the applicable requirements of these Regulations;
- Section IB applies to lithium metal cells with a lithium metal content not exceeding 1 g and lithium metal batteries with a lithium metal content not exceeding 2 g packed in quantities that exceed the allowance permitted in Section II, Table 968-II; and
- Section II applies to lithium metal cells with a lithium metal content not exceeding 1 g and lithium metal batteries with a lithium metal content not exceeding 2 g packed in quantities not exceeding the allowance permitted in Section II, Table 968-II.

PACKING INSTRUCTION 968 (continued)

△ General Requirements

The following requirements apply to all lithium metal or lithium alloy cells and batteries:

- (a) each cell and battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, subsection 38.3. However, batteries and cells manufactured before 1 January 2014 conforming to a design type tested according to the requirements of the 5th revised edition of the UN *Manual of Tests and Criteria*, Part III, subsection 38.3 may continue to be transported;

Note:

Batteries, including those which have been refurbished or otherwise altered, are subject to these tests irrespective of whether the cells of which they are composed have been so tested.

- (b) cells and batteries must be manufactured under a quality management program as described in 3.9.2.6(e);
(c) cells and 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);
(d) waste lithium batteries and lithium batteries being shipped for recycling or disposal are prohibited from air transport unless approved by the appropriate national authority of the State of origin and the State of the operator;
(e) 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.

Section IA

These requirements apply to apply to lithium metal cells with a lithium metal content in excess of 1 g and lithium metal batteries with a lithium metal content in excess of 2 g that have been determined to meet the criteria for assignment to Class 9.

The General Packing Requirements of 5.0.2 must be met.

Each cell or battery must:

1. meet the General Requirements, above;
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 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).

Additional Requirements—Section IA

- lithium metal cells and batteries must be placed in inner packagings that completely enclose the cell or battery then placed in an outer packaging. The completed package for the cells or batteries must meet the Packing Group II performance standards;
- 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 or protective enclosures (e.g. in fully enclosed or wooden slated crates). The packagings need not meet the requirements of Section 6 of these Regulations. The packagings must be approved by the appropriate national authority of the State of origin. A copy of the document of approval must accompany the consignment.

Lithium metal and lithium alloy cells and batteries prepared for transport on Passenger Aircraft as Class 9:

- must be packed in either a rigid metal intermediate or a metal outer packaging;
- cells and batteries must be surrounded by cushioning material that is non-combustible and non-conductive before being placed in either the metal intermediate or metal outer packaging;
- when the package does not meet the above requirements, the package(s) must bear the "Cargo Aircraft Only" label and the Shipper's Declaration must indicate "Cargo Aircraft Only".

PACKING INSTRUCTION 968 (continued)

TABLE 968-IA

UN number						Net quantity per package Passenger aircraft				Net quantity per package Cargo Aircraft Only					
UN 3090 Lithium metal batteries						2.5 kg				35 kg					

OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal	
Spec.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N	

Section IB

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Section IB requirements apply to lithium metal cells with a lithium metal content not exceeding 1 g and lithium metal batteries with a lithium metal content not exceeding 2 g packed in quantities that exceed the allowance permitted in Section II, Table 968-II.

Quantities of lithium ion cells or batteries that exceed the allowance permitted in Section II, Table 968-II must be assigned to Class 9 and are subject to all of the applicable provisions of these Regulations (including the General Requirements of this packing instruction), except for the following:

- (a) the provisions of Section 6; and
- (b) a Shipper's Declaration is not required, provided that the following information must be contained on the air waybill when used, or in the appropriate location on alternative transport documentation. The information required by 2, 3 and 4 below must be shown in the "Nature and Quantity of Goods" box of the air waybill. Where an agreement exists with the operator, the shipper may provide the information by electronic data processing (EDP) or electronic data interchange (EDI) techniques. The information required is as follows and should be shown in the following order:
 1. the name and address of the shipper and consignee;
 2. UN 3090;
 3. Lithium metal batteries, PI 968, IB;
 4. the number of packages and the gross weight of each package.

Lithium metal cells and batteries may be offered for transport if they meet all of the following:

- (a) for cells, the lithium content is not more than 1 g; and
- (b) for batteries, the aggregate lithium content is not more than 2 g.

Cells and batteries must be packed in strong outer packagings that conform to 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1.

Additional Requirements–Section IB

Cells and batteries must be packed in inner packagings that completely enclose the cell or battery then placed in a strong outer packaging.

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 consignment must be accompanied with a document 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 must be followed in the event the package is damaged, to include inspection and repacking if necessary; and
- a telephone number for additional information.

Each package must be labelled with a lithium battery handling label (Figure 7.4.H) in addition to the Class 9 hazard label (Figure 7.3.V).

PACKING INSTRUCTION 968 (continued)

Each package must be marked in accordance with the requirements of 7.1.5.1(a) and (b) and in addition the gross weight must be marked on the package.

TABLE 968-IB

	Quantity per package Passenger aircraft	Quantity per package Cargo Aircraft Only
Lithium metal cells and batteries	2.5 kg G	2.5 kg G

OUTER PACKAGINGS

Type	Drums	Jerricans	Boxes

Section II

Lithium metal or lithium alloy cells and batteries meeting the requirements in this section are not subject to other additional requirements of these Regulations except for:

- (a) dangerous goods in passenger and crew baggage (Subsection 2.3). Only those lithium metal batteries as specifically permitted may be carried in carry-on baggage;
- (b) dangerous goods in air mail (Subsection 2.4);
- (c) reporting of dangerous goods accidents, incidents and other occurrences (9.6.1 and 9.6.2).

Lithium metal or lithium alloy cells and batteries offered for transport must meet the General Requirements of this packing instruction and:

1. for cells, the lithium content is not more than 1 g; and
2. for batteries, the aggregate lithium content is not more than 2 g;

Cells and batteries must be packed in strong outer packagings that conform to 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1.

Additional Requirements—Section II

Cells and batteries must be packed in inner packagings that completely enclose the cell or battery then placed in a strong outer packaging.

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 consignment must be accompanied with a document 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 must be followed in the event the package is damaged, to include inspection and repacking if necessary; and
- a telephone number for additional information.

Each package must be labelled with a lithium battery handling label (Figure 7.4.H);

A Shipper's Declaration for Dangerous Goods is not required.

△ The words "Lithium metal batteries in compliance with Section II of PI 968" must be included on the air waybill, when an air waybill is used. The information should be shown in the "Nature and Quantity of Goods" box of the air waybill.

Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

Overpacks—Section II

Individual packages each complying with the requirements of Section II may be placed in an overpack. The overpack may also contain packages of dangerous goods or goods not subject to these Regulations provided that there are no packages enclosing different substances which might react dangerously with each other. An overpack must be marked with the word "Overpack" and labelled with the lithium battery label (Figure 7.4.H), unless the label(s) on the package(s) inside the overpack are visible.



PACKING INSTRUCTION 968 (continued)



TABLE 968-II

Contents	Lithium metal cells and/or batteries with a lithium content of 0.3 g or less	Lithium metal cells with a lithium content of more than 0.3 g but not more than 1 g	Lithium metal batteries with a lithium content of more than 0.3 g but not more than 2 g
1	2	3	4
Maximum number of cells/batteries per package	No limit	8 cells	2 Batteries
Maximum net quantity per package	2.5 kg	N/A	N/A

Cells and/or batteries specified in columns 2, 3 and 4 of Table 968-II must not be combined in the same package.

OUTER PACKAGINGS

Type	Drums	Jerricans	Boxes

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PACKING INSTRUCTION 969

STATE VARIATIONS: USG-02/03

OPERATOR VARIATIONS: 5X-07, AC-06, AM-09, CI-01, CZ-08, D0-03, EY-04, QR-04, QY-03, SK-01, US-01

Introduction

This instruction applies to lithium metal or lithium alloy cells and batteries packed with equipment (UN 3091) on passenger and Cargo Aircraft Only.

The general requirements apply to all lithium metal batteries packed with equipment prepared for transport according to this packing instruction:

- Section I applies where equipment is packed with lithium metal cells with a lithium metal content in excess of 1 g or lithium metal batteries with a lithium metal content in excess of 2 g which must be assigned to Class 9 and are subject to all of the applicable requirements of these Regulations; and
- Section II applies where equipment is packed with lithium metal cells with a lithium metal content not exceeding 1 g or lithium metal batteries with a lithium metal content not exceeding 2 g.

△ General Requirements

The following requirements apply to all lithium metal or lithium alloy cells and batteries:

- (a) each cell and battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, subsection 38.3. However, batteries and cells manufactured before 1 January 2014 conforming to a design type tested according to the requirements of the 5th revised edition of the UN *Manual of Tests and Criteria*, Part III, subsection 38.3 may continue to be transported;

Note:

Batteries, including those which have been refurbished or otherwise altered, are subject to these tests irrespective of whether the cells of which they are composed have been so tested.

- (b) cells and batteries must be manufactured under a quality management program as described in 3.9.2.6(e);
 (c) cells and 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);
 (d) 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.

Section I

These requirements apply to lithium metal cells with a lithium metal content in excess of 1 g and lithium metal batteries with a lithium metal content in excess of 2 g that have been determined to meet the criteria for assignment to Class 9.

The General Packing Requirements of 5.0.2 must be met.

PACKING INSTRUCTION 969 *(continued)*

Each cell or battery must:

1. meet the General Requirements, above;
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 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).

Additional Requirements—Section I

- lithium metal cells or batteries must:
 - be placed in inner packagings that completely enclose the cell or battery then placed in an outer packaging. The completed package for the cells or batteries must meet the Packing Group II performance standards; or
 - be placed in inner packagings that completely enclose the cell or battery, then placed with equipment in a package that meets the Packing Group II performance standards.
- the equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation;
- for the purpose of this packing instruction, “equipment” means apparatus requiring the lithium batteries with which it is packed for its operation.

Lithium metal and lithium alloy cells and batteries prepared for transport on Passenger Aircraft as Class 9:

- must be packed in either a rigid metal intermediate or a metal outer packaging;
- cells and batteries must be surrounded by cushioning material that is non-combustible and non-conductive, and being placed in either the metal intermediate or metal outer packaging;
- when the package does not meet the above requirements, the package(s) must bear the “Cargo Aircraft Only” label and the Shipper’s Declaration must indicate “Cargo Aircraft Only”.

TABLE 969-I

UN number		Net quantity per package Passenger aircraft						Net quantity per package Cargo Aircraft Only					
UN 3091 Lithium metal batteries packed with equipment		5 kg						35 kg					

OUTER PACKAGINGS

Type	Drums						Jerricans				Boxes						
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal
Spec.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N

Section II

Lithium metal or lithium alloy cells and batteries meeting the requirements in this section are not subject to other additional requirements of these Regulations except for:

- (a) dangerous goods in passenger and crew baggage (Subsection 2.3). Only those lithium metal batteries as specifically permitted may be carried in carry-on baggage;
- (b) dangerous goods in air mail (Subsection 2.4);
- (c) reporting of dangerous goods accidents, incidents and other occurrences (9.6.1 and 9.6.2).

Lithium metal or lithium alloy cells and batteries offered for transport must meet the General Requirements of this packing instruction and:

1. for cells, the lithium content is not more than 1 g; and
2. for batteries, the aggregate lithium content is not more than 2 g;

Cells and batteries must be packed in strong outer packagings that conform to 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1.

Additional Requirements—Section II

Lithium metal cells and batteries must:

- be placed in inner packagings that completely enclose the cell or battery then placed in a strong outer packaging; or

PACKING INSTRUCTION 969 *(continued)*

- be placed in inner packagings that completely enclose the cell or battery, then placed with equipment in a strong outer packaging.

The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.

The maximum number of batteries in each package must be the minimum number required to power the equipment plus two spares.

Each package of cells or batteries, or the completed 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 consignment must be accompanied with a document 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 must be followed in the event the package is damaged, to include inspection and repacking if necessary; and
- a telephone number for additional information.

Each package must be labelled with a lithium battery handling label (Figure 7.4.H);

A Shipper's Declaration for Dangerous Goods is not required.

△ The words "Lithium metal batteries in compliance with Section II of PI 969" must be included on the air waybill, when an air waybill is used. The information should be shown in the "Nature and Quantity of Goods" box of the air waybill.

Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

Overpacks—Section II

Individual packages each complying with the requirements of Section II may be placed in an overpack. The overpack may also contain packages of dangerous goods or goods not subject to these Regulations provided that there are no packages enclosing different substances which might react dangerously with each other. An overpack must be marked with the word "Overpack" and labelled with the lithium battery label (Figure 7.4.H), unless the label(s) on the package(s) inside the overpack are visible.



TABLE 969-II

	Passenger aircraft	Cargo Aircraft Only	
Net quantity of lithium metal cells or batteries per package	5 kg	5 kg	
OUTER PACKAGINGS			
Type	Drums	Jerricans	Boxes

PACKING INSTRUCTION 970

STATE VARIATIONS: USG-02/03

OPERATOR VARIATIONS: 5X-07, AC-06, AM-09, CI-01, CX-08, CZ-08, D0-03, EY-04, KA-08, LD-07, QR-04, QY-03, SK-01, US-01, UX-07

Introduction

This instruction applies to lithium metal or lithium alloy cells and batteries contained in equipment (UN 3091) on passenger and Cargo Aircraft Only.

The general requirements apply to all lithium metal and lithium alloy cells and batteries contained in equipment prepared for transport according to this packing instruction:

PACKING INSTRUCTION 970 (continued)

- Section I applies where equipment contains lithium metal cells with a lithium metal content in excess of 1 g or lithium metal batteries with a lithium metal content in excess of 2 g which must be assigned to Class 9 and are subject to all of the applicable requirements of these Regulations; and
- Section II applies where equipment contains lithium metal cells with a lithium metal content not exceeding 1 g or lithium metal batteries with a lithium metal content not exceeding 2 g.

△ General Requirements

The following requirements apply to all lithium metal or lithium alloy cells and batteries:

- (a) each cell and battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, subsection 38.3. However, batteries and cells manufactured before 1 January 2014 conforming to a design type tested according to the requirements of the 5th revised edition of the UN *Manual of Tests and Criteria*, Part III, subsection 38.3 may continue to be transported;

Note:

Batteries, including those which have been refurbished or otherwise altered, are subject to these tests irrespective of whether the cells of which they are composed have been so tested.

- (b) cells and batteries must be manufactured under a quality management program as described in 3.9.2.6(e);
 (c) cells and 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);
 (d) 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;
 (e) equipment must be equipped with an effective means of preventing accidental activation;
 (f) equipment containing cells or batteries must be packed in strong outer packagings that conform to 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1.
 (g) the equipment containing the cells or batteries must be secured against movement within the outer packaging and be packed so as to prevent accidental operation during air transport;

Section I

These requirements apply to lithium metal cells with a lithium metal content in excess of 1 g and lithium metal batteries with a lithium metal content in excess of 2 g that have been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

1. meet the General Requirements, above;
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 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).

Additional Requirements—Section I

- 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;
- the quantity of lithium metal contained in any piece of equipment must not exceed 12 g per cell and 500 g per battery.

TABLE 970-I

UN number	Net quantity per package Passenger aircraft	Net quantity per package Cargo Aircraft Only
UN 3091 Lithium metal batteries contained in equipment	5 kg	35 kg

OUTER PACKAGINGS—Strong outer packagings, such as:

Type	Drums					Jerricans				Boxes							
Desc.	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Reconstituted wood	Fibre-board	Plastic	Other metal

**PACKING INSTRUCTION 970 (continued)****Section II**

Lithium metal or lithium alloy cells and batteries meeting the requirements in this section are not subject to other additional requirements of these Regulations except for:

- (a) dangerous goods in passenger and crew baggage (Subsection 2.3). Only those lithium metal batteries as specifically permitted may be carried in carry-on and checked baggage;
- (b) dangerous goods in air mail (Subsection 2.4);
- (c) reporting of dangerous goods accidents, incidents and other occurrences (9.6.1 and 9.6.2).

Lithium metal or lithium alloy cells and batteries offered for transport must meet the General Requirements of this packing instruction and:

1. for cells, the lithium content is not more than 1 g; and
2. for batteries, the aggregate lithium content is not more than 2 g;

Devices such as radio frequency identification (RFID) tags, watches and temperature loggers, which are not capable of generating a dangerous evolution of heat, may be transported when intentionally active. When active, these devices must meet defined standards for electromagnetic radiation to ensure that the operation of the device does not interfere with aircraft systems.

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Additional Requirements—Section II

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 cell or 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 7.4.H), except for button cell batteries installed in equipment (including circuit boards);

Each consignment with packages bearing the lithium battery handling label must be accompanied with a document 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 must be followed in the event the package is damaged, to include inspection and repacking if necessary; and
- a telephone number for additional information.

A Shipper's Declaration for Dangerous Goods is not required.

△ Where a consignment includes packages bearing the lithium battery handling label, the words "Lithium metal batteries in compliance with Section II of PI 970" must be included on the air waybill, when an air waybill is used. The information should be shown in the "Nature and Quantity of Goods" box of the air waybill.

Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

Overpacks—Section II

Individual packages each complying with the requirements of Section II may be placed in an overpack. The overpack may also contain packages of dangerous goods or goods not subject to these Regulations provided that there are no packages enclosing different substances which might react dangerously with each other. An overpack must be marked with the word "Overpack" and labelled with the lithium battery label (Figure 7.4.H), unless the label(s) on the package(s) inside the overpack are visible, or a label is not required.

**TABLE 970-II**

	Passenger aircraft	Cargo Aircraft Only
Net quantity of lithium metal cells or batteries per package	5 kg	5 kg

OUTER PACKAGINGS

Type	Drums	Jerricans	Boxes
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PACKING INSTRUCTION 971

This instruction applies to UN 3499 on passenger aircraft and Cargo Aircraft Only (see also Special Provision A186).

The General Packing Requirements of 5.0.2.4.1 and 5.0.2.11(a) must be met.

For the purposes of this packing instruction, a capacitor is considered an inner packaging.

UN number	Net quantity per package Passenger aircraft	Net quantity per package Cargo Aircraft Only
UN 3499 Capacitor, electric double layer	No limit	No limit

Additional Packing Requirements

- each capacitor must be transported in an uncharged state. The capacitor or, when fitted in a module, the module must be fitted with a metal strap connecting the terminals;
- capacitors must be securely cushioned in the outer packagings.

OUTER PACKAGINGS—Strong outer packagings, such as:

Type	Drums					Jerricans					Boxes					
	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic
Desc.																









SECTION 6—PACKAGING SPECIFICATIONS AND PERFORMANCE TESTS

Note:

The requirements found in this Section do not apply to Class 7, radioactive material. Packaging specifications and performance tests for radioactive material packages will be found in Section 10.

6.0 General Provisions

6.0.1 Introduction

6.0.1.1 This Section contains the specifications, tests and specification marking requirements for the UN specification packagings, packagings for refrigerated liquefied gases and test criteria for Limited Quantity Packagings.

6.0.1.2 The specifications, tests and marking requirements for radioactive material packagings will be found in Section 10.

6.0.1.3 The requirements for packagings in 6.1 and 6.2 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 6.1 and 6.2, provided they are equally effective, acceptable to the appropriate authority and are able to successfully withstand the tests described in 5.0.2.11 and 6.3. Methods of testing other than those described in these Regulations are acceptable, provided they are equivalent.

6.0.1.4 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 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 Subsections 6.3 to 6.5 and the pressure differential requirements of 5.0.2.9, as applicable.

6.0.2 Nomenclature

See Appendix A, the Glossary, for definitions of some of the terms used in this Section. See especially the definitions for package, packaging, packing and overpack.

6.0.3 Codes Used to Designate Types of UN Packagings

6.0.3.1 Outer/Single Packagings

A two or three-character code is used for designating packagings other than inner packagings, comprising:

- a 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 applicable, by a numeral indicating the category of packaging within the kind to which the packaging belongs.

6.0.3.2 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 indicates the material of the outer packaging.

6.0.3.3 Combination Packagings

Only the code number for the outer packaging is used.

6.0.3.4 Packaging Type Code

The following numerals must be used for the kinds of packaging:

Type Code—Packaging

- 1—Drum
- 2—Reserved
- 3—Jerrican
- 4—Box
- 5—Bag
- 6—Composite packaging

6.0.3.5 Packaging Material Code

The following capital letters must be used for the types of material:

Material Code—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, multi-wall
- N—Metal (other than steel or aluminium)
- P—Glass, porcelain or stoneware (not used in these Regulations)

Note:

"Plastic material" is taken to include other polymeric materials such as rubber.

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6.0.3.6 Packaging Qualifying Codes

Some packagings may show a code following the packaging code. These codes have the following meaning:

6.0.3.6.1 The letter "V" may follow the packaging code, this signifies a "Special Packaging" conforming to the requirements in 6.3.1.2. The letter "U" may follow the packaging code, this signifies a "Special Packaging" for infectious substances conforming to the requirements in 6.5.2.

6.0.3.6.2 The letter "W" may follow the packaging code, this signifies that the packaging, although of the same type indicated by the code, is manufactured to a specification different from that in Subsection 6.2 and is considered equivalent under the requirements of 6.0.1.3.

6.0.3.6.3 The letter "T" may follow the packaging code, this signifies a "Salvage Packaging" conforming to the requirements of 5.0.1.6, 6.0.6 and Subsection 6.7.

6.0.3.7 Inner Packagings

Other than for aerosols, where a three or four character code is used to identify the type of material and construction and performance test standard, inner packagings are simply identified based on the material from which they are manufactured, e.g. glass, plastic, metal, etc.

Note:

Table 5.0.B contains a list of the inner packagings and Table 5.0.C lists the UN outer/single packagings used in air transport by type and description together with their specification codes. Also included are the reference paragraph numbers in which the design criteria are specified.

6.0.4 Marking of UN Specification Packagings

OPERATOR VARIATION: EI-02

6.0.4.0 Introduction

6.0.4.0.1 The marking indicates that the packaging which bears it corresponds to a successfully tested design type and that it complies with the provisions of Subsections 6.2 and 6.3 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.

6.0.4.0.2 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 tests that have been met.

6.0.4.0.3 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 (specific gravity), determined by taking into account the factor 1.5 or 2.25 indicated in the test requirements for packagings in Subsection 6.3, as appropriate. 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 of relative density 2.7, provided of course that all the performance criteria can still be met with the higher relative density.

6.0.4.0.4 Inner packagings are not required to be marked.

6.0.4.1 Applicability

Except for some packagings intended for gases of Class 2, radioactive materials of Class 7 and some packagings used for Class 9 items, all single packagings and all outer packagings of combination packages and of composite packages which have been manufactured and tested in accordance with the UN specifications and tests must bear markings which are durable, legible and placed in a location and of such size relative to the package as to be readily visible. For packages with a gross weight exceeding 30 kg the markings, or a duplicate thereof, must appear on the top or on the side of the package. Letters, numbers and symbols must be at least 12 mm high, except for packages of 30 L or 30 kg capacity or less, when they must be at least 6 mm in height. For packages of 5 L or 5 kg or less the letters, numbers and symbols must be of an appropriate size.

Note:

Handwritten specification marking is not acceptable. Markings which are not printed or embossed directly on to packaging may be open to additional airline scrutiny so as to ensure the validity of the marking. In such cases, and

to prevent shipment delays, shippers are encouraged to provide contact details with the shipment so that the validity of the mark can be confirmed.

6.0.4.2 Format of Marking

6.0.4.2.1 The marking must consist of:

- (a) the United Nations packaging symbol as shown in Figure 6.0.A:

FIGURE 6.0.A
UN Packaging Symbol

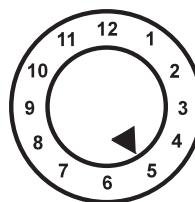


This symbol must not be used for any purpose other than certifying that a packaging complies with the relevant requirements in Section 6. For embossed metal packagings the capital letters "UN" may be applied as the symbol;

- (b) the code number designating the type of packagings according to 6.0.3;
- (c) the letter X, Y, or Z, designating the packing group(s) for which the design type has been successfully tested:
 - X for Packing Group I (these packagings may be used for Packing Group I, II and III articles and substances); or
 - Y for Packing Group II (these packagings may be used for Packing Group II and III articles and substances); or
 - Z for Packing Group III (these packagings may be used for Packing Group III articles and substances only);
- (d) followed by:
 - for single packagings intended to contain liquids, a number indicating 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; or
 - for packagings intended to contain solids or inner packagings, a number corresponding to the maximum gross weight, in kilograms, at which the design type has been tested;
- (e) followed by:
 - 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; or
 - for packagings intended to contain solids or inner packagings, the letter "S";
- (f) followed by 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 shown in Figure 6.0.B:

FIGURE 6.0.B
Example of Indicating the Month of Manufacture



(g) followed by the State authorizing the allocation of the mark, indicated by the international Vehicle Registration Code (VRI Code) as indicated in Appendix D.1 and D.2;

(h) followed by the name of the manufacturer or other identification of the packaging specified by the appropriate national authority.

6.0.4.2.2 The markings illustrated in Tables 6.0.C, 6.0.D, 6.0.E and 6.5.A are shown in either two or three lines, however the markings can be applied in a single or in multiple lines provided the information is given in the correct sequence. Additionally, the elements of the marking required in subsection 6.0.4.2.1 and when appropriate subsections 6.0.5, 6.0.6 and 6.5.3.1 must be clearly separated, e.g. by a "/" symbol or a space so as to be easily identified.

Note:

For other required package or overpack markings see Subsection 7.1.

6.0.4.3 Metal Drums

In addition to the durable markings prescribed in 6.0.4.2, every new metal drum of a capacity greater than 100 L must bear the marks described in 6.0.4.2(a) to 6.0.4.2(f) 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, 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 6.0.4.2(g) and 6.0.4.2(h) must not be applied in a permanent form (e.g. embossed) except as provided for in 6.0.5.2.

6.0.4.4 Recycled Plastic Material

Packagings manufactured with recycled plastic material as defined in Appendix A must be marked "REC". This mark must be placed near the mark prescribed in 6.0.4.1 and 6.0.4.2.

6.0.5 Markings on Reconditioned and Remanufactured UN Specification Packagings

6.0.5.0 Every packaging liable to undergo a reconditioning process other than those referred to in 6.0.4.3 must bear the marks indicated in 6.0.4.2(a) to 6.0.4.2(f) 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 6.0.4.2.

6.0.5.1 For remanufactured 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. Every other remanufactured metal drum must bear the markings indicated in 6.0.4.2(a) to 6.0.4.2(f) in a permanent form (e.g. embossed) on the top head or side.

6.0.5.2 Metal drums made from materials, (e.g. stainless steel), designed to be reused repeatedly may bear the markings indicated in 6.0.4.2(g) and 6.0.4.2(h) in permanent form (e.g. embossed).

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6.0.5.3 Marking must be applied in the sequence of the subparagraphs in 6.0.4; each element of the marking required in these subparagraphs and when appropriate, subparagraphs (a) to (d) of 6.0.5.4, must be clearly separated, e.g. by a slash or space, so as to be easily identified; for examples see Tables 6.0.C, 6.0.D and 6.5.A. Any additional markings authorized by the appropriate national authority must still enable the parts of the mark to be correctly identified with reference to 6.0.4.

6.0.5.4 After reconditioning a packaging, the reconditioner must apply to it, in sequence, a durable marking showing:

- (a) the State in which the reconditioning was carried out, indicated by the international Vehicle Registration Code (VRI Code) as indicated in Appendix D.1 and D.2;
- (b) followed by the name of the reconditioner or other identification of the packages specified by the appropriate national authority;
- (c) followed by the year of reconditioning; and
- (d) followed by the letter "R" and, for every packaging successfully passing the leakproofness test (see 6.3.4), the additional letter "L".

6.0.5.5 When, after reconditioning, the markings required by 6.0.4.2(a) to 6.0.4.2(e) 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 6.0.5.4. The markings must not identify a greater performance capability than that for which the original design type had been tested and marked.

6.0.6 Markings on Salvage Packagings

△ OPERATOR VARIATIONS: 9W-05, AA-04, AC-03, EI-03, EY-06, KQ-06, KZ-08, ME-05, MH-03, MP-02, OM-07, OU-08, SV-06, UX-09

6.0.6.1 Salvage packagings which meet the requirements of 5.0.1.6 and Subsection 6.7 must be marked with a packaging marking (see Table 6.0.E).

6.0.6.2 The packaging marking consists of:

- (a) the United Nations packaging symbol;
- (b) the code number designating the type of packaging according to 6.0.3 accompanied by the letter "T" indicating salvage packaging;
- (c) the letter "Y" designating that the design type has been successfully tested to meet Packing Group II requirements (see 6.0.4.2(c));
- (d) followed by:
 - for single packagings intended to contain liquids, a number indicating 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; or
 - for packagings intended to contain solids or inner packagings, a number corresponding to the maximum gross weight, in kilograms, at which the design type has been tested;
- (e) followed by:
 - 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; or
 - for packagings intended to contain solids or inner packagings, the letter "S" (all salvage packagings);
- (f) followed by the last two digits of the year during which the packaging was manufactured. For 1H1, 1H2, 3H1 and 3H2 packagings see 6.0.4.2(f);
- (g) followed by the State authorizing the allocation of the mark indicated by the international Vehicle Registration Code (VRI Code) as indicated in Appendix D.1 and D.2;
- (h) followed by the name of the manufacturer or other identification of the packaging specified by the appropriate national authority.

6.0.6.3 The markings illustrated in Tables 6.0.C, 6.0.D, 6.0.E and 6.5.A are shown in either two or three lines, however the markings can be applied in a single or in multiple lines provided the information is given in the correct sequence. Additionally, the elements of the marking required in subsection 6.0.4.2.1 and when appropriate subsections 6.0.5 and 6.5.3.1 must be clearly separated, e.g. by a "/" symbol or a space so as to be easily identified.

Note:

For other required package or overpack markings see Subsection 7.1.

TABLE 6.0.C
Examples of UN Specification Markings—New Packaging (6.0.4.2)

Packagings	UN Symbol (a)	Code (b)	Packing Group (c)	Gross Weight (d)	Solid or IP (e)	Relative Density (d)	Test Pressure (e)	Year of Manufacture (f)	State (g)	Manufacturer (h)	Complete Code
Fibreboard box		4G	Y	145	S			13	NL	VL823	4G/Y145/S/13 NL/VL823
Fibreboard box		4G	X, Y, Z	20, 30, 45	S			13	NL	ABC1234	4G/X20-Y30-Z45/S/13 NL/ABC1234
Steel drum to contain liquids		1A1	Y			1.4	150	13	NL	VL824	1A1/Y1.4/150/13 NL/VL824
Steel drum to contain solids or inner packagings		1A2	Y	150	S			13	NL	VL825	1A2/Y150/S/13 NL/VL825
Plastic box of equivalent specification		4HW	Y	136	S			13	NL	VL826	4HW/Y136/S/13 NL/VL826

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TABLE 6.0.D
Examples of UN Specification Markings—Reconditioned Packaging (6.0.5)

Example	UN Symbol	Original Packaging Code	State	Name	Year	Complete Code
1		1A1/Y1.4/150/86/NL/VL824	NL	RB	13RL	1A1/Y1.4/150/86 NL/RB/13RL
2		1A2/Y150/S/86/USA/ABC PACK	USA	RB	13R	1A2/Y150/S/86 USA/RB/13R

TABLE 6.0.E
Example of UN Specification Markings—Salvage Packagings (6.0.6)

UN Symbol (a)	Code (b)	Packing Group (c)	Gross Weight (d)	Solid or IP (e)	Year of Manufacture (f)	State (g)	Manufacturer (h)	Complete Code
	1A2T	Y	300	S	13	USA	abc	1A2T/Y300/S/13 USA/abc

Editorial Note:

Information on the markings for infectious substances packagings has been moved to Subsection 6.5.

6.1 Requirements for Inner Packaging

6.1.1 Glass

6.1.1.1 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.

6.1.1.2 Glass ampoules must be heat-sealed, gas and liquid-tight and they must not react chemically when coming into contact with the contents. If glass tubes are also permitted by the appropriate national authority for liquefied gases, they must be thick-walled and free of defects.

6.1.2 Plastic

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.

6.1.3 Metal

Packagings must be well constructed. 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.

6.1.4 Paper Bags

Shipping sack kraft paper, or equivalent, of at least two sheets of paper must be used.

6.1.5 Plastic Bags

The weld-seams and closures of such bags must be sift-proof. Plastic bags must have a minimum thickness of 0.1 mm.

6.1.6 Fibre Cans or Boxes

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.

6.1.7 IP7 and IP7A—Receptacles (Aerosols)

6.1.7.0 Introductory Note

6.1.7.1 follows the North American practice and provides two absolute levels of pressure testing while 6.1.8.1 shows the alternative European practice.

6.1.7.1 Materials

Uniform quality steel plate or non-ferrous metal of uniform drawing quality must be used:

- **IP7**—receptacles must have a minimum wall thickness of 0.18 mm;
- **IP7A**—receptacles must have a minimum wall thickness of 0.20 mm.

6.1.7.2 Construction

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.

6.1.7.3 Performance Test

One out of each lot of 25,000 or less receptacles successively produced per day must be pressure-tested to destruction:

- **IP7**—receptacles must not burst below 1,650 kPa gauge pressure (16.5 bar);
- **IP7A**—receptacles must not burst below 1,860 kPa gauge pressure (18.6 bar).

6.1.8 IP7B—Receptacles (Aerosols)

6.1.8.0 Introductory Note

6.1.8.1 follows the European practice and provides for a level of pressure testing related to the actual internal pressure within prescribed limits, 6.1.7.1 shows the alternative North American practice.

6.1.8.1 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 L 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.

6.1.8.2 Performance Tests

The following tests are required:

- Hydraulic Pressure Test (see 6.1.8.2.1);
- Bursting Test (see 6.1.8.2.2);
- Leakage Test (see 6.1.8.2.3).

6.1.8.2.1 Hydraulic Pressure

The hydraulic pressure test must consist of:

- (a) *Number of samples*—six receptacles;
- (b) *Method of testing and pressure applied*—the pressure must be applied slowly. The test pressure must be 50% higher than the internal pressure at 50°C but at least 1,000 kPa (10 bar). The test pressure must be applied for 25 seconds;
- (c) *Criteria for passing the test successfully*—the receptacles 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 is allowed, provided that the receptacle passes the bursting test.

6.1.8.2.2 Bursting Test

The bursting test must consist of:

- (a) *Number of samples*—six receptacles. These may be the same ones used in the hydraulic pressure test;
- (b) *Method of testing and pressure applied*—a hydraulic pressure at least 20% higher than the test pressure as mentioned in 6.1.8.2.1 must be applied;
- (c) *Criteria for passing the test successfully*—no receptacles may leak.

6.1.8.2.3 Leakage Test

The leakage test must consist of:

- (a) *Number of samples*—every aerosol;
- (b) *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% of the capacity of the aerosol at 50°C. Where an aerosol is sensitive to heat, the temperature of the bath may be set between 20°C and 30°C. In this case, one receptacle in 2,000 must be tested at 50°C;
- (c) Equally effective methods of testing may also be used;
- (d) *Criteria for passing the test successfully*—the aerosol must not show visible permanent distortion or any leakage.

6.1.9 IP7C—Receptacles (Aerosols)

6.1.9.1 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 must be applied. No used material other than production residues or regrind from the same manufacturing process may be used. The packaging must be adequately resistant to ageing and to degradation caused either by the substance contained or by ultra violet radiation. Maximum capacity must not exceed 500 mL.

6.1.9.2 Performance Tests

The following tests are required:

- Drop Test (see 6.1.9.2.1);
- Hydraulic Pressure Test (see 6.1.9.2.2);
- Bursting Test (see 6.1.9.2.3);
- Leakage Test (see 6.1.9.2.4).

6.1.9.2.1 Drop Test

The Drop Test must consist of:

- (a) *Method of testing*—to ensure that creep does not affect the ability of the receptacle type to retain the contents, the receptacles must be dropped as follows:
 - three groups of twenty-five filled receptacles must 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.
- (b) *Criteria for passing the test successfully*—the receptacle must not break or leak.

6.1.9.2.2 Hydraulic Pressure Test

The hydraulic pressure test must consist of:

- (a) *Number of samples*—six receptacles;
- (b) *Method of testing and pressure applied*—the receptacles must resist a test pressure equal to at least 1,200 kPa;
- (c) *Criteria for passing the test successfully*—the receptacles 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 is allowed, provided that the receptacle passes the bursting test.

6.1.9.2.3 Bursting Test

The bursting test must consist of:

- (a) *Number of samples*—six receptacles. These may be the same ones used in the hydraulic pressure test;
- (b) *Method of testing and pressure applied*—a hydraulic pressure at least 20% higher than the test pressure as mentioned in 6.1.9.2.2 must be applied;
- (c) *Criteria for passing the test successfully*—no receptacles may leak.

6.1.9.2.4 Leakage Test

The leakage test must consist of:

- (a) *Number of samples*—every aerosol;
- (b) *Method of testing*—in accordance with 6.4.4.2.2.2 or 6.4.4.3 approved by the competent authority.

6.1.10 Metal or Plastic Flexible Tubes

The materials of construction of flexible tubes and their closures must, where in contact with the organic peroxide, not affect the thermal stability.

6.2 Specifications for UN Outer, Single and Composite Packagings

6.2.0 General

6.2.0.1 All packagings described in Subsection 6.2, must pass the tests in Subsection 6.3 which are applicable to the type of packaging and contents, unless specifically exempted by these Regulations.

6.2.0.2 Any permeation of the substance contained in the packaging must not constitute a danger under normal conditions of transport.

6.2.1 Steel Drums

6.2.1.1 This paragraph contains the specifications for:

- **1A1**—non-removable head steel drums;
- **1A2**—removable head steel drums.

6.2.1.2 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 L, "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".

6.2.1.3 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.

6.2.1.4 Chimes must be mechanically seamed or welded. Separate reinforcing rings may be applied.

6.2.1.5 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.

6.2.1.6 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 leak-proof 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 leak-proof.

6.2.1.7 Closure devices for removable head drums must be so designed and applied that they will remain secure and drums will remain leak-proof under normal conditions of transport. Gaskets or other sealing elements must be used with all removable heads.

6.2.1.8 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.

6.2.1.9 Maximum capacity of drum: 450 L.

6.2.1.10 Maximum net weight: 400 kg.

6.2.2 Aluminium Drums

6.2.2.1 This paragraph contains the specifications for:

- **1B1**—non-removable head aluminium drums;
- **1B2**—removable head aluminium drums.

6.2.2.2 Body and heads must be constructed of aluminium at least 99% 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.

6.2.2.3 All seams must be welded. Chime seams, if any, must be reinforced by the application of separate reinforcing rings.

6.2.2.4 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.

6.2.2.5 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 leak-proof under normal conditions of transport. Closure flanges must be welded in place so that the weld provides a leak-proof seam. Gaskets or other sealing elements must be used with closures, unless the closure is inherently leak-proof.

6.2.2.6 Closure devices for removable head drums must be so designed and applied that they will remain secure and drums will remain leak-proof under normal conditions of transport. Gaskets or other sealing elements must be used with all removable heads.

6.2.2.7 Maximum capacity of drum: 450 L.

6.2.2.8 Maximum net weight: 400 kg.

6.2.3 Plywood Drums

6.2.3.1 This paragraph contains the specifications for:

- 1D—plywood drums.

6.2.3.2 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.

6.2.3.3 At least two-ply plywood must be used for the body and at least three-ply plywood for heads; the plies must be firmly glued together by a water resistant adhesive with their grain crosswise.

6.2.3.4 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.

6.2.3.5 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.

6.2.3.6 Maximum capacity of drum: 250 L.

6.2.3.7 Maximum net weight: 400 kg.

6.2.4 Fibre Drums

6.2.4.1 This paragraph contains the specifications for:

- 1G—fibre drums.

6.2.4.2 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.

6.2.4.3 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.

6.2.4.4 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.

6.2.4.5 The assembled packaging must be sufficiently water resistant so as not to delaminate under normal conditions of transport.

6.2.4.6 Maximum capacity of drum: 450 L.

6.2.4.7 Maximum net weight: 400 kg.

6.2.5 Steel or Aluminium Jerricans

6.2.5.1 This paragraph contains the specifications for:

- 3A1—non-removable head steel jerricans;
- 3A2—removable head steel jerricans;
- 3B1—non-removable head aluminium jerricans;
- 3B2—removable head aluminium jerricans.

6.2.5.2 Body and heads must be constructed of steel sheet, of aluminium at least 99% 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.

6.2.5.3 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.

6.2.5.4 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 leak-proof under normal conditions of transport. Gaskets or other sealing elements must be used with closures, unless the closure is inherently leakproof.

6.2.5.5 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.

6.2.5.6 Maximum capacity of jerrican: 60 L.

6.2.5.7 Maximum net weight: 120 kg.

Note:

For the specification of 1H1 and 1H2 Plastic Drums see 6.2.6.

6.2.6 Plastic Drums and Jerricans

6.2.6.1 This paragraph contains specifications for:

- 1H1—non-removable head plastic drums;
- 1H2—removable head plastic drums;
- 3H1—non-removable head plastic jerricans;
- 3H2—removable head plastic jerricans.

6.2.6.2 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 Appendix A, no used material other than production residues or regrind from the same manufacturing process may be used. The packaging must be adequately resistant to ageing and to degradation caused either by the substance contained or by ultra-violet radiation. Any permeation of the substance contained must not constitute a danger under normal conditions of transport.

Note:

As specified in 5.0.2.15, unless otherwise approved by the appropriate national authority, the period of use permitted for plastic drums and jerricans is not more than 5 years from the date of manufacture of the receptacle.

6.2.6.3 If protection against ultra-violet 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, re-testing may be waived if the carbon black content does not exceed 2% by weight or if the

pigment content does not exceed 3% by weight; the content of inhibitors of ultra-violet radiation is not limited.

6.2.6.4 Additives serving purposes other than protection against ultra-violet 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, re-testing may be waived.

6.2.6.5 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.

6.2.6.6 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 leak-proof under normal conditions of transport. Gaskets or other sealing elements must be used with closures unless the closure is inherently leak-proof.

6.2.6.7 Closure devices for removable-head drums and jerricans must be so designed and applied that they will remain secure and leak-proof 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 leak-proof.

6.2.6.8 Maximum capacity of drums and jerricans:

- 1H1, 1H2: 450 L;
- 3H1, 3H2: 60 L.

6.2.6.9 Maximum net weight:

- 1H1, 1H2: 400 kg;
- 3H1, 3H2: 120 kg.

6.2.7 Metal Drums (Other than Aluminium or Steel)

6.2.7.1 This paragraph contains the specifications for:

- 1N1—non-removable head drum;
- 1N2—removable head drum.

6.2.7.2 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.

6.2.7.3 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 used metal or metal alloy.

6.2.7.4 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.

6.2.7.5 Openings for filling, emptying and venting in the bodies or heads of 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 used metal or metal alloy so that the seam join is leakproof. Gaskets or other sealing elements must be used with closures, unless the closure is inherently leakproof.

6.2.7.6 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.

6.2.7.7 Maximum capacity of drum: 450 L.

6.2.7.8 Maximum net weight: 400 kg.

△ 6.2.8 Steel, Aluminium or Other Metal Boxes

6.2.8.1 This paragraph contains the specifications for:

- 4A—steel boxes;
- 4B—aluminium boxes;
- 4N—metal boxes, other than steel or aluminium.

6.2.8.2 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.

6.2.8.3 Boxes must be lined with fibreboard or felt packing pieces as required 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.

6.2.8.4 Closures may be of any suitable type, they must remain secured under normal conditions of transport.

6.2.8.5 Maximum net weight: 400 kg.

6.2.9 Boxes of Natural Wood or Wooden Box

6.2.9.1 This paragraph contains the specifications for:

- 4C1—ordinary boxes of natural wood;
- 4C2—sift-proof walled boxes of natural wood.

6.2.9.2 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.

6.2.9.3 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.

6.2.9.4 For a 4C2 box, 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.

6.2.9.5 Maximum net weight: 400 kg.

6.2.10 Plywood Boxes

6.2.10.1 This paragraph contains the specifications for:

- **4D**—plywood boxes.

6.2.10.2 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.

6.2.10.3 Maximum net weight: 400 kg.

6.2.11 Reconstituted Wood Boxes

6.2.11.1 This paragraph contains the specifications for:

- **4F**—reconstituted wood boxes.

6.2.11.2 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. Other parts of the boxes may be made of other suitable material.

6.2.11.3 Boxes must be securely assembled by means of suitable devices.

6.2.11.4 Maximum net weight: 400 kg.

6.2.12 Fibreboard Boxes

6.2.12.1 This paragraph contains the specifications for:

- **4G**—fibreboard boxes.

6.2.12.2 Strong and good quality solid or double-faced corrugated fibreboard (single or multi-wall) 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 weight, 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/m² (see ISO International Standard 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.

6.2.12.3 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.

6.2.12.4 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.

6.2.12.5 Where closing is effected by gluing or taping, a water resistant adhesive must be used.

6.2.12.6 Boxes must be designed so as to provide a good fit to the contents.

6.2.12.7 Maximum net weight: 400 kg.

6.2.13 Plastic Boxes

6.2.13.1 This paragraph contains the specifications for:

- **4H1**—expanded plastic boxes;
- **4H2**—solid plastic boxes.

6.2.13.2 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 ageing and to degradation caused either by the substance contained or by ultra-violet radiation.

6.2.13.3 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.

6.2.13.4 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.

6.2.13.5 For solid plastic boxes, protection against ultra-violet 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% by weight or if the pigment content does not exceed 3% by weight; the content of inhibitors of ultra-violet radiation is not limited.

6.2.13.6 Additives serving purposes other than protection against ultra-violet 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.

6.2.13.7 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.

6.2.13.8 Maximum net weight:

- 4H1 box: 60 kg;
- 4H2 box: 400 kg.

6.2.14 Textile Bags

6.2.14.1 This paragraph contains the specifications for:

- **5L2**—sift-proof textile bags;
- **5L3**—water resistant textile bags.

6.2.14.2 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 intended use.

6.2.14.3 Bags, sift-proof, 5L2: The bag must be made sift-proof, for example by the use of:

- (a) paper bonded to the inner surface of the bag by a water resistant adhesive such as bitumen; or
- (b) plastic film bonded to the inner surface of the bag; or
- (c) one or more inner liners made of paper or plastic material.

6.2.14.4 Bags, water resistant, 5L3: To prevent the entry of moisture, the bag must be made waterproof, for example by the use of:

- (a) separate inner liners of water resistant paper, e.g. waxed kraft paper, tarred paper or plastic-coated kraft paper; or
- (b) plastic film bonded to the inner surface of the bag; or
- (c) one or more inner liners made of plastic material.

6.2.14.5 Maximum net weight: 50 kg.

6.2.15 Woven Plastic Bags

6.2.15.1 This paragraph contains the specifications for:

- **5H1**—without inner lining or coating;
- **5H2**—sift-proof woven plastic bags;
- **5H3**—water resistant woven plastic bags.

6.2.15.2 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 intended use.

6.2.15.3 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.

6.2.15.4 Bags, sift-proof, 5H2: The bag must be made sift-proof, for example by means of:

- (a) paper or a plastic film bonded to the inner surface of the bag; or
- (b) one or more separate inner liners made of paper or plastic material.

6.2.15.5 Bags, water resistant, 5H3: To prevent the entry of moisture, the bag must be made waterproof, for example by means of:

- (a) separate inner liners of water resistant paper, e.g. waxed kraft paper, double-tarred kraft paper or plastic-coated kraft paper; or
- (b) plastic film bonded to the inner or outer surface of the bag; or
- (c) one or more inner plastic liners.

6.2.15.6 Maximum net weight: 50 kg.

6.2.16 Plastic Film Bags

6.2.16.1 This paragraph contains the specifications for:

- **5H4**—plastic film bags.

6.2.16.2 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 the intended use. Joins and closures must withstand pressures and impacts liable to occur under normal conditions of transport.

6.2.16.3 Maximum net weight: 50 kg.

6.2.17 Composite Packagings (Plastic Material)

6.2.17.1 This paragraph contains the specifications for:

- **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.

* Crates are outer packagings with incomplete surfaces. For air transport, crates may not be used as outer packagings of composite packagings.

6.2.17.2 Composite packagings with glass, porcelain, or stoneware (earthenware) receptacles are forbidden for use in air transport.

6.2.17.3 The inner receptacles must meet the provisions of 6.2.6.2 and 6.2.6.4 to 6.2.6.7.

6.2.17.4 The inner plastic receptacle must fit snugly inside the outer packaging, which must be free of any projection that might abrade the plastic material.

6.2.17.5 Maximum capacity of inner receptacles:

- 6HA1, 6HB1, 6HD1, 6HG1, 6HH1: 250 L;
- 6HA2, 6HB2, 6HC, 6HD2, 6HG2, 6HH2: 60 L.

6.2.17.6 Maximum net weight:

- 6HA1, 6HB1, 6HD1, 6HG1, 6HH1: 400 kg;
- 6HA2, 6HB2, 6HC, 6HD2, 6HG2, 6HH2: 75 kg.

6.2.17.7 The outer packaging for 6HA1 must meet the relevant provisions of 6.2.1 as appropriate.

6.2.17.8 The outer packaging for 6HA2 must meet the relevant provisions of 6.2.8 as appropriate.

6.2.17.9 The outer packaging for 6HB1 must meet the relevant provisions of 6.2.2 as appropriate.

6.2.17.10 The outer packaging for 6HB2 must meet the relevant provisions of 6.2.8 as appropriate.

6.2.17.11 The outer packaging for 6HC must meet the relevant provisions of 6.2.9 as appropriate.

6.2.17.12 The outer packaging for 6HD1 must meet the relevant provisions of 6.2.3 as appropriate.

6.2.17.13 The outer packaging for 6HD2 must meet the relevant provisions of 6.2.10 as appropriate.

6.2.17.14 The outer packaging for 6HG1 must meet the relevant provisions of 6.2.4.1 to 6.2.4.5 as appropriate.

6.2.17.15 The outer packaging for 6HG2 must meet the relevant provisions of 6.2.12 as appropriate.

6.2.17.16 The outer packaging for 6HH1 must meet the relevant provisions of 6.2.6.2 and 6.2.6.4 to 6.2.6.8 as appropriate.

6.2.17.17 The outer packaging for 6HH2 must meet the relevant provisions of 6.2.13.2 and 6.2.13.5 to 6.2.13.7 as appropriate.

6.2.18 Paper Bags

6.2.18.1 This paragraph contains the specifications for:

- **5M1**—multi-wall;
- **5M2**—multi-wall, water resistant paper bags.

6.2.18.2 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 the intended use. Joins and closures must be sift-proof.

6.2.18.3 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 should 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.

6.2.18.4 Maximum net weight: 50 kg.

6.3 UN Packaging Performance Tests

6.3.0 Introduction

6.3.0.1 General

The performance tests specified in this subsection 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.

6.3.0.2 Objectives

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 (specific gravity) and vapour pressure (for liquids).

Note:

As an aid to the shipper, a list of testing facilities capable of carrying out these package performance tests has been included in Appendix E.2.

6.3.1 Performance and Frequency of Tests

The design type of each packaging must be tested as provided in this subsection in accordance with procedures established by the appropriate national authority.

6.3.1.1 General Requirements

6.3.1.1.1 Each packaging design type must successfully pass the tests prescribed in this Subsection 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.

6.3.1.1.2 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 6.3.2.3.

6.3.1.1.3 Tests must also be repeated after each modification, which alters the design, material or manner of construction of a packaging.

6.3.1.1.4 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 weight; and packagings such as drums, bags and boxes which are produced with small reductions in external dimensions.

6.3.1.1.5 The appropriate national authority may at any time require proof, by tests in accordance with this Subsection, that serially-produced packagings meet the requirements of the design type tests.

6.3.1.1.6 If an inner treatment or coating is required for safety reasons, it must retain its protective properties even after the tests.

6.3.1.1.7 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.

6.3.1.2 Exemption from Testing

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:

6.3.1.2.1 The outer packaging must have been successfully tested in accordance with 6.3.3 with fragile, e.g. glass, inner packagings containing liquids using the Packing Group I drop height.

6.3.1.2.2 The total combined gross weight of inner packagings must not exceed one-half the gross weight of inner packagings used for the drop test in 6.3.1.2.1.

6.3.1.2.3 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 thickness in the originally tested packaging; if a single inner packaging was used in the original test, the thickness 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 the void spaces.

6.3.1.2.4 The outer packaging must have successfully passed the stacking test in 6.3.6 while empty. The total weight of identical packages must be based on the combined weight of inner packagings used for the drop test in 6.3.1.2.1.

6.3.1.2.5 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.

6.3.1.2.6 If the outer packaging is intended to contain inner packagings for liquids and is not leak-proof, or is intended to contain inner packagings for solids and is not sift-proof, a means of containing any liquid or solid contents in the event of leakage must be provided in the form of leak-proof liner, plastic bag or other equally efficient means of containment. For packagings containing liquids, the absorbent material required by 6.3.1.2.5 must be placed inside the means of containing the liquid contents.

6.3.1.2.7 Inner packagings containing liquids must comply with 5.0.2.9.

6.3.1.2.8 Packagings must be marked in accordance with 6.0.4 as having been tested to Packing Group I performance for combination packagings. The marked gross weight in kilograms must be the sum of the weight of the outer packaging plus one half of the weight of the inner packaging(s) as used for the drop test referred to in 6.3.1.2.1. Such a packaging mark must also contain a letter "V" as described in 6.0.3.6.1.

6.3.1.3 Liquids

Every packaging intended to contain liquids must successfully undergo a suitable leakproofness test and be capable of meeting the appropriate test level indicated in 6.3.4.2:

- (a) before it is first used for transport; and
- (b) after remanufacturing or reconditioning, before it is used 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.

6.3.2 Preparation of Packagings for Testing

6.3.2.1 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 98% or more of their maximum capacity for liquids or 95% 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 articles or substances to be transported in the packaging may be replaced by other articles or 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 (weight, 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 weight, so long as they are placed so that the test results are not invalidated.

6.3.2.2 In the drop tests for liquids, when another substance is used, it must be of similar relative density (specific gravity) and viscosity should be similar to those of the substance being transported. Water may also be used for the liquid drop test under the conditions set forth in 6.3.3.4.

6.3.2.3 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 $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and $50\% \pm 2\%$ r.h. The two other options are $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and $65\% \pm 2\%$ r.h. or $27^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and $65\% \pm 2\%$ 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 $\pm 5\%$ relative humidity without significant impairment of test reproducibility.

6.3.2.4 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 5.0.2.6, 6.2.6.2 and 6.2.6.5. 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 6.3.3, 6.3.4, 6.3.5 and 6.3.6. 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 weight of identical packages which might be stacked on it during transport. The minimum stacking height, including the test sample, must be 3 m.

6.3.3 Drop Test

6.3.3.1 Number of Test Samples (Per design type, 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.

TABLE 6.3.A
Drop Test Requirements (6.3.3)

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 wide face Second drop: flat on a narrow face Third drop: on an end of the bag

6.3.3.2 Special Preparation of Test Samples for the Drop Test

6.3.3.2.1 The temperature of the test sample and its contents must be reduced to -18°C or lower for the following packagings:

- plastic drums (see 6.2.6);
- plastic jerricans (see 6.2.6);
- plastic boxes other than expanded polystyrene boxes (see 6.2.13);

- composite packagings (see 6.2.17); and
- combination packagings with plastic inner packagings, other than plastic bags intended to contain solids or articles.

6.3.3.2.2 Where test samples are prepared in this way, the conditioning specified in 6.3.2.3 may be waived. Test liquids must be kept in the liquid state by the addition of anti-freeze, if necessary.

6.3.3.2.3 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.

6.3.3.3 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.

6.3.3.4 Drop Height

6.3.3.4.1 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—1.8 m;
- Packing Group II—1.2 m;
- Packing Group III—0.8 m.

6.3.3.4.2 For liquids in single packagings and for inner packagings of combination packagings, if the test is performed with water, where the substances to be carried have a relative density not exceeding 1.2:

- Packing Group I—1.8 m;
- Packing Group II—1.2 m;
- Packing Group III—0.8 m.

6.3.3.4.3 For liquids, if the test is performed with water, 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 of the substance to be transported, rounded up to the first decimal, as follows:

- Packing Group I—relative density \times 1.5 (m);
- Packing Group II—relative density \times 1.0 (m);
- Packing Group III—relative density \times 0.67 (m).

Note:

The term water includes water/antifreeze solutions with a minimum specific gravity of 0.95 for testing at -18°C.

6.3.3.5 Criteria for Passing the Test

A package passes the test if it meets the following criteria:

6.3.3.5.1 Each packaging containing liquid must be leak-proof 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.

6.3.3.5.2 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 sift-proof.

6.3.3.5.3 The packaging or outer packaging of a composite or combination packaging must not exhibit any damage liable to affect safety during transport. Inner receptacles, inner packagings, or articles must remain completely within the outer packaging and there must be no leakage of the filling substance from the inner receptacle or inner packaging(s).

6.3.3.5.4 Outer packagings and in the case of a bag, the outermost ply, must not exhibit any damage liable to affect safety during transport.

6.3.3.5.5 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.

6.3.3.5.6 No rupture is permitted in packagings for goods of Class 1 which would permit the spillage of loose explosive articles or substances from the outer packaging.

6.3.4 Leakproofness Test

The leakproofness test must be performed on all types of packagings intended to contain liquids; however, this test is not required for the inner packagings of combination packagings.

6.3.4.1 Number of Test Samples

Three test samples per design type and manufacturer.

6.3.4.2 Test Method and Pressure to be Applied

For design type tests 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—not less than 30 kPa (0.3 bar);
- Packing Group II—not less than 20 kPa (0.2 bar);
- Packing Group III—not less than 20 kPa (0.2 bar).

6.3.4.3 Other Methods

Other methods, at least equally effective, may be used.

6.3.4.4 Criterion for Passing the Test

There must be no leakage.

6.3.5 Internal Pressure (Hydraulic) Test

6.3.5.1 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, however, this test is not required for the inner packagings of combination packagings. See 5.0.2.9 for the internal pressure requirements for inner packagings.

6.3.5.2 Number of Test Samples

Three test samples per design type and manufacturer.

6.3.5.3 Test Methods 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 6.0.4.2(e). 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:

6.3.5.3.1 Method 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 (1 bar) 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 5.0.2.8 and a filling temperature of 15°C. The test pressure must be not less than 95 kPa (0.95 bar), not less than 75 kPa (0.75 bar) for liquids in Packing Group III of Class 3 or Division 6.1; or

6.3.5.3.2 Method B—Not less than 1.75 times the vapour pressure at 50°C of the liquid to be transported, minus 100 kPa (1 bar) but with a minimum test pressure of 100 kPa (1 bar); or

6.3.5.3.3 Method C—Not less than 1.5 times the vapour pressure at 55°C of the liquid to be transported, minus 100 kPa (1 bar) but with a minimum test pressure of 100 kPa (1 bar).

These are expressed as:

Method A:

$$P_T = (P_{M55} \times 1.5) \text{ kPa with minimum of 95 or 75 kPa}$$

Method B:

$$P_T = (Vp_{50} \times 1.75) - 100 \text{ kPa with a minimum of 100 kPa}$$

Method C:

$$P_T = (Vp_{55} \times 1.5) - 100 \text{ kPa with a minimum of 100 kPa}$$

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.

6.3.5.4 Packing Group I Liquids

In addition, packagings intended to contain liquids of Packing Group I must be tested to a minimum test pressure of 250 kPa (2.5 bar) (gauge), for a test period of 5 or 30 minutes depending upon the material of construction of the packaging.

6.3.5.5 Criterion for Passing the Test

The packaging must not leak.

6.3.6 Stacking Test

All design types of packagings other than bags must be subjected to a stacking test.

6.3.6.1 Number of Test Samples

Three test samples per design type and manufacturer.

6.3.6.2 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.

6.3.6.3 Criteria for Passing the Test

The test sample must not 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.

6.3.7 Test Report

6.3.7.1 A test report containing at least the following particulars must be drawn up and must be available to the users of the packagings:

- (a) name and address of the test facility;
- (b) name and address of the test 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.

6.3.7.2 The test report must contain statements that:

- (a) the packaging prepared as for transport was tested in accordance with the appropriate provisions of these Regulations 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.

6.3.7.3 A copy of the test report must be made available to the appropriate national authority.

6.4 Requirements for the Construction and Testing of Cylinders and Closed Cryogenic Receptacles, Aerosol Dispensers and Small Receptacles Containing Gas (Gas Cartridges)

STATE VARIATIONS: CAG-17, USG-06

6

6.3
to
6.4

6.4.0 Introductory Notes

6.4.0.1 Aerosol dispensers, small receptacles containing gas (gas cartridge) and fuel cell cartridges containing liquified flammable gas are not subject to the requirements of 6.4.1 to 6.4.3.

6.4.0.2 For open cryogenic receptacles, the requirements of Packing Instruction 202 must be met.

6.4.1 General Requirements

6.4.1.1 Design and Construction

6.4.1.1.1 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.

6.4.1.1.2 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 Regulations may be used if approved by the appropriate national authorities in the countries of transport and use.

6.4.1.1.3 In no case must the minimum wall thickness be less than that specified in the design and construction technical standards.

6.4.1.1.4 For welded cylinders and closed cryogenic receptacles, metals used must be of weldable quality.

△ 6.4.1.1.5 The test pressure requirements for cylinders must be in accordance with Subsection 5.2 and Packing Instruction 200 or, for a chemical under pressure with Packing Instruction 218. The test pressure requirements for closed cryogenic receptacles must be in accordance with Packing Instruction 202. The test pressure of a metal

hydride storage system must be in accordance with Packing Instruction 214.

6.4.1.1.6 Contact between dissimilar metals which could result in damage by galvanic action must be avoided.

6.4.1.1.7 The following additional requirements apply to the construction of closed cryogenic receptacles for refrigerated liquefied gases:

- (a) the mechanical properties of the metal used must be established for each closed cryogenic receptacle, including the impact strength and the bending coefficient;
- (b) 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 recognised technical code or a 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;
- (c) 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 which 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;
- (d) closed cryogenic receptacles must be designed and constructed with suitable lifting and securing arrangements.

6.4.1.1.8 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.

6.4.1.2 Materials

6.4.1.2.1 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.

6.4.1.2.2 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 receptacles. The materials must be resistant to brittle fracture and to stress corrosion cracking as indicated in the design and construction technical standards.

6.4.1.3 Service Equipment

6.4.1.3.1 Valves, piping, fittings and other equipment subjected to pressure, excluding pressure relief devices, must be designed and constructed so that the burst pressure at least 1.5 times the test pressure of the cylinders and closed cryogenic receptacles.

6.4.1.3.2 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 5.2.0.7.

6.4.1.3.3 Cylinders and closed cryogenic receptacles which are not capable of being handled manually or rolled, must be fitted with devices (i.e. skids, rings, straps) ensuring that they can be safely handled by mechanical means and so arranged as not to impair the strength of, nor cause undue stresses, in the cylinder and closed cryogenic receptacle.

6.4.1.3.4 Individual cylinders and closed cryogenic receptacles must be equipped with pressure relief devices as specified in Packing Instruction 200, Packing Instruction 202 or Packing Instruction 214 or 6.4.1.3.6.3 and 6.4.1.3.6.4. 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.

6.4.1.3.5 Cylinders and closed cryogenic receptacles whose filling is measured by volume must be provided with a level indicator.

6.4.1.3.6 Additional requirements for closed cryogenic receptacles.

6.4.1.3.6.1 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.

6.4.1.3.6.2 Each connection to a closed cryogenic receptacle must be clearly marked to indicate its function (e.g. vapour or liquid phase).

6.4.1.3.6.3 Pressure-relief devices:

- (a) 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;
- (b) 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

6.4.1.3.6.4. The pressure-relief device must be of the type that will resist dynamic forces including surge;

- (c) connections to pressure-relief devices must be of sufficient size to enable the required discharge to pass unrestricted to the pressure-relief device;
- (d) 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.

6.4.1.3.6.4 Capacity and Setting of Pressure-relief Devices:

- (a) 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% of the MAWP. It must, after discharge, close at a pressure not lower than 10% below the pressure at which discharge starts and must remain closed at all lower pressures;
- (b) 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% of the MAWP;
- (c) 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 CGA Publications S-1.2-1995 and S-1.1-2001).

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.

6.4.1.4 Approval of Cylinders and Closed Cryogenic Receptacles

6.4.1.4.1 The conformity of cylinders and closed cryogenic receptacles must be assessed at 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.

6.4.1.4.2 Quality assurance systems must conform to the requirements of the appropriate national authority.

6.4.1.5 Initial Inspection and Test

6.4.1.5.1 New cylinders, other than closed cryogenic receptacles and metal hydride storage systems, must be subjected to testing and inspection 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 specification;

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 and UN 3374 must be inspected to ensure proper installation and condition of the porous mass and if applicable, the quantity of solvent.

6.4.1.5.2 On an adequate sample of closed cryogenic receptacles, the inspections and tests specified in 6.4.1.5.1 (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.

6.4.1.5.3 Additionally, all closed cryogenic receptacles must undergo the inspections and tests specified in 6.4.1.5.1 (g), (h) and (i), as well as a leakproofness test and a test of the satisfactory operation of the service equipment after assembly.

6.4.1.5.4 For metal hydride storage systems, it must be verified that the inspections and tests specified in 6.4.1.5.1 (a), (b), (c), (d), (e) if applicable, (f), (g), (h) and (i) have been performed on an adequate sample of the receptacles used in the metal hydride storage system. In addition, on an adequate sample of metal hydride storage systems, the inspections and tests specified in 6.4.1.5.1 (c) and (f) must be performed, as well as 6.4.1.5.1 (e), if applicable, and inspection of the external conditions of the metal hydride storage system. Additionally, all metal hydride storage systems must undergo the initial inspections and tests specified in 6.4.1.5.1 (h) and (i), as well as a leakproofness test and a test of the satisfactory operation of the service equipment.

6.4.1.6 Periodic Inspection and Test

6.4.1.6.1 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) checking 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.

Notes:

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.*
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 or a combination of acoustic emission testing and ultrasound examination. ISO 16147:2006 may be used as a guide for acoustic emission testing procedures.*
3. *The hydraulic pressure test may be replaced by ultrasonic examination carried out in accordance with ISO 10461:2005+A1:2006 for seamless aluminium alloy gas cylinders and in accordance with ISO 6406:2005 for seamless steel gas cylinders.*

- (e) check of service equipment, other accessories and pressure-relief devices, if to be reintroduced into service.

△ Note:

For the periodic inspection and test frequencies, see Packing Instruction 200 or, for a chemical under pressure Packing Instruction 218.

6.4.1.6.2 Cylinders intended for the transport of UN 1001 **Acetylene, dissolved** and UN 3374 **Acetylene, solvent free** must be examined only as specified in 6.4.1.6.1 a), c) and e). In addition, the condition of the porous material (e.g. cracks, top clearance, loosening, settlement) must be examined.

- 6.4.1.6.3** Pressure relief valves for closed cryogenic receptacles must be subject to periodic inspections and tests.

6.4.1.7 Requirements for Manufacturers

6.4.1.7.1 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.

6.4.1.7.2 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.

6.4.1.8 Requirements for Inspection Bodies

Inspection bodies must be independent from manufacturing enterprises and competent to perform the tests, inspections and approvals required.

6.4.2 Requirements for UN Cylinders and Closed Cryogenic Receptacles

6.4.2.0 General

In addition to the general requirements of 6.4.1, UN cylinders and closed cryogenic receptacles must comply with the requirements of this subsection, 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.

6.4.2.1 Design, Construction and Initial Inspection and Test

6.4.2.1.1 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 6.4.2.5:

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: <i>The note concerning the F factor in section 7.3 of this standard must not be applied for UN cylinders.</i>
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: <i>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.</i>
ISO 4706:2008	Gas cylinders—Refillable welded steel cylinders—Test pressure 60 bar and below.
ISO 18172-1:2007	Gas cylinders—Refillable welded stainless steel cylinders—Part 1: Test pressure 6 MPa and below.
ISO 20703:2006	Gas cylinders—Refillable welded aluminium-alloy cylinders—Design, construction and testing
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.

Notes:

1. In the above referenced standards composite cylinders must be designed for unlimited service life.
2. 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 that 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.

6.4.2.1.2 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 6.4.2.5.

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: <i>The note concerning the F factor in section 7.3 of this standard must not be applied for UN cylinders.</i>
ISO 9809-3:2000	Gas cylinders—Refillable seamless steel gas cylinders—Design, construction and testing—Part 3: Normalized steel cylinders

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.

6.4.2.1.3 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 6.4.2.5:

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.
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6.4.2.1.4 The following standards apply for the design, construction, and initial inspection and test of UN metal hydride storage systems, except that inspection requirements related to the conformity assessment system and approval must be in accordance with 6.4.2.5:

ISO 16111:2008	Transportable gas storage devices—Hydrogen absorbed in reversible metal hydride
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6.4.2.2 Materials

6.4.2.2.1 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 Packing Instruction 202 or Packing Instruction 214), 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 11114-2:1997	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).

6.4.2.3 Service Equipment

△ **6.4.2.3.1** The following standards apply to closures and their protection:

ISO 11117:2008+Cor 1:2009	Gas cylinders—Valve protection caps and valve guards—Design, construction and tests. Note: <i>Construction according to ISO 11117:1998 may continue until 31 December 2014.</i>
ISO 10297:2006	Gas cylinders—Refillable gas cylinder valves—Specification and type testing.
ISO 13340:2001	Transportable gas cylinders—Cylinder valves for non-refillable cylinders—Specification and prototype testing.

6.4.2.3.2 For UN metal hydride storage systems, the requirements specified in the following standard apply to closures and their protection:

ISO 16111:2008	Transportable gas storage devices—Hydrogen absorbed in reversible metal hydride.
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6.4.2.4 Periodic Inspection and Test

△ **6.4.2.4.1** 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.
ISO 11623:2002	Transportable gas cylinders—Periodic inspection and testing of composite gas cylinders.
ISO 16111:2008	Transportable gas storage devices—Hydrogen absorbed in reversible metal hydride.
ISO 10460:2005	Gas cylinders—Welded carbon-steel gas cylinders—Periodic inspection and testing.

Note:
The repair of welds described in clause 12.1 of this standard is not permitted. Repairs described in clause 12.2 require the approval of the appropriate national authority which approved the periodic inspection and test body in accordance with 6.4.2.6.

6.4.2.5 Conformity Assessment System and Approval for Manufacture of Cylinders and Closed Cryogenic Receptacles

6.4.2.5.1 Definition

For the purposes of this subsection:

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.

6.4.2.5.2 General Requirements

6.4.2.5.2.1 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 Regulations. 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 6.4.2.7 and 6.4.2.8). 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.

6.4.2.5.2.2 The appropriate national authority may delegate its functions in this approval system, in whole or in part.

6.4.2.5.2.3 The appropriate national authority must ensure that a current list of approved inspection bodies and their identity marks is available and approved manufacturers and their identity marks is available.

6.4.2.5.2.4 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 organisational 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 Regulations are performed; and
- (h) maintain an effective and appropriate report and record system in accordance with 6.4.2.5.6.

6.4.2.5.2.5 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 6.4.2.5.4 and 6.4.2.5.5).

6.4.2.5.2.6 The Manufacturer must:

- (a) operate a documented quality system in accordance with 6.4.2.5.3;
- (b) apply for design type approvals in accordance with 6.4.2.5.4;
- (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 6.4.2.5.6.

6.4.2.5.2.7 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.

6.4.2.5.3 Manufacturer's Quality System

6.4.2.5.3.1 Quality System Requirements. 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 6.4.2.5.3.2;
- (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.

6.4.2.5.3.2 Audit of the Quality System. The manufacturer's quality system must be audited as follows:

- (a) the quality system must be initially assessed to determine whether it meets the requirements in 6.4.2.5.3.1 to the satisfaction of the appropriate national authority;
- (b) 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;
- (c) 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.

6.4.2.5.3.3 Maintenance of the Quality System. The manufacturer must:

- (a) maintain the quality system as approved in order that it remains adequate and efficient;
- (b) 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 6.4.2.5.3.1.

6.4.2.5.4 Approval Process

6.4.2.5.4.1 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 6.4.2.5.4.2 to 6.4.2.5.4.6 and 6.4.2.5.4.9.

6.4.2.5.4.2 A manufacturer desiring to produce cylinders and closed cryogenic receptacles in accordance with a cylinder and closed cryogenic receptacle standard and these Regulations 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 6.4.2.5.4.9. This certificate must, on request, be

submitted to the appropriate national authority of the country of use.

6.4.2.5.4.3 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 6.4.2.5.3.1;
- (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:
 - 1. cylinder and closed cryogenic receptacle design standard, design and manufacturing drawings, showing components and sub-assemblies, if any;
 - 2. descriptions and explanations necessary for the understanding of the drawings and intended use of the cylinders and closed cryogenic receptacles;
 - 3. a list of the standards necessary to fully define the manufacturing process;
 - 4. design calculations and material specifications; and
 - 5. design type approval test reports, describing the results of examinations and tests carried out in accordance with 6.4.2.5.4.9.

6.4.2.5.4.4 An initial audit in accordance with 6.4.2.5.3.2 must be performed to the satisfaction of the appropriate national authority.

6.4.2.5.4.5 If the manufacturer is denied approval, the appropriate national authority must provide written detailed reasons for such denial.

6.4.2.5.4.6 Following approval, changes to the information submitted under 6.4.2.5.4.3 relating to the initial approval must be provided to the appropriate national authority.

6.4.2.5.4.7 Subsequent Design Type Approvals. An application for a subsequent design type approval must encompass the requirements of 6.4.2.5.4.8 and 6.4.2.5.4.9, provided a manufacturer is in possession of

an initial design type approval. In such a case, the manufacturer's quality system according to 6.4.2.5.3 must have been approved during the initial design type approval and must be applicable for the new design.

6.4.2.5.4.8 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 6.4.2.5.4.3(h).

6.4.2.5.4.9 Procedure for Design Type Approval:

(a) The inspection body must:

1. 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;
2. verify that the production inspections have been carried out as required in accordance with 6.4.2.5.5;
3. 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;
4. 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
5. ensure that the various type approval examinations and tests are correctly and competently carried out.

(b) After prototype testing has been carried out with satisfactory results and all applicable requirements of 6.4.2.5.4 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;

(c) If the manufacturer is denied a design type approval, the appropriate national authority must provide written detailed reasons for such denial.

6.4.2.5.4.10 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.

6.4.2.5.4.11 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.

6.4.2.5.5 Production Inspection and Certification

6.4.2.5.5.1 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.

6.4.2.5.5.2 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.

6.4.2.5.5.3 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 Regulations. Should nonconformance in conjunction with this inspection and testing be determined, the permission to have inspection performed by the manufacturer's inspectors may be withdrawn.

6.4.2.5.5.4 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 Regulations. 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.

6.4.2.5.5.5 A certificate of compliance, signed by the inspection body and the manufacturer, must be issued before the cylinders and closed cryogenic receptacles are filled.

6.4.2.5.6 Records

Design type approval and certificate of compliance records must be maintained by the manufacturer and the inspection body for not less than 20 years.

6.4.2.6 Approval System for Periodic Inspection and Test of Cylinders and Closed Cryogenic Receptacles

6.4.2.6.1 Definition

For the purposes of this section, an approval system means a system for appropriate national authority approval of a body performing 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.

6.4.2.6.2 General Requirements

6.4.2.6.2.1 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 Regulations. In instances where the appropriate national authority that approves a 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 6.4.2.7).

6.4.2.6.2.2 The appropriate national authority of the country of approval for the periodic inspection and test must supply, upon request, evidence demonstrating compliance to this approval system including the records of the periodic inspection and test to its counterpart in a country of use.

6.4.2.6.2.3 The appropriate national authority of the country of approval may terminate the approval certificate referred to in 6.4.2.6.4.1, upon evidence demonstrating non-compliance with the approval system.

6.4.2.6.2.4 The appropriate national authority may delegate its functions in this approval system, in whole or in part.

6.4.2.6.2.5 The appropriate national authority must ensure that a current list of approved periodic inspection and test bodies and their identity marks is available.

6.4.2.6.2.6 The periodic inspection and test body must be approved by the appropriate national authority and must:

- (a) have a staff with an organisational 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;
- (e) maintain clear demarcation between actual periodic inspection and test body functions and unrelated functions;
- (f) operate a documented quality system in accordance with 6.4.2.6.3;
- (g) apply for approval in accordance with 6.4.2.6.4;

- (h) ensure that the periodic inspections and tests are performed in accordance with 6.4.2.6.5; and
(i) maintain an effective and appropriate report and record system in accordance with 6.4.2.6.6.

6.4.2.6.3 Quality System and Audit of the Periodic Inspection and Test Body

6.4.2.6.3.1 Quality System

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. The quality system must include:

- (a) a description of the organisational 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 6.4.2.6.3.2;
(e) a process for control of documents and their revision; and
(f) a means for control of non-conforming cylinders and closed cryogenic receptacles; and training programmes and qualification procedures for relevant personnel.

6.4.2.6.3.2 Audit

The periodic inspection and test body and its quality system must be audited in order to determine whether it meets the requirements of these Regulations to the satisfaction of the appropriate national authority. An audit must be conducted as part of the initial approval process (see 6.4.2.6.4.3). An audit may be required as part of the process to modify an approval (see 6.4.2.6.4.6). 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 Regulations. 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.

6.4.2.6.3.3 Maintenance of the Quality System

The periodic inspection and test body must:

- (a) maintain the quality system as approved in order that it remains adequate and efficient; and
(b) 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 6.4.2.6.4.6.

6.4.2.6.4 Approval Process for Periodic Inspection and Test Bodies

6.4.2.6.4.1 Initial Approval

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 Regulations must apply for, obtain, and retain an Approval Certificate issued by the appropriate national authority. This written approval must, on request, be submitted to the appropriate national authority of a country of use.

6.4.2.6.4.2 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 authorised representative, its name and address;
(b) the address of each facility performing 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 6.4.2.6.3.1;
(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.

6.4.2.6.4.3 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 Regulations; and
(b) conduct an audit in accordance with 6.4.2.6.3.2 to verify that the inspections and tests are carried out as required by the relevant cylinder and closed cryogenic receptacle standards and these Regulations, to the satisfaction of the appropriate national authority.

6.4.2.6.4.4 After the audit has been carried out with satisfactory results and all applicable requirements of 6.4.2.6.4 have been satisfied, an Approval Certificate must be issued. It must include:

- (a) the name of the periodic inspection and test body;
(b) the registered mark;
(c) the address of each facility; and
(d) 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).

6.4.2.6.4.5 If the periodic inspection and test body is denied approval, the appropriate national authority must provide written detailed reasons for such denial.

6.4.2.6.4.6 Modifications to Periodic Inspection and Test Body Approvals—Following approval, the periodic inspection and test body must notify the issuing appropriate national authority of any modifications to the information submitted under 6.4.2.6.4.2 relating to the initial approval. The modifications must be evaluated in order to

determine whether the requirements of the relevant cylinder and closed cryogenic receptacle standards and these Regulations will be satisfied. An audit in accordance with 6.4.2.6.3.2 may be required. The appropriate national authority must accept or reject these modifications in writing, and an amended Approval Certificate must be issued as necessary.

6.4.2.6.4.7 Upon request, the appropriate national authority must communicate to any other appropriate national authority, information concerning initial approvals, modifications of approvals, and withdrawn approvals.

6.4.2.6.5 Periodic Inspection and Test and Certification

6.4.2.6.5.1 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 Regulations. 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 6.4.2.7.4).

6.4.2.6.5.2 A record certifying that a cylinder and closed cryogenic receptacle has passed the periodic inspection and test must be issued by the periodic inspection and test body, before the cylinder and closed cryogenic receptacle is filled.

6.4.2.6.6 Records

6.4.2.6.6.1 The periodic inspection and test body must retain records of cylinder and closed cryogenic receptacle periodic inspections and tests (both passed and failed) including the location of the test facility, for not less than 15 years.

6.4.2.6.6.2 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 is permanently removed from service.

6.4.2.7 Marking of Refillable UN Cylinders and Closed Cryogenic Receptacles

6.4.2.7.1 Applicability

Refillable UN cylinders and closed cryogenic receptacles must be marked clearly and legibly with certification, operational and manufacturing marks (see Table 6.4.A). These marks must be permanently affixed (e.g. stamped, engraved, or etched) on the cylinder and closed cryogenic receptacles. The marks must be on the shoulder, top end or neck of the cylinder and closed cryogenic receptacles or on a permanently affixed component of the cylinder and closed cryogenic receptacles (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.

6.4.2.7.2 Format of Marking

Certification Marks, the following certification marks must be applied:

- (a) the United Nations packaging symbol as shown in Figure 6.0.A. This symbol must not be used for any purpose other than certifying that a packaging complies with the relevant requirements in Section 6;
- (b) the technical standard (e.g. ISO 9809-1) used for design, construction and testing;
- (c) the character(s) identifying the country of approval as indicated by the international Vehicle Registration Code (VRI Code) as indicated in Appendix D.1 and D.2;
- (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. "/").

Operational Marks, 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 L or for composite cylinders or for closed cryogenic receptacles;
- (i) in the case of cylinders for compressed gases, UN 1001 and UN 3374 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;

- 6**
- 6.4**
- (k) in the case of cylinders for UN 1001, 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, 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;

Manufacturing Marks, 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 International Vehicle Registration Code (VRI Code) as indicated in Appendix D.1 and D.2. 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).

6.4.2.7.2.1 The above marks must be placed in three groups as follows:

- (a) manufacturing marks must be the top grouping and must appear consecutively in the sequence (m) to (p);
- (b) operational marks 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 (a) to (e).

TABLE 6.4.A
Example of UN Specification Markings—Cylinders (6.4.2.7.2)

Cylinder Thread (m) 25E	Manufacturer (n) MF	Serial Number (o) 765432	Steel Compatibility (p) H	
Working Pressure (i) PW200	Test Pressure (f) PH300BAR	Empty Weight of Cylinder (g) 62.1 KG	Cylinder Wall Thickness (h) 5.8 MM	Water Capacity (j) 50 L
UN Symbol (a) 	Technical Standard (b) ISO 9809-1	State (c) AUS	Inspection Body (d) IB	Initial Inspection Date (e) 2013/04
Complete Code	25E MF 765432 H PW200 PH300BAR 62.1 KG 5.8 MM 50 L ISO 9809-1 AUS IB 2013/04			

6.4.2.7.3 Other Marking

6.4.2.7.3.1 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 must be on a separate plate attached to the outer jacket. Such marks must not conflict with required marks.

6.4.2.7.3.2 Cylinders of composite construction with limited life must be marked with the letters "FINAL" followed by the expiry date year (four digits) and month (two digits).

6.4.2.7.4 Date of Periodic Inspection

6.4.2.7.4.1 In addition to the preceding marks, each refillable cylinder and closed cryogenic receptacle 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 authorised by the appropriate national authority for performing 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.

6.4.2.7.4.2 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 only be removed by disconnecting the valve from the cylinder.

6.4.2.8 Marking of Non-refillable UN Cylinders and Closed Cryogenic Receptacles

6.4.2.8.1 Non-refillable UN cylinders and closed cryogenic receptacles must be marked clearly and legibly with certification and gas or cylinder and closed cryogenic receptacles specific marks. These marks must be permanently affixed (e.g. stencilled, stamped, engraved, or etched) on the cylinder and closed cryogenic receptacle. 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 packaging symbol 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 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. The minimum size of the "DO NOT REFILL" mark must be 5 mm.

6.4.2.8.2 The marks listed in 6.4.2.7.2 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.

6.4.2.8.3 The requirements of 6.4.2.7.2.1 must apply.

Note:

In the case of non-refillable cylinders and closed cryogenic receptacles, this marking may be replaced by a label.

6.4.2.8.4 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.

6.4.2.9 Marking of UN Metal Hydride Storage Systems

6.4.2.9.1 Applicability

UN metal hydride storage systems must be marked clearly and legibly with the marks listed below (see Table 6.4.A). These marks must be permanently affixed (e.g. stamped, engraved, or etched) on the metal hydride storage system. The marks must be on the shoulder, top end or neck of the metal hydride storage system or on a permanently affixed component of the metal hydride storage system. Except for the UN packaging symbol, the minimum size of the marks must be 5 mm for metal hydride storage systems with a smallest overall dimension greater than or equal to 140 mm and 2.5 mm for metal hydride storage systems with a smallest overall dimension less than 140 mm. The minimum size of the UN packaging symbol must be 10 mm for metal hydride storage systems with a smallest overall dimension greater than or equal to 140 mm and 5 mm for metal hydride storage systems with a smallest overall dimension less than 140 mm.

6.4.2.9.2 Format of Marking

6.4.2.9.2.1 The following marks must be applied:

Certification Marks, the following certification marks must be applied:

- (a) the United Nations packaging symbol as shown in Figure 6.0.A. This symbol must not be used for any purpose other than certifying that a packaging complies with the relevant requirements in Section 6;
- (b) "ISO 16111"; (the technical standard used for design, manufacture and testing);
- (c) the character(s) identifying the country of approval as indicated by the international Vehicle Registration Code (VRI Code) as indicated in Appendix D.1 and D.2;
- (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. "/").

Operational Marks, 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 rated charging pressure of the metal hydride storage system in bar, preceded by the letters "RCP" and followed by the letters "BAR";

Manufacturing Marks, the following manufacturing marks must be applied:

- (h) 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 international Vehicle Registration Code (VRI Code) as indicated in Appendix D.1 and D.2. The country mark and the manufacturer's mark must be separated by a space or slash;
(i) the serial number assigned by the manufacturer;
(j) in the case of steel cylinders and composite cylinders with steel liner, the letter "H" showing compatibility of the steel (see ISO 11114-1:1997); and
(k) in the case of metal hydride storage systems having limited life, the date of expiry, denoted by the letters "FINAL" followed by the year (four digits) followed by the month (two digits) separated by a slash (i.e. "/").

6.4.2.9.2.2 The above marks must be placed as follows:

- (a) certification marks (a) to (e) must be placed in the sequence given;
(b) operational marks must be placed with the test pressure (f) immediately preceded by the rated charging pressure (g);
(c) manufacturing marks (h) to (k) must appear consecutively in the sequence given.

6.4.2.9.3 Other Marking

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. Such marks must not conflict with required marks.

6.4.2.9.4 Date of Periodic Inspection

6.4.2.9.4.1 In addition to the preceding marks, each metal hydride storage system that meets the periodic inspection and test requirements of 6.4.2.4 must be marked indicating:

- (a) the character(s) identifying the country authorizing the body performing the periodic inspection and test as indicated by the international Vehicle Registration Code (VRI Code) as indicated in Appendix D.1 and D.2. 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 authorised by the appropriate national authority for performing 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.

6.4.2.9.4.2 The above marks must appear consecutively in the sequence given.

6.4.3 Requirements for Non-UN Cylinders and Non-UN Closed Cryogenic Receptacles

6.4.3.1 Cylinders and closed cryogenic receptacles not designed, constructed, inspected, tested and approved according to the requirements of section 6.2.2 of the *United Nations Recommendations on the Transport of Dangerous Goods* 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 6.4.1.

6.4.3.2 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.

6.4.3.3 For metallic cylinders, tubes, pressure drums and bundles of 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.

6.4.3.4 Marking must be in accordance with the requirements of the appropriate national authority of the country of use.

6.4.4 Requirements for Aerosol Dispensers and Small Receptacles Containing Gas (gas cartridges) and Fuel Cell Cartridges Containing Liquified Flammable Gas

6.4.4.1 Small Receptacles Containing Gas (gas cartridges) and Fuel Cell Cartridges Containing Liquified Flammable Gas

6.4.4.1.1 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% 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 plastic 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 in 2,000 must be tested at the higher temperature.

6.4.4.1.2 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 that it does not leak.

6.4.4.2 Aerosol Dispensers

Each filled aerosol dispenser must be subjected to a test performed in a hot water bath or an approved water bath alternative.

6.4.4.2.1 Hot Water Bath Test

- (a) 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% 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 plastic 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;
- (b) 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.

6.4.4.2.2 Alternative methods

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 6.4.4.2.2.1 to 6.4.4.2.2.3 are met.

6.4.4.2.2.1 Quality system

- (a) 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;
- (b) the quality system must include:
 1. a description of the organizational structure and responsibilities;
 2. the relevant inspection and test, quality control, quality assurance, and process operation instructions that will be used;
 3. quality records, such as inspection reports, test data, calibration data and certificates;
 4. management reviews to ensure the effective operation of the quality system;
 5. a process for control of documents and their revision;
 6. a means for control of non conforming aerosol dispensers;
 7. training programmes and qualification procedures for relevant personnel; and
 8. procedures to ensure that there is no damage to the final product.
- (c) 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.

6.4.4.2.2.2 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.

6.4.4.2.2.3 Testing of the Aerosol Dispensers After Filling

The following must be met:

- (a) prior to filling the filler must ensure that the crimping equipment is set appropriately and the specified propellant is used;
- (b) 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;
- (c) any filled aerosol dispenser which shows evidence of leakage, deformation or excessive weight must be rejected.

6.4.4.3 Approved Water Bath Alternative

With the approval of the appropriate national authority, aerosols and receptacles, small, containing gas are not subject to 6.4.4.1 and 6.4.4.2 if they are required to be sterile, but may be adversely affected by water bath testing, provided:

- (a) they contain non-flammable gas and either:
 1. contain other substances that are constituent parts of pharmaceutical products for medical, veterinary or similar purposes;
 2. contain other substances used in the production process for pharmaceutical products; or
 3. are used in medical, veterinary or similar applications;
- (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.
- (c) for pharmaceutical products according to (a)1. and 3. above, they are manufactured under the authority of a national health administration. If required by the appropriate national authority, the principles of Good Manufacturing Practice (GMP) established by the World Health Organization (WHO)* must be followed.

Note:

* WHO Publication: *Quality assurance of pharmaceuticals. A compendium of guidelines and related materials. Volume 2: Good manufacturing practices and inspection.*

6.5 Packagings for Infectious Substances of Category A

6.5.0 General

6.5.0.1 The requirements of this subsection apply to packagings intended for the transport of infectious substances of Category A.

6.5.1 Requirements for Packagings

6.5.1.1 The requirements for packagings in this subsection are based on packagings, as specified in 6.0.4, 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 Subsection provided that they are equally effective, acceptable to the competent authority and able successfully to withstand the tests described in 6.5.4. Methods of testing other than those described in these Regulations are acceptable provided they are equivalent.

6.5.1.2 Packagings must be manufactured and tested under a quality assurance programme that satisfies the competent authority in order to ensure that each packaging meets the requirements of this subsection.

6.5.1.3 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 this subsection.

6.5.2 Code for Designating Types of Packagings

6.5.2.1 The codes for designating types of packagings are set out in 6.0.3.

6.5.2.2 The letters "U" or "W" may follow the packaging code. The letter "U" signifies a special packaging conforming to the requirements of 6.5.4.1.6. 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 6.2 and is considered equivalent under the requirements of 6.5.1.1.

6.5.3 Marking

6.5.3.0 Introduction

6.5.3.0.1 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 subsection, which are related to the manufacture, but not to the use, of the packaging.

6.5.3.0.2 The marking is intended to be of assistance to packaging manufacturers, reconditioners, packaging users, operators and appropriate authorities.

6.5.3.0.3 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.

6.5.3.1 Marking on Packagings for Infectious Substances

6.5.3.1.1 Each packaging intended for use according to these Regulations must bear markings which are durable, legible and placed in a location and of such size relative to the package as to be readily visible. For packages with a gross weight exceeding 30 kg the markings, or a duplicate thereof, must appear on the top or on the side of the package. Letters, numbers and symbols must be at least 12 mm high, except for packages of 30 L or 30 kg capacity or less, when they must be at least 6 mm in height. For packages of 5 L or 5 kg or less the letters, numbers and symbols must be of an appropriate size.

6.5.3.1.2 A packaging that meets the requirements of this subsection must be marked with:

- (a) the United Nations packaging symbol (see Figure 6.0.A);
- (b) the code designating the type of packaging according to the provisions of 6.0.3;
- (c) the text "Class 6.2";
- (d) the last two digits of the year of manufacture of the packagings;
- (e) the State authorizing the allocation of the mark, indicated by the international Vehicle Registration Code (VRI Code) as indicated in Appendix D.1;
- (f) the name of the manufacturer or other identification of the packaging specified by the appropriate national authority;
- (g) for packagings meeting the requirements of 6.5.4.1.6, the letter "U", inserted immediately following the marking required in (b) above.

6.5.3.1.3 The marking illustrated in Table 6.5.A is shown in two lines, however the markings can be applied in a single or in multiple lines provided the information is given in the correct sequence. Additionally, the elements of the marking required in subsection 6.5.3.1 must be clearly separated, e.g. by a "/" symbol or a space so as to be easily identified. Any additional markings authorized by a competent authority must still enable the parts of the mark to be correctly identified with reference to 6.5.3.1.1.

Note:

For other required package or overpack markings see Subsection 7.1.

TABLE 6.5.A
Example of UN Specification Markings—Infectious Substances (6.5.3.1)

UN Symbol (a)	Code (b)	Text (c)	Year (d)	State (e)	Manufacturer (f)	Complete Code
	4G	CLASS 6.2	13	S	SP-9989-ERIKSSON	4G/CLASS 6.2/13 S/SP-9989-ERIKSSON

6.5.4 Test Requirements for Packagings

6.5.4.1 Performance and Frequency of Tests

6.5.4.1.1 The design type of each packaging must be tested as provided in this subsection in accordance with procedures established by the competent authority.

6.5.4.1.2 Each packaging design type shall successfully pass the tests prescribed in this subsection 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.

6.5.4.1.3 Tests must be repeated on production samples at intervals established by the competent authority.

6.5.4.1.4 Tests must also be repeated after each modification which alters the design, material or manner of construction of a packaging.

6.5.4.1.5 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 weight of primary receptacles; and packagings such as drums and boxes which are produced with small reductions in external dimension(s).

6.5.4.1.6 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 6.5.4.3 with fragile (e.g. glass) primary receptacles;
- (b) the total combined gross weight of primary receptacles must not exceed one half the gross weight of primary receptacles used for the drop test in 6.5.4.3;
- (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 the 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;

- (d) the rigid outer packaging must have successfully passed the stacking test in 6.3.6 while empty. The total weight of identical packages must be based on the combined mass of packagings used in the drop test in 6.5.4.3;
- (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 leak-proof, or is intended to contain primary receptacles for solids and is not sift-proof, a means of containing any liquid or solid contents in the event of leakage must be provided in the form of a leak-proof liner, plastic bag or other equally effective means of containment; and
- (g) in addition, the marking required by 6.5.3.1.2(a) to (f) must be followed by the letter "U".

6.5.4.1.7 The competent authority may at any time require proof, by tests in accordance with this subsection, that serially-produced packagings meet the requirements of the design type tests.

6.5.4.1.8 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.

6.5.4.2 Preparation of Packagings for Testing

6.5.4.2.1 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 in 6.5.4.3, by a water/antifreeze mixture. Each primary receptacle must be filled to not less than 98% of its capacity.

Note:

The term water includes water/antifreeze solution with a minimum specific gravity of 0.95 for testing at -18°C.

6.5.4.3 Tests and Number of Samples Required

TABLE 6.5.B
Tests Required for Packaging Types (6.5.4.3)

Type of Packaging ^a			Tests Required					
Rigid Outer Packaging	Primary Receptacle		Water Spray (6.5.4.3)	Cold Conditioning (6.5.4.3)	Drop (6.5.4.4)	Additional Drop (6.5.4.4.8)	Puncture (6.5.4.5)	Stack (6.3.6)
	Plastic	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	Required on one sample when the packaging is intended to contain dry ice	2	Required on three samples when testing a "U" marked packaging as defined in 6.5.
		X	5	0	5		2	
Fibreboard drum	X		3	3	6		2	
		X	3	0	3		2	
Plastic box	X		0	5	5		2	
		X	0	5	5		2	
Plastic 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.

Notes:

1. In the above table, "fibreboard" refers to fibreboard or similar materials whose performance may be rapidly affected by moisture; "plastic" refers to plastic, which may embrittle at low temperature; and "other" refers to other materials such as metal whose performance is not significantly affected by moisture or temperature.
2. Where a primary receptacle is made of two or more different materials, the material most liable to damage determines the appropriate test.
3. The material of the secondary packagings is not taken into consideration when selecting the test or conditioning for the test.

6.5.4.3.1 If the packaging to be tested consists of a fibreboard outer box with a plastic primary receptacle, five samples must undergo the water spray test (see 6.5.4.4.6) prior to dropping and another five must be conditioned to -18°C (see 6.5.4.4.7) prior to dropping. If the packaging is to contain dry ice then one further single sample shall be dropped five times after conditioning in accordance with 6.5.4.4.8.

6.5.4.4 Drop Test

6.5.4.4.1 Samples must be subjected to free-fall drops from a height of 9 m onto a non-resilient, horizontal flat, massive and rigid surface that conforms with 6.3.3.3.

6.5.4.4.2 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.

6.5.4.4.3 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.

6.5.4.4.4 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.

6.5.4.4.5 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.

6.5.4.4.6 Fibreboard outer packagings—water spray test. 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 6.5.4.4.1.

6.5.4.4.7 Plastic primary receptacles or outer packagings—cold conditioning. 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 be subjected to the test described in 6.5.4.4.1. Where the samples contain Carbon dioxide, solid (dry ice), the conditioning period may be reduced to 4 hours.

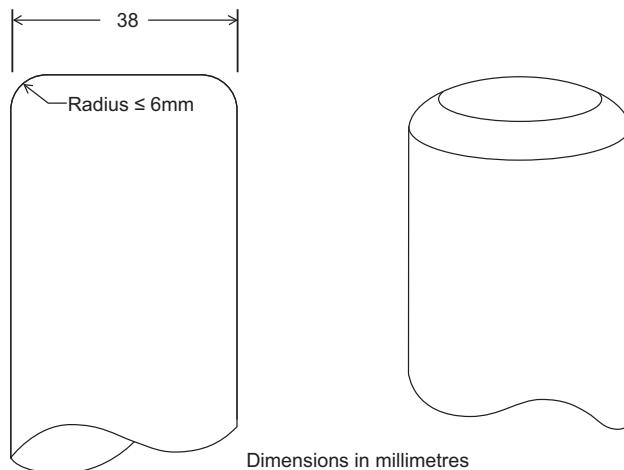
6.5.4.4.8 Packagings intended to contain dry ice—additional drop test. Where the packaging is intended to contain Carbon dioxide, solid (dry ice), a test additional to those required by 6.5.4.4.1 and, when appropriate, in 6.5.4.4.6 or 6.5.4.4.7 must be carried out. One sample must be stored so that all the Carbon dioxide, solid (dry ice) dissipates and then that sample must be dropped in one of the orientations described in 6.5.4.4.2, which must be that most likely to result in failure of the packaging.

6.5.4.5 Puncture Test

6.5.4.5.1 Packagings with a gross weight of 7 kg or less. Samples must be placed on a level, hard surface. A cylindrical steel rod with a weight of at least 7 kg, a diameter not exceeding 38 mm and the impact end edge a radius not exceeding 6 mm (See Figure 6.5.C) must be dropped in a vertical free fall from a height of 1 m, measured from the impact end to the 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. 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).

6.5.4.5.2 Packagings with a gross weight exceeding 7 kg. Samples must be dropped onto the end of a cylindrical steel rod. The rod must be set vertically in a level hard surface. It must have a diameter of 38 mm and the edges of the upper end a radius not exceeding 6 mm (See Figure 6.5.C). 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 must be 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 must be 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).

**FIGURE 6.5.C
Cylindrical Steel Rod Used for Puncture Test
(6.5.4.5)**



6

6.5
to
6.6

6.5.5 Test Report

6.5.5.1 A written 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 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 as 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.

6.6 Test Criteria for Limited Quantity Packaging

6.6.1 Drop Test

The package, packed as if for transport, must be capable of withstanding a 1.2 m drop test onto a rigid, non-resilient, flat, horizontal surface, in a position most likely to cause the most damage. After the test, the outer package must not show any damage, which is liable to affect safety during transport and there must be no leakage from the inner packaging(s).

6.6.2 Stacking Test

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).

6.7 Test Criteria for Salvage Packagings

OPERATOR VARIATIONS: 9W-05, AA-04, AC-03, EI-03, EY-06, JX-04, KQ-06, KZ-08, ME-05, MH-03, MP-02, NH-05, OM-07, OU-08, SV-06, UX-09

Salvage packagings (see SALVAGE PACKAGING in Appendix A) 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:

6.7.1 The test substance used in performing the tests must be water, and the packagings must be filled to 98% or more of their maximum capacity. It is permissible to use additives, such as bags of lead shot, to achieve the requisite total package weight 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 6.3.3;

6.7.2 Packagings must have been successfully leak-proofness tested at 30 kPa with the test results reflected in the test report required by 6.3.7;

6.7.3 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 6.3.5; and

6.7.4 The marking required by 6.0.4.2(b) must be followed by the letter "T".

6.8 Requirements for the Construction and Testing of Intermediate Bulk Containers (IBC)

6.8.1 General Requirements

6.8.1.1 Scope

6.8.1.1.1 The requirements of this Subsection apply to IBCs intended for the transport by air of **Environmentally hazardous substance, solid, n.o.s.**, UN 3077, only. The provisions set out general requirements that are applicable to multimodal transport as set out in the *UN Recommendations on the Transport of Dangerous Goods (Model Regulations)*.

6.8.1.1.2 Exceptionally, IBCs and their service equipment not conforming strictly to the requirements herein, but having acceptable alternatives, may be considered by the appropriate national authority for approval. In addition, in order to take into account progress in science and

technology, the use of alternative arrangements which offer at least equivalent safety in use in respect of compatibility with the properties of the substances carried and equivalent or superior resistance to impact, loading and fire, may be considered by the appropriate national authority.

6.8.1.1.3 The construction, equipment, testing, marking and operation of IBCs must be subject to acceptance by the appropriate national authority of the country in which the IBCs are approved.

6.8.1.1.4 Manufacturers and subsequent distributors of IBCs must provide information regarding procedures to be followed and a description of the types and dimensions of closures (including required gaskets) and any other components needed to ensure that IBCs as presented for transport are capable of passing the applicable performance tests of this Subsection.

6.8.1.2 Definitions

Body—(for all categories of IBCs other than composite IBCs) means the receptacle proper, including openings and their closures, but does not include service equipment;

Handling device—(for flexible IBCs) means any sling, loop, eye or frame attached to the body of the IBC or formed from a continuation of the IBC body material;

Maximum permissible gross mass—means the mass of the IBC and any service or structural equipment together with the maximum net mass;

Protected—(for metal IBCs) means being provided with additional protection against impact, the protection taking the form of, for example, a multi-layer (sandwich) or double wall construction or a frame with a metal lattice-work casing;

Service equipment—means filling and discharge devices and, according to the category of IBC, pressure-relief or venting, safety, heating and heat-insulating devices and measuring instruments;

Structural equipment—(for all categories of IBCs other than flexible IBCs) means the reinforcing, fastening, handling, protective or stabilizing members of the body, including the base pallet for composite IBCs with plastics inner receptacle, fibreboard and wooden IBCs;

Woven plastic—(for flexible IBCs) means a material made from stretched tapes or monofilaments of a suitable plastic material.

6.8.1.3 Categories of IBCs

6.8.1.3.1 Metal IBCs consist of a metal body together with appropriate service and structural equipment.

6.8.1.3.2 Flexible IBCs consist of a body constituted of film, woven fabric or any other flexible material or combinations thereof, and if necessary an inner coating or liner, together with any appropriate service equipment and handling devices.

6.8.1.3.3 Rigid plastic IBCs consist of a rigid plastic body, which may have structural equipment together with appropriate service equipment.

6.8.1.3.4 Composite IBCs consist of structural equipment in the form of a rigid outer casing enclosing a plastic inner receptacle together with any service or other structural equipment. They are so constructed that the inner receptacle and outer casing once assembled, form and are used as, an integrated single unit to be filled, stored, transported or emptied as such.

6.8.1.3.5 Fibreboard IBCs consist of a fibreboard body with or without separate top and bottom caps, if necessary an inner liner (but no inner packagings), appropriate service and structural equipment.

6.8.1.3.6 Wooden IBCs consist of a rigid or collapsible wooden body together with an inner liner (but no inner packagings) and appropriate service and structural equipment.

6.8.1.4 Codes used to Designate IBCs

6.8.1.4.1 The code must consist of two Arabic numerals as specified in Table 6.8.A designating the type of IBC followed by a capital letter(s) as specified in 6.8.1.4.2 designating the material followed, when specified in an individual section, by an Arabic numeral indicating the category of IBC.

TABLE 6.8.A
IBC Type Code (6.8.1.4.1)

Type	For Solids Filled or Discharged		For Liquids
	By gravity	under pressure of more than 10 kPa (0.1 bar)	
Rigid	11	21	31 (Forbidden in air transport)
Flexible	13	—	

6.8.1.4.2 The following capital letters must be used for the types of material:

Material Code—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, multi-wall

N—Metal (other than steel or aluminium)

6.8.1.4.3 For composite IBCs, two capital letters in Latin characters must be used in sequence in the second position of the code. The first must indicate the material of the inner receptacle of the IBC and the second that of the outer packaging of the IBC.

6.8.1.4.4 Table 6.8.B contains a list of the intermediate bulk containers permitted for the shipment of solid environmentally hazardous substances (UN 3077) by air by type and description together with their specification codes.

TABLE 6.8.B
List of IBCs (6.8.1.4.4)

Material	Category	Code
Metal		
Steel	for solids, filled or discharged by gravity	11A
	for solids, filled or discharged under pressure	21A
Aluminium	for solids, filled or discharged by gravity	11B
	for solids, filled or discharged under pressure	21B
Other than steel or aluminium	for solids, filled or discharged by gravity	11N
	for solids, filled or discharged under pressure	21N
Flexible		
Plastic	woven plastic, coated	13H2
	woven plastic, with liner	13H3
	woven plastic, coated and with liner	13H4
	plastic film	13H5
Textile	coated	13L2
	with liner	13L3
	coated and with liner	13L4
Paper	multiwall	13M1
	multiwall, water resistant	13M2
Rigid Plastic	for solids, filled or discharged by gravity, fitted with structural equipment	11H1
	for solids, filled or discharged by gravity, freestanding	11H2
	for solids, filled or discharged under pressure, fitted with structural equipment	21H1
	for solids, filled or discharged under pressure, freestanding	21H2
Composite with plastic inner receptacle *	for solids, filled or discharged by gravity, with rigid plastic inner receptacle	11HZ1
	for solids, filled or discharged by gravity, with flexible inner receptacle	11HZ2
	for solids, filled or discharged under pressure, with rigid plastic inner receptacle	21HZ1

TABLE 6.8.B
List of IBCs (6.8.1.4.4) (continued)

	for solids, filled or discharged under pressure, with flexible inner receptacle	21HZ2
Fibreboard	for solids, filled or discharged by gravity	11G
Wooden		
Natural wood	for solids, filled or discharged by gravity, with inner liner	11C
Plywood	for solids, filled or discharged by gravity, with inner liner	11D
Reconstituted wood	for solids, filled or discharged by gravity, with inner liner	11F

* The code must be completed by replacing the letter "Z" with a capital letter in accordance with 6.8.1.4.2 to indicate the type of material used for the outer casing.

6.8.1.4.5 The letter "W" may follow the IBC code. The letter "W" signifies that the IBC, although of the same type indicated by the code, is manufactured to a specification different from those in section 6.5.5 and is considered equivalent in accordance with the requirements in 6.8.1.1.2.

6.8.2 Marking

6.8.2.1 Primary Marking

6.8.2.1.1 Each IBC manufactured and intended for use according to these Regulations must bear markings which are durable, legible and placed in a location so as to be

readily visible. Letters, numerals and symbols must be at least 12 mm high and must show:

- (a) the United Nations packaging symbol as shown in Figure 6.0.A. This symbol must not be used for any purpose other than certifying that a packaging complies with the relevant requirements in Section 6. For metal IBCs on which the marking is stamped or embossed, the capital letters "UN" may be applied instead of the symbol;
- (b) the code designating the type of IBC according to 6.8.1.4;
- (c) a capital letter designating the packing group(s) for which the design type has been approved:
 - 1. X for packing groups I, II and III (IBCs for solids only);
 - 2. Y for packing groups II and III;
 - 3. Z for packing group III only;
- (d) the month and year (last two digits) of manufacture;
- (e) the State authorizing the allocation of the mark; indicated by the international Vehicle Registration Code (VRI Code) as indicated in Appendix D.1 and D.2;
- (f) the name or symbol of the manufacturer and other identification of the IBC as specified by the appropriate national authority;
- (g) the stacking test load in kg. For IBCs not designed for stacking, the figure "0" must be shown;
- (h) the maximum permissible gross mass in kg.

6.8.2.1.2 The marking, as illustrated in Table 6.8.C, must be applied in the sequence shown in 6.8.2.1.1 (a) to (h); each element of the marking required in these subparagraphs and when appropriate, in 6.8.2.2, must be clearly separated, e.g. by a slash (i.e. "/") or space and presented in a way that ensures that all of the parts of the mark may be easily identified.

TABLE 6.8.C
Example of IBC Markings (6.8.2.1.2)

UN Symbol	Complete Code	Description of IBC Type
	11A/Y/02 13 NL/Mulder 007 5500/1500	For a metal IBC for solids discharged by gravity and made from steel/for packing groups II and III/ manufactured in February 2013/authorized by the Netherlands/manufactured by Mulder and of a design type to which the appropriate national authority has allocated serial number 007/the stacking test load in kg/the maximum permissible gross mass in kg.
	13H3/Z/03 13 F/Meunier 1713 0/1500	For a flexible IBC for solids discharged for instance by gravity and made from woven plastics with a liner/not designed to be stacked.
	11C/X/01 13 S/Aurigny 9876 3000/910	For a wooden IBC for solids with an inner liner and authorized for packing groups I, II and III solids.
	11HA1/X/05 13 D/Muller 1683 10800/800	For a composite IBC for solids with a rigid plastic inner receptacle and a steel outer casing.

6.8.2.2 Additional Marking

6.8.2.2.1 Each IBC must bear the markings required in 6.8.2.1 and, in addition, the information as shown in Table 6.8.D which may appear on a corrosion-resistant plate permanently attached in a place readily accessible for inspection.

6.8.2.2.2 The maximum permitted stacking load applicable when the IBC is in use must be displayed on a symbol as shown in Figure 6.8.E. The symbol must be not less than 100 mm × 100 mm, be durable and clearly visible. The letters and numbers indicating the mass must be at least 12 mm high. The mass marked above the symbol must not exceed the load imposed during the design type test (see UN Model Regulations 6.5.6.6.4) divided by 1.8.

Note:

The provisions of 6.8.2.2.2 apply to all IBCs manufactured, repaired or remanufactured as from 1 January 2011.

6.8.2.2.3 In addition to the markings required in 6.8.2.1, flexible IBCs may bear a pictogram indicating recommended lifting methods.

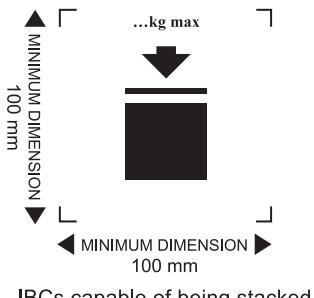
TABLE 6.8.D
Additional IBC Markings (6.8.2.2.1)

Additional Markings	Category of IBC				
	Metal	Rigid Plastic	Composite	Fibre-board	Wooden
Capacity in litres ^a at 20°C	X	X	X		
Tare mass in kg	X	X	X	X	X
Test (gauge) pressure in kPa or bar ^a , if applicable		X	X		
Maximum filling/discharge pressure in kPa or bar a, if applicable	X	X	X		
Body material and its minimum thickness in mm	X				
Date of last leakproofness test, if applicable (month and year)	X	X	X		
Date of last inspection (month and year)	X	X	X		
Serial number of the manufacturer	X				
Maximum permitted stacking load ^b	X	X	X	X	X

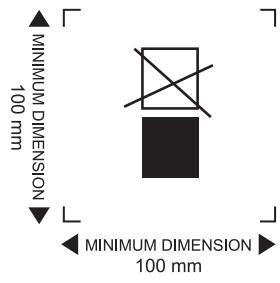
^a The unit used must be shown.

^b See 6.8.2.2.2. This additional marking applies to all IBCs manufactured, repaired or remanufactured as from 1 January 2011.

FIGURE 6.8.E
IBC Stacking Symbol (6.8.2.2.2)



IBCs capable of being stacked

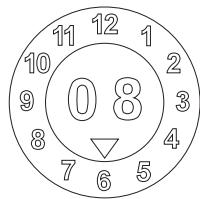


IBCs NOT capable of being stacked

6.8.2.2.4 The inner receptacle of composite IBCs manufactured after 1 January 2011 must bear the markings indicated in 6.8.2.1.1 (b), (c), (d) where this date is that of the manufacture of the plastic inner receptacle, (e) and (f). The UN packaging symbol must not be applied. The marking must be applied in the sequence shown in 6.8.2.1.1. It must be durable, legible and placed in a location so as to be readily visible when the inner receptacle is placed in the outer casing.

The date of the manufacture of the plastic inner receptacle may alternatively be marked on the inner receptacle adjacent to the remainder of the marking. An example of an appropriate marking method is shown in Figure 6.8.F.

FIGURE 6.8.F
Example of IBC Inner Receptacle Marking to Identify Date of Manufacture (6.8.2.2.4)



6.8.2.2.5 Where a composite IBC is designed in such a manner that the outer casing is intended to be dismantled for transport when empty (such as for return of the IBC for reuse to the original consignor), each of the parts intended to be detached when so dismantled must be marked with the month and year of manufacture and the name or symbol of the manufacturer and other identification of the IBC as specified by the appropriate national authority (6.8.2.1.1(f)).

6.8.3 Construction, Testing, Certification, Inspection and Specific Requirements for IBCs

All of the requirements applicable to the construction, testing, certification, inspection and specific requirements applicable to IBC types are set out in 6.5.3 to 6.5.6 of the UN Recommendations on the Transport of Dangerous Goods (Model Regulations).

SECTION 7—MARKING AND LABELLING

7.0 General

7.0.1 Shipper's General Responsibility

The shipper is responsible for all necessary marking and labelling of each package of dangerous goods, and each overpack containing dangerous goods, in compliance with these Regulations. Each package must be of such a size that there is adequate space to affix all required markings and labels (see 5.0.2.13.4).

7.1 Marking

7.1.1 Shipper's Specific Responsibilities

For each such package and overpack requiring marking, the shipper must:

- (a) check that any relevant marking on the package or overpack already on the package is in the correct location and meets the quality and specification requirements of the Regulations;
- (b) remove or obliterate any irrelevant marking already on the package or overpack;
- (c) ensure that each outer or single packaging used for dangerous goods, for which specification packaging is required in Section 5, bears the specification markings as specified in 6.0.4;
- (d) apply any appropriate new marking in the correct location, and ensure that it is of durable quality and correct specification;
- (e) ensure that his responsibilities for marking are completely fulfilled when the package or overpack is presented to the operator for shipment.

7.1.2 Types of Marking

Markings for packages are of two types and must meet the relevant requirements of 7.1.2.1 to 7.1.2.3.

7.1.2.1 Markings which identify the design or specification of a packaging, irrespective of its use for a particular shipment, i.e. irrespective of contents, consignor, consignee, etc., must meet the relevant requirements for Specification Packaging Marking in 6.0.4 to 6.0.6. These markings are normally applied by the packaging manufacturer, but are still ultimately the responsibility of the shipper.

7.1.2.2 Packaging specification markings are not required for Limited Quantity packagings.

7.1.2.3 Markings, which identify the use of a particular packaging for a particular shipment, e.g. indication of contents, consignor, consignee, etc., must meet the relevant requirements for Packaging Use Marking

in 7.1.5. The application of these markings is solely the responsibility of the shipper.

7.1.3 Quality and Specification of Markings

STATE VARIATIONS: BNG-01, BRG-06, DQG-04, ESG-01, HKG-02, MYG-06, PKG-01, RUG-01, USG-01, VCG-05, VUG-01

OPERATOR VARIATIONS: EI-02, FX-11/19

7.1.3.1 General

All markings must be so placed on the packages or overpacks that they are not covered or obscured by any part of or attachment to the packaging or any other label or marking. The required markings must not be located with other package markings that could substantially reduce their effectiveness.

7.1.3.2 Quality

All markings must be:

- (a) durable and printed or otherwise marked on, or affixed to, the external surface of the package or overpack;
- (b) readily visible and legible;
- (c) able to withstand open weather exposure without a substantial reduction in effectiveness; and
- (d) displayed on a background of contrasting colour.

7.1.3.3 Language

OPERATOR VARIATIONS: IR-03, PX-01

English must be used in addition to the language, which may be required by the State of origin.

7.1.4 Markings for Overpacks

△ **7.1.4.1** Unless all markings representative of all dangerous goods in the overpack are clearly visible, the overpack must be marked with:

- the word "overpack";
- the required markings of 7.1.5.1(a), (b), (e) through (i);
- the required markings of 7.1.5.4;
- the required markings of 7.1.6.1, 7.1.6.2 and 7.1.6.3;
- any special handling instructions appearing on packages inside the overpack.

Package specification marking must not be reproduced on the overpack as the word "Overpack" indicates that packages contained within, comply with the prescribed specifications. When packages containing dangerous goods in limited quantities are placed in an overpack, the outside of the overpack must also be marked with the

limited quantity marking shown in Figure 7.1.A unless the limited quantity marking on the packages is visible. For an overpack containing packages of radioactive material, see 10.7.1.4.

7.1.4.2 When a consignment consists of more than one overpack, to facilitate identification, loading and notification, the operator requires each overpack to show an identification mark (which may be in any alpha-numeric format) and the total quantity of dangerous goods, as indicated on the Shipper's Declaration.

Note:

Where an overpack contains more than one UN number, the total quantity of dangerous goods should be shown by UN number.

7.1.5 Packaging Use Marking (Packages and Salvage Packagings)

STATE VARIATIONS: SAG-06, USG-02/04/05/07

△ OPERATOR VARIATIONS: 4C-06, 4M-06, 9W-05, AA-04, AC-03, BA-02, EI-03, EY-06, KQ-05, KZ-08, L7-06, LA-14, LP-06, LU-06, M3-06, M7-06, ME-05, MH-03, MP-02, MS-01, OM-07, OU-08, SK-01, SV-06, TK-02, UC-06, UX-09, XL-06

7.1.5.1 General

Unless otherwise specified in these Regulations, each package containing dangerous goods must be marked, durably and legibly on the outside of the package with each of the following:

△ (a) the PROPER SHIPPING NAME(S) of the contents (see 8.1.3) (supplemented with the technical name or chemical group name(s) if appropriate) and the corresponding UN NUMBER(S) or ID NUMBER(S) preceded by the letters "UN" or "ID" as applicable, as listed in Subsection 4.2—List of Dangerous Goods. The size of these package markings is set out in 7.1.5.5. In the case of unpackaged articles, these markings must be displayed on the article, on its cradle or on its handling, storage or launching device. For Class 1, Explosives, the Proper Shipping Name may be supplemented by additional descriptive text to indicate commercial or military names. Example of Proper Shipping Name and UN Number marking:

CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
(CAPRYLYL CHLORIDE) UN 3265.

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 8.1.3.6).

Note:

Additional descriptive text in the entries in Column B of the List of Dangerous Goods are not part of the Proper Shipping Name but may be used in addition to the Proper Shipping Name.

(b) the full NAME AND ADDRESS of the shipper and the consignee must be provided on each package and should be located on the same surface of the package near the proper shipping name marking, if the package dimensions are adequate;

△ (c) the NET QUANTITY of dangerous goods contained in each package must be shown. Where the maximum quantity shown in Column H in Subsection 4.2 is a gross weight, the GROSS WEIGHT of the package must be shown with the letter "G" following the unit of measure. This quantity must be marked adjacent to the UN number and Proper Shipping Name required by (a), above. The requirement does not apply to:

- consignments of only one package;
- consignments of multiple packages with identical dangerous goods contents (i.e. each package with same UN number, proper shipping name, packing group, and quantity);
- ID 8000, Consumer commodity and Radioactive material (Class 7).

(d) for UN 1845—Carbon dioxide, solid (dry ice) the NET WEIGHT of dry ice contained in each package must be shown.

△ (e) for Division 6.2, Infectious Substances: the NAME AND TELEPHONE NUMBER OF A RESPONSIBLE PERSON;

(f) for Class 2, Refrigerated Liquefied Gases, referenced to Packing Instruction 202: the upright position of each package must be indicated prominently by either the "Package Orientation" label (see Figure 7.4.D or Figure 7.4.E) or pre-printed package orientation labels meeting the same specification as either Figure 7.4.D or Figure 7.4.E or ISO Standard 780-1997. The label must be affixed to or printed on at least two opposite vertical sides of the package with the arrows points in the correct direction. The wording "KEEP UPRIGHT" must be placed at 120° intervals around the package or on each side.

(g) for packages containing UN 3373: "BIOLOGICAL SUBSTANCE, CATEGORY B" as well as the diamond-shaped mark as shown in Packing Instruction 650.

Note:

Packages containing biological substances are not required to have the net quantity marked on the outside of the package. However, where dry ice is used as a refrigerant, the net weight of dry ice must be shown.

(h) when chemical oxygen generators contained in Protective Breathing Equipment (PBE) are being transported in accordance with Special Provision A144, the statement "Air Crew Protective Breathing Equipment (smoke hood) in accordance with Special Provision A144" must be marked adjacent to the proper shipping name on the package.

(i) when environmentally hazardous substances are being transported the marking required by 7.1.6.3.

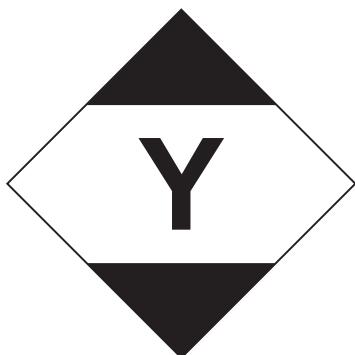
7.1.5.2 Markings of Other Regulations

Markings required by other international or national transport regulations are permitted in addition to markings required by these Regulations, provided that they cannot be confused with or conflict with any markings prescribed by these Regulations, because of their colour, design or shape.

7.1.5.3 Limited Quantities

Packages of dangerous goods shipped under the Limited Quantity provisions of Subsection 2.7, must be marked with the Limited Quantities mark (see Figure 7.1.A).

FIGURE 7.1.A
Limited Quantities Mark (7.1.5.3)



Name: Limited Quantity

Minimum dimensions: 100 mm x 100 mm

If the package(s) are of such dimensions that they can only bear a smaller mark the dimensions may be reduced to not less than 50 mm x 50 mm provided the marking remains clearly visible

Minimum width of line forming the diamond: 2 mm

The symbol "Y" must be placed in the centre of the mark and must be clearly visible

Top and bottom portions and line must be black, centre area white or suitable contrasting background.

7.1.5.4 Salvage Packagings

Before a person offers any salvage packaging for transport by air, he must ensure that it is marked with the word "SALVAGE".

△ 7.1.5.5 Size

7.1.5.5.1 The marking of the UN number and the letters "UN" as specified in 7.1.5.1(a) 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.

Note:

The mandatory size requirements for the UN number marking become effective as from 1 January 2014.

7.1.5.5.2 Package and overpack use markings should be at least 12 mm high, except for packages of 30 L or 30 kg capacity or less when they should have a minimum height of 6 mm.

7.1.5.6 Empty Packagings

7.1.5.6.1 Other than Class 7, a packaging which previously contained dangerous goods must be marked as required for those dangerous goods unless steps such as cleaning, purging of vapours or refilling with non-dangerous goods are taken to nullify any hazard.

7.1.5.6.2 Before an empty packaging which had previously contained infectious substance is returned to the shipper, or sent elsewhere, it must be thoroughly disinfected or sterilized and any marking indicating that it had contained an infectious substance must be removed or obliterated.

7.1.5.7 All Packed in One

When two or more dangerous goods are packed within the same outer packaging, the package must be marked as required for each substance.

7.1.6 Additional Markings

7.1.6.1 Package Orientation

When a "Package Orientation" (This Way Up) label is affixed to a package or overpack, the words "THIS END UP" or "THIS SIDE UP" may be marked on the top of the package or overpack (see 5.0.2.13.3).

7.1.6.2 Additional Handling and Storage Markings

Additional markings 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. It is preferable to use the symbols recommended by the International Organization for Standardization (ISO).

7.1.6.3 Environmentally Hazardous Substances

7.1.6.3.1 Packages containing environmentally hazardous substances or mixtures meeting the criteria of 3.9.2.4 (UN 3077 and UN 3082), must be durably marked with the environmentally hazardous substance mark as shown in Figure 7.1.B. The environmentally hazardous substance mark is not required on single packagings and combination packagings where such single packagings or the inner packagings of such combination packagings have:

- a net quantity of 5 L or less for liquids; or
- a net quantity of 5 kg or less for solids.

Note:

The environmentally hazardous substance mark (Figure 7.1.B) may also appear on packages containing substances other than UN 3077 and UN 3082 when required by other international or national transport regulations (see 7.1.5.2).

7.1.6.3.2 The environmentally hazardous substance mark must be located adjacent to the markings required by 7.1.5.1(a).

7.1.6.3.3 The environmentally hazardous substance mark must be as shown in Figure 7.1.B. The dimensions of the mark must be 100 mm x 100 mm, except in the case of packages of such dimensions that they can only bear smaller marks.

7.1.6.3.4 Regardless of the application of 7.1.6.3.1, all packages containing environmentally hazardous

substances (UN 3077 and UN 3082) must bear a Class 9 hazard label.

7.1.6.4 Intermediate Bulk Containers (IBCs) for UN 3077 Only

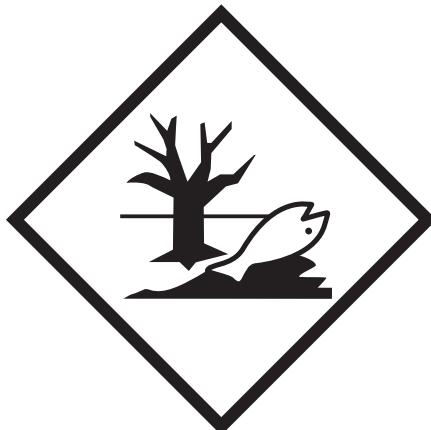
Intermediate bulk containers must comply with the marking requirements applicable to other packagings, except that Intermediate bulk containers of more than 450 L

capacity must be marked with the proper shipping name and UN Number, as required in 7.1.5.1, and the environmentally hazardous mark on two opposite sides.

7.1.7 Prohibited Marking

Arrows for purposes other than indicating proper package orientation must not be displayed on a package or overpack containing liquid dangerous goods.

FIGURE 7.1.B
Environmentally Hazardous Substance Mark (7.1.6.3)

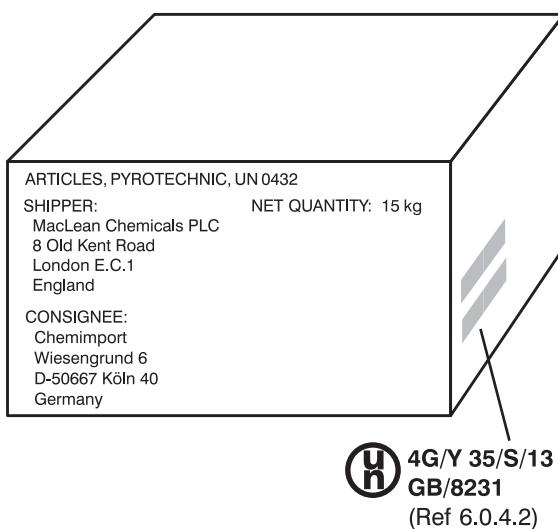
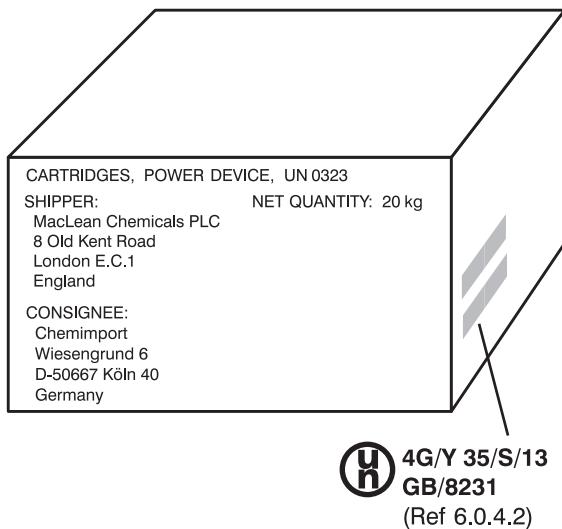


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7.1

Name: Environmentally Hazardous
Minimum dimensions: 100 mm x 100 mm
Symbol (fish and tree): Black
Background: White or suitable contrasting background

FIGURE 7.1.C
Package Marking Example for UN Specification Packaging



Note: Figure 7.1.C displays an example of the markings required for two non-identical packages in a multi-piece consignment.

7.2 Labelling

7.2.1 Shipper's Specific Responsibilities

For each such package and overpack requiring labelling, the shipper must:

- (a) remove or obliterate any irrelevant labelling already on the package or overpack;
- (b) use only labels of durable quality and correct specification;
- (c) inscribe on each label, in a durable manner, any required additional information;
- (d) affix the appropriate label(s) in the correct location(s) and in a secure manner;
- (e) ensure that the responsibilities for labelling are completely fulfilled when the package or overpack is presented to the operator for shipment.

7.2.2 Quality and Specification of Labels

STATE VARIATIONS: DQG-04, PKG-02, VCG-06, VUG-05

7.2.2.1 Durability

The material of every label, the printing and any adhesive thereon, must be sufficiently durable to withstand normal transport conditions including open weather exposure without a substantial reduction in effectiveness.

7.2.2.2 Types of Labels

Labels are of two types:

- (a) hazard labels, which are required for most dangerous goods in all classes; and
- (b) handling labels which are required, either alone or in addition to hazard labels, for some dangerous goods.

7.2.2.3 Label Specifications

7.2.2.3.1 All labels (hazard labels and handling labels) used on packages of dangerous goods, and overpacks containing dangerous goods, must conform, in shape, colour, format, symbol and text, to the specimen designs reproduced in Subsection 7.3 and Subsection 7.4. Except as indicated, no variation in specification is permitted. The dimensions for handling labels shown in Figure 7.4.A through Figure 7.4.H are minimum dimensions, except as otherwise provided for. Hazard and handling labels having dimensions not smaller than half of those shown in Figure 7.3.F, Figure 7.3.O, Figure 7.3.V and Figure 7.4.B to Figure 7.4.E may be used on packages containing infectious substances when the packages are of such dimensions that they can only bear smaller labels.

Note:

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 Regulations 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.

7.2.2.3.2 Hazard labels must conform to the following specifications:

- (a) they must be in the form of a square with minimum dimensions of 100 × 100 mm, except as provided in 7.2.2.3.1, set at an angle of 45° (diamond shaped). The labels have a line 5 mm inside the edge and running parallel to it. In the upper half of the label the line must be the same colour as the symbol and in the lower half it must be the same colour as the figure in the bottom corner. Labels are divided into halves. With the exception of Division 1.4, 1.5 and 1.6, the upper half of the label is reserved for the pictorial symbol and the lower half for texts, the class or division number and the compatibility group letter as appropriate;
- (b) the symbols, text 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;
 3. the Division 5.2 label, where the symbol may be shown in white.
- (c) 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 Subsection 7.3, which have been reduced in size, according to ISO 7225:1994, for display on the non-cylindrical part (shoulder) of such cylinders. Labels may overlap to the extent provided for by ISO 7225:1994 "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 symbols recognisable.

7.2.2.3.3 The following colour standards from the Pantone® Formula Guide may be used to achieve the required colours on hazard and handling labels:

- Blue—Pantone Colour No. 285U
- Green—Pantone Colour No. 335U
- Orange—Pantone Colour No. 151U
- Red—Pantone Colour No. 186U
- Yellow—Pantone Colour No. 109U

7.2.2.4 Hazard Text

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

Unless otherwise provided in these Regulations, only text indicating the nature of the risk may be inserted in the lower half of the hazard label(s) in addition to the class or division number or compatibility group. This text should be in English, unless otherwise required by the State of origin. In such cases, an English translation should also be provided with both languages given equal prominence.

The same language provisions apply to handling labels. 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.

7.2.3 Applicability of Hazard Labels

STATE VARIATIONS: JPG-21/24

7.2.3.1 General

Hazard labels to be used on packages and overpacks of dangerous goods are specified using abbreviations (see B.2.2.1) in Subsection 4.2, List of Dangerous Goods. A primary hazard label is specified for each listed article and substance. A secondary hazard label or labels must also be applied for each article and substance having subsidiary risks. In certain cases the need for using a subsidiary risk label may also be indicated by a special provision (see Subsection 4.4) where no subsidiary risk is indicated in Column C, or may exempt from the requirement for a subsidiary risk label where such a risk is indicated in the List of Dangerous Goods. A subsidiary hazard label may also be required where specified in Table C.1 or Table C.2 for self-reactive substances in Division 4.1 and organic peroxides respectively.

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7.2

7.2.3.2 Hazard Class Number

Labels identifying the primary and subsidiary hazards of the dangerous goods must bear the class or division number as required in Subsection 7.3.

7.2.3.3 Class 1

For Class 1 materials (Explosives), it must be noted that:

- (a) packages requiring labels for Explosives in Divisions 1.1, 1.2, 1.3, 1.4F, 1.5 and 1.6 are (with a few exceptions) normally forbidden for air carriage; and
- (b) Class, Division and Compatibility Group numbers or letters must be inscribed on the label.

7.2.3.4 Class 2

For Class 2 materials (Gases), there are three different labels:

- (a) a red label for Division 2.1 flammable gas (see Figure 7.3.E);
- (b) a green label for Division 2.2 non-flammable, non-toxic gas (see Figure 7.3.F);
- (c) a white label for Division 2.3 toxic gas (see Figure 7.3.G).

Note:

For the labelling of aerosols, see the appropriate entry under UN 1950, Aerosol ..., in the List of Dangerous Goods and the corresponding entry in Column D.

7.2.3.5 Division 4.2

Substances of Division 4.2 need not show a label for the Division 4.1 sub risk if the substance is also a flammable solid.

7.2.3.6 Class 5

For Class 5 materials (Oxidizing Substances and Organic Peroxides) there are two different labels:

- (a) a yellow label for Division 5.1—Oxidizing substances (see Figure 7.3.L), which must have the division number "5.1" in the bottom corner; and
 - (b) a red and yellow label for Division 5.2—Organic Peroxides (see Figure 7.3.M), which must have the division number "5.2" in the bottom corner.
- 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 flammable liquid label is required because the organic peroxide label itself is considered to imply that the product may be flammable.

7.2.3.7 Class 6

7.2.3.7.1 In addition to the primary hazard label (7.3.15), Division 6.2 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 2.6.1 and 2.6.5.

7.2.3.8 Class 8

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.

7.2.3.9 Class 9

7.2.3.9.1 For Class 9 materials, the package must bear the Class 9, "Miscellaneous Dangerous Goods" label as required in the List of Dangerous Goods. When the package contains magnetized material, the "Miscellaneous Dangerous Goods" label must be replaced by the "Magnetized Material" label.

7.2.3.9.2 Intermediate bulk containers must comply with the labelling requirements applicable to other packagings, except that intermediate bulk containers of more than 450 L capacity must be labelled on two opposite sides.

7.2.3.10 Salvage Packagings

OPERATOR VARIATIONS: 9W-05, AA-04, AC-03, EI-03, EY-06, KZ-08, ME-05, MH-03, MP-02, NH-05, OM-07, OU-08, SV-06, UX-09

Before a person offers any salvage packaging for transport by air, he must ensure that:

- (a) the packaging is labelled with all labels appropriate for the dangerous goods contained therein; and
- (b) where the package contains dangerous goods restricted to transport on Cargo Aircraft Only, the packaging bears a "Cargo Aircraft Only" label according to 7.2.4.2.

7.2.3.11 Empty Packagings

7.2.3.11.1 Other than 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 non-dangerous goods are taken to nullify any hazard.

7.2.3.11.2 Before an empty packaging which had previously contained infectious substance is referred to the shipper, or sent elsewhere, it must be thoroughly disinfected or sterilized and any label or marking indicating that it had contained an infectious substance must be removed or obliterated.

7.2.3.12 All Packed in One

When two or more dangerous goods are packed within the same outer packaging, the package must be labelled as required for each substance. Only one hazard label is required for each class or division contained within the package.

7.2.4 Handling Labels

STATE VARIATION: JPG-20

The handling labels to be used, either alone or in addition to hazard labels, as appropriate, are indicated as follows.

7.2.4.1 Magnetized Material

The "Magnetized Material" label (see Figure 7.4.A) must be used on packages and overpacks containing magnetized material.

7.2.4.2 Cargo Aircraft Only

The "Cargo Aircraft Only" label (see Figure 7.4.B) must be used on packages containing dangerous goods that are permitted only on 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. The "Cargo Aircraft Only" label must not be used for packages packed according to Passenger Aircraft limitations (Sub-section 4.2, Columns G and H and/or I and J) even when included on a Shipper's Declaration marked "Cargo Aircraft Only" because of other packages in the shipment.

Note:

There are cases when a State variation may require a shipment to be labelled and carried on Cargo Aircraft Only, when normally permitted on a passenger aircraft.

7.2.4.3 Cryogenic Liquids

The "Cryogenic Liquids" handling label (see Figure 7.4.C) must be used in addition to the Non-flammable gas (Division 2.2) hazard label on packages and overpacks containing cryogenic liquids.

△ 7.2.4.4 Package Orientation

OPERATOR VARIATIONS: ME-09, SV-04, VT-07

Either the "Package Orientation" (This Way Up) labels (see Figure 7.4.D and Figure 7.4.E) or pre-printed package orientation labels meeting the same specifications as Figure 7.4.D or Figure 7.4.E (ISO Standard 780:1997) must be used on combination packagings and overpacks containing liquid dangerous goods.

Orientation arrows are not required on outer packagings containing:

- dangerous goods in inner packagings each containing 120 mL or less with sufficient absorbent material between the inner and outer packagings to completely absorb the liquid contents;
- dangerous goods in gas tight inner packagings such as tubes, bags or vials which are opened by breaking or puncturing. Each inner packaging must not contain more than 500 mL;
- infectious substances in primary receptacles not exceeding 50 mL; or
- radioactive material.

The words "Dangerous Goods" may be inserted on the label below the line. The labels must be affixed or pre-printed on at least two opposite sides to show the proper package orientation for the closure(s) to be in the upright position. When a package orientation label is affixed on a package or overpack, the words "THIS END UP" or "THIS SIDE UP" may also be displayed on the top of the package or overpack (see also 5.0.2.13.3).

7.2.4.5 Keep Away From Heat

The "Keep Away From Heat" handling label (see Figure 7.4.F) must be used in addition to the applicable hazard label on packages and overpacks containing self-reactive substances in Division 4.1 and Division 5.2, Organic Peroxides (see Special Provision A20).

7.2.4.6 Radioactive Material, Excepted Package

The "Radioactive Material, Excepted Package" handling label (see Figure 7.4.G) must be affixed to all excepted packages of radioactive material.

△ 7.2.4.7 Lithium Batteries

7.2.4.7.1 Packages containing lithium batteries that meet the requirements of Section II of Packing Instructions 965 to 970 must bear a "Lithium Battery" handling label (see Figure 7.4.H) as required by the applicable packing instruction. The label must be a minimum dimension of 120 mm x 110 mm except labels of 74 mm x 105 mm may be used on packages containing lithium batteries where the packages are of dimensions such that they can only bear smaller labels. The label must show "Lithium metal batteries" or "Lithium ion batteries", as applicable, and a telephone number for additional information. Where the package contains both types of batteries, the label must show "Lithium metal and lithium ion batteries". The information on the lithium battery handling label must be in English. Additionally, if required,

the wording in English may be supplemented by an accurate printed translation in another language.

7.2.4.7.2 Packages containing lithium batteries that meet the requirements of Section IB of Packing Instructions 965 and 968 must bear both a "Lithium battery" handling label (see Figure 7.4.H) and a Class 9 hazard label (see Figure 7.3.V).

7.2.5 Prohibited Labelling

7.2.5.1 Cylindrical packages, and other slim packages, must be of such peripheral dimension that a label cannot overlap itself.

7.2.5.2 Arrows for purposes other than indicating proper package orientation must not be displayed on a package containing liquid dangerous goods.

7.2.6 Affixing of Labels

OPERATOR VARIATIONS: FX-11, LA-14

7.2.6.1 General

Except as provided in 7.2.2.3, the following requirements apply:

- (a) all labels must be securely affixed or printed on the packaging so that they are readily visible and legible and not obscured by any part of or attachment to the packaging or by any other label or marking;
- (b) each label must be affixed or printed on a background of contrasting colour or must have a dotted or solid line outer boundary;
- (c) labels must not be folded or affixed in such a manner that parts of the same label appear on different faces of the package;
- (d) if the package is of such an irregular shape that a label cannot be attached or printed on a surface, it is acceptable to attach the label(s) to the package by means of strong tag(s);
- (e) the package must be of such a size that there is adequate space to affix all required labels.

Note:

See 9.3.7 for the replacement of labels during transport.

7.2.6.2 Label Location

7.2.6.2.1 When the package dimensions are adequate, labels must be located on the same surface of the package near the Proper Shipping Name marking.

☞ **7.2.6.2.2** Labels should be affixed adjacent to the shipper's or consignee's address appearing on the package.

⚠ **7.2.6.2.3** When labels identifying the primary and subsidiary risk are required, they must be affixed adjacent to each other on the same surface of the package.

7.2.6.2.4 When different items of dangerous goods are packed in the same outer packaging and require multiple hazard labels, they must be affixed adjacent to each other.

7.2.6.2.5 Unless the package dimensions are inadequate hazard labels must be affixed at an angle of 45° (diamond shaped).

7.2.6.3 Cargo Aircraft Only Label

When a "Cargo Aircraft Only" label is required, it must be affixed on the same surface of the package near the hazard label(s).

7.2.6.4 Orientation Label

When package orientation "This Way Up" labels are required, at least two of these labels must be used. One label must be affixed to each of two opposite sides of the package, with the arrows pointing in the upright position.

7.2.7 Overpack

7.2.7.1 Labels required on packages within an overpack must be clearly visible or else be reproduced on the outside of the overpack. Only one hazard label is required for each class or division contained within the package.

7.2.7.2 An overpack containing liquid dangerous goods in single packagings with end closures must be labelled with either the "Package Orientation" label (Figure 7.4.D or Figure 7.4.E), or pre printed package orientation labels meeting the same specification as Figure 7.4.D, Figure 7.4.E or ISO Standard 780 1985, 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 packagings may also have side closures.

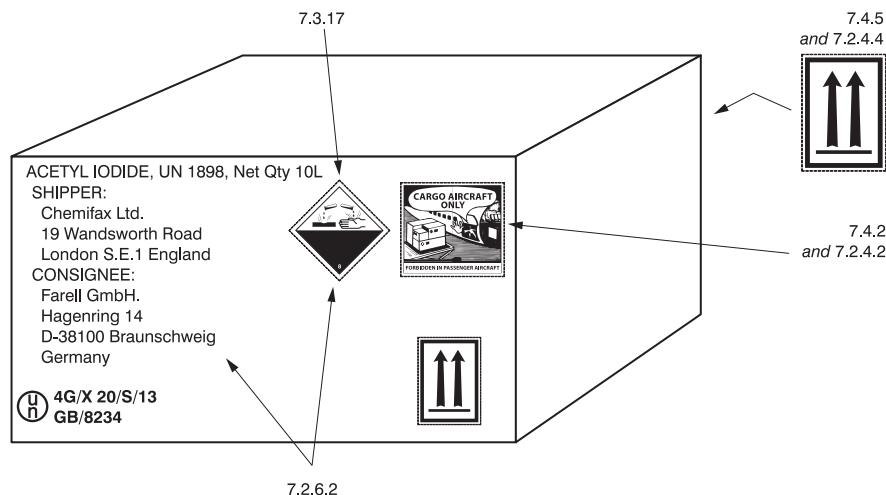
7.2.8 Labels of Other Regulations

Labels required by other international or national transport regulations are permitted in addition to labels required by these Regulations, provided that they cannot be confused with or conflict with any labels prescribed by these Regulations, because of their colour, design or shape.

7.2.9 Additional Handling and Storage Markings

Additional markings or symbols printed on labels 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. It is preferable to use the symbols recommended by the International Organization for Standardization (ISO).

FIGURE 7.2.A
Package Labelling Example



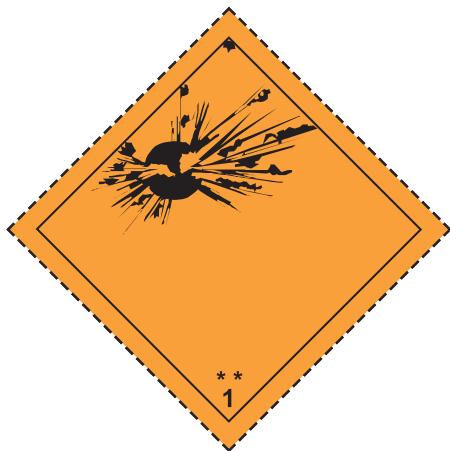
7.3 Hazard Label Specifications

7.3.1 Class 1—Explosive (Divisions 1.1, 1.2, 1.3)

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.A
Class 1—Explosive (Divisions 1.1, 1.2, 1.3)



** Place for Division and Compatibility Group, for example "1.1C".

Name: Explosive
Cargo IMP Code: REX, RCX, RGX, as applicable
Minimum dimensions: 100 × 100 mm
Symbol (exploding bomb): Black
Background: Orange (Pantone Colour No. 151U)

Note: Packages with label marked Division 1.1 or 1.2 are normally forbidden for air transport.

7.3.2 Class 1—Explosive (Division 1.4) including Compatibility Group S

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.B
Class 1—Explosive (Division 1.4) including Compatibility Group S



*** Place for Compatibility Group. The numerals "1.4" printed on the label must be at least 30 mm in height and about 5 mm wide.

Name: Explosive
Cargo IMP Code: RXB, RXC, RXD, RXE, RXG, RXS, as applicable
Minimum dimensions: 100 × 100 mm
Figures: Black
Background: Orange (Pantone Colour No. 151U)

7.3.3 Class 1—Explosive (Division 1.5)

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.C
Class 1—Explosive (Division 1.5)



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7.3

*** Place for Compatibility Group. The numerals “1.5” printed on the label must be at least 30 mm in height and about 5 mm wide.

Name: Explosive

Cargo IMP Code: REX

Minimum dimensions: 100 × 100 mm

Figures: Black

Background: Orange (Pantone Colour No. 151U)

Note: Packages with this label are normally forbidden for air transport.

7.3.4 Class 1—Explosive (Division 1.6)

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.D
Class 1—Explosive (Division 1.6)



*** Place for Compatibility Group. The numerals “1.6” printed on the label must be at least 30 mm in height and about 5 mm wide.

Name: Explosive

Cargo IMP Code: REX

Minimum dimensions: 100 × 100 mm

Figures: Black

Background: Orange (Pantone Colour No. 151U)

Note: Packages with this label are normally forbidden for air transport.

7.3.5 Class 2—Gases: Flammable (Division 2.1)

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.E
Class 2—Gases: Flammable (Division 2.1)



Name: Flammable Gas

Cargo IMP Code: RFG

Minimum dimensions: 100 × 100 mm

Symbol (flame): Black or White

Background: Red (Pantone Colour No. 186U)

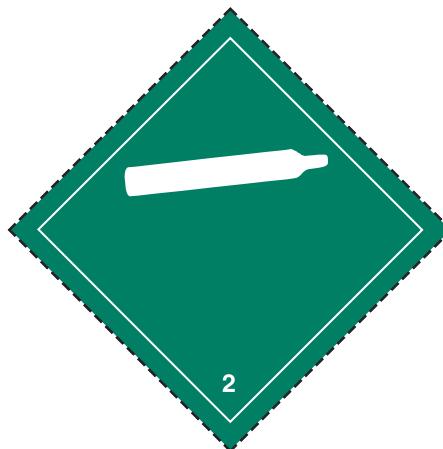
Note: This label may also be printed with symbol (flame), text, numbers and borderline shown in black on red background.

7.3.6 Class 2—Gases: Non-flammable, non-toxic (Division 2.2)

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.F
Class 2—Gases: Non-flammable, non-toxic (Division 2.2)



Name: Non-flammable, non-toxic Gas

Cargo IMP Code: RNG or RCL for Cryogenic liquids subject to Packing Instruction 202 as applicable

Minimum dimensions: 100 × 100 mm

Symbol (gas cylinder): Black or White

Background: Green (Pantone Colour No. 335U)

Note: This label may also be printed with symbol (gas cylinder), text, numbers and borderline shown in black on green background.

7.3.7 Class 2—Gases: Toxic (Division 2.3)

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.G
Class 2—Gases: Toxic (Division 2.3)



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7.3

Name: Toxic Gas

Cargo IMP Code: RPG

Minimum dimensions: 100 × 100 mm

Symbol (skull and crossbones): Black

Background: White

Note: Toxic Substances labels inscribed with the text "Toxic Gas" or "Poison Gas" are acceptable.

7.3.8 Class 3—Flammable Liquids

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.H
Class 3—Flammable Liquids



Name: Flammable Liquids

Cargo IMP Code: RFL

Minimum dimensions: 100 × 100 mm

Symbol (flame): Black or White

Background: Red (Pantone Colour No. 186U)

Note: This label may also be printed with symbol (flame), text, numbers and borderline shown in black on red background.

7.3.9 Class 4—Flammable Solids (Division 4.1)

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.I
Class 4—Flammable Solid (Division 4.1)



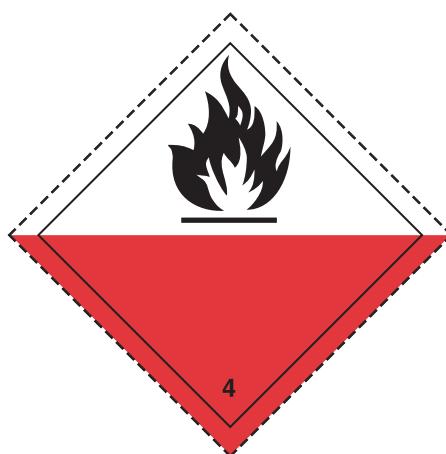
Name: Flammable Solid
Cargo IMP Code: RFS
Minimum dimensions: 100 × 100 mm
Symbol (flame): Black
Background: White with seven vertical red stripes
(Pantone Colour No. 186U)

7.3.10 Class 4—Substances Liable to Spontaneous Combustion (Division 4.2)

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.J
Class 4—Substances Liable to Spontaneous Combustion (Division 4.2)



Name: Spontaneously Combustible
Cargo IMP Code: RSC
Minimum dimensions: 100 × 100 mm
Symbol (flame): Black
Background: Upper half White, lower half Red
(Pantone Colour No. 186U)

7.3.11 Class 4—Substances which in Contact with Water emit Flammable Gases (Division 4.3)

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.K

Class 4—Substances which in Contact with Water emit Flammable Gases (Division 4.3)



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7.3

Name: Dangerous When Wet

Cargo IMP Code: RFW

Minimum dimensions: 100 × 100 mm

Symbol (flame): Black or White

Background: Blue (Pantone Colour No. 285U)

Note: This label may also be printed with symbol (flame), text, numbers and border-line shown in black on blue background.

7.3.12 Class 5—Oxidizing Substances (Division 5.1)

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.L
Class 5—Oxidizing Substances (Division 5.1)



Name: Oxidizer

Cargo IMP Code: ROX

Minimum dimensions: 100 × 100 mm

Symbol (flame over circle): Black

Background: Yellow (Pantone Colour No. 109U)

7.3.13 Class 5—Organic Peroxides (Division 5.2)

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.M
Class 5—Organic Peroxides (Division 5.2)



Name: Organic Peroxides

Cargo IMP Code: ROP

Minimum dimensions: 100 × 100 mm

Symbol (flame): Black or White

Background: Upper half Red (Pantone Colour No. 186U), lower half Yellow (Pantone Colour No. 109U)

7.3.14 Class 6—Toxic Substances (Division 6.1)

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.N
Class 6—Toxic Substances (Division 6.1)



Name: Toxic

Cargo IMP Code: RPB

Minimum dimensions: 100 × 100 mm

Symbol (skull and crossbones): Black

Background: White

Note: Toxic Substances labels inscribed with the text "Toxic" or "Poison" are acceptable.

7.3.15 Class 6—Infectious Substances (Division 6.2)

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.O
Class 6—Infectious Substances (Division 6.2)



The lower part of the label should bear the inscription:

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7.3

INFECTIOUS SUBSTANCE

In case of Damage or Leakage
Immediately Notify
Public Health
Authority

Name: Infectious Substance

Cargo IMP Code: RIS

Minimum dimensions: 100 × 100 mm

For small packages the dimensions may be
50 × 50 mm

Symbol (three crescents superimposed on a circle)
and inscription: Black

Background: White

7.3.16 Class 7—Radioactive Material

7.3.16.1 Category I—White

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.P
Category I—White



Name: Radioactive

Cargo Imp Code: RRW

Minimum dimensions: 100 × 100 mm

Symbol (trefoil): Black

Background: White

7.3.16.2 Category II—Yellow

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.Q
Category II—Yellow



Name: Radioactive

Cargo Imp Code: RRY

Minimum dimensions: 100 × 100 mm

Symbol (trefoil): Black

Background: Top half Yellow (Pantone Colour No. 109U) with White border, bottom half White

7.3.16.3 Category III—Yellow

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.R
Category III—Yellow



Name: Radioactive

Cargo Imp Code: RRY

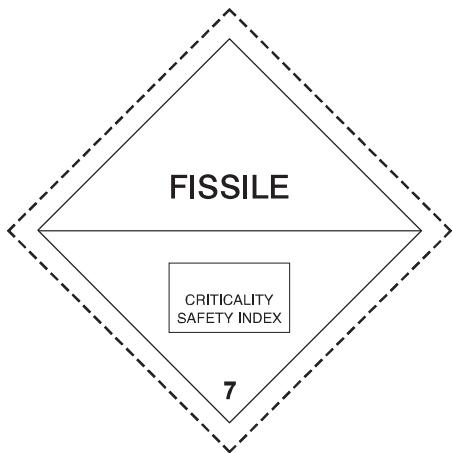
Minimum dimensions: 100 × 100 mm

Symbol (trefoil): Black

Background: Top half Yellow (Pantone Colour No. 109U) with White border, bottom half White

7.3.16.4 Criticality Safety Index Label

FIGURE 7.3.S
Criticality Safety Index Label



Minimum dimensions: 100 x 100 mm
Text (mandatory): "FISSILE" in black on white in upper half of label

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7.3

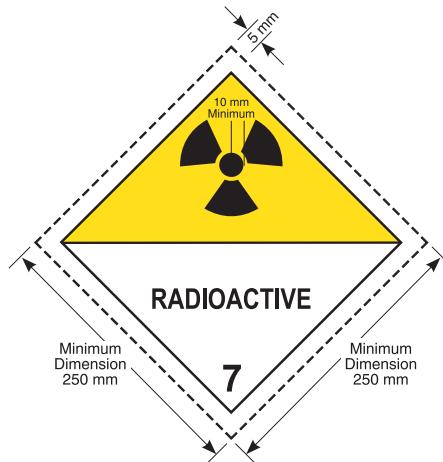
7.3.16.5 Placard for Class 7—Radioactive Materials

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

This placard is to be used on large freight containers as per 10.7.5.

FIGURE 7.3.T
Placard for Class 7—Radioactive Materials



Dimensions: The dimensions shown are minimum, where larger dimensions are used, the proportions must be maintained. The figure "7" must be 25 mm or larger.

Note: The word "Radioactive" in the bottom half of the placard is optional.

7.3.17 Class 8—Corrosives

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.U
Class 8—Corrosives



Name: Corrosive

Cargo IMP Code: RCM

Minimum dimensions: 100 × 100 mm

Symbol (liquids spilling from two glass vessels and attacking a hand and a metal): Black

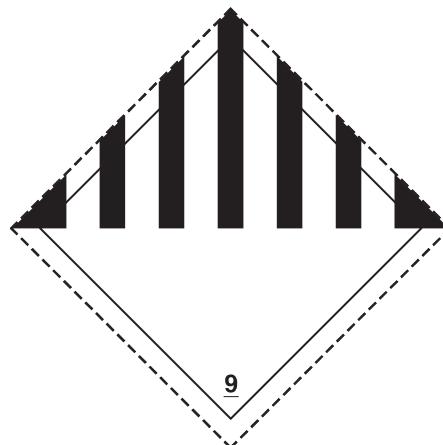
Background: Upper half White, lower half Black with White border

7.3.18 Class 9—Miscellaneous Dangerous Goods

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, UL-05

FIGURE 7.3.V
Class 9—Miscellaneous Dangerous Goods



Name: Miscellaneous

Cargo IMP Code: RMD or ICE, RLI, RLM, RSB (polymeric beads and plastics moulding compound subject to Packing Instruction 957), as applicable

Minimum dimensions: 100 × 100 mm

Symbol (seven vertical stripes in upper half): Black

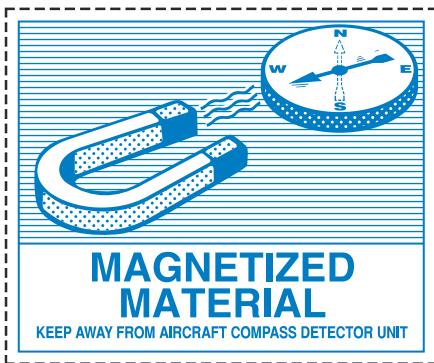
Background: White

7.4 Handling Labels

7.4.1 Class 9—Magnetized Material

FIGURE 7.4.A

Class 9—Magnetized Material



Name: Magnetized Material

Cargo IMP Code: MAG

Minimum dimensions: 110 × 90 mm

Colour: Blue (Pantone Colour No. 285U) on White

7.4.2 Cargo Aircraft Only

FIGURE 7.4.B

Cargo Aircraft Only



Name: Cargo Aircraft Only

Cargo IMP Code: CAO

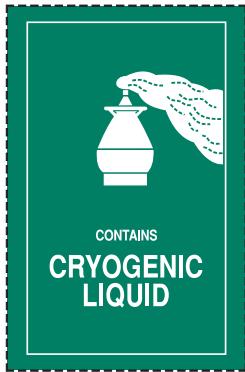
Minimum dimensions: 120 × 110 mm

For small packages of infectious substances (Class 6, Div. 6.2) dimensions may be halved.

Colour: Black on Orange (Pantone Colour No. 151U)

7.4.3 Cryogenic Liquids

FIGURE 7.4.C
Cryogenic Liquids



Name: Cryogenic Liquid

Cargo IMP Code: RCL

Minimum dimensions: 75 x 105 mm

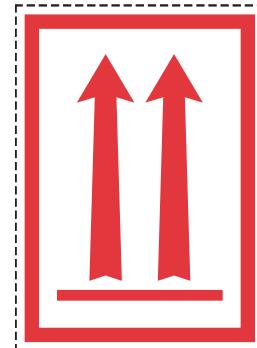
Colour: White on Green (Pantone Colour No. 335U)

Note: The words “Caution—may cause cold burn injuries if spilled or leaked” are optional and may be included.

7.4.4 Package Orientation

(See also Figure 7.4.E.)

FIGURE 7.4.D
Package Orientation



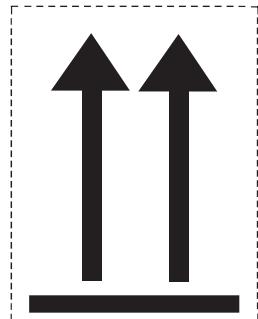
Name: Package Orientation (This Way Up)

Minimum dimensions: 74 x 105 mm

Colour: Red (Pantone Colour No. 186U) or Black on a contrasting background

7.4.5 Package Orientation Alternate Design

FIGURE 7.4.E
Package Orientation Alternate Design



Name: Package Orientation (This Way Up)
Minimum dimensions: 74 x 105 mm
Colour: Red or Black on a contrasting background

7.4.6 Keep Away From Heat

FIGURE 7.4.F
Keep Away From Heat

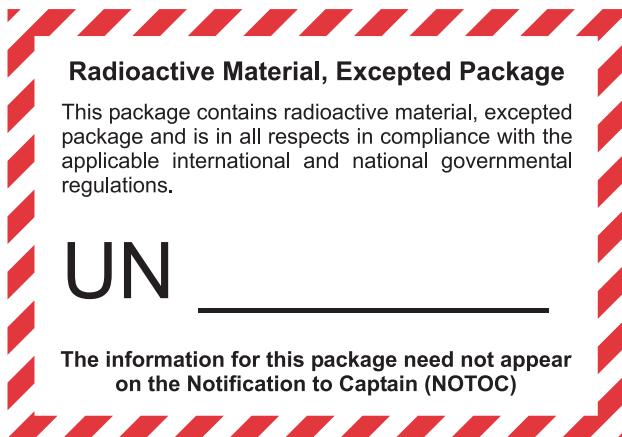


Name: Keep Away From Heat
Minimum dimensions: 74 x 105 mm
Colour: Red (Pantone Colour No. 186U) and Black on a White background or alternative colours.

7.4.7 Radioactive Material—Excepted Package

FIGURE 7.4.G

Radioactive Material—Excepted Package



Name: Radioactive Material—Excepted Package

Cargo IMP Code: RRE

Colour: The border of the label must have red diagonal hatchings (Pantone Colour No. 186U). The label may be printed in black and red on white paper or it may be printed in red only on white paper

Minimum dimensions: 74 x 105 mm

Note: The text "The information for this package need not appear on the Notification to Captain (NOTOC)" is optional and does not have to appear on the label.

7.4.8 Lithium Battery Label

FIGURE 7.4.H

Lithium Battery Label



* Place for "Lithium ion battery" and/or "Lithium metal battery", as applicable

Name: Lithium Battery Label

Cargo IMP Code: ELI or ELM as applicable

Minimum dimensions: 120 x 110 mm

Where the packages are of dimensions such that they can only bear smaller labels the label dimensions may be 74 mm x 105 mm

Colour: The border of the label must have red diagonal hatchings. Text and symbols black on a contrasting background.



SECTION 8—DOCUMENTATION

8.0 General

△ 8.0.1 Required Documentation

OPERATOR VARIATIONS: JJ-05, MH-13, MS-04

8.0.1.1 A “Shipper’s Declaration for Dangerous Goods” must be completed by the shipper for each consignment of dangerous goods, except as provided in 8.0.1.2.

8.0.1.2 The following articles or substances do not require a “Shipper’s Declaration for Dangerous Goods”:

- Dangerous goods in excepted quantities (see 2.6.8);
- UN 3373, Biological substance, Category B (see Packing Instruction 650);
- UN 2807, Magnetized material (see Packing Instruction 953);
- UN 1845, Carbon dioxide, solid (Dry ice) when used as a refrigerant for other than dangerous goods (see Packing Instruction 954(c));
- UN 3245, Genetically modified organisms, Genetically modified microorganisms (see Packing Instruction 959);
- Lithium ion or lithium metal batteries meeting the provisions of Section IB of Packing Instructions 965 and 968;
- Lithium ion or lithium metal batteries meeting the provisions of Section II of Packing Instructions 965-970;
- Radioactive material, excepted packages (RRE) (see 10.5.8.2.2);

Note:

All references to “Shipper’s Declaration for Dangerous Goods” in this Section also include provision of the required information by use of electronic data processing (EDP) and electronic data interchange (EDI) transmission techniques.

8.0.2 Shipper’s Responsibility

8.0.2.1 Provision of Information

The shipper is responsible for providing information applicable to a consignment of dangerous goods to the operator as set out in this Section. The information may be provided on a prescribed declaration form “Shipper’s Declaration for Dangerous Goods” or, where an agreement exists with the operator, by EDP or EDI techniques, for each and every shipment containing dangerous goods so defined or classified in these Regulations unless it is stated that a Shipper’s Declaration is not required. For each shipment containing dangerous goods the shipper must:

- (a) use only the correct form in the correct manner;

- (b) ensure that the information on the form is accurate, easy to identify, legible and durable;
- (c) ensure that the form is properly signed when the shipment is presented to the operator for shipment; and
- (d) ensure that the shipment has been prepared in accordance with these Regulations.

8.0.2.2 Retention of Documentation

8.0.2.2.1 The shipper must retain a copy of the Shipper’s Declaration for Dangerous Goods and additional information and documentation as specified in these Regulations, for a minimum period of three months.

8.0.2.2.2 When the documents are kept electronically or in a computer system, the shipper must be able to reproduce them in a printed form.

8.1 Shipper’s Declaration for Dangerous Goods

STATE VARIATIONS: BNG-01, BRG-05/06, CAG-14/20, DQG-04, ESG-01, HKG-02, MYG-06, PKG-01/03, USG-01/04/13, VUG-01

8

8.1.1 Specification for Declaration Form

8.1.1.1 Format and Language

Pre-printed declaration forms must be printed in the same format, except as provided hereafter, and show the same wording in English, as one of the specimen declaration forms referred to in 8.1.7. Additionally, if required, the wording in English may be supplemented by an accurate printed translation in another language. The spacing of columns and boxes, if any, appearing in the “Nature and Quantity of Dangerous Goods” box and delineated by dotted lines may be changed to accommodate shipper’s requirements.

Completed Shipper’s Declaration forms generated by a computer system must conform in format to the requirements of this section as described and must contain the information required for the shipment type and aircraft limitation.

8.1.1.2 Colour

The declaration form may be printed in black and red on white paper, as shown in 8.1.7, or it may be printed in red only on white paper. The diagonal hatchings printed vertically in the left and right margins must be printed in red.

8.1.1.3 Size

The declaration form must be printed either on ISO paper sizes A3 or A4 or on their North American equivalents:

- ISO standard sizes are:
 - A3: 297 x 420 mm (11½ x 16½ in);
 - A4: 297 x 210 mm (11¾ x 8¼ in);
- North American equivalents are:
 - Ledger: 11 x 17 in (280 x 430 mm);
 - Letter: 11 x 8½ in (280 x 215 mm).

8.1.2 General Principles for Completion of Declaration Form

8.1.2.1 Language

The declaration form must be completed in the English language. The wording in English may be accompanied by an accurate translation in another language.

8.1.2.2 Information Required

8.1.2.2.1 The specific information to be provided in each box of the declaration form is itemized in 8.1.6. In addition to the provisions of this Section, other elements of information may be required by the appropriate national authority for certain modes of transport (e.g. flash point or flash point range in °C).

8.1.2.2.2 A declaration form containing information not relevant to the particular dangerous goods shipment, or to the dangerous goods contained in the shipment, is not acceptable. If both dangerous and non-dangerous goods are listed on the declaration form, the dangerous goods must be listed first, or be otherwise emphasized.

8.1.2.3 Number of Copies

△ OPERATOR VARIATIONS: 5X-05, AC-01, FX-14, KE-03

8.1.2.3.1 Where a paper document is used, the shipper must provide two copies of the declaration form completed and signed, with signature as specified in 8.1.4.1, for presentation to the operator with the shipment. One signed copy must be retained by the accepting operator. The other signed copy must be forwarded with the shipment to its destination. One of the two copies, including the signature thereon, may be a carbon copy (see 8.1.4.1).

Note:

Only the initial operator is required to retain a(n original) copy of the Shipper's Declaration. A photocopy of the original Shipper's Declaration is acceptable to be held on file when a consignment is transhipped.

8.1.2.3.2 Where the Shipper's Declaration 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 Section.

Note:

The purpose of this requirement is to facilitate surveillance/audit and/or incident/accident investigation by the appropriate national authority. In this case the

document produced need not be the form shown in Figure 8.1.A or Figure 8.1.B

8.1.2.4 Consolidations

△ OPERATOR VARIATIONS: 9W-09, AI-04, AZ-01, BR-06, CA-01, CI-03, CZ-02, GA-02, IP-02, IR-02, KE-01, KQ-01, KZ-05, LH-02, ME-02, MH-05, MU-02, OM-06, OU-14, PX-03, RJ-02, SK-07, SV-03, SW-03, TK-03, UX-03, VN-12

8.1.2.4.1 For the purpose of these Regulations, a consolidation or consolidated shipment is a consignment of multi-packages which has been originated by more than one person, each of whom has made an agreement for carriage by air with another person other than a scheduled air carrier.

8.1.2.4.2 In the case of a consolidated shipment, a separate declaration form must be presented to the accepting operator for each component consignment containing dangerous goods.

8.1.2.4.3 The declaration forms for these component consignments must accompany the consolidated shipment. At the airport of destination of the consolidated shipment, the delivering operator will hand a copy of each declaration form to the de-consolidator (break-bulk agent).

Note:

When offering a deconsolidated shipment for further air transportation, at least two copies of the Shipper's Declaration for Dangerous Goods must be presented to the next accepting operator.

8.1.2.5 Multi-page Declarations

8.1.2.5.1 If the declaration form does not contain sufficient space in the "Nature and Quantity of Dangerous Goods" box to accommodate all the required entries and information, additional pages in the form of an extension list (which must have vertical red hatchings) may be used. In such a case, each page of its extension list must show:

- (a) a page number and the total number of pages;
- (b) the Air Waybill number.

8.1.2.5.2 Where multiple Shipper's Declaration Forms are used, the aircraft limitation and shipment type must be the same for all pages.

Note:

The extension lists are not required to have a signature.

8.1.2.6 Alterations and Amendments

8.1.2.6.1 The operator will not accept a declaration form that has been altered or amended, unless the alteration or amendment to an entry has been signed by the shipper with the same signature used to sign the document. Alteration of the "Air Waybill Number", the "Airport of Departure" and the "Airport of Destination" are excepted from this provision.

8.1.2.6.2 An entry inserted in different handwriting or different printing or in a combination of handwriting and printing is not considered to be an alteration or amendment.

8.1.3 Proper Shipping Name

△ OPERATOR VARIATIONS: 7H-02, 9W-06, AA-02, AS-07, AV-03, BA-04, C8-02, CV-02, DL-02, FX-04/05, JU-01, ME-06, UX-08

8.1.3.1 Each article or substance offered for transportation must be declared by its "Proper Shipping Name". The proper shipping name is considered to be that portion of the entry most accurately describing the goods in the List of Dangerous Goods (see Subsection 4.2) and is shown in bold characters. The proper shipping name in the dangerous goods description must be supplemented as set out in 8.1.3.1 to 8.1.3.9, as applicable.

Notes:

1. Additional descriptive text shown in light characters in the List of Dangerous Goods (see Subsection 4.2) is not part of the proper shipping name but may be used in addition to the proper shipping name.
2. For explosives of Class 1, the proper shipping name may be supplemented by additional descriptive text to indicate commercial or military names.
3. Minor discrepancies, such as the omission of dots and commas in the proper shipping name appearing on the Shipper's Declaration for Dangerous Goods or on the package markings are not considered as errors if they do not compromise safety.

8.1.3.2 Proper shipping names that have the "★" symbol in the List of Dangerous Goods (Subsection 4.2) must be supplemented with their technical or chemical group name as described in 4.1.2.1(d).

8.1.3.3 The qualifying word "mixture" or "solution" must be added to the proper shipping name of the listed substance when a mixture or solution contains a substance listed by name in the List of Dangerous Goods with one or more non-dangerous goods. When a mixture or solution contains two or more dangerous goods, whether listed or not, the qualifying word "mixture" or "solution", as applicable, should be added to the technical names shown in parentheses.

8.1.3.4 When waste dangerous goods (other than radioactive wastes) 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 part of the proper shipping name.

8.1.3.5 Proper shipping names may appear 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 marking is optional. For instance, UN 1169 "Extracts, aromatic, liquid" may optionally be shown as "Aromatic extracts, liquid". However, the entry in Column B of the List of Dangerous Goods is 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 the List of Dangerous Goods (Subsection 4.2) is preferred.

8.1.3.6 When a substance, which is implicitly a solid according to the definition of "liquid" in Appendix A, is offered for air transport in the molten state, the word "molten" must be added to the proper shipping name

shown in the List of Dangerous Goods, unless it is already included. An example of such a proper shipping name would be "**Alkylphenol, solid, n.o.s., molten**".

8.1.3.7 When not specifically listed, hydrates may be transported under the proper shipping name for the anhydrous substance, as appropriate.

8.1.3.8 Before a person offers any salvage packaging for transport by air, he must ensure that the words "SALVAGE PACKAGE" are added after the basic dangerous goods description on the Shipper's Declaration for Dangerous Goods.

8.1.3.9 Except for self-reactive substances and organic peroxides and unless it is already included in boldface characters in the name indicated in Column B in the List of Dangerous Goods, the word "**stabilized**" must be added as part of the proper shipping name of a substance which without stabilization would be forbidden for transport in accordance with 2.1.1 due to it being liable to react dangerously under conditions normally encountered in transport (e.g. **Toxic liquid, organic, n.o.s., stabilized**).

8.1.4 Other Requirements

8.1.4.1 Signature

8.1.4.1.1 The declaration form must be signed and dated by the shipper or a designated representative as described below. Facsimile signatures are acceptable where applicable laws and regulations recognize the legal validity of facsimile signatures. A typewritten signature is not acceptable. It is acceptable for persons or organisations (including consolidators, freight forwarders and IATA cargo agents) employed by the shipper to act on their behalf to undertake the shipper's responsibilities in the preparation of the consignment and trained as required by Subsection 1.5 to sign the Shipper's Declaration for Dangerous Goods.

8.1.4.1.2 If the Shipper's Declaration information is presented to the operator by means of EDP or EDI transmission techniques, the signature(s) may be electronic signature(s) or may be replaced by the name(s) (in capitals) of the person authorized to sign. Where the original consignment is transhipped to an operator that requires a paper document, the operator must ensure that document produced is the "Shipper's Declaration for Dangerous Goods" in the format and design shown in Figure 8.1.A or Figure 8.1.B. The Shipper's Declaration must indicate "Original Received Electronically" in association with the signature and the name of the signatory must be shown in capital letters.

8.1.4.2 Additional Approval or Endorsement

The operator reserves the right to require the shipper to have the "Shipper's Declaration for Dangerous Goods" confirmed or endorsed by an authority nominated by the operator.

8.1.4.3 Goods not Classified as Dangerous Goods

The operator may require the shipper to certify that a shipment does not contain dangerous goods if the shipper states that they are not so classified. In such a case, the operator may also require the shipper to have the certification confirmed or endorsed by an authority nominated by the operator.

8.1.4.4 Part Shipments

Where it is necessary for a multi-piece shipment to be carried in more than one lot, on more than one aircraft, the first operator must obtain from the shipper, or provide, a copy of the "Shipper's Declaration for Dangerous Goods" for each part of the shipment to be carried on each aircraft.

Note:

It is acceptable for a photocopy of the original Shipper's Declaration for Dangerous Goods to accompany each part shipment.

8.1.5 General Instructions for Completing the Declaration Form

OPERATOR VARIATIONS: D0-08, FX-12/18, QY-08

8.1.5.1 The "Shipper's Declaration for Dangerous Goods" form must be completed strictly in accordance with the following instructions. Entries in the boxes for AIR WAYBILL NUMBER, AIRPORT OF DEPARTURE and AIRPORT OF DESTINATION may be inserted or amended either by the shipper, his agent, or by the accepting operator, but all other details must only be entered by the shipper, or persons or organizations employed by the shipper to act on their behalf to undertake the shipper's responsibilities.

8.1.5.2 The shipper may complete the "Shipper's Declaration for Dangerous Goods" either manually or mechanically (typewriter, computer, etc.).

8.1.6 Detailed Instructions for Completing the Declaration Form

STATE VARIATIONS: USG-05/07/12/16

The following instructions apply to consignments, which do not contain radioactive materials. See Section 10 for a consignment containing radioactive materials.

8.1.6.1 Shipper

Enter the full name and address of the shipper.

Note:

The name and address of the shipper which appears on the Shipper's Declaration for Dangerous Goods form may differ from that on the Air Waybill.

8.1.6.2 Consignee

Enter the full name and address of the consignee.

Note:

The name and address of the consignee which appears on the Shipper's Declaration for Dangerous Goods form may differ from that on the Air Waybill.

8.1.6.3 Air Waybill Number

Enter the number of the Air Waybill to which the declaration form will be attached. This may be entered or amended by the shipper, his agent or by the operator or its handling agent. In the case of a consolidated shipment, enter the number of the House Air Waybill after the Air Waybill number separated by "/".

8.1.6.4 Page ... of ... Pages

Enter the page number and total number of pages or "Page 1 of 1 pages" if there is no extension list.

8.1.6.5 Aircraft Limitations

On pre-printed Shipper's Declaration forms the shipper must delete either "Passenger and Cargo Aircraft" or "Cargo Aircraft Only" to indicate whether the shipment is packed to comply with the limitations prescribed for passenger and cargo aircraft or the limitations for cargo aircraft only. Where the Shipper's Declaration is generated from a computer system it is sufficient if just the applicable aircraft type is shown, i.e. only print "Passenger and Cargo Aircraft" or "Cargo Aircraft Only".

Where the packing instruction number and the permitted quantity per package are identical for passenger and cargo aircraft, the "Cargo Aircraft Only" limitation should not be used. The "Cargo Aircraft Only" label must not be used for packages packed according to Passenger Aircraft limitations (Subsection 4.2, Columns G and H and/or I and J) even when included on a Shipper's Declaration marked "Cargo Aircraft Only" because of other packages in the shipment.

Note:

When a shipment is required to be transported on a cargo aircraft solely because of a State Variation (2.8.2), that shipment may be carried on a passenger aircraft outside that State's jurisdiction. In this case the "Cargo Aircraft Only" label must be removed before the shipment is loaded onto a passenger aircraft outside that State's jurisdiction. The following note should be added in the "Additional Handling Information" box of the Shipper's Declaration: "This shipment may be carried on passenger aircraft outside the jurisdiction of XXXX" (where XXXX is the name of the State.)

When this statement is used, no other "Cargo Aircraft Only" articles may appear on the declaration.

Where a shipment consists of a salvage packaging(s) containing dangerous goods restricted to transport on Cargo Aircraft Only, the Shipper's Declaration for Dangerous Goods must indicate "Cargo Aircraft Only".

8.1.6.6 Airport of Departure

Enter the full name of the airport or city of departure, which may be entered or amended by the shipper, his agent or by the operator or its handling agent.

Note:

This information is optional and may be left blank.

8.1.6.7 Airport of Destination

Enter the full name of the airport or city of destination, which may be entered or amended by the shipper, his agent or by the operator or its handling agent.

Note:

This information is optional and may be left blank.

8.1.6.8 Shipment Type

On pre-printed Shipper's Declaration forms the shipper must delete "Radioactive" to indicate the shipment does not contain radioactive material. Where a Shipper's declaration is generated from a computer system it is sufficient if just "Non-radioactive" is shown. Radioactive material must not be included on the same declaration form as other dangerous goods except for Carbon dioxide, solid (dry ice) when used as a refrigerant.

8.1.6.9 Nature and Quantity of Dangerous Goods

For a non-radioactive consignment, the information must be entered strictly in accordance with the following instructions. Each sequence of information must be clearly separated or identified.

Note:

Columns indicated are those in the List of Dangerous Goods.

8.1.6.9.1 First Sequence—Identification

OPERATOR VARIATIONS: 5X-02/03/04, FX-04

The Shipper's Declaration must contain the following information for each substance or article described:

Step 1. UN number or ID number (from Column A) preceded by the prefix "UN" or "ID" as appropriate.

Step 2. Proper shipping name (from Column B) as determined by 4.1.2 and 8.1.3.

Step 3. The Class or, when assigned the Division of the goods, including for Class 1, the Compatibility Group letter (all from Column C).

Step 4. Any assigned subsidiary hazard class or division number(s) (from Column C) corresponding to subsidiary risk label(s) to be applied must be entered following the numerical hazard class or division and must be enclosed in brackets.

Note:

A subsidiary risk must be entered where a subsidiary hazard label is required by a Special Provision or required for self-reactive substances of Division 4.1 and Division 5.2—Organic peroxides according to Table C.1 and Table C.2 respectively. The word "Class" or "Division" may be

included preceding the primary and/or subsidiary hazard class or division numbers.

△ **Step 5.** The applicable packing group (Column E) for the substance or article which may be preceded by "PG" (e.g. "PG II"). For chemical kits and/or first aid kits the most stringent packing group assigned to any individual substance contained in the kit. For samples transported under the provision of 3.11, the most stringent packing possible for the proper shipping name must be assigned (3.11.1).

The dangerous goods description specified above must be shown in sequence with no information interspersed except as provided by these Regulations. Examples of this dangerous goods description are:

- UN 2683, Ammonium sulphide solution, 8 (3, 6.1), II
- UN 2683, Ammonium sulphide solution, Class 8 (Class 3, Division 6.1), PG II

8.1.6.9.2 Second Sequence—Number and Type of Packagings, Quantity of Dangerous Goods

Step 6. Number of packages (of same type and content), their type of packaging e.g. "1 Fibreboard box", "3 steel drums", "4 Composite IBCs", etc., and:

(a) the net quantity of dangerous goods in each package (by volume or weight as appropriate) must be indicated for each item of dangerous goods bearing a different proper shipping name, UN/ID 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 × 5 L

Consignments 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 × 5 L, 10 fibreboard boxes × 10 L

UN packaging codes may only be used to supplement the description of the kind of package (e.g. one steel drum (1A1)).

For limited quantities where the letter "G" follows the quantity in Column H of the List of Dangerous Goods the gross weight of each package must be indicated, rather than the net quantity and the letter "G" must be added following the unit of measurement, except when there are different dangerous goods packed together in the same outer packaging, which must be described as shown in paragraph (d);

(b) for empty uncleared packagings containing a residue of dangerous goods, 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 first sequence as shown in 8.1.6.9.1. There is no requirement to show a quantity, only the number and type of packagings;

(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 must be shown;

- △ (d) for dangerous goods in limited quantities with a 30 kg G limit in Column H in the List of Dangerous Goods, where different dangerous goods are packed together in the same outer packaging, the net quantity of each dangerous goods followed by the gross weight of the completed package must be shown;
- (e) for chemical kits or first aid kits, the total net quantity (including the unit of measure) of dangerous goods must be shown. The net weight of liquids within the kits are to be calculated on a 1 to 1 basis of their volume, i.e. 1 L equal to 1 kg;
- (f) when two or more different items of dangerous goods are packed in the same outer packaging, the words "All Packed in One (description of package type)" must immediately follow the relevant entries. If the shipment contains more than one package, each containing the same assortment and quantities of compatible commodities, then the statement immediately following the relevant entries must read:
"All Packed in One (insert description of package type) x". (insert the actual number of packages.);
- (g) when two or more different items of dangerous goods are packed in the same outer packaging in accordance with 5.0.2.11 or 2.7.5.6, the "Q" value rounded up to the first decimal place;

Note:

A "Q" value does not need to be shown on the Shipper's Declaration for carbon dioxide, solid (dry ice), dangerous goods with "No Limit" in columns J or L in Subsection 4.2 or those with the same UN Number, packing group and physical state.

- (h) for dangerous goods transported in Salvage Packagings, an estimate of the remaining quantity must be entered and the words "SALVAGE PACKAGE" must be included.
- (i) for explosive articles of Class 1, the net quantity indicated for each package must be supplemented with the net explosive mass (see Appendix A for the definition of net explosive mass) contained in the package followed by the unit of measurement. The abbreviations "NEQ", "NEC", "NEM" or "NEW" may be indicated in association with the value provided.

Step 7. When an overpack is used, the wording "Overpack Used" must be inserted on the declaration form immediately after all the relevant entries relating to the packages within each overpack. In such cases, packages within overpacks must be listed first.

- when a consignment consists of multiple overpacks, each overpack must have an identification mark (which may be any alpha-numeric format) and be marked with the total quantity of dangerous goods within the overpack including the unit of measurement and, where applicable, the letter "G". This information must also be entered on the Shipper's Declaration. The total quantity(ies) shown on the Shipper's Declaration must match the total quantity(ies) shown on the overpack.
- multiple overpacks with identical contents must be identified as follows: "Overpack Used x (number of identical overpacks)", see Figure 8.1.L and Figure 8.1.N, (Examples 8 and 10).

- multiple overpacks with different contents must be identified by listing them separately, see Figure 8.1.M, (Example 9) for operator requirements when offering multi-overpacks containing different quantities of dangerous goods.

Notes:

1. Where an overpack contains more than one UN number, the total quantity of dangerous goods should be shown by UN number.
2. While the indication of "Overpack Used" will be added at this point in the columnar format Shipper's Declaration, for the open format Shipper's Declaration (see Figure 8.1.A) the wording "Overpack Used" will appear after all of the information associated with the dangerous goods, including the packing instruction number and any applicable authorizations, see Figure 8.1.N.

8.1.6.9.3 Third Sequence—Packing Instructions

Step 8. Number of Packing Instruction or Limited Quantity Packing Instruction (with its "Y" prefix) (Columns G, I or K).

Notes:

1. To qualify as acceptable for transport aboard passenger aircraft, a passenger aircraft packing instruction number(s) must be entered, and the package must not bear the Cargo Aircraft Only label.
2. To qualify as acceptable for transport aboard cargo only aircraft, a cargo aircraft packing instruction number(s) must be entered, and the package must bear the Cargo Aircraft Only label; or a passenger aircraft packing instruction number 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.

8.1.6.9.4 Fourth Sequence—Authorizations

STATE VARIATIONS: AEG-03, AUG-01/03, BEG-02, BHG-02/03, CAG-07/08/10/11, DQQ-02, EGG-01, FRG-01, GBG-03, HRG-03/05, ING-03, IRG-03, ITG-05/07, JMG-01, MYG-03, NLG-01, SAG-04, USG-03, VUG-02, ZAG-01

OPERATOR VARIATIONS: 7H-01, FX-16

Step 9. As applicable:

- ☞ (a) the Special Provision number if the special provision is A1, A2, A51, A81, A88, A99 or A130;
- (b) a statement that the approval or exemption is attached to the declaration form if the consignment is being shipped under any governmental authorization(s) such as under A1 or A2. The authorization(s) must include:
 - quantity limitations;
 - packaging requirements;
 - aircraft type, if applicable;
 - any other relevant information.

- (c) when dangerous goods are shipped in portable tanks, they must be accompanied by a copy of the document(s) of competent authority approval;
- (d) when dangerous goods are shipped in packagings as authorized under 5.0.6.7, they must be accompanied by a copy of the document(s) of competent authority approval;
- (e) for explosive substances, where Packing Instruction 101 has been adopted by an appropriate national authority, the distinguishing sign for motor vehicles in international traffic of the State for which the authority acts (as indicated in Appendix D.1) must be marked on the Shipper's Declaration for Dangerous Goods 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.

- (f) when organic peroxides and self-reactive substances are transported under conditions where approval is required, (for organic peroxides see 3.5.2.3.1, for self-reactive substances see 3.4.1.2.4.1) a statement to this effect must be included in the Shipper's Declaration. A copy of the classification approval and conditions for transport for non-listed organic peroxides and self-reactive substances must be attached to the Shipper's Declaration.

Authorizations, approvals and/or exemptions which must accompany the Shipper's Declaration and which are in a language other than English, must be accompanied by an accurate translation in English.

The shipper should enter the reference or identification number of the exemption, approval or authorisation prior to the statement "attached" where those documents must accompany the consignment.

A shipper may enter a package reference or identification number on the declaration form as the last item in the fourth sequence.

8.1.6.10 Completion of "Nature and Quantity of Dangerous Goods" Box

When completing the "Nature and Quantity of Dangerous Goods" box, each sequence of information must be clearly separated or identified.

- (a) for the computerized form, the sequences as detailed in 8.1.6.9 must be indicated:
 - either by using two oblique strokes as a separator between the sequences; or
 - by putting each sequence on a separate line;
- (b) for the manually completed form, the information must be entered in sequence and should be within the columns provided;
- (c) information within a sequence must be separated by commas.

8.1.6.11 Additional Handling Information

STATE VARIATIONS: AEG-05, CAG-15/16, JMG-03, USG-12, VCG-07, ZAG-03

△ OPERATOR VARIATIONS: 4C-02, 4M-02, 8V-01, 9W-07, AC-02, AH-01, AI-06, AM-14, AR-09, AU-09, BZ-05, CX-04, CZ-03, D0-09, D5-05, DL-03, EK-01, EY-01, GF-06, GH-03, IJ-08, IT-08, JJ-02, JL-11, JX-02, KA-04, KC-01, KQ-05, KZ-09, L7-02, LA-02, LD-04, LP-02, LU-02, LX-05, M3-02, M7-02, MH-04, MK-08, MP-04, OU-10, PZ-03, S7-03, SK-01/06, SQ-08, SV-13, TG-06, TK-02, UC-02, UL-01, V3-02, XL-02

8.1.6.11.1 Handling of Organic Peroxides and Self-Reactive Substances

Enter any special handling information relevant to the shipment. For example, for self-reactive substances of Division 4.1 or other substances having similar properties and organic peroxides of Division 5.2 with Special Provision A20 in Column M of the List of Dangerous Goods, the shipper must indicate that the packages containing such substances must be protected from direct sunlight and all sources of heat and be placed in adequately ventilated areas.

8.1.6.11.2 Samples of Organic Peroxides and Self-Reactive Substances

When a sample of an organic peroxide (see 3.5.2.6) or a self-reactive substance (see 3.4.1.2.5) is transported, a statement to this effect must be included in the "Additional Handling Information" box of the Shipper's Declaration.

8.1.6.11.3 Chemical Oxygen Generators

When chemical oxygen generators contained in Protective Breathing Equipment (PBE) are being transported under Special Provision A144, the statement "Air Crew Protective Breathing Equipment (smoke hood) in accordance with Special Provision A144" must be included in the "Additional Handling Information" box of the Shipper's Declaration.

8.1.6.11.4 Infectious Substances and Controlled Substances

The name and telephone number of a responsible person must be included on the Shipper's Declaration for infectious substances in Category A (UN 2814 and UN 2900) and for substances when a national law or international convention prohibits the disclosure of the technical name following a "n.o.s.★" proper shipping name.

□ 8.1.6.11.5 Firework Classification Reference

When fireworks of UN 0336 or UN 0337 are transported, the Shipper's Declaration must include a classification reference(s) issued by the appropriate national authority.

The classification reference(s) must consist of the appropriate national authority's State, indicated by the distinguishing sign for motor vehicles in international traffic

(VRI Code), the appropriate national authority identification and a unique serial reference. Examples of such classification references are:

GB/HSE123456
D/BAM1234
USA EX20091234

8.1.6.12 Certification Statement

8.1.6.12.1 The declaration must contain a certification or declaration statement that ensures the consignment is acceptable for transport and has been properly prepared in accordance with the Regulations, including additional air transport requirements. Examples of these requirements are indicated in 1.3.2. The text for the certification statement 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."

8.1.6.12.2 For air transport the following additional statement is required:

"I declare that all of the applicable air transport requirements have been met."

8.1.6.13 Name and Title of Signatory

Enter the name and title of the person signing the declaration. This information may be printed or stamped.

8.1
Note:

The title of the person or the name of the department he/she is employed with, are both acceptable.

8.1.6.14 Place and Date

Enter the place and date of signing the declaration form.

Note:

The preferred format for indicating the date is YYYY-MM-DD. Other formats, such as DD/MM/YYYY, DD.MM.YYYY, DD/MMM/YYYY or written out completely, are acceptable provided they cannot be misunderstood.

8.1.6.15 Signature

See 8.1.4.1 for the signature requirements for the Shipper's Declaration for Dangerous Goods.

8.1.7 Specimens of Shipper's Declaration

Two specimens are shown on the following pages. The first specimen is designed for computerized completion, the second for manual completion. Both forms may be completed either manually or mechanically.

8.1.8 Diagrammatic Instructions

Following the two specimen forms are two sample forms showing diagrammatically where to insert the information required in 8.1.6. The numbers shown correspond to the subparagraphs of 8.1.6.

8.1.9 Examples of Completed Declaration Forms

Examples of completion of the Shipper's Declaration for Dangerous Goods, or parts thereof, are shown on the pages following the forms referred to in 8.1.7 and 8.1.8. The examples illustrate:

A—a non-radioactive shipment: for computerized completion. It shows both methods outlined in 8.1.6.10.

Note:

Example 1, this shows the alternative methods of computer input of the nature and quantity of dangerous goods (8.1.6.10). This also applies when several pages are used.

B—a non-radioactive shipment: for manual completion.

Note:

Examples 1 & 2, the "Passenger and Cargo Aircraft" box was deleted since the consignment could only be carried on a cargo aircraft as Packing Instruction 876 was used for UN 1816 and Packing Instruction 459 for UN 3226 respectively.

The mandatory statement for self-reactive substances of Division 4.1 is shown (8.1.6.11.1).

It illustrates how two different dangerous goods having the same proper shipping name, hazard class and UN number may be listed (Paint).

It shows the plural of a proper shipping name which is acceptable (8.1.3.4).

It shows an example of an entry for Chemical kits. This also applies when several pages are used.

Examples 3 to 10, These examples show, for various different types of non-radioactive shipments, how the information required in the "Nature and Quantity of Dangerous Goods" box should be shown.

FIGURE 8.1.A
Shipper's Declaration Specimen Designed for Computerized Completion

SHIPPER'S DECLARATION FOR DANGEROUS GOODS	
Shipper Consignee <small>Two completed and signed copies of this Declaration must be handed to the operator.</small>	Air Waybill No. Page of Pages Shipper's Reference Number <small>(optional)</small>
<small>For optional use for Company logo name and address</small>	
WARNING	
<small>Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties.</small>	
<small>Shipment type: (delete non-applicable) <input checked="" type="checkbox"/> NON-RADIOACTIVE <input type="checkbox"/> RADIOACTIVE</small>	
NATURE AND QUANTITY OF DANGEROUS GOODS <small>UN Number or Identification Number, proper shipping name, Class or Division (subsidiary risk), packing group (if required), and all other required information.</small>	
<small>Additional Handling Information</small>	
<small>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. I declare that all of the applicable air transport requirements have been met.</small>	
<small>Name/Title of Signatory Place and Date Signature <small>(see warning above)</small> </small>	



Dangerous Goods Regulations

FIGURE 8.1.B
Shipper's Declaration Specimen Designed for Manual Completion

SHIPPER'S DECLARATION FOR DANGEROUS GOODS

Shipper		Air Waybill No. Page of Pages Shipper's Reference Number <i>(optional)</i>																						
Consignee		<i>For optional use for Company logo name and address</i>																						
<p><i>Two completed and signed copies of this Declaration must be handed to the operator.</i></p> <p>TRANSPORT DETAILS</p> <table border="1" style="width: 100%;"> <tr> <td style="padding: 5px;">This shipment is within the limitations prescribed for: <i>(delete non-applicable)</i></td> <td style="padding: 5px;">Airport of Departure:</td> </tr> <tr> <td style="padding: 5px; text-align: center;"> <input checked="" type="checkbox"/> PASSENGER AND CARGO AIRCRAFT <input type="checkbox"/> CARGO AIRCRAFT ONLY </td> <td style="padding: 5px;"></td> </tr> <tr> <td colspan="2" style="padding: 5px;">Airport of Destination:</td> </tr> <tr> <td colspan="2" style="padding: 5px; text-align: center;"> Shipment type: <i>(delete non-applicable)</i> <input checked="" type="checkbox"/> NON-RADIOACTIVE <input type="checkbox"/> RADIOACTIVE </td> </tr> </table>				This shipment is within the limitations prescribed for: <i>(delete non-applicable)</i>	Airport of Departure:	<input checked="" type="checkbox"/> PASSENGER AND CARGO AIRCRAFT <input type="checkbox"/> CARGO AIRCRAFT ONLY		Airport of Destination:		Shipment type: <i>(delete non-applicable)</i> <input checked="" type="checkbox"/> NON-RADIOACTIVE <input type="checkbox"/> RADIOACTIVE														
This shipment is within the limitations prescribed for: <i>(delete non-applicable)</i>	Airport of Departure:																							
<input checked="" type="checkbox"/> PASSENGER AND CARGO AIRCRAFT <input type="checkbox"/> CARGO AIRCRAFT ONLY																								
Airport of Destination:																								
Shipment type: <i>(delete non-applicable)</i> <input checked="" type="checkbox"/> NON-RADIOACTIVE <input type="checkbox"/> RADIOACTIVE																								
<p>NATURE AND QUANTITY OF DANGEROUS GOODS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="7" style="text-align: left; padding: 5px;">Dangerous Goods Identification</th> </tr> <tr> <th style="width: 10%;">UN or ID No.</th> <th style="width: 30%;">Proper Shipping Name</th> <th style="width: 15%;">Class or Division (Subsidiary Risk)</th> <th style="width: 10%;">Packing Group</th> <th style="width: 20%;">Quantity and type of packing</th> <th style="width: 10%;">Packing Inst.</th> <th style="width: 10%;">Authorization</th> </tr> </thead> <tbody> <tr> <td style="height: 150px;"></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <hr style="border-top: 1px dashed black; margin-top: 10px;"/> <p>Additional Handling Information</p> <hr style="margin-top: 10px;"/>				Dangerous Goods Identification							UN or ID No.	Proper Shipping Name	Class or Division (Subsidiary Risk)	Packing Group	Quantity and type of packing	Packing Inst.	Authorization							
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UN or ID No.	Proper Shipping Name	Class or Division (Subsidiary Risk)	Packing Group	Quantity and type of packing	Packing Inst.	Authorization																		
<p>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. I declare that all of the applicable air transport requirements have been met.</p>				Name/Title of Signatory Place and Date Signature <small>(see warning above)</small>																				

FIGURE 8.1.C
Shipper's Declaration Completion for a Computerized Form

SHIPPER'S DECLARATION FOR DANGEROUS GOODS			
Shipper <div style="text-align: center; margin-top: 10px;">8.1.6.1</div>	Air Waybill No. <div style="border: 1px solid black; border-radius: 15px; padding: 2px 10px; display: inline-block;">8.1.6.3</div> Page of Pages <div style="border: 1px solid black; border-radius: 15px; padding: 2px 10px; display: inline-block;">8.1.6.4</div> Shipper's Reference Number <small>(optional)</small>		
Consignee <div style="text-align: center; margin-top: 10px;">8.1.6.2</div>	<i>For optional use for Company logo name and address</i>		
<i>Two completed and signed copies of this Declaration must be handed to the operator.</i>			
TRANSPORT DETAILS <div style="border: 1px solid black; border-radius: 15px; padding: 2px 10px; display: inline-block;">8.1.6.5</div>	This shipment is within the limitations prescribed for: <i>(delete non-applicable)</i> <table border="1" style="margin-bottom: 5px; width: 100%;"> <tr> <td style="padding: 2px;">PASSENGER AND CARGO AIRCRAFT</td> <td style="padding: 2px;">CARGO AIRCRAFT ONLY</td> </tr> </table> Airport of Departure: <div style="border: 1px solid black; border-radius: 15px; padding: 2px 10px; display: inline-block;">8.1.6.6</div> Airport of Destination: <div style="border: 1px solid black; border-radius: 15px; padding: 2px 10px; display: inline-block;">8.1.6.7</div>	PASSENGER AND CARGO AIRCRAFT	CARGO AIRCRAFT ONLY
PASSENGER AND CARGO AIRCRAFT	CARGO AIRCRAFT ONLY		
WARNING Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties.			
Shipment type: <i>(delete non-applicable)</i> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px 10px; margin-right: 10px;">NON-RADIOACTIVE</div> <div style="border: 1px solid black; padding: 2px 10px; margin-right: 10px;">RADIOACTIVE</div> <div style="border: 1px solid black; border-radius: 15px; padding: 2px 10px; display: inline-block;">8.1.6.8</div> </div>			
NATURE AND QUANTITY OF DANGEROUS GOODS <i>UN Number or Identification Number, Proper shipping name, Class or Division (subsidiary risk), Packing Group (if required), and all other required information.</i>			
from 8.1.6.9, 8.1.6.10 <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; border-radius: 15px; padding: 2px 10px; display: inline-block;">Steps 1, 2, 3, 4, 5</div> // <div style="border: 1px solid black; border-radius: 15px; padding: 2px 10px; display: inline-block;">Steps 6 and 7</div> // <div style="border: 1px solid black; border-radius: 15px; padding: 2px 10px; display: inline-block;">Step 8</div> // <div style="border: 1px solid black; border-radius: 15px; padding: 2px 10px; display: inline-block;">Step 9</div> </div>			
Additional Handling Information <div style="text-align: center; margin-top: 10px;">8.1.6.11</div>			
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. I declare that all of the applicable air transport requirements have been met. <div style="text-align: center; margin-top: 10px;">8.1.6.12</div>			
Name/Title of Signatory <div style="border: 1px solid black; border-radius: 15px; padding: 2px 10px; display: inline-block;">8.1.6.13</div> Place and Date <div style="border: 1px solid black; border-radius: 15px; padding: 2px 10px; display: inline-block;">8.1.6.14</div> Signature <small>(see warning above)</small> <div style="border: 1px solid black; border-radius: 15px; padding: 2px 10px; display: inline-block;">8.1.6.15</div>			

FIGURE 8.1.D
Shipper's Declaration Completion for a Manual Form

SHIPPER'S DECLARATION FOR DANGEROUS GOODS

Shipper 8.1.6.1	Air Waybill No. 8.1.6.3					
Consignee 8.1.6.2	Page of Pages 8.1.6.4 Shipper's Reference Number (optional)					
Two completed and signed copies of this Declaration must be handed to the operator.						
TRANSPORT DETAILS 8.1.6.5 This shipment is within the limitations prescribed for: <small>(delete non-applicable)</small> <table border="1" style="float: left; margin-right: 10px;"> <tr><td>PASSENGER AND CARGO AIRCRAFT</td></tr> <tr><td>CARGO AIRCRAFT ONLY</td></tr> </table> Airport of Departure: 8.1.6.6		PASSENGER AND CARGO AIRCRAFT	CARGO AIRCRAFT ONLY			
PASSENGER AND CARGO AIRCRAFT						
CARGO AIRCRAFT ONLY						
Airport of Destination: 8.1.6.7	Shipment type: <small>(delete non-applicable)</small> <small>NON-RADIOACTIVE RADIOACTIVE</small> 8.1.6.8					
NATURE AND QUANTITY OF DANGEROUS GOODS Dangerous Goods Identification						
UN or ID No. from 8.1.6.9	Proper Shipping Name	Class or Division (Subsidiary Risk)	Pack- ing Group Step 5	Quantity and type of packing Steps 6 and 7	Packing Inst. Step 8	Authorization Step 9
Step 1	Step 2		Steps 3 and 4			
Additional Handling Information 8.1.6.11						
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. I declare that all of the applicable air transport requirements have been met.				Name/Title of Signatory 8.1.6.13	Place and Date 8.1.6.14	Signature (see warning above) 8.1.6.15
8.1.6.12						

FIGURE 8.1.E
Shipper's Declaration Completion—Example 1

SHIPPER'S DECLARATION FOR DANGEROUS GOODS

Shipper ABC Company 1000 High Street Youngville, Ontario Canada	Air Waybill No. 800 1234 5686 Page 1 of 1 Pages Shipper's Reference Number <small>(optional)</small>
<i>For optional use for Company logo name and address</i>	
<small>Two completed and signed copies of this Declaration must be handed to the operator.</small>	
TRANSPORT DETAILS	
<small>This shipment is within the limitations prescribed for: (delete non-applicable)</small>	<small>Airport of Departure:</small> Youngville
<input checked="" type="checkbox"/> PASSENGER AND CARGO AIRCRAFT	<input type="checkbox"/> CARGO AIRCRAFT ONLY
<small>Airport of Destination:</small> Paris, Charles de Gaulle	
<small>Shipment type: (delete non-applicable)</small> <input checked="" type="checkbox"/> NON-RADIOACTIVE <input type="checkbox"/> RADIOACTIVE	
NATURE AND QUANTITY OF DANGEROUS GOODS <small>UN Number or Identification Number, Proper shipping name, Class or Division (subsidiary risk) Packing Group (if required) and all other required information.</small>	
UN1816, Propyltrichlorosilane, 8 (3) II // 3 Plastic drums x 30L//876	
UN3226, Self-reactive solid type D (Benzenesulphonyl hydrazide), Div. 4.1 1 Fibreboard box x 10 kg 459	
UN1263, Paint, Class 3, II 2 Fibreboard boxes x 4L 3 Plastic drums x 60L 364	
UN1263, Paints, 3, PGIII 1 Composite packaging (6HA1) x 30L 366	
UN3166, Vehicle, flammable liquid powered, 9 // 1 automobile 1350kg // 950	
UN3316, Chemical kits, 9, II // 1 Fibreboard box x 3kg// 960	
<small>Additional Handling Information</small> The packages containing UN3226 must be protected from direct sunlight and all sources of heat and be placed in adequately ventilated areas. 24-hour Number: +1 905 123 4567	
<small>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. I declare that all of the applicable air transport requirements have been met.</small>	
<small>Name/Title of Signatory B.Smith, Dispatch Supervisor Place and Date Youngville 2013-01-01 Signature <small>(see warning above)</small></small>	



Dangerous Goods Regulations

FIGURE 8.1.F
Shipper's Declaration Completion—Example 2

SHIPPER'S DECLARATION FOR DANGEROUS GOODS																																																															
<p>Shipper ABC Company 1000 High Street Youngville, Ontario Canada</p>	<p>Air Waybill No. 800 1234 5686</p> <p>Page 1 of 1 Pages</p> <p>Shipper's Reference Number <i>(optional)</i></p>																																																														
<p>Consignee CBA Lte 50 Rue de la Paix Paris 75 006 France</p>	<p><i>For optional use for Company logo name and address</i></p>																																																														
<p><i>Two completed and signed copies of this Declaration must be handed to the operator.</i></p>																																																															
<p>TRANSPORT DETAILS</p> <p>This shipment is within the limitations prescribed for: <i>(delete non-applicable)</i></p> <table border="1"> <tr> <td>PASSENGER AND CARGO AIRCRAFT</td> <td>CARGO ONLY</td> </tr> </table> <p>Airport of Departure: Youngville</p>		PASSENGER AND CARGO AIRCRAFT	CARGO ONLY																																																												
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<p>WARNING</p> <p>Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties.</p>																																																															
<p>Shipment type: <i>(delete non-applicable)</i></p> <table border="1"> <tr> <td>NON-RADIOACTIVE</td> <td>RADIOACTIVE</td> </tr> </table>		NON-RADIOACTIVE	RADIOACTIVE																																																												
NON-RADIOACTIVE	RADIOACTIVE																																																														
<p>NATURE AND QUANTITY OF DANGEROUS GOODS</p> <table border="1"> <thead> <tr> <th colspan="6">Dangerous Goods Identification</th> </tr> <tr> <th>UN or ID No.</th> <th>Proper Shipping Name</th> <th>Class or Division (Subsidiary Risk)</th> <th>Pack- ing Group</th> <th>Quantity and type of packing</th> <th>Packing Inst.</th> <th>Authorization</th> </tr> </thead> <tbody> <tr> <td>UN1816</td> <td>Propyltrichlorosilane</td> <td>8 (3)</td> <td>II</td> <td>3 Plastic Drums x 30 L</td> <td>876</td> <td></td> </tr> <tr> <td>UN3226</td> <td>Self-reactive solid type D (Benzenesulphonyl hydrazide)</td> <td>Div. 4.1</td> <td></td> <td>1 Fibreboard box x 10 kg</td> <td>459</td> <td></td> </tr> <tr> <td>UN1263</td> <td>Paint</td> <td>3</td> <td>II</td> <td>2 Fibreboard boxes x 4 L</td> <td>364</td> <td></td> </tr> <tr> <td>UN1263</td> <td>Paints</td> <td>3</td> <td>III</td> <td>1 Fibreboard box x 30 L</td> <td>366</td> <td></td> </tr> <tr> <td>UN3166</td> <td>Vehicle, flammable liquid powered</td> <td>9</td> <td></td> <td>1 automobile 1350 kg</td> <td>950</td> <td></td> </tr> <tr> <td>UN3316</td> <td>Chemical kits</td> <td>9</td> <td>II</td> <td>1 Fibreboard box x 3 kg</td> <td>960</td> <td></td> </tr> <tr> <td>UN2794</td> <td>Batteries, wet, filled with acid</td> <td>8</td> <td></td> <td>1 Wooden box 50 kg</td> <td>870</td> <td></td> </tr> </tbody> </table>		Dangerous Goods Identification						UN or ID No.	Proper Shipping Name	Class or Division (Subsidiary Risk)	Pack- ing Group	Quantity and type of packing	Packing Inst.	Authorization	UN1816	Propyltrichlorosilane	8 (3)	II	3 Plastic Drums x 30 L	876		UN3226	Self-reactive solid type D (Benzenesulphonyl hydrazide)	Div. 4.1		1 Fibreboard box x 10 kg	459		UN1263	Paint	3	II	2 Fibreboard boxes x 4 L	364		UN1263	Paints	3	III	1 Fibreboard box x 30 L	366		UN3166	Vehicle, flammable liquid powered	9		1 automobile 1350 kg	950		UN3316	Chemical kits	9	II	1 Fibreboard box x 3 kg	960		UN2794	Batteries, wet, filled with acid	8		1 Wooden box 50 kg	870	
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UN2794	Batteries, wet, filled with acid	8		1 Wooden box 50 kg	870																																																										
<p>Additional Handling Information</p> <p>The packages containing UN3226 must be protected from direct sunlight, and all sources of heat and be placed in adequately ventilated areas.</p> <p>24-hour Number: +1 905 123 4567</p>																																																															
<p>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. I declare that all of the applicable air transport requirements have been met.</p>																																																															
<p>Name/Title of Signatory B.Smith, Dispatch Supervisor Place and Date Youngville 1 January 2013 Signature <i>(see warning above)</i></p> <p><i>B. Smith</i></p>																																																															

FIGURE 8.1.G
Shipper's Declaration Completion—Example 3

NATURE AND QUANTITY OF DANGEROUS GOODS						
Dangerous Goods Identification						
UN or ID No.	Proper Shipping Name	Class or Division (Subsidiary risk)	Packing Group	Quantity and type of packing	Packing Inst.	Authorization
UN2339	2-Bromobutane	3	II	2 L	353	
UN2653	Benzyl iodide	6.1	II	2 L	654	
UN2049	Diethylbenzene	3	III	5L <i>All packed in one wooden box.</i> Q=0.9	355	

Two or more compatible dangerous goods packed together in one box as per 5.0.2.11. Note that the "Q" value is required.

FIGURE 8.1.H
Shipper's Declaration Completion—Example 4

UN3077	Environmentally hazardous substance, solid, n.o.s. (Ferric ammonium citrate)	9	III	14 kg	Y956	
UN2653	Benzyl iodide	6.1	II	0.3 L	Y641	
UN2049	Diethylbenzene	3	III	0.5 L <i>All packed in one wooden box.</i> Q=0.4 Total Gross Weight: 18 kg G	Y344	

Two or more compatible dangerous goods, under the Limited Quantity provisions, packed together in one box as per 2.7.5.6. Note that the "Q" value is calculated with the 2 items without "kg G" in Column H and the total gross weight is added.

FIGURE 8.1.I
Shipper's Declaration Completion—Example 5

UN2814	Infectious substance, affecting humans (Dengue virus culture)	6.2	25 g	620
UN1845	Dry Ice	9	20 kg <i>All packed in one Fibreboard box.</i>	954

A way to show an infectious substance shipment packed together with dry ice inside a UN Class 6.2 specification package. Note that a "Q" value is not required, and the Air Waybill will require the statement as shown in 8.2.1.

FIGURE 8.1.J
Shipper's Declaration Completion—Example 6

NATURE AND QUANTITY OF DANGEROUS GOODS					
Dangerous Goods Identification					
UN or ID No.	Proper Shipping Name	Class or Division (Subsidiary risk)	Packing Group	Quantity and type of packing	Packing Inst.
UN2814	Infectious substance, affecting humans (Dengue virus)	6.2		1 Fibreboard box x 25 g	620
UN1845	Dry Ice	9		20 kg <i>Overpack used</i>	954

A way to show an infectious substance shipment packed in a UN Class 6.2 specification package surrounded by dry ice contained in an overpack meeting Packing Instruction 954 requirements.

FIGURE 8.1.K
Shipper's Declaration Completion—Example 7

NATURE AND QUANTITY OF DANGEROUS GOODS						
Dangerous Goods Identification						
UN or ID No.	Proper Shipping Name	Class or Division (Subsidiary risk)	Packing Group	Quantity and type of packing	Packing Inst.	Authorization
UN1203	Motor Spirit	3	PGII	1 Steel drum x 4 L 2 Plastic Jerricans x 2 L	353	
UN1950	Aerosols, flammable	2.1		1 Fibreboard box x 5 kg Overpack used	203	
UN1992	Flammable liquid, toxic, n.o.s. (Petrol, Carbon tetrachloride mixture)	3 (6.1)	III	1 Fibreboard box x 1 L	Y343	

Overpacked dangerous goods as per 5.0.1.5. Note that the third item is not contained in the overpack, as items in an overpack must be listed first, followed by the words "overpack used" (8.1.6.9.2, Step 6).

FIGURE 8.1.L
Shipper's Declaration Completion—Example 8

NATURE AND QUANTITY OF DANGEROUS GOODS						
Dangerous Goods Identification						
UN or ID No.	Proper Shipping Name	Class or Division (Subsidiary risk)	Packing Group	Quantity and type of packing	Packing Inst.	Authorization
UN1950	Aerosols, flammable	2.1		200 Fibreboard boxes x 0.2 kg Overpack used x 3 #1234 #2345 #1841 Total quantity per overpack 40 kg	203	

Multi-Overpacks with identical contents. Note this consignment contains a total of 600 fibreboard boxes of Aerosols, split across three identical overpacks. To facilitate identification, loading and notification, the operator requires an overpack to show an identification mark (which may be any alpha-numeric format) and the total quantity of dangerous goods. This information must also be entered on the Declaration. The total quantity on the Declaration must match the total quantities shown on the overpack.

FIGURE 8.1.M
Shipper's Declaration Completion—Example 9

NATURE AND QUANTITY OF DANGEROUS GOODS						
Dangerous Goods Identification						
UN or ID No.	Proper Shipping Name	Class or Division (Subsidiary risk)	Packing Group	Quantity and type of packing	Packing Inst.	Authorization
UN1950	Aerosols, flammable	2.1		200 Fibreboard boxes x 0.2 kg Overpack used #AA44 Total net quantity 40 kg 100 Fibreboard boxes x 0.1 kg Overpack used #AB62 Total net quantity 10 kg 100 Fibreboard boxes x 0.3 kg Overpack used x 3 #AA60 #AA72 #AA84 Total quantity per overpack 30 kg	203	

8.1 Multi-Overpacks with different contents. Note this consignment contains a total of 600 fibreboard boxes, two not identical and three identical overpacks. To facilitate identification, loading and notification, the operator requires an overpack to show an identification mark (which may be any alpha-numeric format) and the total quantity of dangerous goods. This information must also be entered on the Declaration. The total quantity on the Declaration must match the total quantities shown on the overpack.

FIGURE 8.1.N
Shipper's Declaration Completion—Example 10

NATURE AND QUANTITY OF DANGEROUS GOODS						
<i>UN Number or Identification Number, proper shipping name, Class or Division (subsidiary risk), packing group (if required), and all other required information.</i>						
UN1309, Coated aluminium powder, 4.1, II 4 Fiberboard boxes (4G) x 10kg 445						
UN1263, Paints, 3, III 6 Steel drums (1A2) x 20L 366 Overpack used x 4 #1 - #4						
Total quantity per overpack 40kg, 120L						
UN3077, Environmentally hazardous substance, solid, n.o.s. (Ferric ammonium citrate), 9, III 4 Flexible IBC (13H2) x 610 kg 956						

Multi-Overpacks with identical contents, but comprising both solid and liquid dangerous goods. Note this consignment comprises 16 fibreboard boxes containing a solid substance and 24 steel drums containing a liquid, split across four identical overpacks. To facilitate identification, loading and notification, the operator requires an overpack to show an identification mark (which may be any alpha-numeric format) and the total quantity of dangerous goods. The total quantity of dangerous goods should be shown by UN number. This information must also be entered on the Declaration. The total quantity on the Declaration must match the total quantities shown on the overpack.

FIGURE 8.1.O
Shipper's Declaration Completion—Example 11

	<p>NATURE AND QUANTITY OF DANGEROUS GOODS <i>UN Number or Identification Number, proper shipping name, Class or Division (subsidiary risk), packing group (if required), and all other required information.</i></p> <p>UN 1993, Flammable liquid, n.o.s. (Ethanol and toluene mixture), Radioactive Material, excepted package – limited quantity of material, Class 3, II // 1 plastic drum (1H2) x 250 mL // 353 // A130</p>	
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The appropriate method of describing a quantity of material that is radioactive excepted package that also meets the classification criteria of a class or division other than Class 7 as set out in Special Provision A130.

Note: The package containing such a substance is only required to bear a Class 3 hazard label. A radioactive material–excepted package handling label (Figure 7.4.G/10.7.8.A) is not required.

8.2 Air Waybill

STATE VARIATIONS: BNG-01, DQG-04, SAG-03

OPERATOR VARIATIONS: AF-02, AI-06, CA-05, GF-06, LY-01, MS-01, OU-16, UU-05

Note:

The following instructions for the completion of the Air Waybill cover only the information required for dangerous goods consignments. Full instructions for the completion of an Air Waybill are to be found in "The Air Cargo Tariff (TACT) Manual Rules" or in Cargo Services Conference (CSC) Resolution 600(a).

8.2.1 Handling Information Statement

Air Waybill(s) accompanying dangerous goods consignment(s) for which a dangerous goods declaration is required must include the following statements, as applicable, in the "Handling Information" box:

- (a) "Dangerous goods as per attached Shipper's Declaration" or "Dangerous Goods as per attached DGD";
- (b) "Cargo Aircraft Only" or "CAO".

8.2.2 Mixed Shipment

An Air Waybill containing both dangerous goods and non-dangerous goods must indicate in the "Handling Information" box of the Air Waybill the number of pieces of dangerous goods either before or after the statement "Dangerous Goods as per attached Shipper's Declaration" or "Dangerous Goods as per attached DGD".

8.2.3 Shipper's Declaration Not Required

OPERATOR VARIATION: TN-05

If a Shipper's Declaration is not required for dangerous goods, the "Nature and Quantity of Goods" box of the Air Waybill must show the following information. The

sequence of the information is optional, but that shown below is preferred:

- UN or ID number (not required for Magnetized Material);
- Proper shipping name;
- Number of packages (unless these are the only packages within the consignment); and
- Net quantity per package (only required for UN 1845).

Note:

For Radioactive Material - Excepted Packages, see DGR 10.8.8.3.

8.2.4 Dry Ice as Refrigerant for Dangerous Goods

When Carbon dioxide, solid (dry ice) is used as a refrigerant for dangerous goods that require a Shipper's Declaration, the details of the Carbon dioxide, solid (dry ice) must be shown on the Shipper's Declaration.

8.2.5 Excepted Quantities

OPERATOR VARIATIONS: CX-06, D0-02, KA-06, LD-06, QY-02

The provisions of 8.2.1 to 8.2.3 do not apply to "excepted quantities of dangerous goods" which meet the requirements of Subsection 2.6. However, the following endorsement is required in the "Nature and Quantity of Goods" box of the Air Waybill:

- "Dangerous Goods in Excepted Quantities";
- The number of packages (unless these are the only packages within the consignment).

8.2.6 Not Dangerous Goods

If an article or substance could be suspected of being a dangerous goods, but does not meet the criteria for any of the hazard classes or divisions, it may be offered for transport as not restricted if the words "Not Restricted" are included in the description of the article or substance

on the Air Waybill to indicate that it has been checked. The statement "Not restricted, as per Special Provision Axx" must be included in the description of the article on the Air Waybill when required, to indicate that the Special Provision has been applied.

8.2.7 Examples

The following examples illustrate how the information required above appears on the Air Waybill.

**FIGURE 8.2.A
Consignment Containing Dangerous Goods for Which a Shipper's Declaration is Required for a Passenger Aircraft Shipment:**

Airport of Destination			Requested Flight/Date		Amount of Insurance	INSURANCE - If carrier offers insurance, and such insurance is requested in accordance with the conditions thereof, indicate amount to be insured in figures in box marked "Amount of Insurance".	
Handling Information							
Dangerous Goods as per attached Shipper's Declaration sci							
No. of Pieces RCP	Gross Weight	kg lb	Rate Class Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (incl. Dimensions of Volume)
							Chemicals

**FIGURE 8.2.B
For a Cargo Aircraft Only Shipment**

Airport of Destination			Requested Flight/Date		Amount of Insurance	INSURANCE - If carrier offers insurance, and such insurance is requested in accordance with the conditions thereof, indicate amount to be insured in figures in box marked "Amount of Insurance".	
Handling Information							
Dangerous Goods as per attached DGD - Cargo Aircraft Only sci							
No. of Pieces RCP	Gross Weight	kg lb	Rate Class Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (incl. Dimensions of Volume)
							Ammunition

**FIGURE 8.2.C
For a Shipment Containing Dangerous Goods and Non-dangerous Goods**

Airport of Destination			Requested Flight/Date		Amount of Insurance	INSURANCE - If carrier offers insurance, and such insurance is requested in accordance with the conditions thereof, indicate amount to be insured in figures in box marked "Amount of Insurance".	
Handling Information							
5 Packages Dangerous Goods as per attached Shipper's Declaration sci							
No. of Pieces RCP	Gross Weight	kg lb	Rate Class Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (incl. Dimensions of Volume)
25							Household goods

FIGURE 8.2.D
For a Consolidated Shipment Containing Dangerous Goods

Airport of Destination			Requested Flight/Date	Amount of Insurance	INSURANCE - If carrier offers insurance, and such insurance is requested in accordance with the conditions thereof, indicate amount to be insured in figures in box marked "Amount of Insurance".	
Handling Information						
Dangerous Goods as per attached DGD				7 Pkgs	SCI	
No. of Pieces RCP	Gross Weight	kg lb	Rate Class Commodity Item No.	Chargeable Weight	Rate / Charge	Total
30						Nature and Quantity of Goods (incl. Dimensions of Volume) Consolidated shipment as per attached list

FIGURE 8.2.E
Consignment Containing Dangerous Goods for Which a Shipper's Declaration is Not Required

Airport of Destination			Requested Flight/Date	Amount of Insurance	INSURANCE - If carrier offers insurance, and such insurance is requested in accordance with the conditions thereof, indicate amount to be insured in figures in box marked "Amount of Insurance".	
Handling Information						
SCI						
No. of Pieces RCP	Gross Weight	kg lb	Rate Class Commodity Item No.	Chargeable Weight	Rate / Charge	Total
						Nature and Quantity of Goods (incl. Dimensions of Volume) Frozen Fish UN 1845 Carbon Dioxide, solid 2 x 40 kg

FIGURE 8.2.F
Consignment Containing Dangerous Goods in Excepted Quantities

Airport of Destination			Requested Flight/Date	Amount of Insurance	INSURANCE - If carrier offers insurance, and such insurance is requested in accordance with the conditions thereof, indicate amount to be insured in figures in box marked "Amount of Insurance".	
Handling Information						
SCI						
No. of Pieces RCP	Gross Weight	kg lb	Rate Class Commodity Item No.	Chargeable Weight	Rate / Charge	Total
						Nature and Quantity of Goods (incl. Dimensions of Volume) Dental Kit - Dangerous Goods in Excepted Quantities, 1 package

FIGURE 8.2.G
Consignment Containing Lithium Batteries Packed According to Section II of PI 965—970

Airport of Destination	Requested Flight/Date	Amount of Insurance	INSURANCE - If carrier offers insurance, and such insurance is requested in accordance with the conditions thereof, indicate amount to be insured in figures in box marked "Amount of Insurance".			
Handling Information						
SCI						
No. of Pieces RCP	Gross Weight kg lb	Rate Class Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (incl. Dimensions of Volume)
						Lithium ion batteries in compliance with Section II of PI965

8.3 Additional Documentation

STATE VARIATIONS: AEG-03, AUG-01/03, BEG-02, BHG-02/03, CAG-07/08/10/11, DQG-02, EGG-01, FRG-01, GBG-03, HRG-03/05, ING-03, IRG-03, ITG-05/07, JMG-01, MYG-03, NLG-01, SAG-02/04, USG-03/05/06/07/16, VUG-02, ZAG-01

OPERATOR VARIATIONS: AY-03, D5-04, FX-16, JJ-05, KL-03, LA-01, MH-13, MS-04, PX-07, TN-02

8.3.1 When dangerous goods are shipped as authorized by Special Provision A1, or A2, 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.

8.3.2 When dangerous goods are shipped in portable tanks as authorized by an appropriate national authority,

they must be accompanied by a copy of the document(s) of approval.

8.3.3 When dangerous goods are shipped in packagings as authorized by 5.0.6.7, they must be accompanied by a copy of the document(s) of approval.

8.3.4 When organic peroxides and self-reactive substances require an approval prior to transport under the provisions of 3.5.2.3.1 or 3.4.1.2.4.1, a copy of the approval must be attached to the Shipper's Declaration.

8.3.5 When dangerous goods are shipped under exemption (see 2.1.2), 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.



SECTION 9—HANDLING

9.0 General

This Section 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.

Note:

Nothing in this Section 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 Responsibilities of Sections 1 and 9.

9.1 Acceptance

9.1.1 Cargo Acceptance Procedures

STATE VARIATIONS: AEG-07, BEG-05, CNG-01, GBG-02, HKG-01, HRG-02/03/05, ING-02/03, MOG-01, MYG-01, NLG-03/06, OMG-01, SAG-02, SGG-01, USG-10/13, VCG-01

△ OPERATOR VARIATIONS: 5X-01, AR-08, AU-08/10, AY-01/03, CI-01, D0-01, D5-04, EY-02, GA-01, GH-01, IJ-09, JP-01, JU-02/03/04, KE-02, KL-01/02/03, KZ-01, LA-01, MD-02, ME-03, MH-01/17, MK-03/06, MS-02, NG-01, NH-01/06, OK-03, OM-01, OS-01, OU-01, QT-04, QY-01, RJ-01, S7-01, SQ-05/09, TK-04, UL-06, US-01, UU-04/07, VN-01, VO-01, XK-03, ZW-01

9.1.1.1 Operators' acceptance staff must be adequately trained to assist them to identify and detect dangerous goods present as general cargo. Information about:

- (a) general descriptions that are often used for items in cargo which may contain dangerous goods; and
- (b) other indication that dangerous goods may be present (e.g. labels, markings), must be provided to cargo acceptance staff and must be readily available to such staff.

9.1.1.2 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 ordinary looking items may contain dangerous goods and a list of some general descriptions which, experience has shown, are often applied to such items is found in Subsection 2.2.

Note:

Often general names are used in the description of the content of a cargo shipment. To assist in the detection of undeclared dangerous goods, acceptance staff should

check shipping documents with the general description stated on the air waybill and, if necessary, request documentary evidence from shippers that the shipment does not contain dangerous goods as indicated in Sub-section 2.2.

9.1.2 Acceptance of Dangerous Goods by Operators

9.1.2.1 An operator must not accept a package or overpack containing dangerous goods or a unit load device or other type of pallet containing dangerous goods as described in 9.1.4 nor a freight container containing radioactive material for transport aboard an aircraft unless:

- (a) it is accompanied by two copies of the "Shipper's Declaration for Dangerous Goods"; or
- (b) the information applicable to the consignment is provided in electronic form; or
- (c) it is accompanied, where permitted, by alternative documentation.

9.1.2.2 Where a Shipper's Declaration is provided in accordance with 9.1.2.1 (a), one copy of the declaration form 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 declaration form must be retained at this point until the goods have arrived at final destination, after which time it may be stored elsewhere.

9.1.2.3 When the information applicable to the consignment is provided in electronic form, the information must be available to the operator at all times during the 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 Section 8.

9.1.3 Acceptance Checklist

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 9.1.4 unless the operator has, by use of a checklist, verified the following:

- (a) the documentation complies with the detailed requirements of Subsection 10.8 for radioactive material and Section 8 for other dangerous goods;
- (b) the quantity of dangerous goods stated on the Shipper's Declaration is within the limits per package on a passenger or cargo aircraft as appropriate;
- (c) the marking of the package(s), overpack(s) or freight container(s) accords with the details stated on the

accompanying Shipper's Declaration and is 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 marks are 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(s), overpack(s) or freight container(s) is as required by 10.7.2 for radioactive material and 7.2 for other dangerous goods;
- △ (g) the outer packaging of a combination packaging or the single packaging is permitted by the applicable packing instruction, and when visible is of the type stated on the accompanying dangerous goods transport document;
- (h) the package or overpack does not contain different dangerous goods which require segregation according to Table 9.3.A;
- (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) the overpack does not contain package(s) bearing the "Cargo Aircraft Only" label unless:
 1. only one package is contained in the overpack; or
 2. two or more packages are contained in the overpack and the packages are assembled in such a way that clear visibility and easy access to them is possible; or
 3. the packages are not required to be accessible under 9.3.4.

Notes:

1. Where packages are contained in an overpack or freight container, as permitted by 9.1.4, the checklist should establish the correct marking and labelling of such overpacks or freight containers or other type of pallet and not the individual packages contained in them. Where packages are contained in a unit load device, as permitted by 9.1.4, the checklist should not require the checking of packages individually for the correct marking and labelling.
2. Sample checklists for non-radioactive material, radioactive material and dry ice shipments are included at the back of the Regulations.
3. Minor discrepancies, such as the omission of dots and commas in the proper shipping name appearing on the Shipper's Declaration for Dangerous Goods 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 a reason for rejecting a consignment.

- 4. A checklist is not required for dangerous goods in excepted quantities and radioactive material in excepted packages.

9.1.4 Acceptance of Freight Containers and Unit Load Devices

9.1.4.1 An operator must not accept from a shipper a unit load device or a freight container containing dangerous goods other than;

- (a) a freight container for radioactive material (see Appendix A);
- (b) a unit load device or other type of pallet containing consumer commodities when prepared according to Packing Instruction Y963;
- (c) a unit load device or other type of pallet containing Carbon dioxide, solid (dry ice) used as a refrigerant for other than dangerous goods prepared according to Packing Instruction 954;
- (d) a unit load device or other type of pallet containing magnetized material.

9.1.4.2 With regard to freight containers containing radioactive material, the operator must ensure that all four sides of the container are correctly labelled.

9.1.4.3 When an operator accepts a unit load device or other type of pallet container consumer commodities, dry ice or magnetized material as permitted by 9.1.4.1 (b), (c) or (d), the operator must attach an identification tag as required by 9.3.8 to the unit load device.

9.1.5 Acceptance of Infectious Substances

STATE VARIATIONS: AUG-03, CAG-05/10/11, VUG-02

OPERATOR VARIATIONS: AF-02, AM-06/10, AS-08, BR-14, FX-09, HA-03, IJ-06, IP-03, LA-07, MS-03, OO-01, OU-12/16, TK-07, UU-05

9.1.5.1 *Routing.* Whatever the mode used, transport must be made by the quickest possible routing. If transhipment is necessary, precautions must be taken to ensure special care, expeditious handling and monitoring of the substances in transit.

9.1.5.2 A live animal which 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.

9.1.6 Special Responsibilities in Accepting Self-Reactive Substances of Division 4.1 and Organic Peroxides of Division 5.2

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 protected from direct sunlight and all sources of heat and be placed in adequately ventilated areas.

9.1.7 Consumer Product Warnings

An article or package may bear a warning symbol or consumer hazard labelling. The article or substance contained in the package may not necessarily meet the criteria for classification shown in Section 3. Clarification should be obtained from the shipper, if required, before accepting the package as "Not Restricted".

9.1.8 Consolidations

△ OPERATOR VARIATIONS: 9W-09, AI-04, AZ-01, BR-06, CA-01, CI-03, CZ-02, GA-02, IJ-11, IP-02, IR-02, KE-01, KQ-01, KZ-05, LH-02, ME-02, MH-05, MU-02, OM-06, OU-14, OZ-02, PX-03, RJ-02, SK-07, SV-03, SW-03, TK-03, UX-03, VN-12

9.1.8.1 Definition

A consolidation is a consignment of multi-packages which has been originated by more than one person each of whom has made an agreement for carriage by air with another person other than a scheduled air carrier. Conditions applied to that agreement may or may not be the same as conditions applied by the scheduled air carrier for the same carriage.

9.1.8.2 Acceptance

Dangerous Goods are accepted in consolidations under the conditions described in 9.1.8.2.1 to 9.1.8.2.5.

9.1.8.2.1 Dangerous goods may be consolidated with goods not subject to these Regulations. Dangerous goods in consolidations are subject to the acceptance check described in 9.1.3. Any delays caused by discrepancies found during the check may result in delay to the complete consolidation.

9.1.8.2.2 Dangerous goods in consolidations must be identified, classified, packed, marked, labelled and documented in accordance with these Regulations and be free from any indication of damage or leakage.

9.1.8.2.3 Packages and overpacks containing dangerous goods must be offered to the operator separately from the goods in the consolidation that are not subject to these Regulations. Dangerous goods in consolidations are not acceptable in unit load devices, unless specifically permitted by these Regulations (see 9.1.4.1).

9.1.8.2.4 A Shipper's Declaration for Dangerous Goods is required for each component (house) consignment.

9.1.8.2.5 Consolidations containing any "Cargo Aircraft Only" dangerous goods must be shipped on Cargo Aircraft.

9.2 Storage

9.2.1 Storage of Radioactive Material

9.2.1.1 Limitation of Exposure of Persons to Radiation

9.2.1.1.1 Radioactive material must be segregated sufficiently from workers and from members of the public.

The following values for dose must be used for the purpose of calculating segregation distances or radiation level:

- (a) for workers in regularly occupied working areas a dose of 5 mSv in a year;
- (b) for members of the public, in areas where the public has regular access, a dose of 1 mSv in a year.

9.2.1.1.2 All relevant storage personnel must receive such instructions as are necessary concerning the hazards involved and the precautions to be observed.

☞ **9.2.1.1.3** In order to maintain the principle of keeping exposure to radiation as low as reasonably achievable, Category II-Yellow and Category III-Yellow packages, overpacks or freight containers should be separated from persons during temporary storage. Minimum separation distances should be applied as shown in Tables 9.3.D and 9.3.E and greater distances should be used where feasible. These distances are measured from the surface of the packages, overpacks or freight containers, irrespective of the duration of the storage of the radioactive material.

☞ **9.2.1.1.4** During acceptance, and handling, exposure to radiation should be kept as low as reasonably achievable.

9.2.1.2 Storage of Fissile Material

The number 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 any group of such packages, overpacks or freight containers does not exceed 50. Groups of such packages must be stored so as to maintain a spacing of at least 6 m from other groups of such packages, overpacks or freight containers.

9.2.1.3 Undeliverable Radioactive Material

Where a consignment is undeliverable, the consignment must be placed in a safe location and the appropriate national authority must be informed as soon as possible and a request made for instructions on further action.

9.2.2 Storage of Organic Peroxides and Self-Reactive Substances

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 protected from direct sunlight and all sources of heat and be placed in adequately ventilated areas.

△ 9.2.3 Visibility of Markings and Labels

During the course of air transport, including storage, markings and labels required by these Regulations must not be covered or obscured by any part of or attachment to the packaging or any other label or marking.

9.3 Loading

9.3.1 Loading Restrictions on Flight Deck and for Passenger Aircraft

STATE VARIATIONS: JPG-10/12, USG-13/15

OPERATOR VARIATIONS: BR-16, IJ-01, IR-04, LA-08, LY-04, SQ-01/02, SW-01

9.3.1.1 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 2.3.2 to 2.3.5 and 2.5.1 and for excepted packages of radioactive materials (see 10.5.8). Dangerous goods may be carried in a main deck cargo compartment of a passenger aircraft provided that the compartment meets all the certification requirements for a Class B or Class C aircraft cargo compartment. Dangerous goods bearing the "Cargo Aircraft Only" label must not be carried on a passenger aircraft.

9.3.1.2 Dangerous goods which do not meet the requirements of 9.3.1.1 may be approved for transport by the appropriate national authorities of the State of origin and the State of the operator, under specified conditions, in the main deck cargo compartments of passenger aircraft.

Note:

Cargo compartment classification is defined in Appendix A—Glossary

- 9.3.1.3** For additional requirements concerning the loading of dangerous goods for carriage by helicopters, see 9.9.

9.3.2 Incompatible Dangerous Goods

STATE VARIATIONS: IRG-02, JPG-11

9.3.2.1 Segregation of Dangerous Goods

9.3.2.1.1 Packages containing dangerous goods, which might react dangerously with each other, 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. To maintain acceptable segregation between packages containing dangerous goods having different hazards, the segregation requirements shown in Table 9.3.A must be observed. The segregation requirements apply based on all hazard labels applied on the package, irrespective of whether the hazard is the primary or subsidiary risk.

Note:

Incompatible dangerous goods must also be segregated during acceptance, handling and loading. Operators, freight forwarders and ground handling agents must also ensure that local government regulations applicable to the storage and handling of dangerous goods are complied with. These local government regulations may impose a greater requirement than that specified in Table 9.3.A.

**TABLE 9.3.A
Segregation of Packages (9.3.2)**

Hazard Label	1 excl. 1.4S	1.4S	2	3	4.2	4.3	5.1	5.2	8
1 excluding 1.4S	See 9.3.2.2.	See 9.3.2.2.3.	x	x	x	x	x	x	x
1.4S	See 9.3.2.2.3.	—	—	—	—	—	—	—	—
2	x	—	—	—	—	—	—	—	—
3	x	—	—	—	—	—	x	—	—
4.2	x	—	—	—	—	—	x	—	—
4.3	x	—	—	—	—	—	—	—	x
5.1	x	—	—	x	x	—	—	—	—
5.2	x	—	—	—	—	—	—	—	—
8	x	—	—	—	—	x	—	—	—

Notes:

1. An "x" at the intersection of a row and a column indicates that packages containing these classes/divisions of dangerous goods must be segregated. A "—" at the intersection of a row and a column indicates that packages containing these classes/divisions of dangerous goods do not require segregation.
2. Division 4.1 and Classes 6, 7 and 9 are not included in Table 9.3.A as they do not require segregation from other classes of dangerous goods.

9.3.2.1.2 Packages containing dangerous goods with multiple hazards in the class or divisions, which require segregation in accordance with Table 9.3.A need not be segregated from packages bearing the same UN number.

9.3.2.2 Separation of Explosive Substances and Articles

9.3.2.2.1 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.

9.3.2.2.2 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.

9.3.2.2.3 Explosives in Compatibility Group S may be stowed with explosives in all compatibility groups.

9.3.2.2.4 Except as provided for in 9.3.2.2.5 explosives of different compatibility groups may be stowed together, whether or not they belong to the same division.

9.3.2.2.5 Explosives of Division 1.4B must not be loaded with other explosives except for Division 1.4S. When loaded on the same aircraft with explosives other than Division 1.4S, Division 1.4B 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 other explosives must be loaded into different, non-adjacent loading positions and separated by other cargo with a minimum separation distance of 2 m.

9.3.3 Handling and Loading of Packages Containing Liquid Dangerous Goods

OPERATOR VARIATIONS: CI-04, EI-01, KE-07, OK-04, SK-04

During the course of transport, packages bearing the package orientation "This Way Up" label must be loaded, stowed 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 such closures upwards, notwithstanding that such single packagings may also have side closures.

9.3.4 Loading of Cargo Aircraft

△ STATE VARIATIONS: JPG-12, USG-13/15

OPERATOR VARIATIONS: BR-01/14, IJ-02, IR-04, LA-08, LY-05, OM-02, SQ-03

△ **9.3.4.1** Packages or overpacks of dangerous goods bearing the "Cargo Aircraft Only" label must be loaded for carriage by 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 (a ULD that is determined by the appropriate national authority to meet the Class C aircraft cargo compartment standards must include "Class C compartment" on the ULD tag); 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 weight permit, separate such packages from other cargo.
- (d) external carriage by helicopter; or

- (e) with the approval of the State of the operator, for helicopter operations, in the cabin (see Supplement to the ICAO Technical Instructions (Doc 9284 AN/905 Supplement), Part S-7;2.4).

Note:

Cargo compartment classification is defined in Appendix A—Glossary.

9.3.4.2 When requested, packages or overpacks bearing the "Cargo Aircraft Only" label should be made available to the crew for inspection prior to departure.

△ **9.3.4.3** The requirements of 9.3.4.1 and 9.3.4.2 do not apply to;

- flammable liquids (Class 3), Packing Group III, other than those with a subsidiary risk of Class 8;
- toxic substances (Division 6.1) with no subsidiary risk other than Class 3
- infectious substances (Division 6.2);
- radioactive materials (Class 7);
- miscellaneous dangerous goods (Class 9).

Note:

When transporting goods in a non-pressurised cargo hold, there will be a large pressure differential up to 75 kPa at cruise altitudes. Packages that are filled at normal atmospheric pressure may not be capable of withstanding this pressure differential. Operators should seek confirmation from the shipper that the package is suitable.

9.3.5 General Loading and Securing Requirements

OPERATOR VARIATION: MH-07

9.3.5.1 When dangerous goods subject to the requirements 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.

9.3.5.2 The operator must secure dangerous goods in the aircraft in a manner that will prevent any movement. For packages or overpacks containing radioactive materials, the securing must be adequate to ensure that the separation requirements of 9.3.10.2, 9.3.10.6 and 9.3.10.7 are met at all times.

9.3.6 Damaged Packages of Dangerous Goods

9.3.6.1 Operators must ensure that a package or overpack is not loaded onto an aircraft or into a unit load device unless the package or overpack has been inspected immediately prior to loading and found free from visible leaks or damage.

9.3.6.2 Before loading on an aircraft, unit load devices must be inspected and found free from any evidence of

leakage from or damage to any dangerous goods contained therein.

9.3.6.3 Any package, which appears to be damaged or leaking, must be removed from the aircraft and safe disposal arranged. In the case of leakage, the operator must ensure the remainder of the consignment is undamaged and that no other package, baggage or cargo has been contaminated. See Subsection 9.4 for damage to Class 6 and Class 7 packages.

9.3.7 Replacement of Labels

When an operator discovers that labels have become lost, detached or illegible, he must replace them in accordance with the information provided on the "Shipper's Declaration for Dangerous Goods". This requirement does not apply where the labels are found to be missing or illegible at time of acceptance.

9.3.8 Identification of Unit Load Devices Containing Dangerous Goods

STATE VARIATION: JPG-09

9.3.8.1 Each unit load device containing dangerous goods, which require a hazard label, must clearly display on its exterior an indication that dangerous goods are contained within the unit load device. 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 with minimum dimensions of 148 x 210 mm. The primary and subsidiary hazard class(es) or division(s) numbers of such dangerous goods must be clearly marked on this tag. The tag must be removed from the unit load device immediately after the dangerous goods have been unloaded.

9.3.8.2 If the unit load device contains packages bearing the "Cargo Aircraft Only" label, the tag must indicate that the unit load device can only be loaded on a cargo aircraft.

9.3.9 Stowage of Toxic and Infectious Substances

For special precautions to be taken when loading Toxic or Infectious Substances, see 9.3.15.3.

9.3.10 Loading of Radioactive Material

STATE VARIATION: USG-10

OPERATOR VARIATIONS: JL-05, MH-15/16

9.3.10.1 Limitation of Exposure of Persons to Radiation

9.3.10.1.1 Radioactive material must be segregated sufficiently from workers such that workers in regularly occupied work areas do not receive a dose in excess of 5 mSv in a year.

9.3.10.1.2 All relevant transport and loading personnel must receive such instructions as are necessary concerning the hazards involved and the precautions to be observed.

9.3.10.2 Loading Restrictions

In order to maintain the principle of keeping exposure to radiation as low as reasonably achievable, packages of radioactive materials should be stored as far away from passengers and crew as possible, i.e. on the floor of underfloor compartments or in the furthermost end of main deck compartments. The separation distances shown in Tables 9.3.D and 9.3.E are the minimum values and greater distances should be used where feasible. Category II-yellow or III-yellow packages or overpacks must not be carried in compartments occupied by passengers, except those exclusively reserved for couriers specially authorized to accompany such packages or overpacks.

Note:

The separation distances from packages of radioactive materials to passengers specified in table 9.3.D are based on a 0.02 mSv/h reference dose at a seat height of 0.4 m.

9.3.10.3 Limitations

STATE VARIATION: USG-10

OPERATOR VARIATIONS: AS-04, BZ-03, E8-03, LG-02, MH-18, MK-01, PZ-04

9.3.10.3.1 Packages or overpacks having a surface radiation level greater than 2 mSv/h must not be transported by air except by special arrangement.

9.3.10.3.2 Type B(M) packages and consignments under exclusive use must not be transported on passenger aircraft.

9.3.10.3.3 The total activity of LSA material and SCO in industrial packages in any single aircraft must not exceed the limits shown in Table 9.3.B.

9.3.10.3.4 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 pyrophoric materials must not be transported by air.

TABLE 9.3.B
Aircraft Activity Limits for LSA Material and SCO in Industrial Packages (9.3.10.3.3)

Nature of Material	Activity Limit per 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

9.3.10.3.5 Except in the case of shipment under special arrangement, mixing of packages of different kinds of radioactive materials, including fissile material, and mixing different kinds of packages with different transport indices 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.

9.3.10.4 Training

All relevant transport and storage personnel must receive such instructions as are necessary concerning the hazards involved and the precautions to be observed.

9.3.10.5 Segregation of Fissile Material During Transport

9.3.10.5.1 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.

9.3.10.5.2 Where the sum of the criticality safety indexes on board an aircraft or in a freight container exceeds 50, as permitted in Table 9.3.C, 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 conveyance carrying radioactive material.

**TABLE 9.3.C
TI and CSI Limits for Freight Containers and Aircraft (9.3.10.6.3)**

Type of Freight Container or Aircraft	Maximum Total Sum of Transport Indices (TI)				Maximum Total Sum of Criticality Safety Indexes (CSI)	
	Not Under Exclusive Use		Under Exclusive Use		Not Under Exclusive Use	Under Exclusive Use
	Non-fissile	Fissile	Non-fissile	Fissile		
Freight container—small	50	50	—	—	50	—
Freight container—large	50	50	No limit	100	50	100
Passenger aircraft	50	50	—	—	50	—
Cargo aircraft	200	50	No limit	100	50	100

9.3.10.6 Stowage During Transport and Storage in Transit

9.3.10.6.1 Consignments must be securely stowed.

9.3.10.6.2 Provided that its average surface heat flux does not exceed 15 W/m² 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 appropriate national authority in an applicable approval certificate. Where the surface heat flux of the package, whether within a freight container or not, exceeds 15 W/m² the stowage must be in accordance with the requirements given in the competent authority approval certificate.

9.3.10.6.3 Loading of freight containers and accumulation of packages, overpacks and freight containers must be controlled as follows:

- (a) except under the conditions of exclusive use, the total number of packages, overpacks and freight containers on board 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 9.3.C. 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 of minimum segregation distances established in 9.3.10.7 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) in the case of fissile material, the total sum of criticality safety indexes in a freight container and aboard an aircraft must not exceed the values shown in Table 9.3.C.

9.3.10.6.4 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.

Note:

Category I White Radioactive Material has a Transport Index (TI) of zero (0).

9.3.10.7 Separation from Persons

Category II-Yellow and Category III-Yellow packages, overpacks or freight containers must be separated from persons. The minimum separation distances to be applied are shown in Tables 9.3.D and 9.3.E. These distances are measured 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 9.3.E applies only when radioactive material is being carried by cargo aircraft and in those circumstances, the minimum distances must be applied as above and also to any other areas occupied by persons.

TABLE 9.3.D
Separation of Radioactive Material—Passenger and Cargo Aircraft (9.3.10.7)

Total Sum of TI	Minimum Distance ¹	
	metres	ft. in.
0.1 to 1.0	0.30	1'0"
1.1 to 2.0	0.50	1'8"
2.1 to 3.0	0.70	2'4"
3.1 to 4.0	0.85	2'10"
4.1 to 5.0	1.00	3'4"
5.1 to 6.0	1.15	3'10"
6.1 to 7.0	1.30	4'4"
7.1 to 8.0	1.45	4'9"
8.1 to 9.0	1.55	5'1"
9.1 to 10.0	1.65	5'5"
10.1 to 11.0	1.75	5'9"
11.1 to 12.0	1.85	6'1"
12.1 to 13.0	1.95	6'5"
13.1 to 14.0	2.05	6'9"
14.1 to 15.0	2.15	7'1"
15.1 to 16.0	2.25	7'5"
16.1 to 17.0	2.35	7'9"
17.1 to 18.0	2.45	8'1"
18.1 to 20.0	2.60	8'6"
20.1 to 25.0	2.90	9'6"
25.1 to 30.0	3.20	10'6"
30.1 to 35.0	3.50	11'6"
35.1 to 40.0	3.75	12'4"
40.1 to 45.0	4.00	13'1"
45.1 to 50.0	4.25	13'11"

¹ 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 indices of the individual packages, overpacks or freight containers. Alternatively, if the packages, overpacks or freight containers are separated into groups, minimum distance from each group to the nearest inside surface of the partitions or floors of the flight deck or other areas occupied by personnel is the distance applicable to the sum of the transport indices 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 indices.

Note:

For larger sums of transport indices, to be carried by cargo aircraft only, see Table 9.3.E.

TABLE 9.3.E
Separation of Radioactive Material—Cargo Aircraft Only (9.3.10.7)

Total Sum of TI	Minimum Distance ¹	
	metres	ft. in.
50.1 to 60	4.65	15'4"
60.1 to 70	5.05	16'8"
70.1 to 80	5.45	17'10"
80.1 to 90	5.80	19'0"
90.1 to 100	6.10	20'0"
100.1 to 110	6.45	21'2"
110.1 to 120	6.70	22'0"
120.1 to 130	7.00	23'0"
130.1 to 140	7.30	24'0"
140.1 to 150	7.55	24'10"
150.1 to 160	7.80	25'8"
160.1 to 170	8.05	26'6"
170.1 to 180	8.30	27'2"
180.1 to 190	8.55	28'0"
190.1 to 200	8.75	28'10"
200.1 to 210	9.00	29'6"
210.1 to 220	9.20	30'2"
220.1 to 230	9.40	30'10"
230.1 to 240	9.65	31'8"
240.1 to 250	9.85	32'4"
250.1 to 260	10.05	33'0"
260.1 to 270	10.25	33'8"
270.1 to 280	10.40	34'2"
280.1 to 290	10.60	34'10"
290.1 to 300	10.80	35'6"

¹ 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 indices of the individual packages, overpacks or freight containers. Alternatively, if the packages, overpacks or freight containers are separated into groups, minimum distance from each group to the nearest inside surface of the partitions or floors of the flight deck or other areas occupied by personnel is the distance applicable to the sum of the transport indices 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 indices.

Notes:

1. For smaller sums of transport indices, see Table 9.3.D.
2. Distances for total sums of transport indices over 200 apply to exclusive use only.

9.3.10.8 Separation from Undeveloped Photographic Films or Plates

Radioactive material must be sufficiently segregated from undeveloped photographic film and plates. The basis for determining segregation distances for this purpose must be that the radiation exposure of undeveloped

photographic film and plates due to the transport of radioactive material be limited to 0.1 mSv per consignment of such film.

In the absence of such measurement, minimum separation distances applicable for Category II and Category III-Yellow packages are shown in Table 9.3.F.

**TABLE 9.3.F
Separation of Radioactive Material—Photographic Films and Plates (9.3.10.8)**

Total Sum of TI	Duration of Carriage											
	2 hours or less		2-4 hours		4-8 hours		8-12 hours		12-24 hours		24-48 hours	
	metres	ft. in.	metres	ft. in.	metres	ft. in.	metres	ft. in.	metres	ft. in.	metres	ft. in.
1	0.4	1'4"	0.6	2'0"	0.9	3'0"	1.1	3'8"	1.5	5'0"	2.2	7'2"
2	0.6	2'0"	0.8	2'8"	1.2	4'0"	1.5	5'0"	2.2	7'2"	3.1	10'2"
3	0.7	2'4"	1.0	3'4"	1.5	5'0"	1.8	5'10"	2.6	8'6"	3.8	12'6"
4	0.8	2'8"	1.2	4'0"	1.7	5'8"	2.2	7'2"	3.1	10'2"	4.4	14'6"
5	0.8	2'8"	1.3	4'4"	1.9	6'2"	2.4	7'10"	3.4	11'2"	4.8	15'10"
10	1.4	4'8"	2.0	6'6"	2.8	9'2"	3.5	11'6"	4.9	16'0"	6.9	22'8"
20	2.0	6'6"	2.8	9'2"	4.0	13'2"	4.9	16'0"	6.9	22'8"	10.0	32'10"
30	2.4	7'10"	3.5	11'6"	4.9	16'0"	6.0	19'8"	8.6	28'2"	12.0	39'4"
40	2.9	9'6"	4.0	13'2"	5.7	18'8"	6.9	22'8"	10.0	32'10"	14.0	45'10"
50	3.2	10'6"	4.5	14'10"	6.3	20'8"	7.9	25'10"	11.0	36'0"	16.0	52'6"

Note:

The above table is calculated so that the radiation dose received by the films does not exceed 0.1 mSv (10 mrem).

9.3.11 Loading of Magnetized Materials

OPERATOR VARIATIONS: JL-06, VN-11

Magnetized materials must be loaded so that headings of aircraft compasses are maintained within the tolerances prescribed by the applicable aircraft airworthiness requirements and, where practical, in locations minimizing possible effects on compasses. Multiple packages may produce a cumulative effect. For magnetized material transported under the conditions of an approval described in Packing Instruction 953, loading must be in accordance with conditions specified in the authorizing approval.

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 affect aircraft compasses, as may packages or items which individually do not meet the definition of magnetized material but cumulatively may have a magnetic field strength of a magnetized material.

9.3.12 Loading of Carbon dioxide, solid (dry ice)

OPERATOR VARIATIONS: AI-05, SV-05, UA-03, VN-11

9.3.12.1 Carbon dioxide, solid (dry ice) shipped by itself or used as a refrigerant for other commodities, may be carried provided that the operator has made suitable

arrangements dependent on the aircraft type, the aircraft ventilation rates, the method of packing and stowing, whether or not animals will be carried on the same flight and other factors. The operator must ensure that ground staff are informed that Carbon dioxide, solid (dry ice) is being loaded or is on board the aircraft.

9.3.12.2 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 954 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.

Notes:

1. For arrangements between the shipper and operator, see Packing Instruction 954.
2. Refer to the relevant airline's loading procedures for Carbon dioxide, solid (dry ice) limitations.

9.3.12.3 As required by 2.3.4.6, crew and passenger checked baggage containing dry ice must be marked to identify that the baggage contains dry ice and shows the quantity of dry ice or identifies that there is 2.5 kg of dry ice or less. To assist with the handling of passenger and crew checked baggage containing dry ice. Figure 9.3.G shows an example of a baggage tag, which may be used by operators to identify such items of checked baggage.

FIGURE 9.3.G
Example Dry Ice Baggage Tag (9.3.12.3)



9.3.13 Loading of Cryogenic Liquids

Packages containing liquefied refrigerated gases in open and closed cryogenic receptacles may be carried provided that the operator has made suitable arrangements dependant on the aircraft type, loading of other temperature-sensitive cargo and whether or not animals will be carried on the same flight. The operator should ensure that ground staff are informed that packages containing cryogenic liquids are being loaded or are on board the aircraft and that appropriate precautions should be taken to ensure that after the cargo door is opened any gas build up is allowed to vent before loading personnel enter the cargo compartment.

9.3.14 Loading of Expandable Polymeric Beads and Plastics Moulding Compound

OPERATOR VARIATION: AS-06

A total of not more than 100 kg net weight of expandable polymeric beads (or granules) or plastics moulding compound, referenced to Packing Instruction 957, may be carried in any inaccessible hold on any aircraft.

9.3.15 Loading of Live Animals with Dangerous Goods

9.3.15.1 Live animals should not be loaded in close proximity of cryogenic liquids or Carbon dioxide, solid (dry ice). As the vapours emitted by Carbon dioxide, solid (dry ice) are heavier than air, they concentrate on the lower level of the hold. Therefore, live animals should be stowed above packages containing Carbon dioxide, solid (dry ice).

Note:

In certain circumstances carbon dioxide, solid (dry ice) may be packaged with live animals as a coolant, e.g. bees. All other requirements for the transport of carbon dioxide, solid (dry ice) must be met.

9.3.15.2 Category II-Yellow and Category III-Yellow packages, overpacks and freight containers must be separated from live animals by a distance of 0.5 m or more for journeys of 24 hours or less and by a distance of 1.0 m or more for journeys of more than 24 hours.

9.3.15.3 Substances of Division 2.3, Class 6 (toxic and category A infectious substances) and substances requiring a subsidiary risk "Toxic" label must not be stowed in the same compartment with:

- (a) animals;
- (b) foodstuffs;
- (c) feed; or
- (d) other edible substances intended for consumption by humans or animals;

except where:

- the dangerous goods are loaded in one closed unit load device and the foodstuffs or animals are loaded in another closed unit load device or,
- where open unit load devices are used, the ULDs must not be stowed adjacent to each other.

△ 9.3.16 Loading of Wheelchairs or other Battery Operated Mobility Aids as Checked Baggage

OPERATOR VARIATIONS: AR-04, AV-05, E8-05, IP-05, OS-02, OU-03, PR-02, VO-02

9.3.16.1 Wheelchairs or other battery-powered mobility aids with non-spillable wet batteries or batteries which comply with Special Provision A123, being carried with the approval of the operator as checked baggage, must be loaded in accordance with 2.3.2.2.

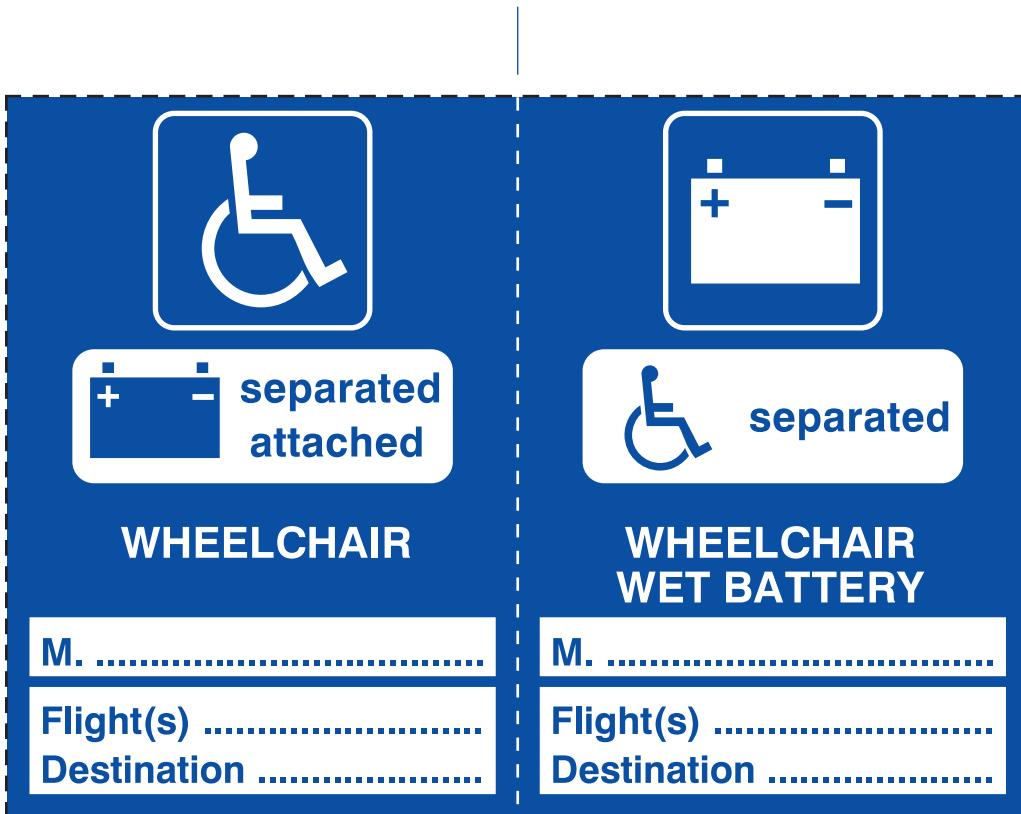
9.3.16.2 Wheelchairs or other battery-powered mobility aids with spillable batteries, being carried with the approval of the operator as checked baggage, must be loaded in accordance with 2.3.2.3.

9.3.16.3 Wheelchairs or other similar battery-powered mobility aids with lithium-ion batteries being carried with the approval of the operator, must be loaded in accordance with 2.3.2.4.

9.3.16.4 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 that batteries which are spillable should be fitted with spill-resistant vent caps when feasible.

9.3.16.5 To assist the handling of wheelchairs and mobility aids with batteries, Figure 9.3.H shows an example of a label which may be used to assist in identifying whether or not a wheelchair has had the battery removed. The label is in two parts; Part A remains with the wheelchair and indicates whether or not the battery has been removed. In the particular case where the battery is separated from the wheelchair, Part B may be used to assist in identifying the battery and also in reconciling the battery and its wheelchair.

FIGURE 9.3.H
Battery-powered Wheelchair and Mobility Aid Label (9.3.16.5)



9.3.17 Handling of Self-reactive Substances and Organic Peroxides

Packages or unit load devices containing packages of self-reactive substances of Division 4.1 and/or organic peroxides of Division 5.2 must be protected from direct sunlight and all sources of heat and be placed in adequately ventilated areas during the course of loading.

9.3.18 Handling and Loading of Intermediate Bulk Containers (IBC)

During handling and loading of intermediate bulk containers (IBC), account must be taken of the IBC markings specified in Figure 6.8.E.

9.4 Inspection

9.4.1 Inspection for Damage or Leakage

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 9.4.2 and for radioactive materials in 9.4.3.

9.4.2 Infectious Substances

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:

- avoid handling the package or keep handling to a minimum;
- inspect adjacent packages for contamination and put aside any that may have been contaminated;
- 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; and
- notify the shipper and/or the consignee.

9.4.3 Radioactive Material

STATE VARIATIONS: FRG-04, ITG-04

9.4.3.1 If it is evident that a package or overpack of radioactive material or a freight container for radioactive material is damaged or leaking, or if it is suspected that the package or overpack or freight container may have leaked or been damaged, access to the package or overpack or freight container 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 or overpack or freight container. The scope of the survey must also include the aircraft, aircraft equipment, the adjacent loading and unloading areas, and, if necessary, all other material which has been carried on the aircraft. When necessary, additional steps for the protection of human health, in accordance with provisions established by the relevant competent authority, must be taken to overcome and minimize the consequences of such leakage or damage.

Note:

The appropriate national authority should be notified so as to ensure that the adjacent loading and unloading areas are also assessed for contamination.

9.4.3.2 Packages damaged or leaking radioactive contents in excess of allowable limits for normal conditions of transport may be removed to an acceptable interim location only under supervision and must not be forwarded until repaired or reconditioned and decontaminated.

9.4.3.3 An aircraft and equipment used regularly for the carriage 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.

9.4.3.4 Except as provided in 9.4.3.5, any aircraft, or equipment or part thereof which has become contaminated above the limits specified in Table 9.4.A in the course of the transport of radioactive material, or which shows a radiation level in excess 5 $\mu\text{Sv}/\text{h}$ 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 Table 9.4.A and the radiation level resulting from the fixed contamination on the surfaces after decontamination is less than 5 $\mu\text{Sv}/\text{h}$ at the surface.

Note:

"Not Reused" means taken out of service.

9.4.3.5 An overpack, freight container or aircraft dedicated to the transport of radioactive material under exclusive use must be excepted from the requirements of 9.4.3.4 and 10.5.3.2 solely with regard to its internal surfaces and only for as long as it remains under that specific exclusive use.

TABLE 9.4.A
Applicable Limits of Non-fixed Radioactive Contamination of an Aircraft or Aircraft Equipment (9.4.3.4)

Contaminant	Applicable limit* Bq/cm ²
Beta and gamma emitters and low toxicity alpha emitters	4.0
All other alpha emitters	0.4

* The above limits are applicable when averaged over any area of 300 cm² of any part of the surface.

9.4.4 Contaminated Cargo or Baggage Handling

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 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 Regulations, the operator must isolate the baggage or cargo and take appropriate steps to nullify any identified hazard before being transported further by air.

9.5 Provision of Information

9.5.1 Pilot-in-Command

9.5.1.1 Notification to Captain

STATE VARIATIONS: AEG-05/08, CHG-02, USG-12/13/15, VCG-07, ZAG-04

△ **9.5.1.1.1** As early as practicable prior to departure of the aircraft, but in no case later than when the aircraft moves under its own power, the operator of an aircraft in which dangerous goods are to be carried must:

- (a) provide the pilot-in-command with accurate and legible written or printed information concerning dangerous goods that are to be carried as cargo; and
- (b) from 1 January 2014, provide personnel with responsibilities for operational control of the aircraft (e.g. the flight operations officer, flight dispatcher, or designated ground personnel responsible for flight operations) with the same information that is required to be provided to the pilot-in-command (e.g. a copy of the written information provided to the pilot-in-command). Each operator must specify the personnel (job title or function) to be provided this information in their operations manual and/or other appropriate manuals.

Notes:

1. This includes information about dangerous goods loaded at a previous departure point and which are to be carried on the subsequent flight.

- 2.** *Information required under 9.5.1.1.1(b) should be readily available to the operator's personnel whose responsibilities most closely align with the duties of the flight operations officer/flight dispatcher described in ICAO Annex 6, Part I, Chapter 4.6 (see Flight Operations Officer). These personnel are intended to provide the information required by 9.6.3 to facilitate emergency response.*
- 3.** *The provision in 9.5.1.1.1(b) is recommended until 1 January 2014 when it will become mandatory.*

- 9.5.1.1.2** For helicopter operations, with the approval of the appropriate national authority of the State of the operator, the information to the pilot-in-command may be abbreviated or be by other means (e.g. radio communication, as part of the working flight documentation such as a journey log or operational flight plan) where circumstances make it impractical to produce written or printed information or on a dedicated form (see Supplement to the ICAO Technical Instructions (Doc 9284 AN/905 Supplement), Part S-7; 4.8).

9.5.1.1.3 This written information to the pilot-in-command must include the following:

- (a) the Air Waybill number (when issued);
- (b) the proper shipping name, supplemented with the technical or chemical group name(s) if appropriate (see 4.1.2.1(d) and 8.1.3) and UN number or ID number as listed in these Regulations. 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 "Air crew Protective Breathing Equipment (smoke hood) in accordance with Special Provision A144";
- (c) the class or division, and subsidiary risk(s) corresponding to label(s) applied (see also 8.1.6.9.1, Steps 4 and 5), by numerals and in the case of Class 1, the compatibility group;
- (d) the Packing Group as shown on the Shipper's Declaration;

- (e) (for non-radioactive material) the number of packages, the net quantity, or gross weight if applicable, of each package, except that this does not apply to dangerous goods where the net quantity or gross weight is not required on the Shipper's Declaration for Dangerous Goods (see 8.1.6.9.2, Step 6), or, when applicable, alternative written documentation and their exact loading location. 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 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 weight;
- (f) (for radioactive material) the number of packages, overpacks, or freight containers, their category, their transport index, if applicable, and their exact loading location;
- (g) whether the package must be carried on cargo aircraft only;
- (h) the airport at which the package(s) is to be unloaded; and
- (i) (where applicable) an indication that the dangerous goods are being carried under a State exemption.

⊗

9.5.1.1.3.1 Where the operator intends to make it possible for the pilot-in-command to provide a telephone number instead of the details about the dangerous goods on board the aircraft as specified in 9.5.1.3, the telephone number from where a copy of the information to the pilot-in-command can be obtained during the flight must be provided in addition to the information specified above in 9.5.1.1.

- 9.5.1.1.3.2** The dangerous goods listed in Table 9.5.A need not appear on the information provided to the pilot-in-command.



TABLE 9.5.A

Dangerous Goods Not Required to Appear on the Information to Pilot-in-Command (9.5.1.1.3.2)

UN Number	Item	Reference
n/a	Dangerous goods in excepted quantities	2.6.1
UN 2807	Magnetized material	Packing Instruction 953
UN 2908	Radioactive material, excepted package—empty packaging	10.5.8.2.2
UN 2909	Radioactive material, excepted package—articles manufactured from depleted uranium or natural thorium or natural uranium	10.5.8.2.2
UN 2910	Radioactive material, excepted package—limited quantity of material	10.5.8.2.2
UN 2911	Radioactive material, excepted package— instruments or articles	10.5.8.2.2
UN 3090	Lithium metal batteries (including lithium alloy batteries) when meeting the requirements of Section II of Packing Instruction 968	Packing Instruction 968 Section II
UN 3091	Lithium metal batteries contained in equipment (including lithium alloy batteries) when meeting the requirements of Section II of Packing Instruction 970	Packing Instruction 970 Section II
UN 3091	Lithium metal batteries packed with equipment (including lithium alloy batteries) when meeting the requirements of Section II of Packing Instruction 969	Packing Instruction 969 Section II
UN 3245	Genetically modified micro-organisms or Genetically modified organisms	Packing Instruction 959
UN 3373	Biological substance, Category B	Packing Instruction 650
UN 3480	Lithium ion batteries (including lithium polymer batteries) when meeting the requirements of Section II of Packing Instruction 965	Packing Instruction 965 Section II
UN 3481	Lithium ion batteries contained in equipment (including lithium polymer batteries) when meeting the requirements of Section II of Packing Instruction 967	Packing Instruction 967 Section II
UN 3481	Lithium ion batteries packed with equipment (including lithium oplymer batteries) when meeting the requirements of Section II of Packing Instruction 966	Packing Instruction 966 Section II

9.5.1.1.4 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.

9.5.1.1.5 For UN 3480 (Lithium ion batteries) and UN 3090 (lithium metal batteries), only the UN number, proper shipping name, class, total quantity at each loading location, and whether the package must be carried on a cargo only aircraft need be provided. UN 3480 (Lithium ion batteries) and UN 3090 (lithium metal batteries) carried under a State exemption must meet all of the requirements in 9.5.1.1.1.

9.5.1.1.6 This information to the pilot-in-command should be presented on a dedicated form and should not be by means of Air Waybills, "Shipper's Declaration for Dangerous Goods", invoices, etc. The pilot-in-command must indicate on a copy of the information to pilot-in-command, or in some other way, that the information has been received.

△ 9.5.1.1.7 The information to the pilot-in-command must also include 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 or any leakage from the unit load devices loaded on the aircraft.

9.5.1.1.8 The information to the pilot-in-command must be readily available to him during flight.

△ 9.5.1.1.9 A legible copy of the information 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. A copy, or the information contained in the notice to the pilot-in-command, must be readily accessible to the flight operations officer, flight dispatcher, or designated ground personnel responsible for flight operations until after the arrival of the flight.

9.5.1.1.10 In addition to the languages, which may be required by the State of the operator, English should be used for the information to the pilot-in-command.

9.5.1.1.11 In the event of the information to the pilot-in-command being of such a size as to make in-flight radiotelephony transmission 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 dangerous goods in each cargo compartment.

9.5.1.2 Emergency Response Information

The operator must ensure that for consignments requiring a Shipper's Declaration for Dangerous Goods, 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:

- *The Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (ICAO Doc. 9481-AN/928); or
- any other document, which provides appropriate information concerning dangerous goods on board.

Note:

Subsection 4.2—List of Dangerous Goods contains the applicable Emergency Response Drill Code (see Column N) assigned to each dangerous goods entry in the ICAO document “Emergency Response Guidance for Aircraft Incidents involving Dangerous Goods” (ICAO Doc. 9481—AN/928).

9.5.1.3 Information by the Pilot-in-Command in Case of In-Flight Emergency

STATE VARIATIONS: MYG-04, VUG-03

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 airport 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/ID 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 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.

△ 9.5.2 Provision of Information to Passengers

9.5.2.1 With the aim of preventing dangerous goods which a passenger is not permitted to have from being taken aboard an aircraft in excess baggage consigned as cargo, any organization or enterprise accepting excess baggage consigned as cargo should seek confirmation from the passenger, or a person acting on behalf of the passenger, that the excess baggage does not contain 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.

Editorial Note:

Operator responsibilities regarding provision of information to passengers have been moved to Subsection 1.4.

9.5.3 Provision of Information at Cargo Acceptance Areas

An operator or the operator's handling agent must ensure that sufficient notices, prominently displayed, are provided at visible location(s) at cargo acceptance points, giving information about the transport of dangerous goods to alert shippers/agents about any dangerous goods that may be contained in their cargo consignment(s). These notices must include visual examples of dangerous goods, including batteries.

9.6 Reporting

STATE VARIATIONS: AUG-04, BRG-04, CAG-19, FRG-05, GBG-04, KPG-03, MYG-05, NLG-05, USG-13, VUG-04

9.6.1 Dangerous Goods Accidents and Incidents

An operator must report dangerous goods accidents or 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.

Notes:

1. *This includes incidents involving dangerous goods that are not subject to all or part of these Regulations through the application of an exception or of a special provision (for example, 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 4.4).*
2. *For an example of an accident and incident reporting form see Figure 9.6.A—Dangerous Goods Occurrence Report.*

△ 9.6.2 Undeclared or Mis-Declared Dangerous Goods

An operator must report any occasion when undeclared or mis-declared dangerous goods are discovered in cargo or mail. 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 Subsection 2.3 are discovered either in the baggage or on the person of passengers or crew members. Such a report must be made to the appropriate authority of the State in which this occurred.

9.6.3 Information by Operator in Case of an Aircraft Accident or Incident

9.6.3.1 In the event of:

- (a) an aircraft accident; or
- (b) serious incident, where dangerous goods carried as cargo may be involved,

the operator of the aircraft carrying dangerous goods as cargo must provide information, without delay, to emergency services responding to the accident or serious incident about the dangerous goods on board, as shown on the information 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.

- 9.6.3.2 In the event of an aircraft incident, the operator of an aircraft carrying dangerous goods as cargo must, if requested to do so, provide information, without delay, to emergency services responding to the incident and to the appropriate authority of the State in which the incident occurred about the dangerous goods on board, as shown on the information to the pilot-in-command.

9.6.3.3 Operators must address the provisions of 9.6.3.1 and 9.6.3.2 in appropriate manuals and accident contingency plans.

Note:

The terms "accident", "serious incident" and "incident" are defined in ICAO Annex 13.

9.6.4 Reporting of Dangerous Goods Occurrences

An operator must report to the appropriate authorities of the State of the operator and the State of origin any occasion when:

- (a) dangerous goods are discovered to have been carried when not loaded, segregated, separated and secured in accordance with 9.2 or 9.3; or
- (b) dangerous goods are discovered to have been carried without information having been provided to the Pilot-in-Command in accordance with 9.5.1.1.

Note:

Entities other than operators who are in possession of dangerous goods at the time a dangerous goods accident or incident occurs or at the time a dangerous goods incident is discovered to have occurred should follow the reporting requirements of 9.6.1. Entities other than operators who discover undeclared or misdeclared dangerous goods should follow the reporting requirements of 9.6.2. These entities may include, but are not limited to, freight forwarders, customs authorities and security screening providers.

9.6.5 Dangerous Goods Occurrence Report

Operators must report:

- dangerous goods accidents and incidents to the appropriate authority of the State of the operator and the State in which the accident or incident occurred in accordance with 9.6.1;
- occasions of undeclared or mis-declared dangerous goods to the appropriate authority of the State of the operator and the State in which this occurred in accordance with 9.6.2;
- other occurrences in accordance with 9.6.4.

Figure 9.6.A is an example of a standard form which is in use in many parts of the world and may be used where the reporting format has not been specified by the appropriate authority. In addition, it is recommended that this format be used when reporting incidents to another operator.

Note:

Individual States may require other reporting formats and carriers must ensure that they follow local national protocols as appropriate.

9.7 Training

An operator must ensure training is provided in accordance with the detailed requirements of Subsection 1.5 to all relevant employees including those of agencies employed to act on his 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.

9.8 Retention of Documents

STATE VARIATIONS: USG-01/13

9.8.1 The operator must ensure that at least one copy of the documents or information, appropriate to the transport by air of a dangerous goods consignment, is retained for a minimum period of three months after the flight on which the dangerous goods were transported. As a minimum, the documents which must be retained are the Shipper's Declaration for Dangerous Goods and other applicable transport documents, the acceptance checklist (when this is in a form which requires physical completion) and the written information to the pilot-in-command. and, for shipments offered under Section IB of Packing Instructions 965 and 968, the alternative documentation, if applicable, or information provided on it. These documents or the information must be made available to the appropriate national authority upon request.

Note:

Where the documents are kept electronically or in a computer system, they should be capable of being reproduced in a printed manner.

9.8.2 For each package or overpack containing dangerous goods or freight container containing radioactive material or unit load device or other type of pallet containing dangerous goods as described in 9.1.4 that was not accepted by an operator, due to an error or omission by the shipper in packaging, labelling, marking or documentation, a copy of the documentation as well as the checklist (when this is in a form which requires physical completion) should be retained for a minimum period of three months after the completion of the acceptance checklist.

Note:

Where the documents are kept electronically or in a computer system, they should be capable of being reproduced in a printed manner.

9.9 Helicopter Operations

9.9.1 Due to the differences in the type of operations carried out by helicopters compared with aeroplanes, there may be circumstances when the full provisions of these Regulations are not appropriate or necessary, due to the operations involving un-manned sites, remote locations, mountainous areas or construction sites etc. In such circumstances and when appropriate, the State of the operator may grant an approval in order to permit the carriage of dangerous goods without all of the normal requirements of these Regulations being fulfilled. When States other than the State of the operator have lodged a variation that they require prior approval of such operations, approval must also be obtained from the States of origin and destination, as appropriate.

9.9.2 When loading dangerous goods for open external carriage by a helicopter, consideration should also be

given to the type of packaging used and to the protection of those packagings, where necessary, from the effects of airflow and weather (e.g. by damage from rain or snow), in addition to the general loading provisions of 9.3.

9.9.3 When dangerous goods are carried suspended from a helicopter, the operator must ensure that consideration is given to the dangers of static discharge upon landing or release of the load.

9.9.4 When helicopters are carrying passengers, in accordance with the Supplement to the ICAO Technical Instructions (Doc. 9284 AN/905 Supplement), Part S-7;

2.2.4, the State of the operator may grant an approval to permit the carriage of dangerous goods either:

- (a) in the cabin, when those dangerous goods are associated with and accompanied by the passengers; or
- (b) in cargo compartments that do not meet the requirements of 9.3.1.1.

Note:

The requirements in this subsection are in addition to the other provisions of these Regulations that apply to all operators (e.g. 1.4 and 1.5).



FIGURE 9.6.A
Dangerous Goods Occurrence Report

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See the Notes on the next page of this form. *Those boxes where the heading is in italics need only be completed if applicable.*

Mark type of occurrence: Accident Incident Other Occurrence

1. Operator:	2. Date of occurrence:	3. Local time of occurrence:
4. Flight date:	5. Flight no.:	
6. Departure airport:	7. Destination airport:	
8. Aircraft type:	9. Aircraft registration:	
10. Location of occurrence:	11. Origin of the goods:	
12. Description of the occurrence, including details of injury, damage, etc. (if necessary continue on the next page)		
13. Proper shipping name (<i>including the technical name</i>):		14. UN/ID no. (when known):
15. Class/division (when known):	16. Subsidiary risk(s):	17. Packing group
19. Type of packaging:	20. Packaging specification marking:	21. No. of packages:
22. Quantity (or transport index, if applicable):		
23. Reference no. of Air Waybill:		
24. Reference no. of courier pouch, baggage tag, or passenger ticket:		
25. Name and address of shipper, agent, passenger, etc.:		
26. Other relevant information (including suspected cause, any action taken):		
27. Name and title of person making report:		28. Telephone no.:
29. Company/dept. code, E-mail or InfoMail code:		30. Reporter ref.:
31. Address:		32. Date/Signature:

FIGURE 9.6.A
Dangerous Goods Occurrence Report (contd.)

Description of the occurrence (continuation):

Note:

1. Any type of dangerous goods occurrence must be reported, irrespective of whether the dangerous goods are contained in cargo, mail or baggage.
2. A dangerous goods accident is an occurrence associated with and related to the transport of dangerous goods which results in fatal or serious injury to a person or major property damage. For this purpose, a serious injury is an injury which is sustained by a person in an accident and which: (a) requires hospitalisation for more than 48 hours, commencing from the time the injury was received; (b) results in a fracture of any bones (except small fractures of fingers, toes, or nose); (c) involves lacerations which cause severe haemorrhage, nerve, muscle or tendon damage; (d) involves injury to any internal organ; (e) involves second or third degree burns; or any burns affecting more than 5% of the body surface; or (f) involves verified exposure to infectious substances or injurious radiation. A dangerous goods accident may also be an aircraft accident; in which case the normal procedure for dangerous goods accidents must be followed.
3. A dangerous goods incident is an occurrence, other than a dangerous goods accident, associated with and related to the transport of dangerous goods, 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 jeopardises the aircraft or its occupants is also deemed to constitute a dangerous goods incident.
4. This form may also be used to report any occasion when undeclared or misdeclared dangerous goods are discovered in cargo or when baggage contains dangerous goods which passengers are not permitted to take on board aircraft.
5. An initial report should be dispatched within 72 hours of the occurrence, unless exceptional circumstances prevent this. The initial report may be made by any means but a written report should be sent as soon as possible, even if all the information is not available.
6. Completed reports are normally sent to the competent authority.
7. Copies of all relevant documents should be included with the report.
8. Providing it is safe to do so, all dangerous goods, packagings, documents etc. relating to the occurrence must be retained until after the initial report has been made.
9. Requirements and procedures differ from state to state, it is recommended that the local competent authority be contacted in order to clarify the exact procedures to be followed in the event of a dangerous goods incident or accident.





SECTION 10—RADIOACTIVE MATERIAL

10.0 Transport of Radioactive Material

10.0.1 Scope and Application

10.0.1.1 Scope

These Regulations 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 Regulations are based on the IAEA Regulations for the Safe Transport of Radioactive Material, (2009 Edition), Safety Standards Series No. TS-R-1, IAEA, Vienna (2009). Explanatory material can be found in *Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material, Safety Guide No. TS-G-1.1 (Rev. 1)*, IAEA, Vienna (2005). The prime responsibility for safety must rest with the person or organization responsible for facilities and activities that give rise to radiation risk.

10.0.1.2 Objective

The objective of these Regulations is to establish requirements that must be satisfied to ensure safety and to protect persons, property and the environment from the effects of radiation in the transport of radioactive material by air. This protection is achieved by requiring:

- containment of the radioactive contents;
- control of external radiation levels;
- prevention of criticality; and
- prevention of damage by heat.

10.0.1.3 Application

These Regulations 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 Regulations that are characterized by three general security levels:

- routine conditions of transport (incident free);
- normal condition of transport (minor mishaps); and
- accident conditions of transport.

10.0.1.4 Exceptions

These Regulations do not apply to:

- (a) radioactive material implanted or incorporated into a person or live animal for diagnosis or treatment;
- (b) a person who has been subject to accidental or deliberate intake of or contamination from radioactive material and is to be transported for medical treatment, taking into account the necessary radiological protection measures with respect to other passengers and crew, subject to approval by the operator:

Note:

Guidance material may be found on www.icao.int/anb/fls/dangerousgoods

- (c) radioactive material in consumer products which have received regulatory approval, following their sale to the end user;
- (d) 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 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 10.3.2.1(b) or calculated in accordance with 10.3.2.2 to 10.3.2.5;
- (e) 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 Appendix A.

10.0.1.5 Specific Provisions for Excepted Packages

Excepted packages which contain radioactive material in limited quantities, instruments, manufactured articles and empty packages as specified in 10.3.11.1 are subject to:

- (a) the applicable provisions specified in 10.5.8;
- (b) the requirements for excepted packages specified in 10.6.2.1.

10.0.2 Radiation Protection Programme

10.0.2.1 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.

10.0.2.2 Doses to persons must be below the relevant dose limits. 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 within the restriction that the doses to individuals be

subject to dose constraints. A structured and systematic approach must be adopted and must include consideration of the interfaces between transport and other activities.

10.0.2.3 The nature and extent of the measures to be employed in the programme must be related to the magnitude and likelihood of radiation exposures. The programme must incorporate the requirements in 10.0.2.2, 10.0.2.4 to 10.0.2.7 and 9.2.1.1 and applicable emergency response procedures. Programme documents must be available, on request, for inspection by the relevant competent authority.

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

- (a) likely to be between 1 and 6 mSv in a year, a dose assessment programme via work place monitoring or individual monitoring must be conducted;
- (b) likely to exceed 6 mSv in a year, individual monitoring must be conducted.

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

Note:

For occupational exposures 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.

10.0.2.5 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).

10.0.2.6 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.

10.0.2.7 Personnel must be appropriately trained in the radiation hazards involved including the precautions to be observed in order to restrict their occupational exposure and the exposure of other persons who might be affected by their actions.

10.0.3 Quality Assurance

10.0.3.1 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 Regulations. Certification that the design specification has been fully implemented must be available to the competent authority. The manufacturer,

consignor or user must be prepared to provide facilities for competent authority inspection during manufacture and use and to demonstrate to any cognizant 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.

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

10.0.4 Shipment Approval By Special Arrangement

STATE VARIATIONS: BEG-04, DEG-02, DKG-01

10.0.4.1 Special arrangements means those provisions, approved by the competent authority, under which consignments of radioactive material, which do not satisfy all the applicable requirements of these Regulations may be transported.

10.0.4.2 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 Regulations is impractical and that the requisite standards of safety established by these Regulations have been demonstrated through alternative means the competent authority may approve special arrangement transport operations for a single or 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. Each consignment shipped under special arrangement requires multi-lateral approval.

10.0.5 Radioactive Materials Possessing Other Dangerous Properties

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 Regulations.

10.0.6 Non-compliance

In the event of non-compliance with any limit in these Regulations 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;

- (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:
 1. take immediate steps to mitigate the consequence of the non-compliance;
 2. investigate the non-compliance and its causes, circumstances and consequences;
 3. 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;
 4. communicate to the relevant competent authority(ies) the causes of the non-compliance and on 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 possible and it must be immediate whenever an emergency exposure situation has developed or is developing.

10.1 Applicability

The following provisions of Section 1 of the Regulations are applicable:

- Definition of Dangerous Goods (Subsection 1.0);
- Basis of the Regulations (Subsection 1.1);
- Application of the Regulations (Subsection 1.2);
- Shipper's Responsibilities (Subsection 1.3);
- Operator's Responsibilities (Subsection 1.4);
- Training Requirements (Subsection 1.5).

10.2 Limitations

10.2.1 Radioactive Material Forbidden Unless Exempted

The following radioactive material must not be carried on aircraft unless exempted by the States under the provisions of 1.2.6.1:

- in vented type B(M) packages;
- in packages which require external cooling by an ancillary cooling system;
- in packages subject to operational controls during transport;
- explosive;
- a pyrophoric liquid.

10.2.2 Transport of Radioactive Material by Post

STATE VARIATIONS: CAG-09, FRG-06, NLG-02, ZAG-04

OPERATOR VARIATIONS: 9W-08, AR-03, AV-07, BR-05, C8-03, CA-06, CV-03, D5-03, EY-07, IJ-04, KQ-03, MU-03, MH-02, OK-01, QR-02, TK-06, UU-01, VN-03

The Universal Postal Union (UPU), subject to the provisions of the national postal authorities concerned and the relevant parts of these Regulations, allows the carriage of radioactive material in excepted packages, provided the activity does not exceed one tenth of the relevant limit specified in Table 10.3.D. The provisions relating to documentation (Subsection 10.8) do not apply to such radioactive material.

10.2.3 Other Limitations

The following provisions of Section 2 of these Regulations are also applicable:

- Hidden Dangerous Goods (Subsection 2.2);
- Dangerous Goods Carried by Passengers or Crew (Subsection 2.3);
- Dangerous Goods in Operator's Property (Subsection 2.5);
- Dangerous Goods in Excepted Quantities (Subsection 2.6);
- State and Operator Variations (Subsection 2.8).

Note:

Applicable State and operator variations that specifically relate to radioactive material are identified by the trefoil symbol in the left margin, however, any or all variations may be applicable.

10

10.3 Classification

STATE VARIATIONS: RUG-03, SAG-04, UKG-01, USG-10

10.0
to
10.3

10.3.1 Definition

Radioactive material means any material containing radionuclides where both the activity concentration and the total activity in the consignment exceed the values specified in 10.3.2.

Note:

For Class 7, the type of packaging may have a decisive effect on classification.

10.3.2 Determining Activity

Activity limits for packagings containing radioactive material are determined by the activity values for "Special Form" radioactive material and for material, which is "Other than Special Form". The value for Special Form is designated A₁. The value for "Other than Special Form" is designated A₂.

10.3.2.1 Listed Single Radionuclides

The following basic values for individual radionuclides are given in Table 10.3.A:

- (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.

10.3.2.2 Unlisted Single Radionuclides

For individual radionuclides whose identities are known, but which are not listed in Table 10.3.A, the determination of the basic radionuclide values referred to in 10.3.2.1 must have multilateral approval. Where the chemical form of each radionuclide is known, 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 values of A_1 and A_2 in Table 10.3.B may be used without obtaining such approval.

10.3.2.3 Determining A_1 and A_2

In the calculations of A_1 and A_2 for a radionuclide not in Table 10.3.A, 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.

TABLE 10.3.A
 A_1 and A_2 Values for Common Radionuclides (10.3.2.1)

Radionuclide	Element (Atomic No)	A_1 (Special Form) (TBq)	A_2 (Other form) (TBq)	Activity concentration for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Ac-225 ^a	Actinium (89)	0.8	0.006	1×10^1	1×10^4
Ac-227 ^a		0.9	0.00009	1×10^{-1}	1×10^3
Ac-228		0.6	0.5	1×10^1	1×10^6
Ag-105	Silver (47)	2	2	1×10^2	1×10^6
Ag-108m ^a		0.7	0.7	1×10^1 b	1×10^6 b
Ag-110m ^a		0.4	0.4	1×10^1	1×10^6
Ag-111		2	0.6	1×10^3	1×10^6
Al-26	Aluminium (13)	0.1	0.1	1×10^1	1×10^5
Am-241	Americium (95)	10	0.001	1×10^0	1×10^4
Am-242m ^a		10	0.001	1×10^0 b	1×10^4 b
Am-243 ^a		5	0.001	1×10^0 b	1×10^3 b
Ar-37	Argon (18)	40	40	1×10^6	1×10^8
Ar-39		40	20	1×10^7	1×10^4
Ar-41		0.3	0.3	1×10^2	1×10^9
As-72	Arsenic (33)	0.3	0.3	1×10^1	1×10^5
As-73		40	40	1×10^3	1×10^7
As-74		1	0.9	1×10^1	1×10^6
As-76		0.3	0.3	1×10^2	1×10^5
As-77		20	0.7	1×10^3	1×10^6
At-211	Astatine (85)	20	0.5	1×10^3	1×10^7
Au-193	Gold (79)	7	2	1×10^2	1×10^7
Au-194		1	1	1×10^1	1×10^6
Au-195		10	6	1×10^2	1×10^7
Au-198		1	0.6	1×10^2	1×10^6

TABLE 10.3.A
A₁ and A₂ Values for Common Radionuclides (10.3.2.1) (continued)

Radionuclide	Element (Atomic No)	A ₁ (Special Form) (TBq)	A ₂ (Other form) (TBq)	Activity concentration for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Au-199		10	0.6	1×10^2	1×10^6
Ba-131 ^a	Barium (56)	2	2	1×10^2	1×10^6
Ba-133		3	3	1×10^2	1×10^6
Ba-133m		20	0.6	1×10^2	1×10^6
Ba-140 ^a		0.5	0.3	1×10^1 ^b	1×10^5 ^b
Be-7	Beryllium (4)	20	20	1×10^3	1×10^7
Be-10		40	0.6	1×10^4	1×10^6
Bi-205	Bismuth (83)	0.7	0.7	1×10^1	1×10^6
Bi-206		0.3	0.3	1×10^1	1×10^5
Bi-207		0.7	0.7	1×10^1	1×10^6
Bi-210		1	0.6	1×10^3	1×10^6
Bi-210m ^a		0.6	0.02	1×10^1	1×10^5
Bi-212 ^a		0.7	0.6	1×10^1 ^b	1×10^5 ^b
Bk-247	Berkelium (97)	8	0.0008	1×10^0	1×10^4
Bk-249 ^a		40	0.3	1×10^3	1×10^6
Br-76	Bromine (35)	0.4	0.4	1×10^1	1×10^5
Br-77		3	3	1×10^2	1×10^6
Br-82		0.4	0.4	1×10^1	1×10^6
C-11	Carbon (6)	1	0.6	1×10^1	1×10^6
C-14		40	3	1×10^4	1×10^7
Ca-41	Calcium (20)	unlimited	unlimited	1×10^5	1×10^7
Ca-45		40	1	1×10^4	1×10^7
Ca-47 ^a		3	0.3	1×10^1	1×10^6
Cd-109	Cadmium (48)	30	2	1×10^4	1×10^6
Cd-113m		40	0.5	1×10^3	1×10^6
Cd-115 ^a		3	0.4	1×10^2	1×10^6
Cd-115m		0.5	0.5	1×10^3	1×10^6
Ce-139	Cerium (58)	7	2	1×10^2	1×10^6
Ce-141		20	0.6	1×10^2	1×10^7
Ce-143		0.9	0.6	1×10^2	1×10^6
Ce-144 ^a		0.2	0.2	1×10^2 ^b	1×10^5 ^b
Cf-248	Californium (98)	40	0.006	1×10^1	1×10^4
Cf-249		3	0.0008	1×10^0	1×10^3
Cf-250		20	0.002	1×10^1	1×10^4
Cf-251		7	0.0007	1×10^0	1×10^3
Cf-252		0.1	0.003	1×10^1	1×10^4
Cf-253 ^a		40	0.04	1×10^2	1×10^5
Cf-254		0.001	0.001	1×10^0	1×10^3
Cl-36	Chlorine (17)	10	0.6	1×10^4	1×10^6
Cl-38		0.2	0.2	1×10^1	1×10^5
Cm-240	Curium (96)	40	0.02	1×10^2	1×10^5

TABLE 10.3.A
A₁ and A₂ Values for Common Radionuclides (10.3.2.1) (continued)

Radionuclide	Element (Atomic No)	A ₁ (Special Form) (TBq)	A ₂ (Other form) (TBq)	Activity concentration for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Cm-241		2	1	1×10^2	1×10^6
Cm-242		40	0.01	1×10^2	1×10^5
Cm-243		9	0.001	1×10^0	1×10^4
Cm-244		20	0.002	1×10^1	1×10^4
Cm-245		9	0.0009	1×10^0	1×10^3
Cm-246		9	0.0009	1×10^0	1×10^3
Cm-247 ^a		3	0.001	1×10^0	1×10^4
Cm-248		0.02	0.0003	1×10^0	1×10^3
Co-55	Cobalt (27)	0.5	0.5	1×10^1	1×10^6
Co-56		0.3	0.3	1×10^1	1×10^5
Co-57		10	10	1×10^2	1×10^6
Co-58		1	1	1×10^1	1×10^6
Co-58m		40	40	1×10^4	1×10^7
Co-60		0.4	0.4	1×10^1	1×10^5
Cr-51	Chromium (24)	30	30	1×10^3	1×10^7
Cs-129	Caesium (55)	4	4	1×10^2	1×10^5
Cs-131		30	30	1×10^3	1×10^6
Cs-132		1	1	1×10^1	1×10^5
Cs-134		0.7	0.7	1×10^1	1×10^4
Cs-134m		40	0.6	1×10^3	1×10^5
Cs-135		40	1	1×10^4	1×10^7
Cs-136		0.5	0.5	1×10^1	1×10^5
Cs-137 ^a		2	0.6	1×10^1 b	1×10^4 b
Cu-64	Copper (29)	6	1	1×10^2	1×10^6
Cu-67		10	0.7	1×10^2	1×10^6
Dy-159	Dysprosium (66)	20	20	1×10^3	1×10^7
Dy-165		0.9	0.6	1×10^3	1×10^6
Dy-166 ^a		0.9	0.3	1×10^3	1×10^6
Er-169	Erbium (68)	40	1	1×10^4	1×10^7
Er-171		0.8	0.5	1×10^2	1×10^6
Eu-147	Europium (63)	2	2	1×10^2	1×10^6
Eu-148		0.5	0.5	1×10^1	1×10^6
Eu-149		20	20	1×10^2	1×10^7
Eu-150 (short lived)		2	0.7	1×10^3	1×10^6
Eu-150 (long lived)		0.7	0.7	1×10^1	1×10^6
Eu-152		1	1	1×10^1	1×10^6
Eu-152m		0.8	0.8	1×10^2	1×10^6
Eu-154		0.9	0.6	1×10^1	1×10^6
Eu-155		20	3	1×10^2	1×10^7
Eu-156		0.7	0.7	1×10^1	1×10^6
F-18	Fluorine (9)	1	0.6	1×10^1	1×10^6

TABLE 10.3.A
A₁ and A₂ Values for Common Radionuclides (10.3.2.1) (continued)

Radionuclide	Element (Atomic No)	A ₁ (Special Form) (TBq)	A ₂ (Other form) (TBq)	Activity concentration for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Fe-52 ^a	Iron (26)	0.3	0.3	1×10^1	1×10^6
Fe-55		40	40	1×10^4	1×10^6
Fe-59		0.9	0.9	1×10^1	1×10^6
Fe-60 ^a		40	0.2	1×10^2	1×10^5
Ga-67	Gallium (31)	7	3	1×10^2	1×10^6
Ga-68		0.5	0.5	1×10^1	1×10^5
Ga-72		0.4	0.4	1×10^1	1×10^5
Gd-146 ^a	Gadolinium (64)	0.5	0.5	1×10^1	1×10^6
Gd-148		20	0.002	1×10^1	1×10^4
Gd-153		10	9	1×10^2	1×10^7
Gd-159		3	0.6	1×10^3	1×10^6
Ge-68 ^a	Germanium (32)	0.5	0.5	1×10^1	1×10^5
Ge-71		40	40	1×10^4	1×10^8
Ge-77		0.3	0.3	1×10^1	1×10^5
Hf-172 ^a	Hafnium (72)	0.6	0.6	1×10^1	1×10^6
Hf-175		3	3	1×10^2	1×10^6
Hf-181		2	0.5	1×10^1	1×10^6
Hf-182		unlimited	unlimited	1×10^2	1×10^6
Hg-194 ^a	Mercury (80)	1	1	1×10^1	1×10^6
Hg-195m ^a		3	0.7	1×10^2	1×10^6
Hg-197		20	10	1×10^2	1×10^7
Hg-197m		10	0.4	1×10^2	1×10^6
Hg-203		5	1	1×10^2	1×10^5
Ho-166	Holmium (67)	0.4	0.4	1×10^3	1×10^5
Ho-166m		0.6	0.5	1×10^1	1×10^6
I-123	Iodine (53)	6	3	1×10^2	1×10^7
I-124		1	1	1×10^1	1×10^6
I-125		20	3	1×10^3	1×10^6
I-126		2	1	1×10^2	1×10^6
I-129		unlimited	unlimited	1×10^2	1×10^5
I-131		3	0.7	1×10^2	1×10^6
I-132		0.4	0.4	1×10^1	1×10^5
I-133		0.7	0.6	1×10^1	1×10^6
I-134		0.3	0.3	1×10^1	1×10^5
I-135 ^a		0.6	0.6	1×10^1	1×10^6
In-111	Indium (49)	3	3	1×10^2	1×10^6
In-113m		4	2	1×10^2	1×10^6
In-114m ^a		10	0.5	1×10^2	1×10^6
In-115m		7	1	1×10^2	1×10^6
Ir-189 ^a	Iridium (77)	10	10	1×10^2	1×10^7
Ir-190		0.7	0.7	1×10^1	1×10^6

TABLE 10.3.A
A₁ and A₂ Values for Common Radionuclides (10.3.2.1) (continued)

Radionuclide	Element (Atomic No)	A ₁ (Special Form) (TBq)	A ₂ (Other form) (TBq)	Activity concentration for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Ir-192		1 ^c	0.6	1×10^1	1×10^4
Ir-194		0.3	0.3	1×10^2	1×10^5
K-40	Potassium (19)	0.9	0.9	1×10^2	1×10^6
K-42		0.2	0.2	1×10^2	1×10^6
K-43		0.7	0.6	1×10^1	1×10^6
Kr-79	Krypton (36)	4	2	1×10^3	1×10^5
Kr-81		40	40	1×10^4	1×10^7
Kr-85		10	10	1×10^5	1×10^4
Kr-85m		8	3	1×10^3	1×10^{10}
Kr-87		0.2	0.2	1×10^2	1×10^9
La-137	Lanthanum (57)	30	6	1×10^3	1×10^7
La-140		0.4	0.4	1×10^1	1×10^5
LSA	Low Specific Activity	note 4	note 4		
Lu-172	Lutetium (71)	0.6	0.6	1×10^1	1×10^6
Lu-173		8	8	1×10^2	1×10^7
Lu-174		9	9	1×10^2	1×10^7
Lu-174m		20	10	1×10^2	1×10^7
Lu-177		30	0.7	1×10^3	1×10^7
MFP	Mixed Fission Products	note 3	note 3		
Mg-28 ^a	Magnesium (12)	0.3	0.3	1×10^1	1×10^5
Mn-52	Manganese (25)	0.3	0.3	1×10^1	1×10^5
Mn-53		unlimited	unlimited	1×10^4	1×10^9
Mn-54		1	1	1×10^1	1×10^6
Mn-56		0.3	0.3	1×10^1	1×10^5
Mo-93	Molybdenum (42)	40	20	1×10^3	1×10^8
Mo-99 ^a		1	0.6	1×10^2	1×10^6
N-13	Nitrogen (7)	0.9	0.6	1×10^2	1×10^9
Na-22	Sodium (11)	0.5	0.5	1×10^1	1×10^6
Na-24		0.2	0.2	1×10^1	1×10^5
Nb-93m	Niobium (41)	40	30	1×10^4	1×10^7
Nb-94		0.7	0.7	1×10^1	1×10^6
Nb-95		1	1	1×10^1	1×10^6
Nb-97		0.9	0.6	1×10^1	1×10^6
Nd-147	Neodymium (60)	6	0.6	1×10^2	1×10^6
Nd-149		0.6	0.5	1×10^2	1×10^6
Ni-59	Nickel (28)	unlimited	unlimited	1×10^4	1×10^8
Ni-63		40	30	1×10^5	1×10^8
Ni-65		0.4	0.4	1×10^1	1×10^6
Np-235	Neptunium (93)	40	40	1×10^3	1×10^7
Np-236 (short lived)		20	2	1×10^3	1×10^7
Np-236 (long lived)		9	0.02	1×10^2	1×10^5

TABLE 10.3.A
A₁ and A₂ Values for Common Radionuclides (10.3.2.1) (continued)

Radionuclide	Element (Atomic No)	A ₁ (Special Form) (TBq)	A ₂ (Other form) (TBq)	Activity concentration for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Np-237		20	0.002	1×10^0 ^b	1×10^3 ^b
Np-239		7	0.4	1×10^2	1×10^7
Os-185	Osmium (76)	1	1	1×10^1	1×10^6
Os-191		10	2	1×10^2	1×10^7
Os-191m		40	30	1×10^3	1×10^7
Os-193		2	0.6	1×10^2	1×10^6
Os-194 ^a		0.3	0.3	1×10^2	1×10^5
P-32	Phosphorus (15)	0.5	0.5	1×10^3	1×10^5
P-33		40	1	1×10^5	1×10^8
Pa-230 ^a	Protactinium (91)	2	0.07	1×10^1	1×10^6
Pa-231		4	0.0004	1×10^0	1×10^3
Pa-233		5	0.7	1×10^2	1×10^7
Pb-201	Lead (82)	1	1	1×10^1	1×10^6
Pb-202		40	20	1×10^3	1×10^6
Pb-203		4	3	1×10^2	1×10^6
Pb-205		unlimited	unlimited	1×10^4	1×10^7
Pb-210 ^a		1	0.05	1×10^1 ^b	1×10^4 ^b
Pb-212 ^a		0.7	0.2	1×10^1 ^b	1×10^5 ^b
Pd-103 ^a	Palladium (46)	40	40	1×10^3	1×10^8
Pd-107		unlimited	unlimited	1×10^5	1×10^8
Pd-109		2	0.5	1×10^3	1×10^6
Pm-143	Promethium (61)	3	3	1×10^2	1×10^6
Pm-144		0.7	0.7	1×10^1	1×10^6
Pm-145		30	10	1×10^3	1×10^7
Pm-147		40	2	1×10^4	1×10^7
Pm-148m ^a		0.8	0.7	1×10^1	1×10^6
Pm-149		2	0.6	1×10^3	1×10^6
Pm-151		2	0.6	1×10^2	1×10^6
Po-210	Polonium (84)	40	0.02	1×10^1	1×10^4
Pr-142	Praseodymium (59)	0.4	0.4	1×10^2	1×10^5
Pr-143		3	0.6	1×10^4	1×10^6
Pt-188 ^a	Platinum (78)	1	0.8	1×10^1	1×10^6
Pt-191		4	3	1×10^2	1×10^6
Pt-193		40	40	1×10^4	1×10^7
Pt-193m		40	0.5	1×10^3	1×10^7
Pt-195m		10	0.5	1×10^2	1×10^6
Pt-197		20	0.6	1×10^3	1×10^6
Pt-197m		10	0.6	1×10^2	1×10^6
Pu-236	Plutonium (94)	30	0.003	1×10^1	1×10^4
Pu-237		20	20	1×10^3	1×10^7
Pu-238		10	0.001	1×10^0	1×10^4

TABLE 10.3.A
A₁ and A₂ Values for Common Radionuclides (10.3.2.1) (continued)

Radionuclide	Element (Atomic No)	A ₁ (Special Form) (TBq)	A ₂ (Other form) (TBq)	Activity concentration for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Pu-239		10	0.001	1×10^0	1×10^4
Pu-240		10	0.001	1×10^0	1×10^3
Pu-241 ^a		40	0.06	1×10^2	1×10^5
Pu-242		10	0.001	1×10^0	1×10^4
Pu-244 ^a		0.4	0.001	1×10^0	1×10^4
Ra-223 ^a	Radium (88)	0.4	0.007	1×10^2 ^b	1×10^5 ^b
Ra-224 ^a		0.4	0.02	1×10^1 ^b	1×10^5 ^b
Ra-225 ^a		0.2	0.004	1×10^2	1×10^5
Ra-226 ^a		0.2	0.003	1×10^1 ^b	1×10^4 ^b
Ra-228 ^a		0.6	0.02	1×10^1 ^b	1×10^5 ^b
Rb-81	Rubidium (37)	2	0.8	1×10^1	1×10^6
Rb-83 ^a		2	2	1×10^2	1×10^6
Rb-84		1	1	1×10^1	1×10^6
Rb-86		0.5	0.5	1×10^2	1×10^5
Rb-87		unlimited	unlimited	1×10^4	1×10^7
Rb (natural)		unlimited	unlimited	1×10^4	1×10^7
Re-184	Rhenium (75)	1	1	1×10^1	1×10^6
Re-184m		3	1	1×10^2	1×10^6
Re-186		2	0.6	1×10^3	1×10^6
Re-187		unlimited	unlimited	1×10^6	1×10^9
Re-188		0.4	0.4	1×10^2	1×10^5
Re-189 ^a		3	0.6	1×10^2	1×10^6
Re (natural)		unlimited	unlimited	1×10^6	1×10^9
Rh-99	Rhodium (45)	2	2	1×10^1	1×10^6
Rh-101		4	3	1×10^2	1×10^7
Rh-102		0.5	0.5	1×10^1	1×10^6
Rh-102m		2	2	1×10^2	1×10^6
Rh-103m		40	40	1×10^4	1×10^8
Rh-105		10	0.8	1×10^2	1×10^7
Rn-222 ^a	Radon (86)	0.3	0.004	1×10^1 ^b	1×10^8 ^b
Ru-97	Ruthenium (44)	5	5	1×10^2	1×10^7
Ru-103 ^a		2	2	1×10^2	1×10^6
Ru-105		1	0.6	1×10^1	1×10^6
Ru-106 ^a		0.2	0.2	1×10^2 ^b	1×10^5 ^b
S-35	Sulphur (16)	40	3	1×10^5	1×10^8
Sb-122	Antimony (51)	0.4	0.4	1×10^2	1×10^4
Sb-124		0.6	0.6	1×10^1	1×10^6
Sb-125		2	1	1×10^2	1×10^6
Sb-126		0.4	0.4	1×10^1	1×10^5
Sc-44	Scandium (21)	0.5	0.5	1×10^1	1×10^5
Sc-46		0.5	0.5	1×10^1	1×10^6

TABLE 10.3.A
A₁ and A₂ Values for Common Radionuclides (10.3.2.1) (continued)

Radionuclide	Element (Atomic No)	A ₁ (Special Form) (TBq)	A ₂ (Other form) (TBq)	Activity concentration for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Sc-47		10	0.7	1×10^2	1×10^6
Sc-48		0.3	0.3	1×10^1	1×10^5
SCO	Surface Contaminated Object	note 5	note 5		
Se-75	Selenium (34)	3	3	1×10^2	1×10^6
Se-79		40	2	1×10^4	1×10^7
Si-31	Silicon (14)	0.6	0.6	1×10^3	1×10^6
Si-32		40	0.5	1×10^3	1×10^6
Sm-145	Samarium (62)	10	10	1×10^2	1×10^7
Sm-147		unlimited	unlimited	1×10^1	1×10^4
Sm-151		40	10	1×10^4	1×10^8
Sm-153		9	0.6	1×10^2	1×10^6
Sn-113 ^a	Tin (50)	4	2	1×10^3	1×10^7
Sn-117m		7	0.4	1×10^2	1×10^6
Sn-119m		40	30	1×10^3	1×10^7
Sn-121m ^a		40	0.9	1×10^3	1×10^7
Sn-123		0.8	0.6	1×10^3	1×10^6
Sn-125		0.4	0.4	1×10^2	1×10^5
Sn-126 ^a		0.6	0.4	1×10^1	1×10^5
Sr-82 ^a	Strontium (38)	0.2	0.2	1×10^1	1×10^5
Sr-85		2	2	1×10^2	1×10^6
Sr-85m		5	5	1×10^2	1×10^7
Sr-87m		3	3	1×10^2	1×10^6
Sr-89		0.6	0.6	1×10^3	1×10^6
Sr-90 ^a		0.3	0.3	1×10^2 ^b	1×10^4 ^b
Sr-91 ^a		0.3	0.3	1×10^1	1×10^5
Sr-92 ^a		1	0.3	1×10^1	1×10^6
T (All Forms) (see note 2)	Tritium (1)	40	40	1×10^6	1×10^9
Ta-178 (long lived)	Tantalum (73)	1	0.8	1×10^1	1×10^6
Ta-179		30	30	1×10^3	1×10^7
Ta-182		0.9	0.5	1×10^1	1×10^4
Tb-157	Terbium (65)	40	40	1×10^4	1×10^7
Tb-158		1	1	1×10^1	1×10^6
Tb-160		1	0.6	1×10^1	1×10^6
Tc-95m ^a	Technetium (43)	2	2	1×10^1	1×10^6
Tc-96		0.4	0.4	1×10^1	1×10^6
Tc-96m ^a		0.4	0.4	1×10^3	1×10^7
Tc-97		unlimited	unlimited	1×10^3	1×10^8
Tc-97m		40	1	1×10^3	1×10^7
Tc-98		0.8	0.7	1×10^1	1×10^6
Tc-99		40	0.9	1×10^4	1×10^7

TABLE 10.3.A
A₁ and A₂ Values for Common Radionuclides (10.3.2.1) (continued)

Radionuclide	Element (Atomic No)	A ₁ (Special Form) (TBq)	A ₂ (Other form) (TBq)	Activity concentration for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
Tc-99m		10	4	1×10^2	1×10^7
Te-121	Tellurium (52)	2	2	1×10^1	1×10^6
Te-121m		5	3	1×10^2	1×10^6
Te-123m		8	1	1×10^2	1×10^7
Te-125m		20	0.9	1×10^3	1×10^7
Te-127		20	0.7	1×10^3	1×10^6
Te-127m ^a		20	0.5	1×10^3	1×10^7
Te-129		0.7	0.6	1×10^2	1×10^6
Te-129m ^a		0.8	0.4	1×10^3	1×10^6
Te-131m ^a		0.7	0.5	1×10^1	1×10^6
Te-132 ^a		0.5	0.4	1×10^2	1×10^7
Th-227	Thorium (90)	10	0.005	1×10^1	1×10^4
Th-228 ^a		0.5	0.001	1×10^0 b	1×10^4 b
Th-229		5	0.0005	1×10^0 b	1×10^3 b
Th-230		10	0.001	1×10^0	1×10^4
Th-231		40	0.02	1×10^3	1×10^7
Th-232		unlimited	unlimited	1×10^1	1×10^4
Th-234 ^a		0.3	0.3	1×10^3 b	1×10^5 b
Th (natural)		unlimited	unlimited	1×10^0 b	1×10^3 b
Ti-44 ^a	Titanium (22)	0.5	0.4	1×10^1	1×10^5
Tl-200	Thallium (81)	0.9	0.9	1×10^1	1×10^6
Tl-201		10	4	1×10^2	1×10^6
Tl-202		2	2	1×10^2	1×10^6
Tl-204		10	0.7	1×10^4	1×10^4
Tm-167	Thulium (69)	7	0.8	1×10^2	1×10^6
Tm-170		3	0.6	1×10^3	1×10^6
Tm-171		40	40	1×10^4	1×10^8
U-230 (fast lung absorption) ^{a d}	Uranium (92)	40	0.1	1×10^1 b	1×10^5 b
U-230 (medium lung absorption) ^{a e}		40	0.004	1×10^1	1×10^4
U-230 (slow lung absorption) ^{a f}		30	0.003	1×10^1	1×10^4
U-232 (fast lung absorption) ^d		40	0.01	1×10^0 b	1×10^3 b
U-232 (medium lung absorption) ^e		40	0.007	1×10^1	1×10^4
U-232 (slow lung absorption) ^f		10	0.001	1×10^1	1×10^4
U-233 (fast lung absorption) ^d		40	0.09	1×10^1	1×10^4
U-233 (medium lung absorption) ^e		40	0.02	1×10^2	1×10^5
U-233 (slow lung absorption) ^f		40	0.006	1×10^1	1×10^5
U-234 (fast lung absorption) ^d		40	0.09	1×10^1	1×10^4
U-234 (medium lung absorption) ^{e f}		40	0.02	1×10^2	1×10^5

TABLE 10.3.A
A₁ and A₂ Values for Common Radionuclides (10.3.2.1) (continued)

Radionuclide	Element (Atomic No)	A ₁ (Special Form) (TBq)	A ₂ (Other form) (TBq)	Activity concentration for exempt material (Bq/g)	Activity limit for an exempt consignment (Bq)
U-234 (slow lung absorption) ^f		40	0.006	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
U-236 (fast lung absorption) ^d		unlimited	unlimited	1×10^1	1×10^4
U-236 (medium lung absorption) ^e		40	0.02	1×10^2	1×10^5
U-236 (slow lung absorption) ^f		40	0.006	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
V-48	Vanadium (23)	0.4	0.4	1×10^1	1×10^5
V-49		40	40	1×10^4	1×10^7
W-178	Tungsten (74)	9	5	1×10^1	1×10^6
W-181		30	30	1×10^3	1×10^7
W-185		40	0.8	1×10^4	1×10^7
W-187		2	0.6	1×10^2	1×10^6
W-188 ^a		0.4	0.3	1×10^2	1×10^5
Xe-122 ^a	Xenon (54)	0.4	0.4	1×10^2	1×10^9
Xe-123		2	0.7	1×10^2	1×10^9
Xe-127		4	2	1×10^3	1×10^5
Xe-131m		40	40	1×10^4	1×10^4
Xe-133		20	10	1×10^3	1×10^4
Xe-135		3	2	1×10^3	1×10^{10}
Y-87 ^a	Yttrium (39)	1	1	1×10^1	1×10^6
Y-88		0.4	0.4	1×10^1	1×10^6
Y-90		0.3	0.3	1×10^3	1×10^5
Y-91		0.6	0.6	1×10^3	1×10^6
Y-91m		2	2	1×10^2	1×10^6
Y-92		0.2	0.2	1×10^2	1×10^5
Y-93		0.3	0.3	1×10^2	1×10^5
Yb-169	Ytterbium (70)	4	1	1×10^2	1×10^7
Yb-175		30	0.9	1×10^3	1×10^7
Zn-65	Zinc (30)	2	2	1×10^1	1×10^6
Zn-69		3	0.6	1×10^4	1×10^6
Zn-69m		3	0.6	1×10^2	1×10^6
Zr-88	Zirconium (40)	3	3	1×10^2	1×10^6
Zr-93		unlimited	unlimited	1×10^3 ^b	1×10^7 ^b
Zr-95 ^a		2	0.8	1×10^1	1×10^6
Zr-97 ^a		0.4	0.4	1×10^1 ^b	1×10^5 ^b

- ^a A₁ and/or A₂ 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, Pb-212, Bi-212, Tl-208 (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 UF_6 , UO_2F_2 and $\text{UO}_2(\text{NO}_3)_2$ in both normal and accident conditions of transport.

e These values apply only to compounds of uranium that take the chemical form of UO_3 , UF_4 , UCl_4 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.

Notes:

1. In Table 10.3.A, and elsewhere in these Regulations, the symbols for the various radionuclides are styled thus “Ir-192”. The alternative form of “192 Ir” is equally acceptable.
2. Tritium (T) is a synonym for the radionuclide Hydrogen-3.
3. For Mixed Fission Products (MFP) values for A_1 and A_2 are calculated using the formula for mixtures or Table 10.3.B.
4. For Low Specific Activity (LSA) material, please consult 10.3.5 of these Regulations.
5. For Surface Contaminated Objects (SCO), please consult 10.3.6 of these Regulations.
6. Type A packages must not contain activities greater than the following values: for Special Form radioactive material: A_1 ; or for all other radioactive materials: A_2 .

10.3.2.4 Mixtures

For mixtures of radionuclides, the determination of the basic radionuclide values referred to in 10.3.2.1 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.

10.3.2.5 A_2 Value for Mixtures—Unknown Individual Activities

10.3.2.5.1 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 10.3.2.4 and 10.3.11.4.3. Groups may be based on the total alpha activity and the total beta/gamma activity, when these are known, in each case using the lowest radionuclide values for the alpha emitters or beta/gamma emitters, respectively.

10.3.2.5.2 For individual radionuclides or for mixtures of radionuclides for which relevant data are not available, the values shown in Table 10.3.B must be used.

TABLE 10.3.B

Basic Radionuclide Values for Unknown Radionuclides or Mixtures (10.3.2.5.2)

Radioactive contents	A_1	A_2	Activity concentration for exempt material	Activity limits for an exempt consignment
	(TBq)	(TBq)	(Bq/g)	(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 available	0.001	9×10^{-5}	1×10^{-1}	1×10^3

10.3.3 Nomenclature

Radioactive materials are grouped according to their form and/or characteristics. These include:

- Special Form;
- Low Specific Activity (LSA);
- Surface Contaminated Object (SCO);
- Fissile;
- Low dispersible radioactive material;
- Other form.

A radioactive material may meet the definition of one or more of the above.

10.3.4 Special Form

10.3.4.1 Definition

Special Form radioactive material is either an indispersible solid radioactive material or a sealed capsule containing radioactive material that meets the requirements of 10.3.4.2.

10.3.4.2 Requirements

Special Form radioactive material must meet the requirements of 10.3.4.2.1 to 10.3.4.2.3.

10.3.4.2.1 If it is in a sealed capsule, that capsule must be so constructed that it can only be opened by destroying it.

10.3.4.2.2 The design for Special Form radioactive material must have at least one dimension not less than 5 mm.

10.3.4.2.3 The design for special form requires unilateral approval.

10.3.4.2.4 Special Form radioactive material must be of such a nature or so designed that if it is subjected to the tests specified in 10.3.4.3 and 10.3.4.4 it must meet the following requirements:

- (a) it would not break or shatter under the impact, percussion or bending tests 10.3.4.3.1 to 10.3.4.3.3 and 10.3.4.3.5(a), as applicable;
- (b) it would not melt or disperse in the heat test 10.3.4.3.4 or 10.3.4.3.5(b), as applicable; and
- (c) the activity in the water from the leaching tests specified in 10.3.4.4 would not exceed 2 kBq (50 nCi); or alternatively for sealed sources, the leakage rate for the volumetric leakage assessment test specified in ISO 9978:1992 “Radiation Protection—Sealed Radioactive Sources—Leak Test Methods”, would not exceed the applicable acceptance threshold acceptable to the competent authority.

10.3.4.2.5 Demonstration of compliance with the standards shown in 10.3.4.2.4 must be in accordance with 10.6.3.1.1 and 10.6.3.1.2.

10.3.4.3 Tests

The tests to be performed on specimens that comprise or simulate Special Form radioactive material are: the impact test, the percussion test, the bending test, and the

heat test specified in 10.3.4.3.1 to 10.3.4.3.4 or alternative tests as authorized in 10.3.4.3.5. A different specimen may be used for each of the tests. After each of the tests specified in 10.3.4.3.1 to 10.3.4.3.5, a leaching assessment or volumetric leakage test must be performed on the specimen by a method no less sensitive than the methods given in 10.3.4.4.1 for indispersible solid material and 10.3.4.4.2 for encapsulated material.

10.3.4.3.1 Impact Test

The specimen must drop from a height of 9 m onto a target as specified in 10.6.3.3.

10.3.4.3.2 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 $3\text{ mm} \pm 0.3\text{ mm}$. 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.

10.3.4.3.3 Bending Test

The test need 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 produce an impact equivalent to that resulting from a free vertical drop of 1.4 kg through 1 m. The flat face of the bar must be 25 mm in diameter with the edges rounded off to a radius of $3\text{ mm} \pm 0.3\text{ mm}$.

10.3.4.3.4 Heat Test

The specimen must be heated in air to a temperature of 800°C (1472°F) and held at that temperature for a period of 10 minutes and then allowed to cool.

10.3.4.3.5 Alternative Tests

Specimens that comprise or simulate radioactive material enclosed in a sealed capsule may be excepted from:

- (a) the tests prescribed in 10.3.4.3.1 and 10.3.4.3.2, provided the mass of the Special Form radioactive material is:
 - 1. less than 200 g and they are alternatively subjected to the Class 4 impact test prescribed in ISO 2919:1999 "Radiation Protection—Sealed Radioactive Sources—General requirements and classification"; or

- 2. less than 500 g and they 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 10.3.4.3.4, provided they are alternatively subjected to the Class 6 temperature test prescribed in ISO 2919:1999 "Radiation Protection—Sealed Radioactive Sources—General requirements and classification".

10.3.4.4 Leaching and Volumetric Leakage Assessment Methods

10.3.4.4.1 Indispersible Solid Material

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% of the volume of the solid test sample itself. The water must have an initial pH of 6 to 8 and a maximum conductivity of 1 mS/m at 20°C ;
- (b) the water with specimen must then be heated to a temperature of $50^\circ\text{C} \pm 5^\circ\text{C}$ and maintained at this temperature for 4 hours;
- (c) the activity of the water must then be determined;
- (d) the specimen must then be stored for at least 7 days in still air at not less than 30°C and relative humidity not less than 90%;
- (e) the specimen must then be immersed in water of the same specification as shown in 10.3.4.4.1(a) and the water with the specimen heated to $50^\circ\text{C} \pm 5^\circ\text{C}$ and maintained at this temperature for 4 hours;
- (f) the activity of the water must then be determined.

10.3.4.4.2 Encapsulated Material

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:
 - 1. the specimen must be immersed in water at ambient temperature. The water must have an initial pH of 6 to 8 with a maximum conductivity of 1 mS/m at 20°C ;
 - 2. the water and specimen must be heated to a temperature of $50^\circ\text{C} \pm 5^\circ\text{C}$ and maintained at this temperature for 4 hours;
 - 3. the activity of the water must then be determined;
 - 4. the specimen must then be stored for at least 7 days in still air at a temperature at not less than 30°C and relative humidity of not less than 90%;
 - 5. the process in 1, 2 and 3 must be repeated;

- (b) the alternative volumetric leakage assessment may comprise any of the tests prescribed in ISO 9978:1992 "Radiation Protection—Sealed Radioactive Sources—Leak Test Methods", which are acceptable to the competent authority.

10.3.5 Low Specific Activity (LSA) Material

10.3.5.1 Definition

Radioactive material, which by its nature has a limited specific activity, or radioactive material for which limits of estimated average specific activity apply, is termed Low Specific Activity, or LSA material. External shielding material surrounding the LSA material must not be considered in determining the estimated average specific activity. LSA material is classified in one of three groups:

- LSA-I;
- LSA-II;
- LSA-III.

10.3.5.1.1 LSA-I

LSA-I material is:

- (a) 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;
- (b) natural uranium, depleted uranium, natural thorium or their compounds or mixtures, providing they are unirradiated and in solid or liquid form;
- (c) radioactive material, for which the A_2 value is unlimited, other than fissile material not excepted under 10.3.7.2; or
- (d) 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 10.3.2, excluding fissile material not excepted under 10.3.7.2.

10.3.5.1.2 LSA-II

LSA-II material is:

- (a) water with tritium concentration up to 0.8 TBq/L; or
- (b) 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.

Note:

See Appendix A for definition of A_1 and A_2 .

10.3.5.1.3 LSA-III

LSA-III material is a solid (e.g. consolidated wastes, activated materials), excluding powders meeting the requirements of 10.3.5.1.3.1, in which:

- (a) 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.);

- (b) 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 7 days would not exceed $0.1 A_2$; and
- (c) the estimated average specific activity of the solid, excluding any shielding material, does not exceed $2 \times 10^{-3} A_2/g$.

10.3.5.1.3.1 LSA-III material must be a solid of such a nature that if the entire contents of the package were subjected to the tests specified in 10.3.5.1.3.3 the activity in the water would not exceed $0.1 A_2$.

10.3.5.1.3.2 Compliance Demonstration of compliance with the performance standards in 10.3.5.1.3.3 must be in accordance with 10.6.3.1.1 and 10.6.3.1.2.

10.3.5.1.3.3 Tests LSA-III material must be tested as follows:

Solid material 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 will be at least 10% of the volume of the solid test sample itself. The water must have an initial pH of 6 to 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.

10.3.6 Surface Contaminated Object (SCO)

10.3.6.1 Definition

Surface Contaminated Object (SCO) means a solid object which is not itself radioactive but which has radioactive material distributed on its surfaces. SCO is classified in one of two groups:

- SCO-I;
- SCO-II.

10.3.6.1.1 SCO-I

A solid object on which:

- (a) the non-fixed contamination on the accessible surface averaged over 300 cm^2 (or the surface area if less than 300 cm^2) does not exceed 4 Bq/cm^2 (0.1 nCi/cm^2) for beta and gamma emitters and low toxicity alpha emitters, or 0.4 Bq/cm^2 (0.01 nCi/cm^2) for all other alpha emitters; and
- (b) the fixed contamination on the accessible surface averaged over 300 cm^2 (or the surface area if less than 300 cm^2) does not exceed 40 kBq/cm^2 ($1 \mu\text{Ci/cm}^2$) for beta and gamma emitters and low toxicity alpha emitters, or 4 kBq/cm^2 ($0.1 \mu\text{Ci/cm}^2$) for all other alpha emitters; and
- (c) the non-fixed contamination plus the fixed contamination on the inaccessible surface averaged over 300 cm^2 (or the surface area if less than 300 cm^2) does not exceed 40 kBq/cm^2 ($1 \mu\text{Ci/cm}^2$) for beta and

gamma emitters and low toxicity alpha emitters, or 4 kBq/cm² (0.1 µCi/cm²) for all other alpha emitters.

10.3.6.1.2 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 10.3.6.1.1 and on which:

- (a) the non-fixed contamination on the accessible surface averaged over 300 cm² (or the surface area if less than 300 cm²) does not exceed 400 kBq/cm² (10 nCi/cm²) for beta and gamma emitters and low toxicity alpha emitters, or 40 kBq/cm² (1 nCi/cm²) for all other alpha emitters;
- (b) the fixed contamination on the accessible surface averaged over 300 cm² (or the surface area if less than 300 cm²) does not exceed 800 kBq/cm² (20 µCi/cm²) for beta and gamma emitters and low toxicity alpha emitters, or 80 kBq/cm² (2 µCi/cm²) for all other alpha emitters; and
- (c) the non-fixed contamination plus the fixed contamination on the inaccessible surface averaged over 300 cm² (or the surface area if less than 300 cm²) does not exceed 800 kBq/cm² (20 µCi/cm²) for beta and gamma emitters and low toxicity alpha emitters, or 80 kBq/cm² (2 µCi/cm²) for all other alpha emitters.

10.3.7 Fissile Material

10.3.7.1 Definition

10.3.7.1.1 Fissile material is a material containing any of the following fissile nuclides: Uranium-233, Uranium-235, Plutonium-239 and Plutonium-241. Excluded from the definition of fissile material are:

- natural uranium or depleted uranium which is unirradiated; and
- natural uranium or depleted uranium, which has been irradiated in thermal reactors only.

10.3.7.1.2 Packages containing fissile material must be classified under the relevant entry of Table 10.4.A the description of which includes the words "fissile" or "fissile excepted". Classification as "fissile excepted" is only allowed if one of the conditions set out in 10.3.7.2.1 to 10.3.7.2.4 is met. Only one type of exception is allowed per consignment. Packages containing fissile material must be designed and used so as to comply with the requirements specified in 10.6.2.8.

10.3.7.2 Fissile Excepted

Fissile material meeting one of the requirements of 10.3.7.2.1 to 10.3.7.2.4 is excepted from the requirement to be transported in packages that comply with 10.6.2.8 and from the other requirements of these Regulations that apply to fissile material. Only one type of exception is permitted per consignment.

10.3.7.2.1 A mass limit per consignment provided that the smallest external dimension of each package is not less than 10 cm 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 10.3.C, provided that either:

- (a) each individual package contains not more than 15 g of fissile nuclides; or
- (b) the fissile material is a homogeneous hydrogenous solution or mixture where the ratio of fissile nuclides to hydrogen is less than 5% by mass; or
- (c) there are not more than 5 g of fissile nuclides in any 10 L volume of material.

Beryllium must not be present in quantities exceeding 1% of the applicable consignment mass limits provided in Table 10.3.C, except where the concentration of beryllium in the material does not exceed 1 g beryllium in any 1,000 g.

Deuterium must also not be present in quantities exceeding 1% of the applicable consignment mass limits provided in Table 10.3.C, except where deuterium occurs up to natural concentration in hydrogen.

10.3.7.2.2 Uranium enriched in Uranium-235 to a maximum of 1% by weight, and with a total plutonium and Uranium-233 content not exceeding 1% of the weight of Uranium-235, provided that the fissile nuclides are 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.

10.3.7.2.3 Liquid solutions of uranyl nitrate enriched in Uranium-235 to a maximum of 2% by weight, with a total plutonium and Uranium-233 content not exceeding 0.002% of the weight of uranium, and with a minimum nitrogen to uranium atomic ratio (N/U) of 2.

10.3.7.2.4 Plutonium containing not more than 20% of fissile nuclides by weight up to a maximum of 1 kg of plutonium per consignment. Shipments under this exemption must be under exclusive use.

TABLE 10.3.C
Consignment Mass Limits for Exceptions from
the Requirements for Packages Containing
Fissile Material (10.3.7.2.1)

Fissile material	Fissile material mass (g) mixed with substances having an average hydrogen density ≤ water	Fissile material mass (g) mixed with substances having an average hydrogen density > water
Uranium-235 (X)	400	290
Other fissile material (Y)	250	180

10.3.8 Low Dispersible Material

10.3.8.1 Definition

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

10.3.8.2 Requirements

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, taking into account the provisions of 10.6.2.5.15, 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 10.6.3.7.3 and 10.6.3.7.4, the airborne release in gaseous and particulate forms of up to 100 µm aerodynamic equivalent diameter would not exceed 100 A₂. A separate specimen may be used for each test; and
- (c) if subjected to the test specified in 10.3.5.1.3.3, the activity in the water would not exceed 100 A₂. In the application of this test, the damaging effects of the tests specified in (b) above, must be taken into account.

10.3.8.3 Tests

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 10.6.3.7.3 and the impact test specified in 10.6.3.7.4. 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 10.3.5.1.3.3. After each test it must be determined if the applicable requirements of 10.3.8.2 have been met.

10.3.8.4 Compliance

Demonstration of compliance with the performance standards in 10.3.8.2 and 10.3.8.3 must be in accordance with 10.6.3.1.1 and 10.6.3.1.2.

10.3.9 Other Form

Other form radioactive material is radioactive material that does not meet the definition of Special Form as specified in 10.3.4.1.

10

10.3

10.3.10 Subsidiary Risks

10.3.10.1 With the exception of UN 2908, UN 2909, UN 2910, UN 2911, UN 2977, UN 2978, radioactive material with a subsidiary risk must:

- (a) be labelled with subsidiary risk labels corresponding to each subsidiary risk exhibited by the material. Corresponding placards must be affixed to transport units in accordance with the relevant provisions of 10.7.5;
- (b) be allocated to Packing Groups I, II or III, as and if appropriate, by application of the grouping criteria in Section 3 corresponding to the nature of the predominant subsidiary risk;
- (c) be capable of meeting the appropriate packaging performance criteria for the subsidiary risk.

10.3.10.2 The description required in 10.8.3.9.2(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.

10.3.10.3 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.

10.3.11 Classification of Packages

STATE VARIATIONS: BEG-04, JPG-03/10

The quantity of radioactive material in a package must not exceed the relevant limits for the package type as specified below.

10.3.11.1 Classification as Excepted Packages

10.3.11.1.1 General

10.3.11.1.1.1 Packages may be classified as excepted packages if:

- (a) they contain radioactive material in limited quantities as specified in Table 10.3.D;
- (b) they contain instruments or articles in limited quantities as specified in Table 10.3.D;
- (c) they contain articles manufactured of natural uranium, depleted uranium or natural thorium; or
- (d) they are empty packages having contained radioactive material.

10.3.11.1.1.2 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 (0.5 mrem/h).

10.3.11.1.2 Radioactive Material in Limited Quantities

Radioactive material in forms other than as specified in 10.3.11.1.3 with an activity not exceeding the limit specified in the column headed "Materials—Package Limits" in Table 10.3.D may be classified as UN 2910, **Radioactive material, excepted package—Limited quantity of material**, provided that:

- (a) these materials are packaged in such a manner that, in conditions likely to be encountered during routine transport (incident-free conditions), there can be no leakage of radioactive material from the package; and
- (b) the packaging 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.

Note:

Categorisation, hazard labels and Shipper's Declaration are NOT required.

10.3.11.1.3 Instruments and Manufactured Articles

Radioactive material which is enclosed in or is included as a component part of an instrument or other manufactured article may be classified as UN 2911, **Radioactive material, excepted package—articles** or **Radioactive material, excepted package—instruments**, only if:

- (a) the radiation level at 10 cm from any point on the external surface of any unpacked instrument or article does not exceed 0.1 mSv/h (10 mrem/h);
- (b) the activity of an instrument or article does not exceed the relevant exception limits listed in the column headed "Instruments and Articles—Item Limits" in Table 10.3.D;
- (c) the total activity per package does not exceed the relevant exception limit listed in the column headed "Instruments and Articles—Package Limits" in Table 10.3.D;
- (d) each instrument or article is marked "RADIOACTIVE", except:
 - 1. radioluminescent time-pieces or devices;
 - 2. consumer products that either have received regulatory approval according to 10.0.1.4 (b), following their sale to the end user or do not individually exceed the activity limit for an exempt consignment in Table 10.3.A (column 6), 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; and
- (e) 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).

Note:

Categorisation, hazard labels and Shipper's Declaration are NOT required.

10.3.11.1.4 Articles Manufactured from Natural Uranium or Depleted Uranium or Natural Thorium

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 as UN 2909, **Radioactive material, excepted package—articles manufactured from depleted uranium**, or **Radioactive material, excepted package—articles manufactured from natural uranium**, or **Radioactive material, excepted package—articles manufactured from natural thorium** only if the outer surface of the uranium or thorium is enclosed in an inactive sheath made of metal or some other substantial material.

Note:

Categorisation, hazard labels and Shipper's Declaration are NOT required.

10.3.11.1.5 Empty Packages

An empty packaging which had previously contained radioactive material may be classified as 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 cm² does not exceed:
 - 1. 400 Bq/cm² for beta and gamma emitters and low toxicity alpha emitters; and
 - 2. 40 Bq/cm² for all other alpha emitters.
- (d) any labels which may have been displayed on it in conformity with 10.7.4 are no longer visible.

Note:

Categorisation, hazard labels and Shipper's Declaration are NOT required.

**TABLE 10.3.D
Excepted Package Activity Limits
(10.3.11.1.2 to 10.3.11.1.5)**

Nature of Contents	Materials	Instruments and Articles	
	Package Limits*	Item Limits*	Package Limits*
Solids:			
Special Form	$10^{-3} A_1$	$10^{-2} A_1$	A_1
Other forms	$10^{-3} A_2$	$10^{-2} A_2$	A_2
Liquids:	$10^{-4} A_2$	$10^{-3} A_2$	$10^{-1} A_2$
Gases:			
Tritium	$2 \times 10^{-2} A_2$	$2 \times 10^{-2} A_2$	$2 \times 10^{-1} A_2$
Special Form	$10^{-3} A_1$	$10^{-3} A_1$	$10^{-2} A_1$
Other forms	$10^{-3} A_2$	$10^{-3} A_2$	$10^{-2} A_2$

* For mixtures of radionuclides in items, see 10.3.2.4 and 10.3.2.5.

Note:

For values of A_1 and A_2 see Table 10.3.A. Where the A_1 or A_2 is unlimited, the limits for excepted packages will be satisfied by meeting the requirements of 10.5.8.1.

10.3.11.2 Classification as Low Specific Activity (LSA) Material

10.3.11.2.1 Radioactive material may only be classified as LSA material if the definition of LSA in 10.3.5.1 and the conditions of 10.3.5, 10.5.9.6 and 9.3.10.3.3 are met.

10.3.11.3 Classification as Surface Contaminate Object (SCO)

Radioactive material may only be classified as SCO if the definition of SCO in 10.3.6.1 and the conditions of 10.3.6, 10.5.9.6 and 9.3.10.3.3 are met.

10.3.11.4 Classification of Type A Packages

10.3.11.4.1 Packages containing radioactive material may be classified as Type A packages provided the conditions set out in 10.3.11.4.2 are met.

10.3.11.4.2 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 materials: A_2
where A_1 and A_2 are determined in accordance with the procedures described in 10.3.2.

10.3.11.4.3 For mixtures of radionuclides whose identities and respective activities are known, the following conditions must apply to the radioactive contents of the 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 and $A_1(i)$ is the A_1 value for radionuclide i ; and

$C(j)$ is the activity of radionuclide j as other than Special Form radioactive material and $A_2(j)$ is the A_2 value for radionuclide j .

10.3.11.5 Classification of Uranium Hexafluoride

10.3.11.5.1 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**.

10.3.11.5.2 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% 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.

10.3.11.6 Classification as Type B(U), Type B(M) or Type (C) Packages

10.3.11.6.1 Packages not otherwise classified in 10.3.11.1 to 10.3.11.5 must be classified in accordance with the competent authority approval certificate for the package issued by the State of origin of design.

10.3.11.6.2 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 design;
as specified in the certificate of approval.

10.3.11.6.3 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 design;

as specified in the certificate of approval.

10.3.11.6.4 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 a physical or chemical state, different from those authorized for the design;
as specified in the certificate of approval.

10.3.12 Special Arrangements

Radioactive material must be classified as transport under special arrangement when the intention is for it to be transported in accordance with 10.0.4.

10.4 Identification

STATE VARIATION: USG-10

OPERATOR VARIATIONS: KZ-02, LX-01

10.4.1 Proper Shipping Name

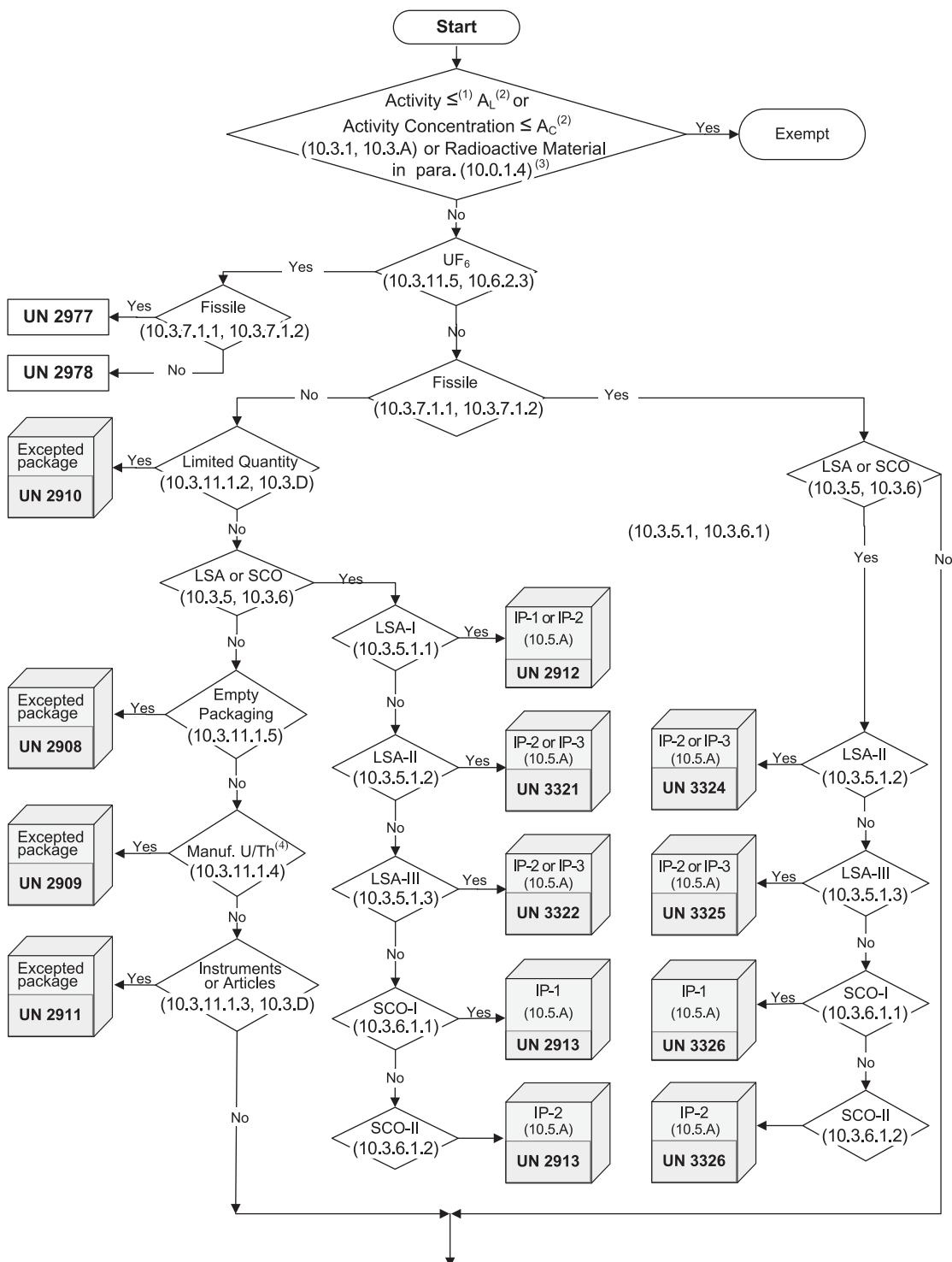
10.4.1.1 Radioactive material must be assigned to one of the proper shipping names/UN numbers specified in Table 10.4.A depending on the activity level of the radionuclides contained in a package, the fissile or non-fissile properties of these radionuclides, the type of package to be presented for transport, 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 10.3.2 to 10.3.11.

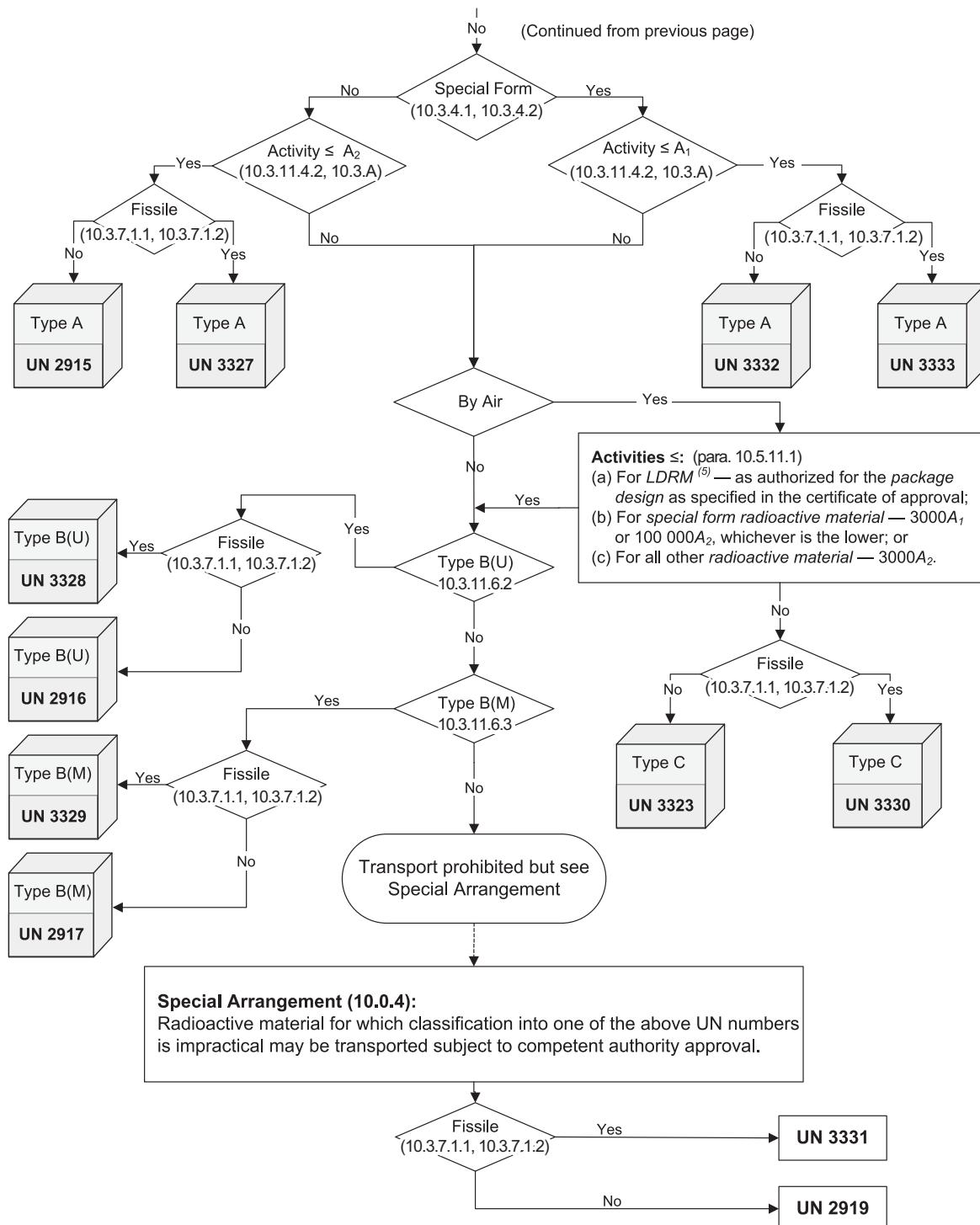
- 10.4.1.2 Guidance on the correct assignment of proper shipping names is provided in Figure 10.4.B. To assist users with the table the paragraph references associated with each decision point have been included.

TABLE 10.4.A
Assignment of Proper Shipping Name/UN Number (10.4.1.1)

UN Number	Proper Shipping Name
Excepted Package (10.3.11.1)	
UN 2908	Radioactive material, excepted package—empty packaging
UN 2909	Radioactive material, excepted package—articles manufactured from depleted uranium
UN 2909	Radioactive material, excepted package—articles manufactured from natural thorium
UN 2909	Radioactive material, excepted package—articles manufactured from natural uranium
UN 2910	Radioactive material, excepted package—limited quantity of material
UN 2911	Radioactive material, excepted package—articles
UN 2911	Radioactive material, excepted package— instruments
Low Specific Activity (LSA) Material (10.3.11.2)	
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 (SCO) (10.3.11.3)	
UN 2913	Radioactive material, surface contaminated objects (SCO—I), non fissile or fissile excepted
UN 2913	Radioactive material, surface contaminated objects (SCO—II), non fissile or fissile excepted
UN 3326	Radioactive material, surface contaminated objects (SCO—I), fissile
UN 3326	Radioactive material, surface contaminated objects (SCO—II), fissile
Type A Package (10.3.11.4)	
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 (10.3.11.6)	
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 (10.3.11.6)	
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 (10.3.11.6)	
UN 3323	Radioactive material, Type C package, non fissile or fissile-excepted
UN 3330	Radioactive material, Type C package, fissile
Special Arrangement (10.3.12)	
UN 2919	Radioactive material, transported under special arrangement, non fissile or fissile-excepted
UN 3331	Radioactive material, transported under special arrangement, fissile
Uranium Hexafluoride (10.3.11.5)	
UN 2978	Radioactive material, uranium hexafluoride, non fissile or fissile-excepted
UN 2977	Radioactive material, uranium hexafluoride, fissile

FIGURE 10.4.B
Class 7 Classification Flowchart (10.4.1.2)





(1) ≤: Less than or equal to.

(2) A_L: Activity limit for an exempt consignment in Table 10.3.A of the Regulations.

A_C: Activity concentration for exempt material in Table 10.3.A of the Regulations.

(3) The number in (): The paragraph number or table of the Regulations.

(4) Manuf. U/Th: Articles manufactured from natural uranium or depleted uranium or natural thorium.

(5) LDRM: Low Dispersible Radioactive Material.

10.5 Packing

STATE VARIATION: USG-10

10.5.1 Shipper's Responsibility

The shipper is responsible for all aspects of the packing of radioactive materials in compliance with these Regulations. See also 5.0.1.

10.5.2 Packaging Criteria

10.5.2.1 Explanatory Information on Packing of Radioactive Materials

10.5.2.1.1 Packing requirements for radioactive materials vary with the particular radionuclide (or radionuclides) involved. In all cases, the radiation is considered; if the material is not in "Special Form", then the possibility of leakage is considered; and if the material is fissile, then the possibility of criticality is considered. A further factor, relevant if the quantity, i.e. activity, of the radioactive material is very large, is that the heat generated by the radiation may be significant, in which case heat dissipation is considered.

10.5.2.1.2 As noted in 10.5.2.1.1, the radiation level depends on several factors—and the activity (quantity) of the radioactive material is only one of those factors. Equal quantities of two different radionuclides, each packed in the same type of packaging, may produce very different radiation levels both on the external surface of the package and at any specific distance. Therefore, to ensure that radiation levels comply with specified permissible limits, the specified permitted quantities vary with the particular radionuclides involved.

10.5.2.1.3 The terms A_1 and A_2 used in these packing requirements denote the maximum activity (or quantity) limits for "Special Form" and "other forms" respectively, of each radionuclide permitted in a Type A package. They also serve as the basic limits for other purposes. The values of A_1 and A_2 for many radionuclides are listed in Table 10.3.A; the values of A_1 and A_2 for other cases must be obtained by the approved procedures given in 10.3.2.2 to 10.3.2.5.

10.5.2.1.4 It may be observed from Table 10.3.A that for many radionuclides the A_2 value is less than the A_1 value, but that for all others the A_2 value is the same as the A_1 value. The A_2 value cannot be greater than the A_1 value.

10.5.2.1.5 When a radioactive material has been packed in compliance with these packing requirements the complete package in most cases, must be allotted a "Transport Index" in accordance with 10.5.14. The "Transport Index" is a number devised with the purpose of indicating the relative degree of radiation hazard of packages containing radioactive material.

10.5.2.1.6 The complete package, in most cases, must also be allotted to one of three categories as shown in Table 10.5.C and then labelled with the hazard label for that category.

10.5.3 General Requirements

10.5.3.1 Radioactive material, packagings and packages must meet the requirements of 10.6. The quantity of radioactive material in a package must not exceed the limits specified in 10.3.11. The types of packages for radioactive materials covered by these regulations are:

- (a) Excepted packages (10.5.8);
- (b) Industrial package Type 1 (Type IP-1 package) (10.5.9.3);
- (c) Industrial package Type 2 (Type IP-2 package) (10.5.9.4);
- (d) Industrial package Type 3 (Type IP-3 package) (10.5.9.5);
- (e) Type A packages (10.5.10);
- (f) Type B(U) and B(M) packages (10.5.11);
- (g) Type C Packages (10.5.12).

10.5.3.1.1 Packages containing fissile material or uranium hexafluoride are subject to additional requirements.

10.5.3.2 External Contamination: The non-fixed radioactive contamination on any external surface of any package must be kept as low as practicable and, under normal 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 an area of 300 cm^2 of any part of the surface.

10.5.3.3 In the case of overpacks and freight containers, the level of non-fixed contamination on the external and internal surfaces must not exceed the limits specified in 10.5.3.2. An overpack or freight container dedicated to the transport of radioactive material under exclusive use is excepted from the requirements of this paragraph solely with regard to its internal surfaces and only for as long as it remains under that specific exclusive use.

10.5.3.4 Radioactive material meeting the criteria of other Classes or Divisions as defined in Section 3 must be allocated to Packing Group I, II or III, as appropriate, by the application of the grouping criteria provided in Section 3 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.

10.5.4 Different Radionuclides in One Package

When different individual radionuclides are packaged together in the same package, the total activity must be determined as described in 10.3.2.4 and 10.3.2.5.

10.5.5 Packed with Other Items

A package containing radioactive material, 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. Low Specific Activity materials (LSA) and Surface Contaminated Objects

(SCO) may be packed with other items. Articles and documents (and for LSA and SCO other items) may be included, provided that there is no interaction between them and the packaging or the radioactive contents that would reduce the safety of the package.

10.5.6 Overpacks Containing Packages of Radioactive Materials

10.5.6.1 Packages of radioactive material may be combined together in an overpack for transport, provided that each package contained therein meets the applicable requirements of these Regulations.

10.5.6.2 Only the original shipper of the packages contained within an overpack is permitted to use the method of direct measurement of radiation level to determine the transport index of a rigid overpack.

10.5.7 Requirements Before Shipment

10.5.7.1 Requirements Before First Shipment

Before the first shipment of any package, the following requirements must be fulfilled:

- (a) 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, containment system, 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;
- (b) if the design pressure of the containment system exceeds 35 kPa (0.35 bar, 5 lb/in²) (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;
- (c) for each package containing fissile material where neutron poisons are specifically included as components of the package, tests must be performed to confirm the presence and distribution of those neutron poisons in order to comply with the requirements of 10.6.2.8.

10.5.7.2 Requirements Before Each Shipment

10.5.7.2.1 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 Regulations have been satisfied;
- (b) each Type B(U) and 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;

- (c) for each package requiring competent authority approval, it must be ensured that all the requirements specified in the approval certificates have been met;
- (d) for each Type B(U), Type B(M) and Type C package it must be ensured by examination 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 10.6.2.5.8 and 10.6.2.7.4 were made;
- (e) it must be ensured that lifting attachments which do not meet the requirements of 10.6.0.3, have been removed or otherwise rendered incapable of being used to lift the package, in accordance with 10.6.0.4;
- (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 Regulations have been satisfied;
- (g) for packages containing fissile material the measurement specified in 10.6.2.8.1.4(b) and the tests to demonstrate closure of each package as specified in 10.6.2.8.2 must be performed where applicable; and
- (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 Regulations have been satisfied.

10.5.7.2.2 Before making any shipment, the shipper must have in his possession a copy of any instructions for the proper closing of the package and any other preparation for shipment, together with a copy of each of the following certificates relevant to the package:

- Special Form approval certificate;
- Low dispersible radioactive material;
- Packages containing 0.1 kg or more of uranium hexafluoride;
- Type B package design approval certificate;
- Type B(M) package shipment approval certificate;
- Type C package design approval and shipment approval certificate;
- Fissile Material package design approval certificate;
- Fissile Material package shipment approval certificate;
- Special Arrangement approval certificate.

Note:

Package design approval and package shipment approval may be combined on a single certificate.

For package designs where a competent authority issued certificate is not required, the shipper must, on request, make available for inspection by the relevant authority, documentary evidence of the compliance of the package design with all the applicable requirements.

10.5.8 Excepted Packages

STATE VARIATIONS: CHG-03, JPG-03/10/23, RUG-01

OPERATOR VARIATIONS: BR-11, CA-07, DL-01, IJ-07, KE-06

Excepted Package is a packaging, used for containing radioactive material, that is designed to meet the requirements of 10.6.0 and 10.6.1.

10.5.8.1 General

Radioactive materials in limited quantities, instruments, manufactured articles and empty packagings as specified in 10.3.11.1 may be transported as excepted packages, provided that:

- (a) the radiation level at any point on the external surface of the package does not exceed 5 $\mu\text{Sv/h}$ (0.5 mrem/h);
- (b) if the excepted package contains fissile material, one of the requirements provided by 10.3.7.2 must be met, and the smallest dimension of the package must not be less than 10 cm; and
- (c) the non-fixed radioactive contamination on any external surface of the excepted package does not exceed the limits of 10.5.3.2;
- (d) if transported by air mail, the requirements of Sub-section 10.2.2 are met.

10.5.8.2 Exceptions

10.5.8.2.1 Excepted packages are subject to the provisions of the Regulations relating to:

- training requirements (1.5);
- package marking (10.7.1.3.2);
- "Excepted package" label (10.7.4.4.3);
- air waybill completion (10.8.8.3);
- inspection and decontamination requirements (9.4.3);
- the reporting of dangerous goods accidents, incidents and other occurrences (9.6.1, 9.6.2);
- general packaging requirements (10.6.0 to 10.6.1); and
- any other provisions specifically retained in this Section.

10.5.8.2.2 Excepted packages are not subject to the provisions relating to:

- categorisation of packages (10.5.15.1);
- packing (9.3.10.7, 10.5.5, 10.5.6, 10.5.9.6 to 10.5.9.9, Tables 9.3.B and 10.5.B);
- Determination of Transport Index (10.5.14)
- packaging nomenclature, marking requirements and tests (Subsection 10.6, except for 10.6.2.1);
- marking (10.7.1 except as required in 10.7.1.3.2);
- labelling (10.7.2 except as required in 10.7.4.4.3);
- documentation (Subsection 10.8, except for 10.8.8.3); and
- other shippers and operators responsibilities (Sub-section 10.10).

10.5.8.3 Other Hazards

For excepted packages of radioactive materials possessing any other dangerous characteristics, the other hazard takes precedence. Therefore, the package is subject to the Regulations relevant to the other hazard, see Special Provision A130.

10.5.9 Requirements and Controls for Transport of LSA Material and SCO

STATE VARIATION: CAG-02

OPERATOR VARIATIONS: JL-03, KZ-02, NH-06, UX-10, VN-09

10.5.9.1 Application

Industrial Packaging may be used for Low Specific Activity (LSA) material and Surface Contaminated Objects (SCO) (see 10.3.5 and 10.3.6).

10.5.9.2 Activity Limit

The total activity in a single package of LSA material or in a single package of SCO must be so restricted that the radiation level specified in 10.5.9.6 is not exceeded, and the activity in a single package must also be so restricted that the activity limits for an aircraft specified in Table 9.3.B are not exceeded. A single package of non-combustible solid LSA-II or LSA-III material must not contain an activity greater than 3,000 A_2 .

10.5.9.3 Industrial Package Type 1

A packaging or freight container containing LSA material or Surface Contaminated Object (SCO) that is designed to meet the requirements of 10.6.2.2.1 is an Industrial Package Type 1.

10.5.9.4 Industrial Package Type 2

A packaging or freight container containing LSA material or Surface Contaminated Object (SCO) that is designed to meet the requirements of 10.6.2.2.2 is an Industrial Package Type 2. Packages or freight containers may also be used as Industrial Packages Type 2 (Type IP-2) in accordance with the requirements of 10.6.2.2.2 and 10.6.2.2.5.

10.5.9.5 Industrial Package Type 3

A packaging or freight container containing LSA material or Surface Contaminated Object (SCO) that is designed to meet the requirements of 10.6.2.2.3 is an Industrial Package Type 3. Freight containers may also be used as an Industrial Package Type 3 (Type IP-3) in accordance with the requirements of 10.6.2.2.5.

10.5.9.6 LSA and SCO Quantity Limit

The quantity of Low Specific Activity material (LSA) or Surface Contaminated Objects (SCO) in a single Industrial Package Type 1, Industrial Package Type 2, Industrial Package Type 3 must be so restricted that the external radiation level at 3 m from the unshielded material does not exceed 10 mSv/h (1 rem/h).

10.5.9.7 LSA and SCO—Fissile

LSA material and SCO which is, or contains, fissile material must meet the applicable requirements of 9.3.10.5 and 10.6.2.8.1.2.

10.5.9.8 LSA and SCO—Restrictions

Packages and freight containers containing LSA material or SCO must meet the requirements of 10.5.3.2 and 10.5.5. LSA material in group LSA-I and SCO in group SCO-I must not be transported unpackaged.

10.5.9.9 LSA and SCO—Integrity Limits

LSA material and SCO must be packaged in accordance with Table 10.5.A.

**TABLE 10.5.A
Industrial Package Integrity Requirements
for LSA Material and SCO (10.5.9.9)**

Contents	Industrial Package Type (see 10.6.2.2)	
	Exclusive Use	NOT Under Exclusive Use
LSA-I:		
Solid	Type 1	Type 1
Liquid	Type 1	Type 2
LSA-II:		
Solid	Type 2	Type 2
Liquid and gas	Type 2	Type 3
LSA-III	Type 2	Type 3
SCO-I	Type 1	Type 1
SCO-II	Type 2	Type 2

10.5.10 Type A Packages

Type A packages must not contain activities greater than A_1 (if Special Form radioactive material) or A_2 (if not Special Form Radioactive Material). Type A packages must be designed to meet the requirements of 10.6.0, 10.6.1, 10.6.2.4.1 to 10.6.2.4.4.

10.5.11 Type B(U) and B(M) Packages

STATE VARIATIONS: BEG-04, CAG-03, DEG-02, DKG-01, FRG-04, ITG-02, JPG-08/26, NLG-03, USG-10

OPERATOR VARIATIONS: JL-03/05, KE-05, KZ-02, MH-16, NH-06, OZ-04, PX-04, TU-10, UX-10, VN-09

10.5.11.1 Activity Limits

Type B(U) and Type B(M) must in addition 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, 3,000 A_1 or 100,000 A_2 , whichever is the lower; or
- (c) for all other radioactive material, 3,000 A_2 .

10.5.11.2 Unilateral Approval

Each Type B(U) package design requires unilateral approval, i.e. approval of the competent authority of the State of origin of design only, except that

- (a) a Type B(U) package design for fissile material, which is also subject to 10.5.11.3 and 10.5.7.2.2, must require multilateral approval; and
- (b) a Type B(U) package design for low dispersible radioactive material must require multilateral approval.

10.5.11.3 Multilateral Approval

Each Type B(M) package design requires multilateral approval, i.e. approval by the competent authorities of the State of origin and of each State through or into which the package is to be transported (see Note following definition of "Multilateral Approval" in Appendix A).

Note:

Type B(M) packages are forbidden on Passenger Aircraft.

10.5.12 Type C Packages

Type C packages may contain activities greater than A_1 (if Special Form radioactive material) or A_2 (if not in Special Form radioactive material). Type C packages must be designed to meet the requirements of 10.6.0, 10.6.1, 10.6.2.4.1 except for 10.6.2.4.1(b), 10.6.2.4.2, 10.6.2.5.3, 10.6.2.5.4, 10.6.2.5.6, 10.6.2.5.11 to 10.6.2.5.16, and, in addition, the requirements specified in 10.6.2.7.3 to 10.6.2.7.5.

10.5.13 Packages Containing Fissile Materials

STATE VARIATIONS: CAG-01, DEG-01/02, DKG-01, IRG-04, ITG-01/02, JPG-08/26, NLG-03, RUG-01/02, USG-10

OPERATOR VARIATIONS: AI-07, AV-08, BR-11, C8-01, CA-11, CV-01, D0-05, GF-07, HF-01, IB-02, IJ-03, JL-03, KZ-02, LA-15, LG-01, MH-17, MU-01, NH-06, OK-03, OU-09, SQ-04, VN-09

10.5.13.1 Fissile Material Activity Limit

Unless excepted by 10.3.7.2, any packages containing fissile material must not contain:

- (a) a mass of fissile material (or mass of each fissile nuclide for mixtures when appropriate) different than 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 the certificate of approval where appropriate.

10.5.13.2 Design

The design for packaging for fissile material must comply in all respects with the requirements for packages containing fissile materials of 10.3.7 and 10.6.2.8.

10.5.13.3 Approval

Each package design for fissile material requires multilateral approval, i.e. approval by the competent authorities of the State of origin and of each State through or into which the package is to be transported.

10.5.14 Determination of Transport Index and Criticality Safety Index

STATE VARIATIONS: JPG-02/17, USG-10

OPERATOR VARIATIONS: 8X-01, TX-01

10.5.14.1 Determination of Transport Index (TI)

Transport Index (TI) is a single number assigned to a package, overpack or freight container used to provide control over radiation exposure. It is also used to establish categories for labelling, to determine whether transport under exclusive use is required; to establish spacing requirements during storage in transit, and to define the number of packages allowed in a freight container or aboard an aircraft. The TI is determined as described in 10.5.14.1.1 and 10.5.14.1.2.

10.5.14.1.1 Transport Index—Radiation Exposure Control

The TI based on radiation exposure control for a package, overpack or freight container is the number derived using the following procedure:

(a) determine the maximum radiation level at a distance of 1 m from the external surfaces of the package, overpack or freight container. Where the radiation level is determined in units of millisievert per hour (mSv/h), the value determined must be multiplied by 100. (Where the radiation level is determined in units of millirem per hour (mrem/h), the value determined is not changed.) For uranium and thorium ores and concentrates, the maximum radiation dose rate at any point 1 m from the external surface of the load may be taken as:

- 0.4 mSv/h (40 mrem/h)—for ores and physical concentrates of uranium and thorium;
- 0.3 mSv/h (30 mrem/h)—for chemical concentrates of thorium; or
- 0.02 mSv/h (2 mrem/h)—for chemical concentrates of uranium, other than uranium hexafluoride.

(b) for freight containers the value determined in (a) must be multiplied by the appropriate factor from Table 10.5.B;

**TABLE 10.5.B
Multiplication Factors for Freight Containers
(10.5.14.1.1(b))**

Largest Cross-Sectional Area of the Freight Container	Multiplication Factor
$\leq 1 \text{ m}^2$	1
$> 1 \text{ m}^2 \text{ to } \leq 5 \text{ m}^2$	2
$> 5 \text{ m}^2 \text{ to } \leq 20 \text{ m}^2$	3
$> 20 \text{ m}^2$	10

(c) the figure obtained in (a) and (b) 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.

10.5.14.1.2 Transport Index—Consignment

The Transport Index for each overpack or freight container must be determined as either the sum of the TIs 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 TIs of all the packages.

10.5.14.2 Determination of Criticality Safety Index (CSI)

10.5.14.2.1 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 using the procedures specified in 10.6.2.8.3, i.e. CSI equals $50/N$. The value of the Criticality Safety Index may be zero, provided that an unlimited number of packages is subcritical, i.e. N is effectively equal to infinity.

10.5.14.2.2 The Criticality Safety Index (CSI) 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.

10.5.15 Limits on Transport Index (TI), Criticality Safety Index (CSI), Radiation Levels for Packages and Overpacks

STATE VARIATIONS: JPG-02/17, USG-10

OPERATOR VARIATIONS: E8-03, LG-02, VN-09

10.5.15.1 Packages and overpacks must be assigned to Category I-White, II-Yellow or III-Yellow in accordance with Table 10.5.C and with the requirements set out below. Each category is assigned a specific label; this labelling system is outlined in 10.7.2:

(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 must be assigned to

- the higher category of the two. For this purpose, Category I-White being regarded as the lowest category;
- (b) the Transport Index must be determined following the procedures specified in 10.5.14.1.1;
 - (c) if the Transport Index is greater than 10, the package or overpack must be transported under exclusive use;
 - (d) if the surface radiation level is greater than 2 mSv/h (200 mrem/h), the package or overpack must be transported under exclusive use and under the provisions of 9.3.10.3;

(e) a package transported under a special arrangement must be assigned to Category III-Yellow, except under the provisions of 10.5.15.2;

(f) an overpack which contains packages transported under special arrangement must be assigned to Category III-Yellow, except under the provisions of 10.5.15.2.

10.5.15.2 In all cases of international transport of packages requiring competent authority design or shipment approval, for which different approval types apply in the different countries concerned by the shipment, the categorisation must be in accordance with the certificate of the country of origin of design.

TABLE 10.5.C
Category Determination for Packages, Overpacks and Freight Containers (10.5.15.1)

Categories of Packages (Other Than Excepted Packages) and Overpacks		
Transport index	Maximum Radiation Level at any Point on External Surface	Category
0*	Not more than 0.005 mSv/h (0.5 mrem/h)	I-White
More than 0 but not more than 1*	More than 0.005 mSv/h (0.5 mrem/h) but not more than 0.5 mSv/h (50 mrem/h)	II-Yellow
More than 1 but not more than 10	More than 0.5 mSv/h (50 mrem/h) but not more than 2 mSv/h (200 mrem/h)	III-Yellow
More than 10	More than 2 mSv/h (200 mrem/h) but not more than 10 mSv/h (1000 mrem/h)	III-Yellow**

* If the measured TI is not greater than 0.05, the value quoted may be zero in accordance with 10.5.14.1.1(c).

** Must be transported under exclusive use and special arrangement (see 10.5.16 and 10.5.17).

10.5.16 Special Arrangement

STATE VARIATIONS: BEG-04, DEG-02, DKG-01

If the radioactive material does not comply with any of the methods of packing provided in this subsection, the material may be permitted to be carried under special arrangement. The provisions for carrying the radioactive material under special arrangement must be approved by the competent authorities of the States concerned (note that for radioactive consignments this includes only the States of origin, transit and destination). These provisions must be adequate to ensure that the overall level of safety in transport and in-transit storage is at least equivalent to the level of safety which would be provided if all the applicable requirements of these Regulations had been met. Each consignment must have multilateral approval.

10.5.17 Exclusive Use

10.5.17.1 Except for consignments under exclusive use, the Transport Index of any individual package or overpack must not exceed 10, nor must the Criticality Safety Index of any package or overpack exceed 50.

10.5.17.2 Except for packages or overpacks transported under exclusive use under the conditions specified in 9.3.10.3.1, the maximum radiation level at any point on any external surface of a package or overpack must not exceed 2 mSv/h (200 mrem/h).

10.5.17.3 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 (1,000 mrem/h).

10.6 Packaging Specifications and Performance Testing

10.6.0 General Requirements

10.6.0.1 Package and packaging performance specifications, in terms of retention of integrity of containment and shielding, depend upon the quantity and nature of the radioactive material transported. Performance specifications applied are graded to take into account conditions of transport characterized by the following severity levels:

- (a) conditions likely to be encountered in routine transport (incident-free);
- (b) normal conditions of transport (minor mishaps); and
- (c) accident conditions of transport.

The performance specifications include design requirements and tests.

10.6.0.2 The package must be designed in relation to its weight, volume and shape that it can be easily and safely handled and transported. In addition, the package must be designed that it can be properly secured in the aircraft during transport.

10.6.0.3 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 Regulations would not be impaired. The design must take account of appropriate safety factors to cover snatch lifting.

10.6.0.4 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 weight in accordance with the requirements of 10.6.0.3 or must be removable or otherwise rendered incapable of being used during transport.

10.6.0.5 As far as practicable, the packaging must be so designed and finished that the external surfaces are free from protruding features and can be easily decontaminated.

10.6.0.6 As far as practicable, the outer layer of the package must be so designed as to prevent the collection and the retention of water.

10.6.0.7 Any features added to the package at the time of transport, which are not part of the package, must not reduce its safety.

10.6.0.8 The package must be capable of withstanding the effects of any acceleration, vibration or vibration resonance which may arise under conditions likely to be encountered in routine 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 so designed as to prevent them from becoming loose or being released unintentionally, even after repeated use.

Note:

Information on vibration in commercial aircraft is given in 5.0.4.3.

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10.6.0.9 The materials of the packaging and any other 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.

10.6.0.10 All valves through which the radioactive contents could otherwise escape must be protected against unauthorized operation. The design of the package must take into account ambient temperatures and pressures that are likely to be encountered under normal conditions of transport. For radioactive material having other dangerous properties, the package design must take into account those properties.

10.6.1 Additional Requirements for Packages Transported by Air

10.6.1.1 The temperature of the accessible surfaces of packages must not exceed 50°C (122°F) at an ambient temperature of 38°C (100°F) with no account taken for insolation.

10.6.1.2 Packages must be so designed that, if they were exposed to ambient temperatures ranging from -40°C to +55°C (-40°F to +131°F), the integrity of containment would not be impaired.

10.6.1.3 Packages containing radioactive material must be capable of withstanding without leakage, an internal pressure that produces a pressure differential of not less than the maximum normal operating pressure plus 95 kPa.

10.6.2 Packaging Requirements

10.6.2.1 Requirements for Excepted Packages

An Excepted Package is a packaging containing radioactive material that is designed to meet the requirements specified in 10.6.0 and 10.6.1.

10.6.2.2 Requirements for Industrial Packages

10.6.2.2.1 Industrial Packages Type 1 (Type IP-1)

An Industrial Package Type 1 (Type IP-1) is a packaging or freight container containing Low Specific Activity (LSA) material or Surface Contaminated Object (SCO) that is designed to meet the requirements specified in 10.6.0 and 10.6.1. The smallest overall external dimension of the package must not be less than 10 cm.

10.6.2.2.2 Industrial Packages Type 2 (Type IP-2)

An Industrial Package Type 2 (Type IP-2) is a packaging or freight container containing Low Specific Activity (LSA) material or Surface Contaminated Object (SCO) that must meet the requirements for an Industrial Package Type 1 as specified in 10.6.2.2.1 and, in addition, if it were subjected to the tests specified in 10.6.3.4.3 and 10.6.3.4.4 it would prevent:

- (a) the loss or dispersal of the radioactive contents; and
- (b) more than a 20% increase in the maximum radiation level at any external surface of the package.

For package and freight container alternative see 10.6.2.2.4 and 10.6.2.2.5.

10.6.2.2.3 Industrial Package Type 3 (Type IP-3)

An Industrial Package Type 3 (Type IP-3) is a packaging or freight container containing Low Specific Activity (LSA) material or Surface Contaminated Object (SCO) that must meet the requirements specified in 10.6.2.4.1 and 10.6.2.4.2. For freight container alternative see 10.6.2.2.5.

10.6.2.2.4 Alternative Requirements for Industrial Packages Type 2

Packages may be used as Industrial Package Type 2 (Type IP-2) provided that:

- (a) they satisfy the requirements of Type IP-1 specified in 10.6.2.2.1;
- (b) they are designed to satisfy the requirements prescribed for Packing Group I or II in Subsections 6.1 to 6.3 of these Regulations; and

- (c) when subjected to the tests required for Packing Group I or II in Subsection 6.3 they would prevent:
- loss or dispersal of the radioactive contents; and
 - more than a 20% increase in the maximum radiation level at any external surface of the package.

10.6.2.2.5 Freight Container Alternative

Freight containers with the characteristics of a permanent enclosure may also be used as Industrial Packages Types 2 and 3, (Types IP-2 or IP-3) provided that:

- (a) the radioactive contents are restricted to solid material;
- (b) they satisfy the requirements for an Industrial Package Type 1 (Type IP-1) as specified in 10.6.2.2.1; and
- (c) they are designed to conform to the requirements prescribed in the document ISO 1496-1:1990, "Series 1 Freight Containers—Specifications and Testing—Part 1: General Cargo Containers" and subsequent amendments 1:1993, 2:1998, 3:2005, 4:2006 and 5:2006, excluding dimensions and ratings. They must be designed such that if subjected to the tests prescribed in that document and the accelerations occurring during routine conditions of transport they would prevent:
 - loss or dispersal of the radioactive contents, and
 - more than 20% increase in the maximum radiation level at any external surface of the freight container.

10.6.2.3 Requirements for Packages Containing Uranium Hexafluoride

10.6.2.3.1 Packages designed to contain uranium hexafluoride must meet the requirements prescribed elsewhere in these Regulations which pertain to the radioactive and fissile properties of the material. Except as allowed in 10.6.2.3.4, uranium hexafluoride in quantities of 0.1 kg or more must also be packaged and transported in accordance with the provisions of ISO 7195:2005 "Nuclear Energy—Packaging of uranium hexafluoride (UF_6) for transport", and the requirements of 10.6.2.3.2 and 10.6.2.3.3.

10.6.2.3.2 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 7195:2005, the structural test as specified in 10.6.3.8;
- (b) withstand without loss or dispersal of the uranium hexafluoride the free drop test specified in 10.6.3.4.3; and
- (c) withstand without rupture of the containment system the thermal test specified in 10.6.3.6.2.

10.6.2.3.3 Packages designed to contain 0.1 kg or more of uranium hexafluoride must not be provided with pressure relief devices.

10.6.2.3.4 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 7195:2005 provided an equivalent level of safety is maintained;
- (b) the packages are designed to withstand without leakage and without unacceptable stress a test pressure less than 2.76 MPa as specified in 10.6.3.8; or
- (c) for packages designed to contain 9,000 kg or more of uranium hexafluoride, the packages do not meet the requirement of 10.6.2.3.2(c);
- (d) in all other respects the requirements specified in 10.6.2.3.1 to 10.6.2.3.3 must be satisfied.

10.6.2.4 Requirements for Type A Packages

A Type A package is a packaging containing an activity up to A_1 (if Special Form radioactive material) or up to A_2 (if not Special Form Radioactive Material). Type A packages must be designed to meet the requirements of 10.6.0, 10.6.1, 10.6.2.4.1 to 10.6.2.4.4.

10.6.2.4.1 General

10.6.2.4.1.1 The smallest overall external dimension of the package must not be less than 10 cm.

10.6.2.4.1.2 The outside of every package must incorporate a feature, such as a seal, which is not readily breakable and which, while intact, will be evidence that the package has not been opened.

10.6.2.4.1.3 Any tie-down attachments on the package must be so designed that, under both normal and accident conditions, the forces in those attachments must not impair the ability of the package to meet the requirements of these Regulations.

10.6.2.4.1.4 The design of the package must take into account temperatures ranging from -40°C to $+70^{\circ}\text{C}$ (-40°F to $+158^{\circ}\text{F}$) for the components of the packaging. Special attention must be given to freezing temperatures for liquid contents and to the potential degradation of packaging materials within the given temperature range.

10.6.2.4.1.5 The design, fabrication and manufacturing techniques must be in accordance with national or international standards, or other requirements, acceptable to the competent authority.

10.6.2.4.1.6 A package must be designed so that if it were subjected to the tests specified in 10.6.3.4, it would prevent:

- (a) more than a 20% increase in the maximum radiation level at any external surface of the package; and
- (b) loss or dispersal of the radioactive contents.

10.6.2.4.2 Containment System

10.6.2.4.2.1 The design must include a containment system securely closed by a positive fastening device which cannot be opened unintentionally or by pressure which may develop within the package.

10.6.2.4.2.2 Special Form radioactive material may be considered as a component of the containment system.

10.6.2.4.2.3 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.

10.6.2.4.2.4 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.

10.6.2.4.2.5 The containment system must retain its radioactive contents under a reduction of ambient pressure to 60 kPa.

10.6.2.4.2.6 All valves, other than pressure relief valves, must be provided with an enclosure to retain any leakage from the valve.

10.6.2.4.2.7 A radiation shield which encloses a component of the package specified as a part of the containment system must be so designed 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.

10.6.2.4.3 Additional Requirements for Type A Packages Designed to Contain Liquids

10.6.2.4.3.1 Type A packages designed to contain liquid radioactive material must be adequate to meet the conditions specified in 10.6.2.4.1.6 if the package is subjected to the tests specified in 10.6.3.5.

10.6.2.4.3.2 Type A packages designed to contain liquids must 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. Alternatively the package must be provided with a containment system composed of primary inner and secondary outer containment components designed to enclose the liquid contents completely and ensure their retention within the secondary outer containment components, even if the primary inner components leak.

10.6.2.4.3.3 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.

10.6.2.4.4 Additional Requirements for Type A Packages Designed to Contain Gases

10.6.2.4.4.1 A package designed for gases must prevent loss or dispersal of the radioactive contents if the package were subjected to the tests specified in 10.6.3.5. A Type A package designed for tritium gas or for noble gases must be excepted from this requirement.

10.6.2.5 Requirements for Type B(U) Packages

10.6.2.5.1 A Type B package is a packaging containing an activity that may be in excess of A_1 (if Special Form radioactive material) or in excess of A_2 (if not Special Form radioactive material).

10.6.2.5.2 Type B(U) packages must be designed to meet the requirements of 10.6.0, 10.6.1, 10.6.2.4.1 except for 10.6.2.4.1.6(b), 10.6.2.4.2 and in addition, to the requirements specified in 10.6.2.5.3 to 10.6.2.5.16.

10.6.2.5.3 A package must be so designed that, under the ambient conditions specified below, the heat generated within the package by the radioactive contents will not, under normal conditions of transport, as demonstrated by the tests in 10.6.3.4, 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 must 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 material is enclosed in a can or receptacle (for example, clad fuel elements), cause the can, receptacle or material to deform or melt;
- (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.

10.6.2.5.4 For the purposes of 10.6.2.5.3, the ambient temperature must be taken as 38°C and the solar insolation conditions must be assumed to be as given by Table 10.6.A.

10.6.2.5.5 A package must be so designed that, under the ambient condition specified in 10.6.2.5.4 and in the absence of insolation, the temperature of the accessible surfaces of a package must not exceed 50°C, unless the package is transported under exclusive use.

10.6.2.5.6 In meeting the requirements of 10.6.1.1, 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.

TABLE 10.6.A
Type B Package Insolation Criteria (10.6.2.5.4)

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, adopting an absorption coefficient and neglecting the effects of possible reflection from neighbouring objects.

10.6.2.5.7 A package which includes thermal protection for the purpose of satisfying the requirements of the thermal test specified in 10.6.3.6.2 must be so designed that such protection will remain effective if the packaging is subjected to the tests specified in 10.6.3.4; 10.6.3.6.1.1 Drop Test 1 and 10.6.3.6.1.2 Drop Test 2 or 10.6.3.6.1.2 Drop Test 2 and 10.6.3.6.1.3 Drop Test 3, as appropriate. Any such protection on the exterior of the package must not be rendered ineffective by conditions commonly encountered in normal handling or transport, or in accidents, and which are not simulated in the tests referred to above, e.g. by ripping, cutting, skidding abrasion or other rough handling.

10.6.2.5.8 A package must be so designed that, if it were subjected to:

- (a) the tests specified in 10.6.3.4, it would restrict the loss of radioactive contents to not more than $10^{-6} A_2$ per hour; and
- (b) the tests specified in 10.6.3.6, 10.6.3.6.1.2 Drop Test 2, 10.6.3.6.2 and 10.6.3.6.3.1 and the tests in:
 - 1. 10.6.3.6.1.3 Drop Test 3 when the package has a weight less than or equal to 500 kg, an overall density not greater than 1,000 kg/m³ based on the external dimensions, and radioactive contents greater than 1,000 A₂ not as Special Form radioactive material; or
 - 2. 10.6.3.6.1.1 Drop Test 1 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 for 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 A₂ for Krypton-85 and not more than A₂ for all other radionuclides.

10.6.2.5.9 Where mixtures of different radionuclides are present, the provisions of 10.3.2.4 and 10.3.2.5 must apply except that for Krypton-85 an effective A₂ value equal to 100 TBq may be used. For 10.6.2.5.8(a), the evaluation must take into account the external contamination limitations of 10.5.3.2.

10.6.2.5.10 A package for radioactive contents with activity greater than $10^5 A_2$ must be so designed that if it were subjected to the enhanced water immersion test specified in 10.6.3.6.3.2 there would be no rupture of the containment system.

10.6.2.5.11 Compliance with the permitted activity release limits must not depend either upon filters or upon a mechanical cooling system.

10.6.2.5.12 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 10.6.3.4, 10.6.3.6 and 10.6.3.6.1 to 10.6.3.6.3.

10.6.2.5.13 A package must be so designed that if it were at the maximum normal operating pressure and it were subjected to the tests specified in 10.6.3.4, 10.6.3.6 and 10.6.3.6.1 to 10.6.3.6.3, 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.

10.6.2.5.14 A package must not have a maximum normal operating pressure in excess of a gauge pressure of 700 kPa.

10.6.2.5.15 A package containing low dispersible radioactive material must be so designed 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.

10.6.2.5.16 A package must be designed for an ambient temperature range from -40°C to +38°C.

10.6.2.6 Requirements for Type B(M) Packages

10.6.2.6.1 Type B(M) packages must meet the requirements for Type B(U) packages specified in 10.6.2.5.2 except that for packages to be transported solely within a specified State or solely between specified States, conditions other than those given in 10.6.2.4.1, 10.6.2.5.4, 10.6.2.5.6, 10.6.2.5.10 to 10.6.2.5.16 may be assumed with the approval of the competent authorities of those States. Notwithstanding, the requirements for Type B(U) packages specified in 10.6.2.5.6, 10.6.2.5.10 to 10.6.2.5.16 must be met as far as practicable.

10.6.2.7 Requirements for Type C Packages

10.6.2.7.1 A Type C package is a packaging containing an activity that may be in excess of A₁ (if Special Form radioactive material) or in excess of A₂ (if not in Special Form radioactive material).

10.6.2.7.2 Type C packages must be designed to meet the requirements of 10.6.0, 10.6.1, 10.6.2.4.1 except for 10.6.2.4.1(b), 10.6.2.4.2, 10.6.2.5.3, 10.6.2.5.4, 10.6.2.5.6, 10.6.2.5.11 to 10.6.2.5.16, and, in addition, the requirements specified in 10.6.2.7.3 to 10.6.2.7.5.

10.6.2.7.3 A package must be capable of meeting the assessment criteria prescribed for tests in 10.6.2.5.8(b) and 10.6.2.5.12 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.

10.6.2.7.4 A package must be so designed that, if it were at the maximum normal operating pressure and subjected to:

- (a) the tests specified in 10.6.3.4, it would restrict the loss of radioactive contents to not more than $10^{-6} A_2$ per hour; and
- (b) the test sequences in 10.6.3.7.1, 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 1 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 10.3.2.4 and 10.3.2.5 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 10.5.3.2.

10.6.2.7.5 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 10.6.3.6.3.2.

10.6.2.8 Requirements for Packages Containing Fissile Materials

10.6.2.8.1 General

Except as provided in 10.3.7.2, packages containing fissile material must be designed and used so as to comply with the requirements of 10.6.2.8.1.1 to 10.6.2.8.1.6.

10.6.2.8.1.1 Packages containing fissile materials must be stored and transported in accordance with the relevant controls in 9.2.1 and 9.3.10.

10.6.2.8.1.2 Fissile material must be transported so as to:

- (a) maintain subcriticality under conditions likely to be encountered during normal conditions of transport and in accidents. In particular, the following contingencies must be considered:
 1. water leaking into or out of packages;
 2. the loss of efficiency of built-in neutron absorbers or moderators;
 3. possible rearrangement of the radioactive contents either within the package or as a result of loss from the package;
 4. reduction of spaces between packages or radioactive contents;
 5. packages becoming immersed in water or buried in snow; and
 6. temperature changes; and
- (b) meet the requirements:
 1. that the smallest overall external dimension of a package containing fissile material must not be less than 10 cm;
 2. prescribed elsewhere in these Regulations which pertain to the radioactive properties of the material; and
 3. specified in 10.6.2.8.1.3 to 10.6.2.8.1.6 and 10.6.2.8.2 and 10.6.2.8.3 unless excepted by 10.3.7.2.

10.6.2.8.1.3 Where the chemical or physical form, isotopic composition, mass or concentration, moderation ratio or density, or geometric configuration is not known, the assessments of 10.6.2.8.2 and 10.6.2.8.3 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.

10.6.2.8.1.4 For irradiated nuclear fuel the assessments of 10.6.2.8.2 and 10.6.2.8.3 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.

10.6.2.8.1.5 The package after being subjected to the tests specified in 10.6.3.4, must;

- (a) preserve the minimum overall outside dimensions of the package to at least 10 cm; and
- (b) prevent the entry of a 10 cm cube.

10.6.2.8.1.6 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.

10.6.2.8.2 Assessment of an Individual Package in Isolation

10.6.2.8.2.1 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 human error, absence of leakage may be assumed in respect of those void spaces. Special features include the following:

- (a) multiple high standard water barriers, not less than two of which would remain leak-tight if the package were subject to the tests prescribed in 10.6.2.8.3.2(b); a high degree of quality control in the production and maintenance of packagings; and tests to demonstrate the closure of each package before shipment; or
- (b) for packages containing uranium hexafluoride only, with a maximum enrichment of 5 mass per cent uranium-235:
 1. packages where, following the tests prescribed in 10.6.2.8.3.2(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 thermal test prescribed in 10.6.3.6.2 the valves remain leaktight; and
 2. 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.

10.6.2.8.2.2 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 10.6.2.8.3.2(b), close reflection of the package by at least 20 cm of water may be assumed.

10.6.2.8.2.3 The package, must be subcritical under the conditions specified in 10.6.2.8.2.1 and 10.6.2.8.2.2 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 10.6.2.8.3.1(b);
- (c) the tests specified in 10.6.2.8.3.2(b).

10.6.2.8.2.4 The package must be subcritical under conditions consistent with the Type C package tests specified in 10.6.3.7.1 assuming reflection by at least 20 cm of water but no water inleakage. In the assessment of 10.6.2.8.2.3 allowance must not be made for special features of 10.6.2.8.2.1 unless, following the Type C package tests specified in 10.6.3.7.1 and, subsequently, the water inleakage test of 10.6.3.6.4.3, leakage of water into or out of the void spaces is prevented.

10.6.2.8.3 Assessment of Packages Arrays

10.6.2.8.3.1 Under normal conditions of transport. 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 10.6.3.4.

10.6.2.8.3.2 Under accident conditions of transport. 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 10.6.3.4 followed by whichever of the following is the more limiting:
 1. the Drop Test 2 specified in 10.6.3.6.1.2 and, either Drop Test 3 specified in 10.6.3.6.1.3 for packages having a mass not greater than 500 kg and an overall density not greater than 1,000 kg/m³ based on the external dimensions, or Drop Test 1 specified in 10.6.3.6.1.1 for all other packages; followed by the Thermal Test specified in 10.6.3.6.2 and completed by the Water Leakage Test specified in 10.6.3.6.4; or
 2. the test specified in 10.6.3.6.3.1; and
- (c) where any part of the fissile material escapes from the containment system following the tests specified in 10.6.2.8.3.2(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.

10.6.2.8.4 Approval of Package Design

Each package design for fissile material which is not excepted according to 10.3.7.2 from the requirements that apply specifically to packages containing fissile material, requires multilateral approval.

10.6.3 Package Tests Procedures

10.6.3.1 Test Procedures and Demonstration of Compliance

10.6.3.1.1 Demonstration of compliance with the performance standards required in this section may be accomplished by any of the following methods 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, provided that the contents of the specimen or the packaging for the tests simulate as closely as practicable the expected range of radioactive contents and the packaging to be tested is prepared as normally presented for transport;
- (b) reference to previous satisfactory demonstrations of 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 the 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 the penetrator diameter or the 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.

10.6.3.1.2 After the specimen, prototype or sample has been subjected to the tests, appropriate methods of assessment must be used to assure that the requirements of this subsection have been fulfilled in compliance with the performance and acceptance standards prescribed in 10.3.4.2, 10.3.5.1.3.3, 10.3.8.2, 10.5.3, 10.6.0 to 10.6.2.

10.6.3.1.3 All specimens must be examined 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.

10.6.3.1.4 The containment system of the packaging 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 specimen.

10.6.3.2 Testing the Integrity of the Containment System and Shielding and Evaluating Criticality Safety

After the applicable tests specified in 10.6.3.4 to 10.6.3.8:

- (a) faults and damage 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 10.6.0 to 10.6.2 for the packaging under test; and
- (c) for packages containing fissile material, it must be determined whether the assumptions made in 10.5.14.2.1 and 10.6.2.8 regarding the most reactive configuration and degree of moderation of the fissile contents, of any escaped material, and of one or more packages are valid.

10.6.3.3 Target for Drop Tests

The target for the drop tests specified in 10.3.4.3.1, 10.6.3.4.3, 10.6.3.5.1, 10.6.3.6.1, 10.6.3.7.2 and 10.6.3.7.4 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.

10.6.3.4 Tests for Demonstrating Ability to Withstand Normal Conditions of Transport

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 10.6.3.4.1 are fulfilled.

10.6.3.4.1 Sequencing of Tests

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 may elapse, however, if the water spray is applied from each of the four directions consecutively.

10.6.3.4.2 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.

10.6.3.4.3 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 drop measured from the lowest point of the package to the upper surface of the target must be not less than the distance specified in Table 10.6.B for the applicable weight. The target must be as defined in 10.6.3.3;

TABLE 10.6.B
Free Drop Distance for Testing Packages to Normal Conditions of Transport (10.6.3.4.3(a))

Package Weight (kg)	Free Drop Distance (m)
<5,000	1.2
≥5,000 to <10,000	0.9
≥10,000 to <15,000	0.6
≥15,000	0.3

- (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.

10.6.3.4.4 Stacking Test

The specimen must be subjected, for a period of 24 hours, to a compressive load equal to the greater of the following:

- a total weight equal to five times the maximum weight of the package; or
- the equivalent of 13 kPa (0.13 bar or 2 lb/in²) 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 normally rest.

10.6.3.4.5 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. A bar of 32 mm diameter with a hemispherical end and a weight of 6 kg must be dropped and directed to fall, with its longitudinal axis vertical, onto the centre of the weakest part of the package, so that, if it penetrates sufficiently far, it will hit the containment system. The bar must not be significantly deformed by the test performance. The height of 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.

10.6.3.5 Additional Tests for Type A Packages Designed for Liquids and Gases

A single package or separate packages must be subjected to each of the following tests unless it can be demonstrated that one test is more severe for the package in question than the other, in which case one package only must be subjected to the more severe test.

10.6.3.5.1 Free Drop Test

The specimen must drop onto the target so as to suffer the maximum damage in respect of containment. The height of drop measured from the lowest part of the package to the upper surface of the target must be 9 m. The target must be as defined in 10.6.3.3.

10.6.3.5.2 Penetration Test

The specimen must be subjected to the test specified in 10.6.3.4.5 except that the height of drop must be increased to 1.7 m.

10.6.3.6 Tests for Demonstrating Ability to Withstand Accident Conditions in Transport

The specimen must be subjected to the cumulative effects of the tests specified in 10.6.3.6.1 and 10.6.3.6.2, 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 10.6.3.6.3.1 and, if applicable, 10.6.3.6.3.2.

10.6.3.6.1 Mechanical Test

The mechanical test consists of three different drop tests. Each specimen must be subjected to the applicable drops as specified in 10.6.2.5.8 and 10.6.2.8.3.2. The order in which the package is subjected to the drops must be such that, on completion of the mechanical test, the specimen will have suffered such damage as will lead to the maximum damage in the thermal test which follows.

10.6.3.6.1.1 Drop Test 1

The package must be dropped onto the target so as to suffer the maximum damage, and the height of the drop measured from the lowest point of the package to the upper surface of the target must be 9 m. The target must be as defined in 10.6.3.3.

10.6.3.6.1.2 Drop Test 2

The specimen must be dropped 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 package to the upper surface of the bar must be 1 m. The bar must be of solid mild steel of circular section 150 mm \pm 5 mm in diameter and 200 mm 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 must 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 must be as described in 10.6.3.3.

10.6.3.6.1.3 Drop Test 3

The package 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 weight from 9 m onto the specimen. The weight must consist of a solid mild steel plate 1 m \times 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 package. The target on which the specimen rests must be as defined in 10.6.3.3.

10.6.3.6.2 Thermal Test

10.6.3.6.2.1 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 10.6.A 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, providing due account is taken of them in the subsequent assessment of package response.

10.6.3.6.2.2 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 10.6.A 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, providing 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.

10.6.3.6.3 Water Immersion Test

10.6.3.6.3.1 General

The specimen must be immersed under a head of water of at least 15 m for a period of not less than 8 hours in the attitude which will lead to maximum damage. For demonstration purposes, an external pressure of at least 150 kPa [gauge] (1.5 bar [gauge] or 22 lb/in² [gauge]) is considered to meet these conditions.

10.6.3.6.3.2 Enhanced Water Immersion Test for Type B(U) and Type B(M) Packages Containing more than 10⁵ A₂ and Type C Packages

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 is considered to meet these conditions.

10.6.3.6.4 Water Leakage Test for Packages Containing Fissile Material

10.6.3.6.4.1 Packages for which water in-leakage or out-leakage to the extent which results in greatest reactivity, has been assumed for purposes of assessment under 10.6.2.8.2 and 10.6.2.8.3 must be excepted from the test.

10.6.3.6.4.2 Before the specimen is subjected to the water leakage test specified in 10.6.3.6.4.3, it must be subjected to Drop Test 2 in 10.6.3.6.1.2, and either Drop

Test 1 in 10.6.3.6.1.1 or Drop Test 3 in 10.6.3.6.1.3 as required by 10.6.2.8.3.2 and the Thermal Test specified in 10.6.3.6.2.

10.6.3.6.4.3 The specimen must be immersed under a head of water of at least 0.9 m for a period of not less than 8 hours and in the attitude for which maximum leakage is expected.

10.6.3.7 Tests for Type C Packages

10.6.3.7.1 Test Requirements

Specimens must be subjected to the effects of each of the following test sequences in the orders specified:

- (a) the tests specified in 10.6.3.6.1.1, 10.6.3.6.1.3, 10.6.3.7.2 and 10.6.3.7.3; and
- (b) the test specified in 10.6.3.7.4.

Separate specimens are allowed to be used for each of the sequences (a) and (b).

10.6.3.7.2 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 as to cause maximum damage at the conclusion of the test sequence specified in 10.6.3.7.1(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 falling from a height of 3 m above the intended impact point. For this test the probe must be a 20 cm diameter cylindrical bar with the striking end forming a frustum of a right circular cone with the following dimensions: 30 cm height and 2.5 cm in diameter at the top with its rounded 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 10.6.3.3;
- (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 10.6.3.3.

10.6.3.7.3 Enhanced Thermal Test

The conditions for this test must be as specified in 10.6.3.6.2, except that the exposure to the thermal environment must be for a period of 60 minutes.

10.6.3.7.4 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 10.6.3.3, except that the target surface may be at any orientation as long as the surface is normal to the specimen path.

10.6.3.8 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 retesting packagings, any other equivalent non-destructive testing may be applied subject to multilateral approval.

10.6.3.9 Notification and Registration of Serial Numbers

The competent authority must be informed of the serial number of each packaging manufactured to a design approved under 10.6.2.5, 10.6.2.7 and 10.6.2.8.4. The competent authority will maintain a register of such serial numbers.

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.

10.6.4 Transitional Measures for Class 7

10.6.4.1 Packages Not Requiring Competent Authority Approval of Design Under the 1985 and 1985 (as amended 1990) Editions of IAEA Safety Series No. 6

10.6.4.1.1 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 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 10.0.3 and the activity limits and material restrictions of 10.3.2 and 10.3.11.

Any packaging modified, unless to improve safety, or manufactured after 31 December 2003, must meet the requirements of these Regulations 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 Regulations in full.

10.6.4.2 Packages Approved Under the 1973, 1973 (as amended), 1985 and 1985 (as amended 1990) Editions of IAEA Safety Series No. 6

10.6.4.2.1 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 10.0.3 the activity limits and material restrictions of 10.3.2 and 10.3.11; and for a package containing fissile material and transported by air, the requirement of 10.6.2.8.4. 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 require that the requirements of these Regulations be met in full. A serial number according to the provision of 10.7.1.3.5 and 10.7.1.3.6 must be assigned to and marked on the outside of each packaging.

10.6.4.2.2 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 designs; the mandatory programme of quality assurance in accordance with the requirements of 10.0.3; the activity limits and material restrictions of 10.3.2 and 10.3.11 and for a package containing fissile material and transported by air, the requirement of 10.6.2.8.4. 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 require that the requirements of these Regulations be met in full. All packagings for which manufacture begins after 31 December 2006 must meet the requirements of these Regulations in full.

10.6.4.3 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 10.0.3. All Special Form radioactive material manufactured after 31 December 2003 must meet the requirements of these Regulations in full.

10

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to
10.7

10.7 Marking and Labelling

10.7.1 Marking

STATE VARIATIONS: BRG-06, ESG-01, HKG-02, MYG-06, PKG-01, SAG-03, USG-01, VCG-05, VUG-01
OPERATOR VARIATIONS: FX-11, IR-03, MS-01, PX-01

10.7.1.0 General

The shipper is responsible for all necessary marking and labelling of each package, overpack or freight container containing radioactive material in compliance with these Regulations.

10.7.1.1 Shipper's Responsibility

10.7.1.1.1 Specific

For each package and overpack requiring marking, the shipper must:

- (a) check that any relevant marking on the package or overpack already on the package is in the correct location and meets the quality and specification requirements of the Regulations;
- (b) remove or obliterate any irrelevant marking already on the package or overpack;
- (c) ensure that each outer or single packaging used for radioactive material bears the identification markings as specified in 10.7.1.3.3 to 10.7.1.3.7;
- (d) apply any appropriate new marking in the correct location, and ensure that it is of durable quality and correct specification; and
- (e) ensure that his responsibilities for marking are completely fulfilled when the package or overpack is presented to the operator for shipment.

10.7.1.2 Quality and Specification of Markings

10.7.1.2.1 General

All markings must be so placed on the packagings or overpacks that they are not covered or obscured by any part of or attachment to the packaging or overpack or any other label or marking. The required markings must not be located with other package markings that could substantially reduce their effectiveness.

10.7.1.2.2 Quality

All markings must be:

- (a) durable and printed or otherwise marked on, or affixed to, the external surface of the package or overpack;
- (b) readily visible and legible;
- (c) able to withstand open weather exposure without a substantial reduction in effectiveness; and
- (d) displayed on a background of contrasting colour.

10.7.1.2.3 Language

English must be used in addition to the language which may be required by the State of origin.

10.7.1.2.4 Size

10.7.1.2.4.1 The marking of the UN number and the letters "UN" as specified in 10.7.1.3.1 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.

Note:

The mandatory size requirements for the UN number marking become effective as from 1 January 2014.

10.7.1.2.4.2 Package and overpack use markings required by 10.7.1.3 and 10.7.1.4 should be at least 12 mm high, except for packages of 30 L or 30 kg capacity or less when they should have a minimum height of 6 mm.

10.7.1.3 Required Markings

10.7.1.3.1 General

The following markings are required on all Industrial Package Types IP-1, IP-2 and IP-3, Type A, Type B(U), Type B(M) and Type C packages containing radioactive material:

- Proper Shipping Name;
- UN Number, preceded by the letters "UN";
- full name and address of the shipper and consignee; and
- permissible gross weight if this exceeds 50 kg;
- when carbon dioxide, solid (dry ice) is used as a refrigerant, the additional marking requirements of 7.1.5.1(d) are required.

10.7.1.3.2 Excepted Packages

Excepted Packages must be marked with:

- UN number, preceded by the letters "UN";
- full name and address of the shipper and consignee; and
- permissible gross weight, if this exceeds 50 kg;
- when carbon dioxide, solid (dry ice) is used as a refrigerant, the additional marking requirements of 7.1.5.1(d) are required.

10.7.1.3.3 Industrial Package Specification Markings

Each package which conforms to a Type IP-1 package, "TYPE IP-1".

Each package which conforms to a Type IP-2 package or a Type IP-3 package design must be marked with:

- "TYPE IP-2" or "TYPE IP-3" as appropriate;
- International Vehicle Registration code (VRI Code), as indicated in Appendix D.1 and D.2, of the country of origin of design; and
- name of the manufacturer, or other identification of the packaging specified by the competent authority of the country of origin of design.

10.7.1.3.4 Type A Package Specification Markings

Each package which conforms to a Type A packaging design must be marked with:

- "TYPE A";
- International Vehicle Registration code (VRI Code), as indicated in Appendix D.1 and D.2, of the country of origin of design; and
- name of the manufacturer, or other identification of the packaging specified by the competent authority of the country of origin of design.

10.7.1.3.5 Type B Package Specification Markings

Each package which conforms to a Type B packaging design must be marked as follows:

- "TYPE B(U)" or "TYPE B(M)" as appropriate;
- identification mark allocated to the design by the competent authority;
- serial number to uniquely identify each packaging which conforms to that design; and
- trefoil symbol, as shown in Figure 10.7.1.A, must be plainly marked by embossing, stamping or by other means, resistant to the effects of fire and water, on the outermost receptacle, which is resistant to the effects of fire and water.

10.7.1.3.6 Type C Package Specification Markings

Each package which conforms to a Type C packaging design must be marked as follows:

- "TYPE C";
- identification mark allocated to the design by the competent authority;
- serial number to uniquely identify each packaging which conforms to that design; and
- trefoil symbol, as shown in Figure 10.7.1.A, must be plainly marked by embossing, stamping or by other means, resistant to the effects of fire and water, on the outermost receptacle, which is resistant to the effects of fire and water.

10.7.1.3.7 Fissile Package Specification Markings

Each package containing fissile material must be marked according to the requirements of its type.

Note:

For packages containing fissile material only, the identification mark should contain the type codes "AF", "B(U)F", "B(M)F", "CF" or "IF".

10.7.1.3.8 Competent Authority Design or Shipment Approval

In all cases of international transport of packages requiring competent authority design or shipment approval, for which different approval types apply in the different countries concerned by the shipment, marking must be in accordance with the certificate of the country of origin of the design.

△ 10.7.1.4 Overpacks

OPERATOR VARIATION: FX-19

10.7.1.4.1 Unless all markings required by 10.7.1.3 for all dangerous goods in the overpack are clearly visible, the overpack must be marked with:

- the word "Overpack";
- UN Number, Proper Shipping Name, full name and address of the shipper and consignee; and
- any special handling instructions appearing on packages inside the overpack.

Packaging specification markings must not be reproduced on the overpack. The "Overpack" marking is an indication that packages contained within comply with prescribed specifications.

10.7.1.4.2 When a consignment consists of more than one overpack, to facilitate identification, loading and notification, the operator requires each overpack to show an identification mark (which may be in any alphanumeric format).

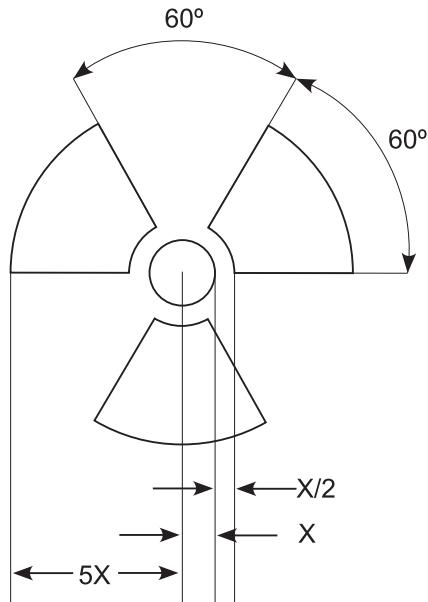
Note:

Where an overpack contains more than one UN number, the total quantity of dangerous goods should be shown by UN number.

10.7.1.5 Markings of Other Regulations

Markings required by other international or national transport regulations are permitted in addition to markings required by these Regulations provided that they cannot be confused with or conflict with any markings prescribed by these Regulations because of their colour, design or shape.

FIGURE 10.7.1.A
Trefoil Symbol (10.7.1.3.5 and 10.7.1.3.6)



Basic trefoil symbol with proportions based on a central circle of radius "X". The minimum allowable size of "X" is 4 mm.

10.7.2 Labelling

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, NH-03, PX-02, QF-01

10.7.2.1 Shipper's Specific Responsibilities

For each such package and overpack requiring labelling, the shipper must:

- (a) remove or obliterate any irrelevant labelling already on the package or overpack;
- (b) use only labels of durable quality and correct specification;
- (c) inscribe on each label, in a durable manner, any required additional information;
- (d) affix the appropriate label(s) in the correct location(s) and in a secure manner;
- (e) ensure that the responsibilities for labelling are completely fulfilled when the package or overpack is presented to the operator for shipment; and
- (f) when an empty packaging is transported as an excepted package under the provisions of 10.3.11.1.5, the previously displayed labels must be removed or obliterated.

10.7.2.2 Quality and Specification of Labels

10.7.2.2.1 Durability

The material of every label, the printing and any adhesive thereon, must be sufficiently durable to withstand normal transport conditions including open weather exposure without a substantial reduction in effectiveness.

10.7.2.2.2 Types of Labels

Labels are of two types:

- (a) hazard labels (in the shape of a square set at 45°); and
- (b) handling labels (in various rectangular shapes), which are required, either alone or in addition to hazard labels.

10.7.2.2.3 Label Specifications

All labels (hazard labels and handling labels) used on packages and overpacks containing radioactive material, must conform, in shape, colour, format, symbol and text, to the specimen designs reproduced in 10.7.7. Except as indicated, no variation in specification is permitted. Except as otherwise provided in these Regulations, the minimum dimensions of the hazard labels must be 100 x 100 mm. The dimensions for handling label shown in Figure 7.4.A to Figure 7.4.F are the minimum dimension. Hazard labels must have a line of the same colour as the symbol, 5 mm inside the edge and running parallel to it. A label may contain form identification, including the name of its maker, provided the information is printed outside of the solid line border in no larger than 10-point type. Except for the Criticality Safety Index label (CSI),

the upper half of the label is reserved for the trefoil symbol and the lower half for texts and the class number.

10.7.3 Applicability of Hazard Labels

10.7.3.1 Hazard Label

The hazard labels to be used on packages and overpacks of radioactive material are specified in the List of Dangerous Goods in Subsection 4.2. Each package of radioactive material must be labelled in accordance with the category assigned to it in Table 10.5.C. Each package of fissile material must, in addition, bear the Criticality Safety Index (CSI) label (10.7.7.4) adjacent to the radioactive hazard labels.

10.7.3.2 Subsidiary Risk Label

Packages of radioactive material, which possesses other hazardous properties meeting the criteria for one or more of the other classes, must bear the applicable subsidiary risks labels. Such subsidiary risk labelling is not required for an uncompressed gas that is non-flammable and non-toxic.

Note:

See Section 7 for information on handling labels.

10.7.3.3 Label Marking

The contents, activity and for Category II and III Yellow labels, the transport index must be marked on the label in a clear and durable manner, and for the CSI label, the Criticality Safety Index.

10.7.3.3.1 Contents

The contents must be inscribed as follows:

- (a) except for LSA-I material, the symbol of the radionuclide as listed in Table 10.3.A;
- (b) for mixtures of radionuclides, or for different individual radionuclides packed together in the same package, the most restrictive radionuclides must be listed to the extent that space on the line permits;
- (c) LSA (except LSA-I) or SCO the symbol of the radionuclide followed by "LSA-II", "LSA-III", "SCO-I" or "SCO-II" as appropriate;
- (d) for LSA-I materials, only the term "LSA-I" need be used.

10.7.3.3.2 Activity

The maximum activity of the radioactive contents must be inscribed in terms of becquerel or multiples thereof. The equivalent activity in curies or multiples thereof may be shown in parentheses following the becquerel units. In each case, the units used must be clearly indicated either in full or by use of the correct abbreviations. For fissile materials, the total mass of the fissile material (or mass of each fissile nuclide for mixtures when appropriate) in grams or kilograms may be used in place of the activity (in all cases the units used must be clearly indicated).

10.7.3.3.3 Transport Index (TI)

For Category II and Category III Yellow labels only, the Transport Index must be inscribed in the box provided. It must be rounded up to one decimal place.

10.7.3.3.4 Criticality Safety Index (CSI)

10.7.3.3.4.1 The Criticality Safety Index label, 10.7.7.4, must be inscribed 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, in the box provided.

10.7.3.3.4.2 For overpacks and freight containers, the Criticality Safety Index (CSI) on the label, must bear the information required by 10.7.3.3.4.1 totalled together for the fissile contents of the overpack or freight container.

10.7.3.3.5 Competent Authority Design or Shipment Approval

In all cases of international transport of packages requiring competent authority design or shipment approval, for which different approval types apply in the different countries concerned by the shipment, labelling must be in accordance with the certificate of the country of origin of the design.

10.7.3.4 Overpacks and Freight Containers

For overpacks and freight containers, the "Contents" and "Activity" entries on the labels must bear the information as required by 10.7.3.3.1 and 10.7.3.3.2, totalled together for the entire contents of the overpack or freight container. For overpacks and freight containers containing mixed loads of packages containing different radionuclides, such entries may read "See Shipper's Declaration".

10.7.4 Affixing Labels

STATE VARIATION: JPG-09

OPERATOR VARIATION: FX-11

10.7.4.1 General

10.7.4.1.1 All labels must be securely affixed or printed on the packaging so that they are readily visible, legible and not covered or obscured by any part of the packaging or by any other label or marking.

10.7.4.1.2 Each label must be affixed or printed on a background of contrasting colour or must have a dotted or solid line outer boundary.

10.7.4.1.3 Labels must not be folded or affixed in such a manner that parts of the same label appear on different faces of the package.

10.7.4.1.4 If the package is of such an irregular shape that a label cannot be attached or printed on a surface, it is acceptable to attach the label(s) to the package by means of strong tag(s).

10.7.4.1.5 The package must be of such a size that there is adequate space to affix all required labels.

Note:

See 9.3.7 for the replacement of labels during transport.

10.7.4.2 Label Location

10.7.4.2.1 When the package dimensions are adequate, one set of labels (10.7.4.3.1) must be located on the same surface of the package near the proper shipping name marking.

 **10.7.4.2.2** Labels should be affixed adjacent to the shipper's or consignee's address appearing on the package.

10.7.4.2.3 Subsidiary hazard labels, when applicable, must be affixed adjacent to the primary hazard labels.

10.7.4.2.4 When a "Cargo Aircraft Only" handling label (see Figure 7.4.B) is required, it must be affixed on the same surface of the package near the hazard label(s).

10.7.4.2.5 Unless the package dimensions are inadequate hazard labels must be affixed at an angle of 45° (diamond shaped).

10.7.4.3 Number of Labels

10.7.4.3.1 The Radioactive Material label together with any subsidiary risk label(s), the Criticality Safety Index label (if applicable) and the "Cargo Aircraft Only" label (if applicable) must be affixed to two opposite sides of the package.

10.7.4.3.2 For a freight container, the labels must be affixed to all four sides of the container.

10.7.4.3.3 For a cylindrical package, two sets of labels must be affixed opposite each other such that they are centred on opposite points of the circumference.

10.7.4.3.4 On very small packages including cylinders, where the two sets of labels would overlap, only one label is required, provided it does not overlap itself.

10.7.4.3.5 If a rigid overpack is used, two sets of labels, affixed to opposite sides of the overpack must be used.

10.7.4.3.6 If a non-rigid overpack is used, at least one set of labels must be affixed to a durable tag secured to the overpack.

10.7.4.4 Handling Labels

10.7.4.4.1 Cargo Aircraft Only Label

This label must always be used on Type B(M) packages of radioactive materials and on freight containers containing such Type B(M) packages.

10.7.4.4.2 Package Orientation Label

A package orientation "This Way Up" label (see Figure 7.4.D and Figure 7.4.E) is not necessary on a package containing radioactive material, in liquid form.

10.7.4.4.3 Radioactive Material Excepted Package Label

10.7.4.4.3.1 Excepted packages of radioactive material must be labelled with the "Radioactive Material, Excepted Package" handling label (see Figure 10.7.8.A). This label must conform in shape, colour, format and text to the specimen reproduced in Figure 10.7.8.A. The label must be affixed or printed on the package on a contrasting background. If the package is included in an overpack, this label must be clearly visible or be reproduced on the overpack.

Note:

The "Radioactive Material, Excepted Package" label is not required on a package when Special Provision A130 paragraph (b) is applied.

10.7.4.4.3.2 If required, the wording in English may be supplemented by an accurate translation in another language. Alternatively, a second label in a different language may be affixed.

Note:

The text "The information for this package need not appear on the Notification to Captain (NOTOC)" is optional and does not have to appear on the label.

10.7.4.4.3.3 The border of the label must have red diagonal hatchings. The label may be printed in black and red on white paper or it may be printed in red only on white paper.

10.7.4.4.3.4 The label may contain identification information, including the name of its printer, provided that the information is printed outside the border and is no larger than 10 point type.

10.7.5 Placarding Large Freight Containers

Large freight containers containing radioactive material, other than excepted packages must bear four placards conforming to 10.7.7.5 in addition to the required labels. The placards must be affixed in a vertical orientation to each side wall and each end wall of the freight container. Any placards which do not relate to the contents of the freight container must be removed. As an alternative to the use of both labels and placards, enlarged radioactive material labels conforming to 10.7.7.1 to 10.7.7.3, and where appropriate 10.7.7.4, may be used providing they have the minimum dimensions shown in 10.7.7.5.

10.7.6 Labels of Other Regulations

Labels required by other international or national transport regulations are permitted in addition to labels required by these Regulations provided that they cannot be confused with or conflict with any labels prescribed by these Regulations because of their colour, design or shape.

10.7.7 Class 7 Label Specifications

10.7.7.1 Category I-White

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, QF-01

FIGURE 10.7.7.A
Category I-White



Name: Radioactive
Cargo Imp Code: RRW
Minimum dimensions: 100 × 100 mm
Symbol (trefoil): Black
Background: White

10.7.7.2 Category II-Yellow

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, QF-01

FIGURE 10.7.7.B
Category II-Yellow



Name: Radioactive
Cargo Imp Code: RRY
Minimum dimensions: 100 × 100 mm
Symbol (trefoil): Black
Background: Top half Yellow (Pantone Colour No. 109U) with White border, bottom half White

10.7.7.3 Category III—Yellow

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, QF-01

FIGURE 10.7.7.C
Category III—Yellow



Name: Radioactive

Cargo Imp Code: RRY

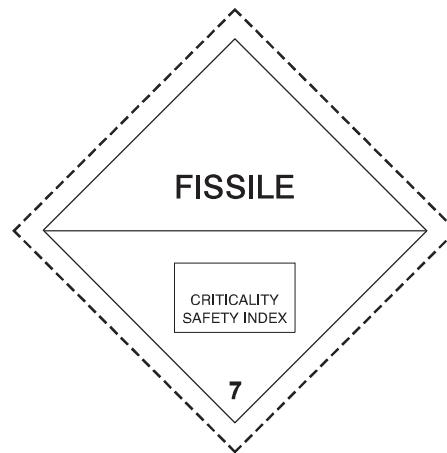
Minimum dimensions: 100 × 100 mm

Symbol (trefoil): Black

Background: Top half Yellow (Pantone Colour No. 109U) with White border, bottom half White

10.7.7.4 Criticality Safety Index Label

FIGURE 10.7.7.D
Criticality Safety Index Label



Minimum dimensions: 100 × 100 mm

Text (mandatory): "FISSILE" in black on white in upper half of label

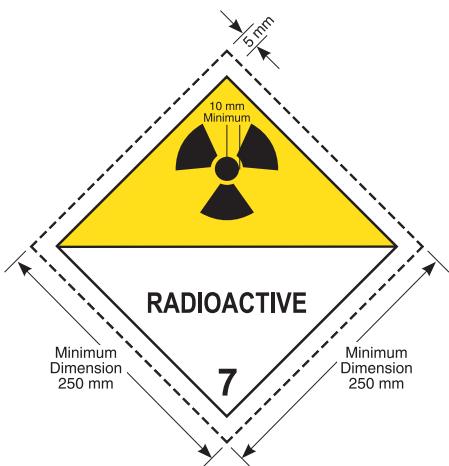
10.7.7.5 Placard for Class 7—Radioactive Materials

STATE VARIATIONS: PKG-02, VCG-06, VUG-05

OPERATOR VARIATIONS: JW-01, KC-07, PX-02, QF-01

This placard is to be used on large freight containers as per 10.7.5.

FIGURE 10.7.7.E
Placard for Class 7—Radioactive Materials



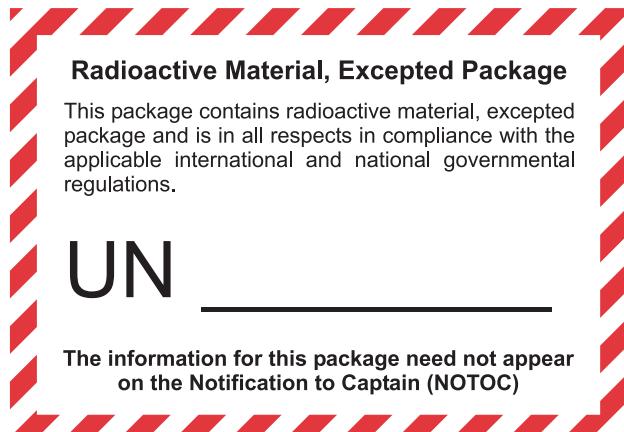
Dimensions: The dimensions shown are minimum, where larger dimensions are used, the proportions must be maintained. The figure "7" must be 25 mm or larger.

Note: The word “Radioactive” in the bottom half of the placard is optional.

10.7.8 Handling Label

10.7.8.1 Radioactive Material—Excepted Package

FIGURE 10.7.8.A
Radioactive Material—Excepted Package



Name: Radioactive Material—Excepted Package

Cargo IMP Code: RRE

Colour: The border of the label must have red diagonal hatchings. The label may be printed in black and red on white paper or it may be printed in red only on white paper.

Minimum dimensions: 74 x 105 mm

Notes:

1. The text “The information for this package need not appear on the Notification to Captain (NOTOC)” is optional and does not have to appear on the label.
2. The “Radioactive Material, Excepted Package” label is not required on a package when Special Provision A130 is applied.

10.8 Documentation

10.8.0 General

Except as otherwise specified in these Regulations, a "Shipper's Declaration for Dangerous Goods" form and an "Air Waybill" must be completed for each consignment of radioactive material.

Note:

All references to "Shipper's Declaration for Dangerous Goods" in this Section also include provision of the required information by use of electronic data processing (EDP) and electronic data interchange (EDI) transmission techniques.

10.8.0.1 Shipper's Responsibility

10.8.0.1.1 Provision of Information

The shipper is responsible for providing information applicable to a consignment of dangerous goods to the operator as set out in this section. The information may be provided on a prescribed declaration form, "Shipper's Declaration for Dangerous Goods" or, where an agreement exists with the operator, by EDP or EDI techniques, for each and every shipment containing radioactive material. This requirement is not applicable to "Radioactive Material, excepted packages."

For each shipment containing radioactive material, the shipper must:

- (a) use only the correct form in the correct manner;
- (b) ensure that the information on the form is accurate, easy to identify, legible and durable;
- (c) ensure that the form is properly signed when the shipment is presented to the operator for shipment; and
- (d) ensure that the shipment has been prepared in accordance with these Regulations.

10.8.0.1.2 Retention of Documentation

10.8.0.1.2.1 The shipper must retain a copy of the Shipper's Declaration for Dangerous Goods and additional information and documentation as specified in these Regulations, for a minimum period of three months.

10.8.0.1.2.2 When the documents are kept electronically or in a computer system, the shipper must be able to reproduce them in a printed form.

10.8.1 Shipper's Declaration for Dangerous Goods

10.8.1.1 Specification for Declaration Form

STATE VARIATIONS: BRG-05/06, CAG-14/20, ESG-01, HKG-02, MYG-06, PKG-01/03, USG-01/13, VUG-01

OPERATOR VARIATIONS: D0-08, FX-12, QY-08

The specifications for Shipper's Declaration for Dangerous Goods form are to be found in 8.1.1.

10.8.1.2 Language

The declaration form must be completed in the English language. The wording in English may be accompanied by an accurate translation in another language.

10.8.1.3 Information Required

The specific information to be provided in each box of the declaration form is itemized in 10.8.3. In addition to the provisions of this Section, other elements of information may be required by the appropriate national authority for certain modes of transport.

10.8.1.3.1 A declaration form containing information not relevant to the particular dangerous goods shipment, or to the dangerous goods contained in the shipment, is not acceptable. If both dangerous and non-dangerous goods are listed on the declaration form, the dangerous goods must be listed first, or be otherwise emphasized.

10.8.1.4 Number of Copies

△ OPERATOR VARIATIONS: 5X-05, AC-01, FX-14, KE-03

10.8.1.4.1 Where a paper document is used, the shipper must provide two copies of the declaration form completed and signed, with a signature as specified in 10.8.1.9.1, for presentation to the operator with the shipment. One signed copy must be retained by the accepting operator. The other signed copy must be forwarded with the shipment to its destination. One of the two copies, including the signature thereon, may be a carbon copy.

Note:

Only the initial operator is required to retain (an original) copy of the Shipper's Declaration. A photocopy of the original Shipper's Declaration is acceptable to be held on file when a consignment is transhipped.

10.8.1.4.2 Where the Shipper's Declaration 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 Section.

Note:

The purpose of this requirement is to facilitate surveillance/audit and/or incident/accident investigation by the appropriate national authority. In this case the document produced need not be the form shown in Figure 8.1.A or Figure 8.1.B.

10.8.1.5 Consolidations

△ OPERATOR VARIATIONS: 9W-09, AI-04, AZ-01, BR-06, CA-01, CI-03, CZ-02, GA-02, IR-02, KE-01, KQ-01, KZ-05, LH-02, ME-02, MH-05, MU-02, OM-06, OU-14, PX-03, RJ-02, SK-07, SV-03, SW-03, TK-03, TY-02, UX-03, VN-12

For the purpose of these Regulations, a consolidation or consolidated shipment is a consignment of multi-packages which has been originated by more than one person, each of whom has made an agreement for carriage by air with another person other than a scheduled air carrier.

10.8.1.5.1 In the case of a consolidated shipment, a separate declaration form must be presented to the accepting operator for each component consignment containing dangerous goods.

10.8.1.5.2 The declaration forms for these component consignments must accompany the consolidated shipment. At the airport of destination of the consolidated shipment, the delivering operator will hand a copy of each declaration form to the de-consolidator (break-bulk agent).

Note:

When offering a deconsolidated shipment for further air transportation, at least two copies of the Shipper's Declaration for Dangerous Goods must be presented to the next accepting operator.

10.8.1.6 Multi-page Declarations

10.8.1.6.1 If the declaration form does not contain sufficient space in the "Nature and Quantity of Dangerous Goods" box to accommodate all the required entries and information, additional pages in the form of an extension list (which must have vertical red hatchings) may be used. In such a case, each page of its extension list must show:

- (a) a page number and the total number of pages;
- (b) the Air Waybill number.

10.8.1.6.2 Where multiple Shipper's Declaration Forms are used, the aircraft limitation and shipment type must be the same for all pages.

Note:

The extension lists are not required to have a signature.

10.8.1.7 Alterations and Amendments

The operator will not accept a declaration form that has been altered or amended unless the alteration or amendment to an entry has been signed by the shipper with the same signature used to sign the document. Alteration of the "Air Waybill Number", the "Airport of Departure" and the "Airport of Destination" are excepted from this provision.

10.8.1.7.1 An entry inserted in different handwriting or different printing or in a combination of handwriting and printing, is not considered to be an alteration or amendment and is acceptable.

10.8.1.8 Proper Shipping Name

Each radioactive material offered for transportation must be declared by its "Proper Shipping Name". The proper shipping name is considered to be that portion of the entry most accurately describing the goods in the List of Dangerous Goods (see Subsection 4.2) and is shown in bold characters. Proper shipping names may appear 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 marking is optional, however, the sequence shown in 10.4.1 is preferred.

10.8.1.9 Other Requirements

10.8.1.9.1 Signature

10.8.1.9.1.1 The declaration form must be signed and dated by the shipper. Facsimile signatures are acceptable where applicable laws and regulations recognize the legal validity of facsimile signatures. A typewritten signature is not acceptable. Persons or organisations (including consolidators, freight forwarders, and IATA Cargo Agents) employed by the shipper to act on their behalf to undertake the shipper's responsibilities in the preparation of the consignment and trained as required by Section 1.5 may sign the Shipper's Declaration for Dangerous Goods.

10.8.1.9.1.2 If the Shipper's Declaration information is presented to the operator by means of EDP or EDI transmission techniques, the signature(s) may be electronic signature(s) or 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 document, the operator must ensure that the document produced is the "Shipper's Declaration for Dangerous Goods" in the format and design shown in Figure 8.1.A or Figure 8.1.B. The Shipper's Declaration must indicate "Original Received Electronically" in association with the signature and the name of the signatory must be shown in capital letters.

10.8.1.9.2 Additional Approval or Endorsement

The operator reserves the right to require the shipper to have the "Shipper's Declaration for Dangerous Goods" confirmed or endorsed by an authority nominated by the operator.

10.8.1.9.3 Goods not Classified as Dangerous Goods

The operator may require the shipper to certify that a shipment does not contain dangerous goods if the shipper states that they are not so classified. In such a case, the operator may also require the shipper to have the certification confirmed or endorsed by an authority nominated by the operator.

10.8.1.9.4 Part Shipments

Where it is necessary for a multi-piece shipment to be carried in more than one lot, on more than one aircraft, the first operator must obtain from the shipper, or provide, a copy of the "Shipper's Declaration for Dangerous Goods" for each part of the shipment to be carried on each aircraft.

10.8.2 General Instructions for Completing the Declaration Form

STATE VARIATIONS: USG-01/10/12

OPERATOR VARIATION: FX-12

10.8.2.1 The "Shipper's Declaration for Dangerous Goods" form must be completed strictly in accordance with the following instructions. Entries in the boxes for AIR WAYBILL NUMBER, AIRPORT OF DEPARTURE

and AIRPORT OF DESTINATION may be inserted or amended either by the shipper, his agent, or by the accepting operator, but all other details must only be entered by the shipper, or persons or organizations employed by the shipper to act on their behalf to undertake the shipper's responsibilities.

10.8.2.2 The shipper may complete the "Shipper's Declaration for Dangerous Goods" either manually or mechanically (typewriter, computer, etc.).

10.8.3 Detailed Instructions for Completing the Declaration Form

STATE VARIATIONS: USG-10/12

OPERATOR VARIATIONS: AM-07, AV-09, MK-01

10.8.3.1 Shipper

Enter the full name and address of the shipper.

Note:

The name and address of the shipper which appears on the Shipper's Declaration for Dangerous Goods form may differ from that on the Air Waybill.

10.8.3.2 Consignee

Enter the full name and address of the consignee. It is recommended that the telephone number of the consignee is included to facilitate a prompt release of the consignment at the airport of destination.

Note:

The name and address of the consignee which appears on the Shipper's Declaration for Dangerous Goods form may differ from that on the Air Waybill.

10.8.3.3 Air Waybill Number

Enter the number of the Air Waybill to which the declaration form will be attached. This may be entered or amended by the Shipper, his agent or by the operator or its handling agent. In the case of a consolidated shipment, enter the number of the House Air Waybill after the Air Waybill number separated by "/".

10.8.3.4 Page ... of ... Pages

Enter the page number and total number of pages or "Page 1 of 1 pages" if there is no extension list.

10.8.3.5 Aircraft Limitations

On pre-printed Shipper's Declaration forms the shipper must delete either "Passenger and Cargo Aircraft" or "Cargo Aircraft Only" to indicate whether the shipment is packed to comply with the limitations prescribed for passenger and cargo aircraft or the limitations for cargo aircraft only. Where the Shipper's Declaration is generated from a computer system it is sufficient if just the aircraft type is shown, i.e. only print "Passenger and Cargo Aircraft" or "Cargo Aircraft Only", as applicable.

Note:

When a radioactive material shipment is required to be transported on a cargo aircraft solely because of USG-10, that shipment may be carried on passenger aircraft

outside US jurisdiction. In this case, the "Cargo Aircraft Only" label must be removed before the shipment is loaded onto a passenger aircraft outside US jurisdiction. The following note should be added in the "Additional Handling Information" box of the Shipper's Declaration:

This shipment may be carried on passenger aircraft outside US jurisdiction.

When this statement is used, no other "Cargo Aircraft Only" articles may appear on the declaration.

10.8.3.6 Airport of Departure

Enter the full name of the airport or city of departure, which may be entered or amended by the Shipper, his agent or by the operator or its handling agent.

Note:

This information is optional and may be left blank.

10.8.3.7 Airport of Destination

Enter the full name of the airport or city of destination, which may be entered or amended by the Shipper, his agent or by the operator or its handling agent.

Note:

This information is optional and may be left blank.

10.8.3.8 Shipment Type

On pre-printed Shipper's Declaration forms the shipper must delete "Non-Radioactive" to indicate the shipment contains radioactive material. Where the Shipper's Declaration is generated from a computer system it is sufficient if just "Radioactive" is shown.

Radioactive material must not be included on the same declaration form as other dangerous goods, except for Carbon dioxide, solid (dry ice) when used as a refrigerant or when the other dangerous goods are contained within the same article. When Carbon dioxide, solid (dry ice) is used as a refrigerant for radioactive material or other dangerous goods are contained within the same article, those items must be fully described on the same Shipper's Declaration as the radioactive materials. This does not apply to radioactive material, excepted packages, which do not require a Shipper's Declaration.

10.8.3.9 Nature and Quantity of Dangerous Goods

For a radioactive consignment, the information must be entered strictly in accordance with the following instructions. Each sequence of information must be clearly separated or identified.

Note:

Columns indicated are those in the List of Dangerous Goods.

10.8.3.9.1 First Sequence—Identification

OPERATOR VARIATIONS: 5X-02/03/04

Step 1. UN number (from Column A) preceded by the prefix "UN".

Step 2. Proper shipping name (from Column B).

Step 3. The Class number—"7" (Column C).

Step 4. Any assigned subsidiary hazard class or division number(s) (from Column D) must be entered following the numerical hazard class or division and must be enclosed in brackets. A subsidiary risk may also have to be entered where a subsidiary hazard label is required by a Special Provision. The word "Class" or "Division" may be included preceding the primary and/or subsidiary hazard class or division numbers.

Step 5. For radioactive materials having a subsidiary risk the assigned packing group (Column E), which may be preceded by "PG" (e.g. "PG II").

The dangerous goods description specified above must be shown in sequence with no information interspersed except as provided by these Regulations. Examples of this dangerous goods description are:

- UN 2978, Radioactive material, uranium hexafluoride, 7 (8)
- UN 2978, Radioactive material, uranium hexafluoride, Class 7 (Class 8).

10.8.3.9.2 Second Sequence—Quantity and Type of Packing

Step 6.

- (a) name or symbol of each radionuclide(s) or, for mixtures of radionuclides, an appropriate general description or a list of the most restrictive radionuclides;
- (b) a description of the physical and chemical form of the material, or a notation that the material is Special Form radioactive material (not required for UN 3332 and UN 3333) or low dispersible material. A generic chemical description is acceptable for chemical form;

Step 7. Number of packages (of same type and content), their type of package and activity in becquerel or multiples thereof (units used must be clearly indicated) of the radioactive contents in each package, including packages in overpacks. (The activity in Curie or multiples thereof [units used must be clearly indicated] may be added in parentheses following the becquerel units). For fissile material, the total weight of fissile material (or the weight of each fissile nuclide for mixtures when appropriate) in grams or kilograms may be used in place of activity (in all cases the units used must be clearly identified).

For different individual radionuclides packed together in the same package, the activity of each radionuclide.

The words "All Packed in One" (description of package type) must immediately follow the relevant entries.

Step 8. When an overpack is used, the wording "Overpack Used" must be inserted on the declaration form immediately after all the relevant entries relating to the packages within the overpack. In such cases, packages within overpacks must be listed first.

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, additional Shipper's Declaration for Dangerous Goods forms must be made available.

Note:

While the indication of "Overpack Used" will be added at this point in the columnar format Shipper's Declaration, for the open format Shipper's Declaration (see Figure 8.1.A) the wording "Overpack Used" will appear after all of the information associated with the dangerous goods, including the packing instruction number and any applicable authorizations.

10.8.3.9.3 Third Sequence—Packing Instructions

OPERATOR VARIATIONS: 8X-01, TX-01, UL-06

Step 9. Category of the package(s), overpack or freight container, i.e. "I-White" or "II-Yellow" or "III-Yellow".

- for Category "II-Yellow" and "III-Yellow" only—Transport Index and dimensions including dimensional units of each package, overpack or freight container. The dimensions must be shown in the order length x width (or diameter for drum-shaped packages) x height, with the height as the last dimension. "L", "W" (or "D"), "H" may be shown immediately preceding each dimension. The Transport Index must be rounded up to the first decimal place;
- for Fissile Material, other than fissile excepted, the Criticality Safety Index;
- for Fissile Material only—The words "Fissile Excepted", if the material is excepted under 10.3.7.2.

10.8.3.9.4 Fourth Sequence—Authorizations

STATE VARIATIONS: BEG-04, BHG-02, CAG-01/03/04, CHG-03, DEG-01/02/03, DKG-01, DQG-01, EGG-01/02, FRG-03, GBG-06, HRG-04, ING-02, IRG-01/04, ITG-01/02, JPG-08, KGG-01, MYG-02, NLG-03, RUG-03, SAG-04, TRG-02, UKG-01

OPERATOR VARIATIONS: JU-04, KZ-02, TU-10

Step 10. (if relevant) A list of the identification marks of any of the following documents issued by a competent authority for the shipment together with a statement that such documents are attached to the declaration form:

- Special Form approval certificate;
- Low Dispersible Material certificate;
- Type B package design approval certificate;
- Type B(M) package shipment approval certificate;
- Type C package design approval and shipment approval certificate;
- Fissile Material package design approval certificate;
- Fissile Material package shipment approval certificate;
- Special Arrangement approval certificate;
- Any similar documents.

Authorizations, approvals and/or exemptions which must accompany the Shipper's Declaration and which are in a language other than English must be accompanied by an accurate translation in English.

Step 11. Where a consignment is required to be shipped under exclusive use, the statement "Exclusive Use Shipment".

Step 12. For LSA-II, LSA-III, SCO-I and SCO-II, the total activity of the consignment as a multiple of A_2 . For radioactive material for which the A_2 value is unlimited, the multiple of A_2 must be zero.

A shipper may enter a package reference or identification number on the declaration form as the last item in the fourth sequence.

10.8.3.10 Completion of "Nature and Quantity of Dangerous Goods" Box

When completing the "Nature and Quantity of Dangerous Goods" box, each sequence of information must be clearly separated or identified.

- (a) for the computerized form, the sequences as detailed in 10.8.3.9 must be indicated:
 - either by using two oblique strokes as a separator between the sequences; or
 - by putting each sequence on a separate line;
- (b) for the manually completed form, the information must be entered in sequence within the columns provided;
- (c) information within a sequence must be separated by commas.

10.8.3.11 Additional Handling Information

STATE VARIATIONS: AEG-05, CAG-15/16, JMG-03, USG-12, VCG-07, ZAG-04

△ OPERATOR VARIATIONS: 4C-02, 4M-02, 8V-01, 9W-07, AC-02, AH-01, AI-06, AM-14, AR-09, AU-09, BZ-05, CX-04, CZ-03, D0-09, D5-05, DL-03, EK-01, EY-01, GF-06, GH-03, IJ-08, IT-08, JJ-02, JL-11, JX-02, KA-04, KC-01, KQ-05, KZ-09, L7-02, LA-02, LD-04, LP-02, LU-02, LX-05, M3-02, M7-02, MH-04, MK-08, MP-04, OU-10, PZ-03, S7-03, SK-01/06, SQ-08, SV-13, TG-06, TK-02, UC-02, UL-01, V3-02, XL-02

Enter any special handling information relevant to the shipment. For radioactive materials covered by a Competent Authority Certificate, this must include:

- (a) any special stowage provisions that may be required for the safe dissipation of heat from the package, and if applicable, an indication that the package to be offered for transport has an average surface heat flux exceeding 15 W/m^2 (1.4 W/ft^2);
- (b) for type B(M) package, any statement that no supplementary operational controls are required, when appropriate;
- (c) any restrictions on the type of aircraft and any necessary routing instructions;
- (d) emergency arrangements appropriate to the shipment.

10.8.3.12 Certification Statement

OPERATOR VARIATION: LH-06

10.8.3.12.1 The declaration must contain a certification or declaration statement that ensures the consignment

is acceptable for transport and has been properly prepared in accordance with the Regulations, including additional air transport requirements. Examples of these requirements are indicated in 1.3.2. The text for the certification statement 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 the applicable international and national governmental regulations."

10.8.3.12.2 For air transport the following additional statement is required:

"I declare that all of the applicable air transport requirements have been met."

10.8.3.13 Name and Title of Signatory

Enter the name and title of the person signing the declaration. This information may be printed or stamped.

Note:

The title of the person or the name of the department he/she is employed with, are both acceptable.

10.8.3.14 Place and Date

Enter the place and date of signing the declaration.

Note:

The preferred format for indicating the date is YYYY-MM-DD. Other formats, such as DD/MM/YYYY, DD.MM.YYYY, DD/MMM/YYYY or written out completely, are acceptable provided they cannot be misunderstood.

10.8.3.15 Signature

See 10.8.1.9.1 for the signature requirements for the Shipper's Declaration for Dangerous Goods.

10.8.4 Specimens of Shipper's Declaration

Two specimens are shown on the following pages. The first specimen is designed for computerized completion, the second the preferred format for manual completion. Both forms may be completed either manually or mechanically.

10.8.5 Diagrammatic Instructions

The two specimen forms also show diagrammatically where to insert the information required in 10.8.3. The numbers shown correspond to the subparagraphs of 10.8.3.

10.8.6 Examples of Completed Declaration Forms

Examples of completion of the Shipper's Declaration for Dangerous Goods, or parts thereof, are shown on the pages following Figures 10.8.A and 10.8.B. The radioactive shipment examples illustrate:

Example 1 for computerized completion. It shows both methods outlined in 10.8.3.10.

Note:

This also applies when several pages are used.

Example 2 for manual completion.

Example 3 carbon dioxide, solid (dry ice) as a refrigerant.

10.8.6.1 When a package contains two or more entries, the wording "All packed in One (description of type of package)" must immediately follow the relevant entries.

Example UN 2915, Radioactive material Type A Package, 7, Sr90 metal solid, 1.48 GBq, Am241 metal solid, 74 MBq, III-Yellow, TI 0.2, Dimensions 20 x 20 x 20 cm, All Packed in One Type A Package.

10.8.6.2 If the shipment consists of several identical packages, then, as an alternative to listing each one, a statement immediately following the relevant entries must read:

"All Packed in One (insert description of package type) x (insert the actual number of packages)."

Example If there were 10 identical packages in the shipment, the statement would read: "All packed in One Type A package x 10".

FIGURE 10.8.A
Shipper's Declaration Completion for a Computerized Form

SHIPPER'S DECLARATION FOR DANGEROUS GOODS			
Shipper 10.8.3.1	Air Waybill No. 10.8.3.3 Page of Pages 10.8.3.4 Shipper's Reference Number <i>(optional)</i>		
Consignee 10.8.3.2	For optional use for Company logo name and address		
<i>Two completed and signed copies of this Declaration must be handed to the operator.</i>			
TRANSPORT DETAILS This shipment is within the limitations prescribed for: <i>(delete non-applicable)</i> <table border="1"><tr><td>PASSENGER AND CARGO AIRCRAFT</td><td>CARGO AIRCRAFT ONLY</td></tr></table> 10.8.3.5	PASSENGER AND CARGO AIRCRAFT	CARGO AIRCRAFT ONLY	Airport of Departure: 10.8.3.6 Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties. Shipment type: <i>(delete non-applicable)</i> <input checked="" type="checkbox"/> NON-RADIOACTIVE <input type="checkbox"/> RADIOACTIVE 10.8.3.8
PASSENGER AND CARGO AIRCRAFT	CARGO AIRCRAFT ONLY		
Airport of Destination: 10.8.3.7			
NATURE AND QUANTITY OF DANGEROUS GOODS <i>UN Number or Identification Number, Proper shipping name, Class or Division (subsidiary risk), Packing Group (if required), and all other required information.</i> <p style="text-align: center;">from 10.8.3.9, 10.8.3.10</p> <p style="text-align: center;">Steps 1, 2, 3, 4, 5 // Steps 6, 7, 8 // Step 9 // Steps 10, 11, 12</p>			
<hr/> Additional Handling Information 10.8.3.11			
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. I declare that all of the applicable air transport requirements have been met.			
Name/Title of Signatory 10.8.3.13 Place and Date 10.8.3.14 Signature <i>(see warning above)</i> 10.8.3.15			

10

10.8

FIGURE 10.8.B
Shipper's Declaration Completion for a Manual Form

SHIPPER'S DECLARATION FOR DANGEROUS GOODS																													
Shipper 10.8.3.1		Air Waybill No. 10.8.3.3 Page of Pages 10.8.3.4 Shipper's Reference Number <small>(optional)</small>																											
Consignee 10.8.3.2		<i>For optional use for Company logo name and address</i>																											
<small>Two completed and signed copies of this Declaration must be handed to the operator.</small>																													
TRANSPORT DETAILS <small>This shipment is within the limitations prescribed for: (delete non-applicable)</small>		10.8.3.5 <small>Airport of Departure:</small> 10.8.3.6 <div style="display: flex; justify-content: space-around;"> PASSENGER AND CARGO AIRCRAFT CARGO AIRCRAFT ONLY </div> <small>Airport of Destination:</small> 10.8.3.7																											
		WARNING <small>Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties.</small>																											
		<small>Shipment type: (delete non-applicable)</small> <input checked="" type="checkbox"/> NON-RADIOACTIVE <input type="checkbox"/> RADIOACTIVE 10.8.3.8																											
NATURE AND QUANTITY OF DANGEROUS GOODS																													
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="6">Dangerous Goods Identification</th> </tr> <tr> <th>UN or ID No.</th> <th>Proper Shipping Name</th> <th>Class or Division (Subsidiary Risk)</th> <th>Pack-ing Group</th> <th>Quantity and type of packing</th> <th>Packing Inst.</th> </tr> </thead> <tbody> <tr> <td>Step 1:</td> <td>from 10.8.3.9</td> <td>Steps 3 and 4</td> <td>Step 5</td> <td>Steps 6, 7, 8</td> <td>Steps 10, 11, 12</td> </tr> <tr> <td>Step 2</td> <td></td> <td></td> <td></td> <td>Step 9</td> <td></td> </tr> </tbody> </table>						Dangerous Goods Identification						UN or ID No.	Proper Shipping Name	Class or Division (Subsidiary Risk)	Pack-ing Group	Quantity and type of packing	Packing Inst.	Step 1:	from 10.8.3.9	Steps 3 and 4	Step 5	Steps 6, 7, 8	Steps 10, 11, 12	Step 2				Step 9	
Dangerous Goods Identification																													
UN or ID No.	Proper Shipping Name	Class or Division (Subsidiary Risk)	Pack-ing Group	Quantity and type of packing	Packing Inst.																								
Step 1:	from 10.8.3.9	Steps 3 and 4	Step 5	Steps 6, 7, 8	Steps 10, 11, 12																								
Step 2				Step 9																									
<small>Additional Handling Information</small> 10.8.3.11																													
<small>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. I declare that all of the applicable air transport requirements have been met.</small>			Name/Title of Signatory 10.8.3.13 Place and Date 10.8.3.14 Signature <small>(see warning above)</small> 10.8.3.15																										
10.8.3.12																													

FIGURE 10.8.C
Shipper's Declaration Completion—Example 1

SHIPPER'S DECLARATION FOR DANGEROUS GOODS

Shipper Advanced Chemical Co. 345 Main Street Reigate, Surrey England	Air Waybill No. 800 1234 5686 Page 1 of 1 Pages Shipper's Reference Number 1213 / A12 <i>(optional)</i>		
Consignee ABC Co. Ltd. 1000 High Street Athens Greece	<i>For optional use for Company logo name and address</i>		
<i>Two completed and signed copies of this Declaration must be handed to the operator.</i>			
TRANSPORT DETAILS			
This shipment is within the limitations prescribed for: <i>(delete non-applicable)</i> <table border="1"><tr><td>PASSENGER AND CARGO AIRCRAFT</td><td>CARGO AIRCRAFT ONLY</td></tr></table>	PASSENGER AND CARGO AIRCRAFT	CARGO AIRCRAFT ONLY	Airport of Departure: London Heathrow
PASSENGER AND CARGO AIRCRAFT	CARGO AIRCRAFT ONLY		
Airport of Destination: Athens			
NATURE AND QUANTITY OF DANGEROUS GOODS <i>UN Number or Identification Number, proper shipping name, Class or Division (subsidiary risk), packing group (if required), and all other required information.</i> <p>UN 3328, Radioactive material, Type B(U) package, fissile, 7 U-235, (UO_2), solid, 1 Type B(U) package x 3.4 GBq I-White, CSI=1 Type B package design approval certificate B/30/B(U)F Fissile material package shipment approval certificate B/30/B(U)F/T attached.</p>			
<hr/> Additional Handling Information <hr/>			
<p>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. I declare that all of the applicable air transport requirements have been met.</p>			
Name/Title of Signatory A. Brown, Shipping Manager Place and Date Reigate, 1 Jan 2013 Signature <i>(see warning above)</i> 			



Dangerous Goods Regulations

FIGURE 10.8.D
Shipper's Declaration Completion—Example 2

SHIPPER'S DECLARATION FOR DANGEROUS GOODS

Shipper ADVANCED CHEMICAL CO. 345 MAIN STREET REIGATE, SURREY, ENGLAND		Air Waybill No. 800 1234 5686 Page 1 of 1 Pages Shipper's Reference Number 1213 / A12 (optional)				
Consignee ABC Co.Ltd. 1000 HIGH STREET ATHENS, GREECE		<i>For optional use for Company logo name and address</i>				
Two completed and signed copies of this Declaration must be handed to the operator.		WARNING				
TRANSPORT DETAILS This shipment is within the limitations prescribed for: (delete non-applicable) <table border="1" style="margin-left: auto; margin-right: auto;"><tr><td>PASSENGER AND CARGO AIRCRAFT</td><td>CARGO AIRCRAFT ONLY</td></tr></table>		PASSENGER AND CARGO AIRCRAFT	CARGO AIRCRAFT ONLY	Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties.		
PASSENGER AND CARGO AIRCRAFT	CARGO AIRCRAFT ONLY					
Airport of Departure: LONDON Airport of Destination: ATHENS		Shipment type: (delete non-applicable) <table border="1" style="margin-left: auto; margin-right: auto;"><tr><td>NON-RADIOACTIVE</td><td>RADIOACTIVE</td></tr></table>		NON-RADIOACTIVE	RADIOACTIVE	
NON-RADIOACTIVE	RADIOACTIVE					
NATURE AND QUANTITY OF DANGEROUS GOODS						
Dangerous Goods Identification						
UN or ID No.	Proper Shipping Name	Class or Division (Subsidiary Risk)	Pack- ing Group	Quantity and type of packing	Packing Inst.	Authorization
UN2916	RADIOACTIVE MATERIAL, TYPE B(U) PACKAGE	7		IRIDIUM - 192 SPECIAL FORM 1 TYPE B(U) PACKAGE X 1.925 TBq	III-YELLOW T13.0 DIM 30x30 x40CM	SPECIAL FORM CERTIFICATE NO 9999 TYPE B(U) PACKAGE CERTIFICATE UK1735/ B(U)S ATTACHED
Additional Handling Information						
<p>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. I declare that all of the applicable air transport requirements have been met.</p>				Name/Title of Signatory A. BROWN, SHIPPING MANAGER Place and Date REIGATE, 1 JAN 2013 Signature <small>(see warning above)</small> 		

FIGURE 10.8.E
Shipper's Declaration Completion—Example 3

NATURE AND QUANTITY OF DANGEROUS GOODS						
Dangerous Goods Identification						
UN or ID No.	Proper Shipping Name	Class or Division (Subsidiary Risk)	Pack-ing Group	Quantity and type of packing	Packing Inst.	Authorization
UN2915	RADIOACTIVE MATERIAL, TYPE A PACKAGE	7		Sr-90, METAL SOLID 1.48 GBq Am-241, METAL SOLID 74 MBq	II- YELLOW T1 0.2 Dims (L)20x (W)20x (H)20 cm	
UN1845	CARBON DIOXIDE, SOLID	9		5 kg	954	ALL PACKED IN ONE TYPE A PACKAGE

A way to show the dimensions in the required sequence with the addition of suggested dimension qualifiers, (L)length × (W)width × (H)height.

10.8.7 Competent Authority Certificates

For radioactive materials, the shipper must have in his possession a copy of any of the following competent authority certificates relevant to the shipment, and a copy of the instructions for proper closing of packages and other preparation for shipment, before consigning any shipment under the terms of the certificate(s):

- Special Form approval certificate;
- Low dispersible radioactive material approval certificate;
- Packages containing 0.1 kg or more of uranium hexafluoride approval certificate;
- Type B package design approval certificate;
- Type B(M) package shipment approval certificate;
- Type C package design approval certificate;
- Fissile Material package design approval certificate;
- Fissile Material package shipment approval certificate;
- Special Arrangement approval certificate.

The package design and shipment approval certificates may be combined into a single certificate. The applicable competent authority certificate(s) must accompany the shipment.

10.8.7.1 Type A Packages Documentation

Documentation requirements may be summarized as follows:

- Special Form approval certificate—required only if material is Special Form;
- Fissile Material package design/shipment approval certificate (see 10.8.7.4);
- Shipper's Declaration—required in all cases.

10.8.7.2 Type B Package Documentation

Documentation requirements may be summarized as follows:

- Type B package design approval certificate required in all cases;
- Type B(M) package shipment approval certificate required for each Type B(M) package containing radioactive material with an activity greater than 3,000 A₁ or 3,000 A₂, as appropriate, or 1,000 TBq (20,000 Ci), whichever is least;
- Fissile Material package design/shipment approval certificate (see 10.8.7.4);
- Shipper's Declaration—required in all cases.

Note:

Type B(M) package design approval and package shipment approval may be combined on a single certificate.

10.8.7.3 Type C Package Documentation

Documentation requirements may be summarized as follows:

- Type C package design approval certificate required in all cases;
- Fissile Material package design/shipment approval certificate (see 10.8.7.4);
- Shipper's Declaration—required in all cases.

Note:

Type C package design approval and package shipment approval may be combined on a single certificate.

10.8.7.4 Fissile Package Documentation

Documentation requirements may be summarized as follows:

- Fissile Material package design approval certificate is required unless the fissile material package design is excepted by 10.3.7.2;
- Fissile Material package shipment approval certificate is required for each package containing fissile materials if the sum of the Criticality Safety Indexes of the individual package exceeds 50 as provided in 9.3.10.5;
- Shipper's Declaration—required in all cases.

Note:

Fissile Material package design approval and package shipment approval may be combined on a single certificate.

10.8.7.5 Special Form Design Approval

10.8.7.5.1 The design for Special Form radioactive material must meet the definition of Special Form radioactive material given in Appendix A and requires unilateral approval, i.e. approval by the competent authority of the State of origin only.

10.8.7.5.2 The competent authority must establish a "Special Form Approval Certificate" stating that the approved design meets the definition of Special Form radioactive material given in Appendix A, and must attribute to that design an identification mark.

10.8.7.6 Competent Authority Design or Shipment Approval

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, the UN number and proper shipping name required in 10.8.3.9.1 must be in accordance with the certificate of the country of origin of the design.

10.8.8 Air Waybill

STATE VARIATIONS: BNG-01, DQG-04, SAG-03

OPERATOR VARIATIONS: AI-06, CA-05, GF-06, LY-01, MH-04, MS-01

Note:

The following instructions for the completion of the Air Waybill cover only the information required for dangerous goods consignments. Full instructions for the completion of an Air Waybill are to be found in the IATA "Air Waybill Handbook".

10.8.8.1 Handling Information Statement

Air Waybill(s) accompanying radioactive material consignment(s) must include the following statements, as applicable, in the "Handling Information" box:

- (a) "Dangerous goods as per attached Shipper's Declaration" or "Dangerous Goods as per attached DGD";
- (b) "Cargo Aircraft Only" or "CAO".

10.8.8.2 Mixed Shipment

An Air Waybill containing both dangerous goods and non-dangerous goods must indicate in the "Handling Information" box of the Air Waybill, the number of pieces of dangerous goods either before or after the statement "Dangerous Goods as per attached Shipper's Declaration" or "Dangerous Goods as per attached DGD".

10.8.8.3 Excepted Packages

10.8.8.3.1 The provisions of 10.8.8.1 do not apply to excepted packages of radioactive material.

10.8.8.3.2 When Carbon dioxide, solid (dry ice) is used as a refrigerant for Radioactive material, excepted packages, no Shipper's Declaration is required and the details of the Carbon dioxide, solid (dry ice) shown in the "Nature and Quantity of Goods" box as required by 8.2.3.

10.8.8.3.3 For excepted packages of radioactive material, the UN Number(s) preceded by "UN", the proper shipping name(s) and the number of packages (unless these are the only packages within the consignment) must be shown in the "Nature and Quantity of Goods" box of the Air Waybill. The preferred format is with the UN number shown first, followed by the proper shipping name. Where an agreement exists with the operator, the shipper may provide the information by EDP or EDI techniques.

10.8.8.3.4 A Shipper's Declaration for Dangerous Goods is required for "excepted packages" of radioactive material possessing other dangerous characteristics that are subject to the provisions of these Regulations (see Special Provision A130), unless the provisions of Special Provision A130 paragraph (a) are met.

10.8.8.4 Examples

The following examples illustrate how the information required above appears on the Air Waybill.

FIGURE 10.8.F
Consignment Containing Dangerous Goods for which a Shipper's Declaration is Required

Airport of Destination			Requested Flight/Date		Amount of Insurance	INSURANCE - If carrier offers insurance, and such insurance is requested in accordance with the conditions thereof, indicate amount to be insured in figures in box marked "Amount of Insurance".	
Handling Information							
Dangerous Goods as per attached Shipper's Declaration							
No. of Pieces RCP	Gross Weight	kg lb	Rate Class Commodity Item No.	Chargeable Weight	Rate Charge	Total	Nature and Quantity of Goods (incl. Dimensions of Volume)

FIGURE 10.8.G
Air Waybill Example—Cargo Aircraft Only

Airport of Destination			Requested Flight/Date	Amount of Insurance	INSURANCE - If carrier offers insurance, and such insurance is requested in accordance with the conditions thereof, indicate amount to be insured in figures in box marked "Amount of Insurance".
Handling Information					
Dangerous Goods as per attached DGD - Cargo Aircraft Only					
No. of Pieces RCP	Gross Weight	kg lb	Rate Class Commodity Item No.	Chargeable Weight	Rate / Charge
					Total
Nature and Quantity of Goods (incl. Dimensions of Volume)					

FIGURE 10.8.H
Consignment Containing Excepted Packages of Radioactive Material

Airport of Destination			Requested Flight/Date	Amount of Insurance	INSURANCE - If carrier offers insurance, and such insurance is requested in accordance with the conditions thereof, indicate amount to be insured in figures in box marked "Amount of Insurance".
Handling Information					
No. of Pieces RCP	Gross Weight	kg lb	Rate Class Commodity Item No.	Chargeable Weight	Rate / Charge
					Total
Nature and Quantity of Goods (incl. Dimensions of Volume)					
Luminous Paint - UN2910, Radioactive material, excepted package - limited quantity of material, 3 packages					

10.9 Handling

The following provisions of Section 9 of these Regulations are also applicable:

- General (Subsection 9.0);
- Acceptance (Subsection 9.1);
- Storage (Subsection 9.2);
- Loading (Subsection 9.3);
- Inspection (Subsection 9.4);
- Provision of Information (Subsection 9.5);
- Reporting (Subsection 9.6);
- Training (Subsection 9.7);
- Retention of Documents (Subsection 9.8).

10.10 Additional Shipment Preparation

10.10.1 General

Prior to offering a shipment of Radioactive Material for transport, the shipper must ensure that the shipment is in full compliance with all relevant sections of these Regulations. The package must comply with the requirements of the Competent Authority Approval Certificates as required. Competent Authority Approval Certificates must accompany the shipment where necessary. All parties, which must be notified in advance of the shipment (operator(s), competent authorities, etc.), must have been notified where required by these Regulations. Inspection of the packages, where required by these Regulations, must be performed by the shipper prior to offering the shipment for transport.

10.10.2 Design and Shipment Approvals and Notification

STATE VARIATIONS: BEG-04, BHG-02, BRG-08, CAG-01/03/04, CHG-03, DEG-01/02/03, DKG-01, DQG-01, EGG-01/02, FRG-03, GBG-06, HRG-04, ING-02, IRG-01/04, ITG-01/02, JPG-08, KGG-01, MYG-02, NLG-03, ROG-04, RUG-02, SAG-02/04, TRG-02, UKG-01, USG-10

OPERATOR VARIATIONS: AV-08, BA-06, BR-11, BZ-04, C8-01, CM-04, CV-01, CZ-07, D0-05/06, D5-02, FJ-01, FX-03, GF-07, HA-04, HF-01, HV-01, IB-02, IJ-03, IP-04, JL-03/05, JU-04, KC-02, KE-05, KL-02, KZ-02, LA-15, LG-01, MU-01, NF-01, NH-03, OK-03, OM-08, OU-09, OZ-04, PS-01, PX-04, QY-06, SQ-04, SS-01, TU-10, UU-03

10.10.2.0 General

In all cases of international transport of packages requiring competent authorities design or shipment approval, for which different approval types apply in the different countries concerned by the shipment, the UN number and proper shipping name required in 10.8.3.9.1 must be in accordance with the certificate of the country of origin of design.

10.10.2.1 Design Approvals

10.10.2.1.1 Special Form

The design for Special Form radioactive material requires unilateral approval, i.e. approval by the competent authority of the State of origin only.

10.10.2.1.2 Type B(U) Package

Each Type B(U) package design requires unilateral approval, i.e. approval by the competent authority of the State of origin only, except that:

- (a) a Type B(U) package design for fissile material, which is also subject to 10.6.2.8, must require multilateral approval; and
- (b) a Type B(U) package design for low dispersible radioactive material must require multilateral approval.

10.10.2.1.3 Type B(M) Package

Each Type B(M) package design requires multilateral approval, i.e. approval by the competent authorities of the State of origin and of each State through or into which the package is to be transported (see Note following definition of multilateral approval in Appendix A).

10.10.2.1.4 Type C Package

Each Type C package design requires unilateral approval, i.e. approval by the competent authorities of the State of origin only, except that:

- (a) a Type C package design for fissile material, which is also subject to 10.6.2.8, must require multilateral approval.

10.10.2.1.5 Fissile Material

Each package design for fissile material requires multilateral approval, i.e. approval by the competent authorities of the State of origin and of each State through or into which the package is to be transported.

10.10.2.1.6 Uranium Hexafluoride

The approvals of designs for packages containing 0.1 kg or more of uranium hexafluoride require that:

- (a) each design that meets the requirements of 10.6.2.3.4 must require multilateral approval;
- (b) each design that meets the requirements of 10.6.2.3.1 to 10.6.2.7.4 must require unilateral approval by the competent authority of the country of origin of the design, unless multilateral approval is otherwise required by these Regulations.

10.10.2.2 Shipment Approval

Multilateral approval is required for:

- (a) the shipment of Type B(M) packages not conforming with the requirements of 10.6.2.4.1.4;
- (b) the shipment of Type B(M) packages containing radioactive material with an activity greater than 3×10^3 A₁ or 3×10^3 A₂, as appropriate, or 1,000 TBq, whichever is the lower; and

(c) the shipment of packages containing fissile material if the sum of the criticality safety indexes of the individual packages in a single freight container or in an aircraft exceeds 50 as provided in 9.3.10.5.

10.10.2.2.1 A competent authority may authorize transport into or through its country without shipment approval, by a specific provision in its design approval.

10.10.2.3 Notification

In addition to the requirements for the above approval certificates (see 10.5.7.2.2), there are also requirements in some circumstances to provide notification of shipment to competent authorities.

10.10.2.3.1 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 the country of origin of the shipment and to the competent authority of each State through or into which the package 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.

10.10.2.3.2 For each shipment listed below, the shipper must notify the competent authority of the country of origin of the shipment and to the competent authorities of each State through or into which the package 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 (seven) days in advance:

- Type C packages containing radioactive material with an activity greater than 3,000 A₁ or 3,000 A₂, as appropriate, or 1,000 TBq, whichever is lower;
- Type B(U) packages containing radioactive materials with an activity greater than 3,000 A₁ or 3,000 A₂, as appropriate, or 1,000 TBq, whichever is lower;
- Type B(M) packages; and
- transported under special arrangement.

10.10.2.3.3 The shipper is not required to send a separate notification if the required information has been included in the application for shipment approval.

10.10.2.3.4 The consignment notification must include:

- (a) sufficient information to enable the package to be identified, including all applicable certificate numbers and identification marks;
- (b) information on the date of shipment, the expected date of arrival and proposed routing;
- (c) the name of the radioactive material or nuclide;
- (d) a description of the physical and chemical form of the radioactive material, or whether it is Special Form radioactive material; and
- (e) the maximum activity of the radioactive contents during transport, in becquerel (Bq) with an appropriate SI prefix symbol, or multiples thereof. For fissile material, the mass of fissile material (or the mass of each fissile nuclide for mixtures when appropriate) in grams (g), or multiples thereof, may be used in place of activity.

APPENDIX A—GLOSSARY

General

STATE VARIATION: BEG-01

The following is a list of definitions of commonly used terms, in these Regulations. Definitions of terms which have their usual dictionary meanings or are used in the common technical sense, are not included.

Definitions of terms which are used solely in conjunction with radioactive materials are clearly marked “Radioactive Material Only”.

A₁ and A₂. (Radioactive Material Only).

- A₁, the activity value of Special Form radioactive material, which is listed in Table 10.3.A or derived in 10.3.2 and is used to determine the activity limits for the requirements of these Regulations.
- A₂, the activity value of radioactive material, other than Special Form radioactive material, which is listed in Table 10.3.A or derived in 10.3.2 and is used to determine the activity limits for the requirements of these Regulations.

ACIDIC. In general, an acidic substance is one which contains hydrogen and which dissolves in water to produce one or more hydrogen ions. Such solutions turn litmus dye red and cause other indicator dyes to change to characteristic colours. They also react with certain metals and bases/alkalis to form salts. Acidity is commonly measured using the pH scale; on this scale water has a “neutral” pH, i.e. neither acidic nor basic, of 7 and acids have a pH lower than 7. Some examples of acidic substances are hydrochloric acid, sulphuric acid, hydrogen sulphide (inorganic acids) and acetic acid, e.g. vinegar, and citric acid (organic acids). (See also “Basic”.)

ACTIVITY. (Radioactive Material Only) is a measure of the quantity of radioactivity emitted by a radioisotope and is used to determine the amount of radioactive material which may be transported in various types of packagings.

AERO-ENGINES. Generic term for engines powering flying craft and fuelled by flammable liquids (e.g. petrol/gasoline, kerosene). The term includes piston designs, turbine designs and turbine auxiliary units.

AEROSOL OR AEROSOL DISPENSERS. Means any non-refillable receptacle meeting the requirements of 6.1.7 and 6.1.8 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 liquefied particles in suspension in a gas, as a foam, paste or powder, or in a liquid or gaseous state.

AIR BAG INFLATOR. Articles which contain pyrotechnical substances and are used as life-saving vehicle air bags or seat belts.

AIR BAG MODULES. Articles which contain pyrotechnical substances and are used as life-saving vehicle air bags.

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).

AIRLINE. —see OPERATOR.

ALKALI. —see BASIC.

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 not generally dangerous.

ALUMINIUM PROCESSING BY-PRODUCTS. Materials, consisting of skimmings of virgin aluminium, rising to the surface of impure molten aluminium metal.

ALUMINIUM SMELTING/REMETALING BY-PRODUCTS. Materials, consisting of skimming of virgin aluminium, rising to the surface of impure molten aluminium metal.

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;
- Projectiles;
- Illuminating and target identification bombs.

The term excludes Cartridges, signal; Signal devices, hand; Signals, distress; Flares, aerial and Flares, surface. These articles are listed separately.

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.

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* Grenades, practice which is listed separately.

AMMUNITION, PROOF. Ammunition containing pyrotechnic substance(s) used to test the performance or strength of new ammunition or weapon components or assemblies.

AMMUNITION, SA (SMALL ARMS). —see CARTRIDGES, SMALL ARMS.

AMMUNITION, SMOKE. Ammunition containing smoke-producing substance such as chlorosulphonic acid mixture, titanium tetrachloride or white 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.

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.

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.

ANIMAL MATERIAL. Animal carcasses, animal body parts or animal foodstuffs.

ANTIMONY TRICHLORIDE. A solid material which, upon exposure to air, rapidly absorbs moisture, so that its effect, in the event of leakage from a package would be the same as a solution.

APPROPRIATE NATIONAL AUTHORITY. Any authority designated, or otherwise recognized, by a State to perform specific functions related to provisions contained in these Regulations.

△ APPROVAL. An authorization granted by the appropriate national authority for:

- (a) the transport of dangerous goods forbidden on passenger and/or cargo aircraft where these Regulations state that goods may be carried with an approval; or
- (b) other purposes as provided for in these Regulations.

Note:

In the absence of a specific reference in these Regulations allowing the granting of an approval, an exemption may be sought.

▲ APPROVAL. (Radioactive Material Only):

- **MULTILATERAL APPROVAL.** The approval by the relevant competent authority of the State of origin of the design or shipment, as applicable and also, where the consignment is to be transported through or into any other State, approval by the competent authority of that State. The term "through or into" specifically excludes "over", i.e. the approval and notification requirements must not apply to a State over which radioactive material is carried in an aircraft, provided that there is no scheduled stop in that State.
- **UNILATERAL APPROVAL.** The approval of a design which is required to be given by the competent authority of the State of origin of the design only.

Note:

State refers to country.

ARSENICAL DUST (ARSENICAL FLUE DUST). Consists of smelter dust containing large proportions of arsenic. These dusts are hazardous due to their toxic characteristics.

ARTICLES, EXPLOSIVE, EXTREMELY INSENSITIVE (ARTICLES, EEI). Articles that contain only extremely insensitive substances and which demonstrate a negligible probability of accidental initiation or propagation under normal conditions of transport.

Note:

An extremely insensitive substance is one 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.

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.

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* Ammunition (all); 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. These articles are listed separately.

Note:

Ammunition, cartridges, power devices, signal devices, and alarm devices which contain pyrotechnic substances, are listed separately.

ASBESTOS. 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.

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

AUXILIARY EXPLOSIVE COMPONENT, isolated. An “isolated auxiliary explosive component” is a small device that explosively performs an operation related to the article’s functioning, other than its main explosive loads’ performance. Functioning of the component does not cause any reaction of the main explosive loads contained within the article.

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.

BAGGAGE. Personal property of passengers or crew carried on an aircraft by agreement with the operator.

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

BASIC (ALKALI). In general, a basic substance dissolves in water to produce one or more hydroxyl ions. Such substances have the ability to turn litmus blue and to cause other indicators to take on characteristic colours. They also react with (neutralise) acids to form salts. Basicity is commonly measured using the pH scale; on this scale water has a “neutral” pH (neither acidic nor basic) of 7 and bases have a pH higher than 7. Some examples of basic substances are sodium hydroxide, (e.g. caustic soda or lye); calcium hydroxide (e.g. lime); potassium hydroxide and ammonium hydroxide. (See also “Acidic”).

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.

BATTERIES, DRY. Sealed, non-vented batteries of the type used in flashlights or for the operation of small apparatus. They contain zinc salts and other solids, or may be of the nickel cadmium type or other combinations of metals. Such batteries must be packed in inner packagings in such a manner as to effectively prevent short circuits and to prevent movement which could lead to short circuits. Examples of such batteries are: alkalimanganese, zinc-carbon, nickel-metal hydride and nickel-cadmium batteries.

BATTERIES, DRY CONTAINING SOLID POTASSIUM HYDROXIDE. 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.

BATTERIES, WET, ELECTRIC STORAGE. Consist of series of metal plates immersed in an electrolyte. The electrolyte is a 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. Non-spillable batteries are designed and constructed so as to positively prevent leakage of the electrolyte, irrespective of the position of the battery. This is achieved by the use of jelly type electrolyte or porous absorbent separators or by specially designed filling and venting devices.

BATTERIES WET, WITHOUT ELECTROLYTE, AND FULLY DISCHARGED. Are usually wet type batteries which have been shipped from the factory in their original dry state with the intent that electrolyte would be added just before placing the batteries in service. They may also be wet batteries from which the electrolyte has been removed. In this latter instance the cells should be thoroughly flushed with water and allowed to drain before shipping.

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▲ BECQUEREL. (Radioactive Material Only). The becquerel is the standard unit of measure for the activity of a radionuclide used in these Regulations; it is represented by the symbol “Bq”. Because the becquerel is a very small unit, larger multiples are used (see B.2.2.3). The becquerel replaces the older unit for specific activity, the “Curie” (Ci). One Ci is equal to 37 GBq.

BIOLOGICAL PRODUCTS. Are either finished biological products for human or veterinary use manufactured in accordance with the requirements of national public health authorities and moving under special approval or license from such authorities; or finished biological products shipped prior to licensing for development or investigational purposes for use in humans or animals; or products for experimental treatment of animals that are manufactured in compliance with the requirements of national public health authorities. They also cover unfinished biological products prepared in accordance with procedures of specialized governmental agencies. Live animal and human vaccines are considered biological products and not infectious substances. Importation of human and animal vaccines may be subject to authorization by the country of destination.

BLACK POWDER (GUN POWDER). 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 pelletised. Black powder may be readily ignited by a spark. The finer the grains the easier the powder may be ignited. It is the peculiar susceptibility to sparks which renders the transportation of black powder hazardous.

BLUE ASBESTOS. —see ASBESTOS.

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;

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- Bombs with flammable liquid, with bursting charge.

BOOSTERS. Articles consisting of charge of detonating explosive with or without means of ignition. They are used to increase the initiating power of detonators or detonating cord.

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 package during transport.

BROWN ASBESTOS. —see ASBESTOS.

BUNDLES OF CYLINDERS. Assemblies of cylinders that are fastened together and which are interconnected by a manifold and transported as a unit. They are not permitted in air transport.

BURSTERS, EXPLOSIVE. Articles consisting of a small charge of explosive used to open projectiles, or other ammunition in order to disperse their contents.

CALOR GAS. A liquefied flammable hydrocarbon gas or a mixture of any of the liquefiable petroleum gases.

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.

CARBON DIOXIDE. In approved cylinders, not exceeding 230 g (8 oz) net weight, and worn by passengers for the operation of artificial limbs or orthopaedic appliances, is not considered to be a dangerous article under these Regulations, provided the cylinders are approved for the purpose and pressures do not exceed the maximum working and service pressures for which they are designed. Spare cylinders of the same size and make may be carried by the passengers if required to ensure an adequate supply for the duration of the journey.

CARBON DIOXIDE, SOLID (DRY ICE). Carbon dioxide, solid (dry ice) is produced by expanding liquid carbon dioxide to vapour and "snow" in presses that compact the product into blocks. It is used primarily for cooling and due to its very low temperature (about -79°C) can cause severe burns to skin upon direct contact. When Carbon dioxide, solid (dry ice) converts (sublimates) directly to gaseous carbon dioxide it takes in heat from its surroundings. The resulting gas is heavier than air and can cause suffocation in confined areas as it displaces air. Packages containing Carbon dioxide, solid (dry ice) must be designed and constructed so as to prevent build-up of pressure due to the release of carbon dioxide gas.

CARGO. For the purposes of these Regulations, any property carried on an aircraft other than mail and accompanied or mishandled baggage.

CARGO AGENT. A person or organization authorized by an airline to receive shipments, execute Air Waybills and collect charges. An IATA cargo agent is one that is recognized by IATA as having met its requirements for an IATA registered cargo agent.

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

CARGO COMPARTMENT CLASSIFICATION. These definitions reflect the classification requirements set out in Federal Aviation Regulation (FAR) Section 25.857 and European Aviation Safety Agency (EASA) Certification Standard (CS) 25.857, as shown in the ICAO document Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods (Doc 9481) (red book).

Class A. A Class A cargo or baggage compartment is one in which:

- the presence of a fire would be easily discovered by a crew member while at his or her station; and
- each part of the compartment is easily accessible in flight.

Class B. A Class B cargo or baggage compartment is one in which:

- there is sufficient access in flight to enable a crew member to effectively reach any part of the compartment with the contents of a hand fire extinguisher;
- when the access provisions are being used, no hazardous quantity of smoke, flames, or extinguishing agent, will enter any compartment occupied by the crew or passengers; and
- there is a separate approved smoke detector or fire detector system to give warning at the pilot or flight engineer station.

Class C. A Class C cargo or baggage compartment is one not meeting the requirements for either a Class A or B compartment but in which:

- there is a separate approved smoke detector or fire detector system to give warning at the pilot or flight engineer station;
- there is an approved built-in fire extinguishing or suppression system controllable from the pilot or flight engineer station;
- there are means to exclude hazardous quantities of smoke, flames, or extinguishing agent, from any compartment occupied by the crew or passengers; and
- there are means to control ventilation and draughts within the compartment so that the extinguishing agent used can control any fire that may start within the compartment.

Class D. A Class D cargo or baggage compartment is one in which:

- a fire occurring in it will be completely confined without endangering the safety of the aeroplane or the occupants;
- there are means to exclude hazardous quantities of smoke, flames, or other noxious gases from any compartment occupied by the crew or passengers;
- ventilation and draughts are controlled within each compartment so that any fire likely to occur in the compartment will not progress beyond safe limits; and
- consideration is given to the effect of heat within the compartment on adjacent critical parts of the aeroplane.

Class E. A Class E cargo compartment is one on aeroplanes used only for the carriage of cargo and in which:

- (a) there is a separate approved smoke or fire detector system to give warning at the pilot or flight engineer station;
- (b) there are means to shut off the ventilating airflow to, or within, the compartment, and the controls for these means are accessible to the flight crew in the crew compartment;
- (c) there are means to exclude hazardous quantities of smoke, flames, or noxious gases, from the flight crew compartment; and
- (d) the required crew emergency exits are accessible under any cargo loading condition.

CARGO IMP CODES. A standard system of coding for cargo message elements. IMP codes are used by operators in data exchange in order to minimise transmission time. See B.2.2.4 for a list of Cargo IMP Codes.

CARRIER. —see OPERATOR.

CARTRIDGES. Generic term, applied to any explosive article designed to deliver combustion gases, under pressure, with a view to performing a given mechanical action, for example to propel a projectile. In particular, it applies to assembled ammunition consisting of a case fitted with a primer, filled with propellant powder with or without projectile. The term cartridge is used also to indicate a unit charge of blasting explosive, wrapped in a thin paper, plastic or other envelope, the shape of which is ordinarily a cylinder. However, cartridge-blasting explosives are not considered as articles but as substances.

CARTRIDGES, ACTUATING FOR FIRE EXTINGUISHER OR APPARATUS VALVE, EXPLOSIVE. 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 or either opens or closes a valve. (See Cartridges, power device.)

CARTRIDGES, FLASH. Articles consisting of a casing, a primer and a flash powder, all assembled in one piece ready for firing.

CARTRIDGES FOR WEAPONS.

- (a) 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 for Weapons, blank");
- (b) incendiary, smoke, toxic and tear-producing cartridges are described in this appendix under "Ammunition, incendiary", etc.

CARTRIDGES FOR WEAPONS, 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.

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.

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 Charges, shaped which are listed separately.

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.

CARTRIDGES, SIGNAL. Articles designed to fire-coloured flares or other signals from signal pistols, etc.

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. Shotgun cartridges of any calibre are included in this definition. The term excludes Cartridges, small arms, blank which are listed separately and some small arms cartridges which are listed under Cartridges for weapons, inert projectile.

CARTRIDGES, SMALL ARMS, BLANK. —see CARTRIDGES FOR WEAPONS, BLANK.

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.

CASES, COMBUSTIBLE, EMPTY, WITHOUT PRIMER. Articles consisting of cartridge cases made partly or entirely from nitrocellulose.

CASTOR BEANS. The residue from extraction of oil from the castor seed.

CASTOR FLAKE. —see CASTOR BEANS.

CASTOR MEAL. —see CASTOR BEANS.

CASTOR POMACE. —see CASTOR BEANS.

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.

CEMENT. The fine grey powder composed of lime, alumina and silica which sets to a hard product when water is added. Also known as hydraulic cement or Portland cement. It is used to make concrete. This product is not restricted for transport by air.

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CEMENT, FLAMMABLE. This product, properly called an adhesive, usually contains rubber or a rubber-like substance and a solvent. It is used to bond other substances together such as paper or leather. The solvent may be flammable.

CHARGES, BURSTING. Articles consisting of a charge of detonating explosives 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 fibreboard, plastics, metal or other material. The term excludes Bombs, Mines, etc., which are listed separately.

CHARGES, DEPTH. Articles consisting of a charge of detonating explosive contained in a drum or projectile. They are designed to detonate under water.

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.

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.

CHARGES, PROPELLING FOR CANNON. Articles consisting of a propellant charge in any physical form, with or without a casing, for use in a cannon.

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.

CHARGES, SHAPED, FLEXIBLE, LINEAR. Articles consisting of a V-shaped core of a detonating explosive and are clad by a flexible metal sheath.

CHARGES, SUPPLEMENTARY, EXPLOSIVE. Articles consisting of a small removable booster used in the cavity of a projectile between the fuze and the bursting charge.

CHEMICAL KITS. Boxes, cases, etc., containing small amounts of one or more compatible items of dangerous goods used for analytical or other purposes.

CHEMICAL SAMPLE, TOXIC. This entry may only be used for chemical samples taken for analysis in connection with the implementation of the *Chemical Weapons Convention*.

CLOSURES. Devices which close an opening in a receptacle.

COAL GAS COMPRESSED. The gas obtained by the destructive distillation of bituminous coal. It is shipped in steel cylinders and classed as a toxic flammable compressed gas.

COATING SOLUTIONS. Materials such as automobile undercoatings, drum or barrel lining materials, etc. which

cannot properly be described as cements, but present similar hazards in transportation. They usually contain flammable solvents.

COCCULUS. Is the dried fruit or berry of an Oriental plant having toxic qualities.

COMBINATION PACKAGINGS. Are 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 Section 5.

▲ **COMPETENT AUTHORITY.** (Radioactive Material Only). Any body or authority designated or otherwise recognized as such for any purpose in connection with these Regulations. A list of competent authorities is given in Appendix D.2.

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

COMPONENTS, EXPLOSIVE TRAIN, NOT OTHERWISE SPECIFIED. Devices containing an explosive, designed to transmit the detonation within an explosive train.

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 Regulations are regarded as single packagings.

▲ **CONFINEMENT SYSTEM.** (Radioactive Material Only). 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.

Note:

The name and address of the consignee which appears on the Shipper's Declaration for Dangerous Goods form may differ from that on the Air Waybill.

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

CONSOLIDATED SHIPMENT. —see CONSOLIDATED CONSIGNMENT.

CONSOLIDATED CONSIGNMENT. A consignment of multi-packages which has been originated by more than one person each of whom has made an agreement for carriage by air with another person other than a scheduled air carrier. Conditions applied to that agreement may or may not be the same as conditions applied by the scheduled air carrier for the same carriage.

CONSOLIDATOR. A person or organization performing a consolidation.

CONSUMER COMMODITY. A Consumer Commodity is defined as 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. See Special Provision A112 for Classes and Divisions permitted under this definition.

❖ **CONTAINMENT SYSTEM.** (Radioactive Material Only). The assembly of components of the packaging specified by the designer as intended to retain the radioactive material during transport.

❖ **CONTAMINATION.** (Radioactive Material Only). The presence of a radioactive substance on a surface in quantities in excess of 0.4 Bq/cm² (0.01 nCi/cm²) for beta and gamma emitters and low toxicity alpha emitters, or 0.04 Bq/cm² (0.001 nCi/cm²) for all other alpha emitters. This is either:

- *Fixed contamination*—contamination other than non-fixed contamination; or
- *Non-fixed contamination*—contamination that can be removed from a surface during normal conditions of transport.

CONTRIVANCES, WATER-ACTIVATED, WITH BURSTER, EXPELLING CHARGE OR PROPELLING CHARGE. Articles whose functioning depends upon physico-chemical reaction of their contents with water.

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.

COPRA. The dried meat of coconuts used to produce coconut oil. Copra contains up to 67% oil and is subject to spontaneous combustion.

CORD, DETONATING, FLEXIBLE. Article consisting of a core of detonating explosive enclosed in spun fabric with plastic or other covering, unless the spun fabric is sift-proof.

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.

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.

CRATES. Are outer packagings with incomplete sides. They are not acceptable for air transport except as an overpack.

Note:

For air transport, crates may not be used as outer packagings or composite packagings.

CREW MEMBER. A person assigned by an operator to duty on an aircraft during a flight duty period.

❖ **CRITICALITY SAFETY INDEX (CSI).** Assigned to a package, overpack or freight container containing fissile material. A number which is used to provide control over the accumulation of packages, overpacks or freight containers containing fissile material.

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

CYLINDERS. Transportable pressure receptacles of a water capacity not exceeding 150 L.

CRYOGENIC LIQUIDS. Are low temperature liquefied gases, such as air, argon, helium, neon and nitrogen.

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

CUTTERS, CABLE, EXPLOSIVE. Articles consisting of a knife-edged device which is driven by a small charge of deflagrating explosive into an anvil.

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 Regulations or which are classified according to the Regulations.

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 or environmental 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 or environmental 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 jeopardises an aircraft or its occupants is also deemed to be a dangerous goods incident. (A dangerous goods accident or incident may also constitute an aircraft accident or incident as specified in *Annex 13 to the Chicago Convention on International Civil Aviation - Aircraft Accident 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.

DE-ICING FLUIDS. Frequently contain large proportions of alcohol or other flammable liquids.

❖ **DESIGN.** (Radioactive Material Only). The description of special form radioactive material, low dispersible radioactive material, package or packaging which enables such an item to be fully identified. The description may include specifications, engineering drawings, reports demonstrating compliance with regulatory requirements, and other relevant documentation.

DESIGNATED POSTAL OPERATOR. Any governmental or non-governmental entity officially designated by a Universal Postal Union (UPU) member country to operate

postal services and to fulfill the related obligations arising from the acts of the Convention on its territory.

DETONATOR ASSEMBLIES, NON-ELECTRIC, FOR BLASTING. Non-electric detonators assembled with and activated by such means as safety fuse, shock 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".

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.

DRESSING, LEATHER. May contain liquids or solvents of low flash point, and hence be classified as flammable liquids.

DRUMS. Are 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.

DRY ICE. —see CARBON DIOXIDE, SOLID.

DRY SHIPPER. Insulated packagings containing refrigerated liquid nitrogen fully absorbed in a porous material and intended for transport, at low temperature, of dangerous or non-dangerous products where 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.

DYE, N.O.S. Are cyclic or ring compounds, containing an amino, hydroxy, sulfonic acid, or quinone group or a combination of these groups used in the manufacture of dyes.

DYE INTERMEDIATE N.O.S. —see DYE, N.O.S

ELECTROLYTE. This term is commonly applied to the dilute sulphuric acid used in the ordinary lead plate storage batteries. The solution of potassium hydroxide used in some storage batteries is also called electrolyte. The term electrolyte is sometimes applied to the strong sulphuric acid which is meant for use in storage batteries after dilution with water.

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).

ENTIRE LOAD. (Explosive Material Only). Means such as 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.

EXCEPTED PACKAGE. (Radioactive Material Only). Is a packaging provision (see 10.5.8) which may be used to package radioactive material in limited quantities, instruments or articles which contain radioactive material; all of these are limited by the applicable activity limits contained in Table 10.3.D. As well, empty packages which previously contained radioactive material as limited by the requirements of 10.3.11.1.5 may be shipped under these provisions. Because the activities are so limited, categorisation, labelling and Shipper's Declarations are not required for shipments prepared under these provisions. Therefore the term "radioactive material in limited quantity" should not be confused with the "limited quantity" provisions (see Subsection 2.7) as applied to non-radioactive materials. Similarly, the "excepted package" provisions as applied to radioactive materials should not be confused with the "excepted quantity" provisions (see Subsection 2.6) applied to non-radioactive materials.

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

EXCESS BAGGAGE (Baggage consigned as cargo). Baggage which a passenger has presented to check-in as accompanied checked baggage, but which exceeds the passenger's baggage allowance specified by the operator and which is consequently consigned as cargo in order to be sent to the same destination as the passenger.

Note:

This is commonly referred to as "unaccompanied baggage" or "baggage consigned as cargo" (see The Air Cargo Tariff (TACT) Rules 3.7.8).

EXCLUSIVE USE. (Radioactive Material Only). 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. Authorization, other than an approval, granted by an appropriate national authority providing relief from the provisions of these Regulations. The requirements for exemptions are given in 1.2.6.

EXPELLING CHARGE. An explosive charge designed to eject the projectile from the parent article without damage.

EXPLODE. The verb used to indicate those explosive effects capable of endangering life and property through blast, heat and projection or 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 ARTICLE. An article containing one or more explosive substances.

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 stabilisers.

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. These explosives must be in powdery, gelatinous or elastic form. The term includes dynamite, gelatine, blasting and gelatine dynamites.

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.

EXPLOSIVE, BLASTING, TYPE C. Substances consisting of either potassium or sodium chlorate or potassium, sodium or ammonium perchlorates 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.

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.

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; explosive slurry and explosives, watergel.

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, has demonstrated through tests that it is so insensitive that there is very little probability of accidental initiation.

EXPLOSIVE, INITIATING. Explosive substances which, even in very small quantities, detonate on contact with a flame, on mild or low impact or as a result of friction; they are able to transmit detonation to other explosives close to them. The main initiating explosives are mercury

fulminate and lead azide. For transport purposes some explosives, such as lead styphnate, are considered as initiating explosives because of their great sensitivity to the contact of a flame, to impact or to friction. (Both these types of sensitive explosives are referred to as primary explosives.)

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.

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.

EXTERNAL CARRIAGE. Any load suspended from a helicopter or in equipment attached to a helicopter.

EXTRACTS, AROMATIC OR FLAVOURING. Consist of substances used for flavouring/odorising/aromatising food, beverages, cosmetics, etc. They may have obnoxious properties such as an overpowering odour which, in the case of a leak, may cause extreme discomfort to passengers and crew. Some may contain flammable solvents and hence have a flash point sufficiently low to require classification as flammable liquids. Others may have corrosive or toxic properties and will require appropriate classification. Note that although there is a technical difference between "extracts" and "flavourings", for the purpose of these Regulations they are treated alike under the term "extracts".

FILLING RATIO. The ratio of the mass of gas to the mass of water at 15°C (59°F) that would fill completely a pressure receptacle ready for use.

FILMS, NITROCELLULOSE BASE. This type of film consists essentially of nitrocellulose. As such the material has a comparatively low ignition temperature and burns with great rapidity when ignited. Also, when burning, the material evolves gases that 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 quite unstable and may be liable to spontaneous heating unless kept under water.

FIRE EXTINGUISHERS. Are devices containing one or more non-flammable gases under pressure. They have a mechanism to spray the contained gas, or expel a liquid or powder through some type of nozzle.

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FIRE EXTINGUISHER CHARGES. Commonly consist of packages containing sodium bicarbonate (a dry powder) which is non-hazardous, and bottles containing concentrated sulphuric acid, a corrosive liquid.

FIRE LIGHTERS. Are usually made from peat, wood shavings, or sawdust and a flammable liquid.

FIRE POINT. The lowest temperature at which a liquid evolves vapour in sufficient concentration that when it is ignited in air, the liquid will continue to burn. It is usually close to the flash point.

FIREWORKS. Fireworks are pyrotechnic articles designed for entertainment.

FIRST AID KITS. Are boxes, cases, etc., containing small amounts of one or more compatible items of dangerous goods used for medical purposes.

FISSILE MATERIAL. Uranium-233, uranium-235, plutonium-239, plutonium-241 or any combination of these. Excepted from this definition is:

- natural uranium or depleted uranium which is unirradiated; and
- natural uranium or depleted uranium, which has been irradiated in thermal reactors only.

FLAMMABLE. The word flammable has the same meaning as inflammable in the English language.

FLARES. Articles containing pyrotechnic substances, which are designed to illuminate, identify, signal or warn. The term includes:

- Flares, aerial;
- Flares, surface.

FLASH POINT. Is defined as the lowest temperature at which flammable vapour is given off a liquid in a test vessel in sufficient concentration to be ignited in air when exposed momentarily to a source of ignition. This does not mean the temperature at which a liquid ignites spontaneously (see Spontaneous ignition temperature).

FLASH POWDER. Pyrotechnic substance which, when ignited, produces an intense light.

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

FLIGHT DISPATCHER. —see Flight Operations Officer.

FLIGHT OPERATIONS OFFICER. A person designated by the operator to engage in the control and supervision of flight operations, whether licensed or not, suitably qualified, who supports, briefs and/or assists the pilot-in-command in the safe conduct of the flight.

FRACTURING DEVICES, EXPLOSIVE, FOR OIL WELLS, WITHOUT DETONATOR. Articles consisting of a charge of detonating explosive 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.

FREIGHT CONTAINER (Non-Radioactive Material). —see UNIT LOAD DEVICE.

FREIGHT CONTAINER. (Radioactive Material only). An article of transport equipment designed to facilitate the carriage of goods by one or more modes of transport

without intermediate reloading. Small freight containers are those, which have either any overall outer dimension less than 1.5 m or an internal volume of not more than 3 m³. All other freight containers are considered to be large freight containers. Each freight container must meet the following requirements:

- it must be of a permanent enclosed character, and rigid and strong enough for repeated use; and
- it must be fitted with devices facilitating its handling, particularly in transfer from one mode of transport to another.

FREIGHT FORWARDER. A person or organization who offers the service of arranging the transport of cargo by air.

FREQUENCY OF TESTS. The number of times a test must be carried out within a given period of time.

FUEL CELL. A fuel cell is an electrochemical device that converts the chemical energy of a fuel to electrical energy, heat and reaction products.

FUEL CELL CARTRIDGE. 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 during normal conditions of transport.

FUEL CELL ENGINE. A device used to power equipment and which consists of a fuel cell and its fuel supply, whether integrated with or separate from the fuel cell, and includes all appurtenances necessary to fulfil its function.

FULL LOAD. (Radioactive Material Only). Obsolete term. See EXCLUSIVE USE.

FUSE/FUZE. Although these two words have a common origin (French fusee, fusil) and are sometimes considered to be different spellings, 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.

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 explosive effect.

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.

GALLIUM. Is a silvery-white metal with a melting point of 29.7°C (85.5°F) which may be under-cooled to almost 0°C (32°F) without solidifying. It has the property of penetrating very rapidly the grain boundaries of

aluminium alloys and other metals and causing embrittlement.

GAS DRIPS, HYDROCARBON. Is 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 hydrocarbon. It is very combustible and has a low flash point.

GAS TURBINE ENGINES. Generic term used for engines fuelled by flammable liquids, gas or other combustible fuels. They may power fixed wing or rotary aircraft, hover-craft (air cushion vehicles), marine vessels, land vehicles, pumps and power generating plants.

GHS. The fourth 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. 4.

GRENADES. Hand or rifle. Articles that 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".

GROSS WEIGHT. The total weight of the package as presented for transport.

GUN POWDER. —see BLACK POWDER.

HYDROCARBON GAS, COMPRESSED. Consists of hydrocarbon gas under high pressure, but not in the liquid condition.

HYDROCARBON GAS, LIQUEFIED. Consists of hydrocarbon gas from natural gas or from distillations of petroleum which are liquefied by pressure.

HYPOCHLORITE SOLUTION. Are water solutions containing a soluble hypochlorite. The concentration of the solutions vary over a wide range. 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. Contact with textile fibres, etc. will cause severe damage to fibres and to colours. The solutions are used for water-treatment, bleaching, etc.

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

ID NUMBER. A temporary identification number (ID) in the 8000 series assigned to an article or substance for which no UN number has been assigned. (The prefix "ID" must always be used in conjunction with these numbers.)

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

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* Cord, igniter; Fuse, igniter; Fuse, instantaneous, non-detonating; Fuzes, igniting; Lighters, fuse; Primers, cap type; Primers, tubular. These articles are listed separately.

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).

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.

INFLAMMABLE. —see FLAMMABLE.

INITIAL BOILING POINT. The temperature at which the liquid under test first boils.

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.

INNER PACKAGINGS. Are packagings for which an outer packaging is required for transport.

Note:

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

INNER RECEPTACLES. Are receptacles which require an outer packaging in order to perform their containment function.

Note:

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 not therefore an "inner packaging".

INORGANIC. Inorganic compounds are all elements, alloys and compounds, which do not contain a carbon-carbon linkage. Some examples of *inorganic* substances are carbides, carbon disulphide; such toxic materials as phosgene or chlorine and inorganic acids such as hydrochloric, hydrofluoric, and sulphuric acids. (See also ORGANIC.)

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

INTERMEDIATE BULK CONTAINERS (IBCs). Are rigid or flexible portable packagings that:

(a) Have a capacity of:

- less than 3,000 L for solids and liquids of Packing Group II and III;
- less than 1,500 L for solids of Packing Group I when packed in flexible, rigid plastics, composite, fibreboard and wooden IBCs;
- less than 3,000 L for solids of Packing Group I when packed in metal IBCs;
- less than 3,000 L for radioactive material Class 7;

(b) Are designed for mechanical handling;

(c) Are resistant to the stresses produced in handling and transport, as determined by tests.

Note:

IBCs are only authorised by these Regulations for UN 3077, Environmentally hazardous substances, solid, n.o.s. as provided in Packing Instruction 956.

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 Chicago Convention on International Civil Aviation.

IRON MASS AND IRON SPONGE. Consist of a mixture of wood shavings with iron oxide and possibly lime or other material. If properly made and all the iron is properly oxidised, the material is free from the hazard of spontaneous heating or ignition. If there is an undue amount of metallic unoxidized iron, further oxidation is liable to occur, producing sufficient heat in closely packed material to cause fire. This material may be ignited by external sparks. Iron mass is used for gas purification. See IRON OXIDE, SPENT.

IRON OXIDE, SPENT OR IRON SPONGE, SPENT. Consists of iron mass or iron sponge after saturation with sulphur in gas purification. This spent material is very liable to spontaneous heating and ignition. See IRON MASS AND IRON SPONGE.

ISO (standard). An international standard published by the International Organization for Standardization (ISO—1, Voie-Creuse, CH-1211 Geneva 20, Switzerland).

ISOCYANATES. 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 Regulations.

ISOSORBIDE DINITRATE MIXTURE. Requires the use of a phlegmatizer such as lactose, mannose, calcium, hydrogen phosphate or starch. However, other phlegmatizers may be used at the discretion of the appropriate authority, provided they have identical phlegmatizing properties.

JERRICANS. Are metal or plastic packagings of rectangular or polygonal cross-section.

JET PERFORATING GUNS, OIL WELL, WITHOUT DETONATOR. Article consisting of a steel tube or metallic strip into which are inserted shaped charges connected by detonating cord, without means of ignition.

LACQUER BASE OR LACQUER CHIPS, DRY. May consist of a colloided solid mixture of nitrocellulose, pigment, gums, and a plasticizer. Those containing nitrocellulose are highly flammable.

LARGE PACKAGINGS. Are packagings consisting of an outer packaging which contains articles or inner packagings and which are designed for mechanical handling, and exceed 400 kg net mass or 450 L capacity but have a volume not more than 3,000 L. Not permitted for air transport.

LIGHTERS, FUSE. Articles of various design actuated by friction, percussion or electricity and used to ignite safety fuse.

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) (UN Publication ECE/TRANS/202).

△ **LITHIUM BATTERY.** "Battery" means two or more cells which are electrically connected together and fitted with devices necessary for use, for example, case, terminals, marking and protective devices. A single cell lithium battery is considered a "cell" and must be tested according to the testing requirements for "cells" for the purposes of these Regulations and the provisions of subsection 38.3 of the UN Manual of Tests and Criteria (see also the definition for "lithium cell").

Note:

Units that are commonly referred to as "battery packs", "modules" or "battery assemblies" having the primary function of providing a source of power to another piece of equipment are for the purposes of these Regulations and the provisions of Subsection 38.3 of the UN Manual of Tests and Criteria treated as batteries.

The term "lithium battery" refers to a family of different chemistries, comprising many types of cathodes and electrolytes. For the purposes of the Regulations they are separated into:

- Lithium metal batteries. Are normally primary (non-rechargeable) batteries that have lithium metal or lithium compounds as an anode. The most common type of lithium cell used in consumer applications uses metallic lithium as anode and manganese dioxide as cathode, with a salt of lithium dissolved in an organic solvent; and
- Lithium-ion batteries (sometimes abbreviated Li-ion batteries). Are a type of secondary (rechargeable) battery commonly used in consumer electronics. Also included within lithium-ion batteries are lithium polymer batteries.

LITHIUM CELLS. A single encased electrochemical unit (one positive and one negative electrode) which exhibits a voltage differential across its two terminals. Under these Regulations and the UN Manual of Tests and Criteria, to the extent the encased electrochemical unit meets the definition of "cell" herein, it is a "cell", not a "battery", regardless of whether the unit is termed a "battery" or a "single cell battery" outside of these Regulations and the UN Manual of Tests and Criteria.

LITHIUM SILICON. Is a so-called alloy of metallic lithium and silicon used for industrial purposes. The material is somewhat combustible and reactive with water. The containers must be maintained in a condition to prevent entrance of moisture.

☢ LOW DISPERSIBLE RADIOACTIVE MATERIAL. (Radioactive Material Only). 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 activity apply.

☢ LOW TOXICITY ALPHA EMITTER. (Radioactive Material Only). Natural uranium; depleted uranium; natural thorium; uranium-235 or uranium-238; thorium-232; thorium-228 and thorium-230 when contained in ores or physical or chemical concentrates; and radionuclides with a half-life of less than 10 days.

MAGNESIUM SCRAP. Is borings, clippings, shavings, sheets, turnings, or scalpings 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.

MAGNETIZED MATERIALS. Cover materials with relatively high magnetic field strength such as magnetrons and non-shielded permanent magnets without keeper bars installed. 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 operator's special stowage regulations since they may affect aircraft instruments, particularly the compasses.

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 fifth revised edition of the United Nations publication entitled *Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria* and Amendment 1 (ST/SG/AC.10/11/Rev.5 and Amend.1).

MASS. —see WEIGHT.

MASS EXPLOSION. An explosion that affects almost the entire load virtually instantaneously.

MATCHES, SAFETY (BOOK, CARD, OR STRIKE-ON-BOX). Are matches intended to be struck on a prepared surface.

MATCHES, STRIKE-ANYWHERE OR FUSEE. Usually contain phosphorus sesquisulphide, potassium chlorate and other ingredients. The strike-anywhere matches are readily ignited by friction on almost any dry surface. When a closed package of strike-anywhere matches is ignited by impact or friction the head composition burns off the matches and the fire then usually goes out unless the package is broken. If the package is broken, allowing access of air, the fire will continue. Packages of these matches that have been wetted for any reason and subsequently dried should be handled with extreme caution.

MAXIMUM CAPACITY. As used in Section 6 is the maximum inner volume of receptacles or packagings expressed in litres.

MAXIMUM NET MASS. As used in Section 6 is 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. (Radioactive Material Only). 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 of transport in the absence of venting, external cooling by an ancillary system or operational controls during transport.

MAXIMUM TRANSPORT TEMPERATURE. The maximum temperature likely to be encountered by a substance in transport.

METAL CATALYST, FINELY DIVIDED, ACTIVATED, OR SPENT. Is metal in an extremely finely divided form. It must be shipped wet in moisture-tight and airproof packagings. If exposed to air, the metal may become hot and may even ignite.

METAL HYDRIDE STORAGE SYSTEM. A single complete hydrogen storage system, including a receptacle, metal hydride, pressure relief device, shut-off valve, service equipment and internal components used for the transport of hydrogen only.

METHYLACETYLENE AND PROPADIENE MIXTURE, STABILIZED. A flammable gas mixture that is reasonably stable at ordinary temperatures. While this is an acetylene

derivative, the gas is not shipped dissolved in liquid and the cylinders do not require an absorbent filler.

MINES. Articles normally consisting 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".

MISCIBLE. The ability of a liquid (or gas) to dissolve uniformly in another liquid (or gas). Miscibility depends on the chemical nature of the substances involved and in some cases, liquids may only be partially miscible. Liquids that do not mix at all are said to be *immiscible*.

MIXTURE. Mixture means a material composed of more than one chemical compound or element.

MOTOR FUEL ANTI-KNOCK MIXTURE. A mixture of one or more organic lead compounds 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.

❖ **MULTILATERAL APPROVAL.** (Radioactive Material Only). The approval of a design by the competent authorities of the State of origin and of each State through or into which (see Note) the consignment is to be transported.

Note:

The term "through or into" specifically excludes "over", i.e. the approval and notification requirements would not apply to a State over which radioactive material is carried in an aircraft, provided that there is no scheduled stop in that State.

MULTIPLE-ELEMENT GAS CONTAINERS (MEGCs). Are multi modal assemblies of cylinders, tubes and bundles of cylinders which are interconnected by a manifold and which are assembled within a framework. The MEGC includes service equipment and structural equipment necessary for the transport of gases. Not permitted for air transport.

NET EXPLOSIVE MASS (NEM). The total mass of the explosive substances, without the packagings, casings, etc. (net explosive quantity (NEQ), net explosive contents (NEC), or net explosive weight (NEW) are often used to convey the same meaning).

△ **NET QUANTITY.** The weight or volume of the dangerous goods contained in a package excluding the weight or volume of any packaging material. For the purposes of this definition "dangerous goods" means the substance or article as described by the proper shipping name shown in Table 4.2, e.g. for "Fire extinguishers" the net quantity is the weight of the fire extinguisher. For articles packed with equipment or contained in equipment, the net quantity is the net weight of the article, e.g. for lithium ion batteries contained in equipment, the net quantity is the net weight of the lithium ion batteries in the package.

NITRATING ACID MIXTURE. A mixture of nitric and sulphuric acids used for the nitration of glycerine, cellulose or other organic substances. This acid mixture coming in contact with organic matter commonly causes fire, unless the mixture contains much water.

NOT RESTRICTED. Means not subject to or restricted by these Regulations, except as otherwise stated.

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 is classified as a toxic gas because it contains a high proportion of Carbon Monoxide.

OPEN CRYOGENIC RECEPTACLE. A transportable thermally insulated receptacle for refrigerated liquefied gases maintained at atmospheric pressure by continuous venting of the refrigerated liquefied gas.

OPERATOR. A person, organisation or enterprise engaged in or offering to engage in an aircraft operation.

ORGANIC. Organic substances are compounds which contain a carbon-carbon linkage. There are a few exceptions but by methodical reasons they are counted to belong to the organic compounds (e.g. Methane CH₄), for example carbon oxides, the carbides, carbon disulphide, etc.; ternary compounds such as metallic cyanides, metallic carbonyls, phosgene (COCl₂), carbonyl sulphide (COS), etc.; and the metallic carbonates, such as calcium carbonate and sodium carbonate. Some examples of organic substances are hydrocarbons, alcohols, ethers, aldehydes, ketones, organic solvents and organic acids. (See also "Inorganic".)

ORGANIC PEROXIDES. Organic peroxides are classified into seven types according to the degree of danger. These types range from A, which is not accepted for transport, to G which is exempted from Division 5.2. The classification of B to F is directly related to the maximum quantity allowed in one package. The list of currently assigned Organic Peroxides is shown in Appendix C.

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. Dangerous goods packages contained in the overpack must be properly packed, marked, labelled and in proper condition as required by these Regulations. For cooling purposes, an overpack may contain Carbon dioxide, solid (dry ice), provided that the overpack meets the requirements of Packing Instruction 954. (A Unit Load Device is not included in this definition.)

Note:

Shrink-wrap or banding may be considered an overpack.

OXYGEN GENERATOR, CHEMICAL. Devices containing chemicals which upon activation release 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 oxygen reacts with 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.

PACKAGE. (Non-Radioactive Material). The complete product of the packing operation consisting of the packaging and contents prepared for transport.

PACKAGING. (Non-Radioactive Material). One or more receptacles and any other components or materials necessary for the receptacles to perform their containment and other safety functions and to ensure compliance with the minimum packing requirements of these Regulations.

⚠ **PACKAGING.** (Radioactive Material Only). The assembly of components necessary to enclose completely the radioactive contents. It may in particular, consist of one or more receptacles, absorbent materials, spacing structures, radiation shielding, service equipment for filling, emptying, venting and pressure relief and devices integral to the package. The packaging may be a box, drum, or similar receptacle, or may also be a freight container.

PACKING. The art and operation by which articles or substances are enveloped in wrappings and/or enclosed in packagings or otherwise secured.

PACKING GROUP. An indication of the relative degree of danger presented by various articles and substances within a class or division. Roman numerals I, II and III are used to represent "high danger", "medium danger", and "low danger" respectively.

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

PERCENTAGE FILLED. The percentage of the capacity filled with the prescribed material.

PHLEGMATISER. A solid or liquid which is added to a substance such as an explosive or an organic peroxide in order to reduce its sensitivity to heat and impact, thereby assisting in ensuring safety during transport.

PHLEGMATIZED. Means that a substance (or "phlegmatizer") has been added to an explosive to enhance its safety in handling and transport. The phlegmatizer renders the explosive insensitive, or less sensitive, to the following actions: heat, shock, impact, percussion or friction. Typical phlegmatizing agents include, but are not limited to: wax, paper, water, polymers (such as chlorofluoropolymers), alcohol and oils (such as petroleum jelly and paraffin).

PHOTO-FLASH POWDER, IN UNITS. —see FLASH POWDER.

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 the flight.

PLASTIC SOLVENT. 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–32°C).

POLYMERIC BEADS, EXPANDABLE. Semi-processed products used to manufacture polymeric articles. These are impregnated with a flammable gas or liquid as a blowing agent and may evolve small quantities of flammable gas during transportation.

POLYMERIZABLE MATERIAL. Any liquid, solid, or gaseous material which, under conditions incident to transportation, may polymerize (combine or react with itself) so as to cause dangerous evolution of gas or heat.

PORTABLE TANK. A tank having a capacity of more than 450 L whose shell is fitted with items of service equipment and structural equipment necessary for the transport of dangerous goods, that has stabilising members external to the shell and that is not permanently secured aboard the aircraft. It must be capable of being filled and discharged without the need for the removal of its structural equipment and must be capable of being lifted on and off the aircraft when filled.

POST. See MAIL.

POTASSIUM SODIUM ALLOYS. Are 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.

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.

POWDER CAKE, WETTED. Substances consisting of nitrocellulose impregnated with not more than 60% of nitroglycerin or other liquid organic nitrates or a mixture of these.

POWDER PASTE, WETTED. —see POWDER CAKE, WETTED.

POWDER, SMOKELESS. Substances 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".

PREMIXING BURNER LIGHTER. Gas lighter in which fuel and air are mixed before being supplied for combustion, such as lighters producing a blue flame.

Note:

Premixing burner ("blue flame") lighters are forbidden for carriage by passengers and crew.

PRESSURE DRUMS. Are welded transportable pressure receptacles of a water capacity exceeding 150 L and of not more than 1,000 L, (e.g. cylindrical receptacles equipped with rolling hoops, spheres on skids). Not permitted for air transport.

PRESSURE RECEPTACLE. A collective term that includes cylinders, tubes, pressure drums, closed cryogenic receptacles, metal hydride storage systems and bundles of cylinders.

PRIMERS, CAP TYPE. Articles consisting of metal or plastics caps 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.

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.

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 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.

PROPELLANTS. Deflagrating explosives used for propulsion or for reducing the drag of projectiles.

PROPELLANT, LIQUID. A substance consisting of a deflagrating liquid explosive, used for propulsion or for reducing the drag of projectiles.

PROPELLANT, SOLID. A substance consisting of a deflagrating solid explosive, used for propulsion or for reducing the drag of projectiles.

PROPER SHIPPING NAME. The name to be used to describe a particular article or substance in all shipping documents and notifications and, where appropriate, on packagings.

Note:

These names are indicated in bold face characters in the List of Dangerous Goods. See also 8.1.3.

PROTECTIVE BREATHING EQUIPMENT (PBE). Also known as a "smoke hood", PBE are carried on commercial aircraft as part of the safety equipment for flight and cabin crew. PBE contain a small chemical oxygen generator (UN 3356) similar to that found fitted in the cabin for passenger use.

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. All are decidedly combustible and all fume

strongly on exposure to air to produce fumes that are somewhat irritating and may be somewhat toxic.

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.

PYROXYLIN SOLUTION. Consists of 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.

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 Regulations is achieved in practice.

QUALITY CONTROL. Several production samples selected at random must be tested in accordance with the requirements and frequency described for each type of package. If the requirements are not met, the whole production lot must be rejected unless otherwise specified.

QUANTITY. For packaging tests, quantity means a certain number of random samples, or in certain cases all of each individual type and size, out of a lot or out of a production series.

RADIATION LEVEL. (Radioactive Material Only). The corresponding dose-equivalent rate expressed in millisieverts per hour (previously in millirem per hour).

Note:

It is recognised that millisieverts (or millirem) are not the correct units that should apply to radiation exposures in all cases; nevertheless, these units are used exclusively in these Regulations for convenience.

RADIOACTIVE CONTENTS. (Radioactive Material Only). The radioactive material together with any contaminated solids, liquids and gases within the packaging.

RECEPTACLE. A containment vessel, including closures, for receiving and holding substances or articles.

RECEPTACLE. (Explosive Material Only). Inner and intermediate packagings including boxes, bottles, cans, drums, jars and tubes, including any means of closure.

RE-CONDITIONED PACKAGINGS.

(a) Include metal drums that are:

1. cleaned to original materials of construction, with all former contents, internal and external corrosion and all external coatings and labels removed;
2. restored to original shape and contour, with chimes (if any) straightened and sealed, and all non-integral gaskets replaced;
3. 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 with other significant defects.

(b) Include plastic drums and jerricans that:

1. are cleaned to original materials of construction, with all former contents, external coatings and labels removed;
2. have all non-integral gaskets replaced; and
3. 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.

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 re-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 have 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 tests in Subsection 6.3 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 plastic material", provides additional guidance on procedures to be followed in approving the use of recycled plastic material.

REELS. (Explosive Material Only). 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.

RELEASE DEVICES, EXPLOSIVE. Articles consisting of a small charge of explosive with means of initiation. They sever rods or links to release equipment quickly.

REMANUFACTURED LARGE PACKAGING. Means a metal or rigid plastic large packaging that:

- (a)** is produced as a UN type from a non-UN type; or
- (b)** is converted from one UN design type to another UN design type.

Remanufactured large packagings are subject to the same requirements of these Regulations as apply to new large packagings of the same type

Not permitted for air transport.

REMANUFACTURED PACKAGINGS.

(a) Include metal drums that:

1. are produced as a UN type from a non-UN type;
2. are converted from one UN type to another UN type; or
3. undergo the replacement of integral structural components (such as non-removable heads).

(b) Include plastic drums that:

1. are converted from one UN type to another UN type (e.g. 1H1 to 1H2); or
2. undergo the replacement of integral structural components.

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

REUSED PACKAGINGS. Are packagings to be filled which have been examined and found free of defects affecting the ability to withstand the performance tests; the term includes those which are transported within distribution chains controlled by the shipper of the product.

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.

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.

SADT. —see SELF-ACCELERATING DECOMPOSITION TEMPERATURE.

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

△ **SALVAGE PRESSURE RECEPTACLE.** Means a pressure receptacle with a water capacity not exceeding 1,000 L into which are placed damaged, defective, leaking or non-conforming pressure receptacle(s) for the purpose of transport e.g. for recovery or disposal.

Not permitted for air transport.

SEAT-BELT PRETENSIONER. Articles which contain pyrotechnical substances and are used as life-saving vehicle seatbelts.

SELF-ACCELERATING DECOMPOSITION TEMPERATURES (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 hospitalisation 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% 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.

▲ **SIEVERT.** (Radioactive Material Only). The sievert is the standard unit of measure for radiation dose-equivalent used in these Regulations; it is represented by the symbol "Sv". Other multiples of the sievert are frequently used in these Regulations (see B.2.2.3). The sievert replaces the older unit for dose-equivalent, the "rem". One Sv is equal to 100 rem.

SIFT-PROOF PACKAGINGS. Packagings impermeable to dry contents including fine solid material produced during transport.

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.

SINGLE PACKAGINGS. Are packagings which do not require any inner packaging in order to perform their containment function during transport.

SLUDGE, ACID. The acid waste resulting from oil refining, or from nitrating processes. It generally has somewhat the same hazards as the original acid.

SODA LIME. A mixture of calcium oxide or calcium hydroxide with sodium hydroxide.

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.

SOLID DANGEROUS GOODS. Dangerous goods, other than gases, that do not meet the definition of liquid dangerous goods.

SOLUTION. Solution means any homogeneous liquid mixture of two or more chemical compounds or elements that will not undergo any segregation under conditions normal to transport.

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.

OUNDING 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.

▲ **SPECIAL ARRANGEMENTS.** (Radioactive Material Only). Those provisions approved by the competent authority under which a consignment, which does not satisfy all the applicable requirements of these Regulations may be transported. For international shipments of this type multilateral approval is required.

▲ **SPECIAL-FORM RADIOACTIVE MATERIAL.** (Radioactive Material Only). Either an indispersible solid radioactive material or a sealed capsule containing radioactive material that must be so manufactured that it can be opened only by destroying the capsule.

▲ **SPECIFIC ACTIVITY.** (Radioactive Material Only). The activity of the radionuclide per unit weight of that nuclide. The specific activity of a material in which radionuclides are essentially uniformly distributed is the activity per unit weight of that material.

SPONTANEOUS IGNITION TEMPERATURE. The lowest temperature at which a substance will ignite spontaneously without an external source of ignition.

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.

□ **STATE OF DESTINATION.** The country (State) in the territory of which the consignment is finally to be unloaded from an aircraft.

△ **STATE OF ORIGIN.** The country (State) in the territory of which the consignment is to first be loaded on an aircraft.

STATE OF REGISTRY. The country on whose register the aircraft is entered.

STATE OF THE OPERATOR. The country in which the operator has his principal place of business or, if he has no such place of business, his permanent residence.

STORES (SUPPLIES).

(a) **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; and

(b) **STORES (SUPPLIES) TO BE TAKEN AWAY.** Goods for sale to the passengers and the crew of aircraft with a view to being landed.

Items that meet classification as dangerous goods and which are transported in accordance with 2.5.2 are considered as "cargo".

Note:

The word "landed" in this context generally means duty free or tax free goods that will be declared to Customs by passengers and crew and which may be subject to excise duty.

SUBSTANCES, EXPLOSIVE, VERY INSENSITIVE (SUBSTANCES, EVI) N.O.S. Substances that present a mass explosion hazard but which are so insensitive that there is very little probability of accidental initiation or of transition from burning to detonation under normal conditions of transport and which have passed Test Series 5.

SULPHURIC ACID, FUMING. Is sulphuric acid in which an excess of sulphur trioxide has been dissolved. It is more corrosive than ordinary sulphuric acid and evolves toxic fumes whilst ordinary sulphuric acid does not.

SULPHURIC ACID, SPENT. Is sulphuric acid usually of high concentration, which has been used for chemical processes and contains residual organic matter.

❖ **SURFACE CONTAMINATED OBJECT (SCO).** (Radioactive Material Only). A solid object which is not itself radioactive but which has radioactive material distributed on its surface.

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 gases as defined in 3.2.1.1.

Note:

These Regulations do not permit the use of a tank for the transport of radioactive material by air.

TEST CONDITION. Means the physical conditions imposed on the sample during the process of testing.

TEST PRESSURE. The required pressure applied during a pressure test for qualification or requalification.

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.

TOTAL CONTENTS. (Explosive Material Only). Means 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.

❖ **TRANSPORT INDEX (TI).** (Radioactive Material Only). A single number assigned to a package, overpack or freight container to provide control over radiation exposure.

TRAYS. (Explosive Material Only). 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.

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, hovercraft (cushion craft), marine vessels, land vehicles, pumps and power generating plants.

TURPENTINE SUBSTITUTES. 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.

ULLAGE. Amount by which a container, or a receptacle, falls short of being full.

Note:

Ullage is required to allow for the expansion of the contents.

UNCOMPRESSED GAS. Gas at a pressure not exceeding ambient atmospheric pressure at the time the containment system is closed.

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

❖ **UNILATERAL APPROVAL.** (Radioactive Material Only). An approval of a design which is required to be given by the competent authority of the State of origin of the design only.

❖ **UNIRRADIATED THORIUM.** Thorium containing not more than 10^{-7} gram 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.

UNIT LOAD DEVICE. Any type of freight container, aircraft container, aircraft pallet with a net, or aircraft pallet with a net over an igloo.

Notes:

1. An overpack is not included in this definition.
2. A freight container for radioactive material is not included in this definition.

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. (The prefix "UN" must always be used in conjunction with these numbers.)

❖ **URANIUM—NATURAL, DEPLETED, ENRICHED.**

- Natural uranium. Uranium (which may be chemically separated) containing the naturally occurring distribution of uranium isotopes (approximately 99.28% uranium-238, and 0.72% 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%.

In all cases, a very small mass percentage of uranium-234 is present.

VRI CODE. The distinguishing sign, consisting of one to three letters in capital Latin letters, of vehicles in International traffic as notified to the United Nations in accordance with the 1968 Convention on Road Traffic. (See Appendix D.1 and D.2.).

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.

WATT-HOUR RATING. Expressed in Watt-hours, the Watt-hour rating of lithium ion battery is calculated by

multiplying the rated capacity in ampere-hours by its nominal voltage.

WEIGHT. The force at which a body is attracted towards the earth and is equal to the mass multiplied by the acceleration due to gravity. For practical purposes, mass and weight are used interchangeably in these Regulations.

WHITE ASBESTOS. —see ASBESTOS.

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

ZIRCONIUM SUSPENDED IN A FLAMMABLE LIQUID.

Consists of 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 and therefore can be shipped only in very limited quantities when specially packed.

APPENDIX B—NOMENCLATURE

B.0 General

This Appendix describes the nomenclature used in these Regulations in three parts. Subsection B.1 describes the Units of Measurement. Subsection B.2 lists the Symbols, Abbreviations and Cargo IMP Codes. Subsection B.3 contains tables of useful conversion factors to and from SI units.

B.1 Units of Measurement

B.1.1 Use of SI Units

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 on International Civil Aviation*. The primary units of length, weight and volume will be the metre (m), the kilogram (kg) and the litre (L) and the unit of pressure will be the kilopascal (kPa). Where measurements relating to radioactivity occur in these Regulations, the values are shown in SI units followed by the non-SI equivalents in parentheses. The units used must always be expressed together with the quantities. Except as specifically provided for in these Regulations, only those abbreviations for units of measurement that are indicated in this section may be used in the transport of dangerous goods by air.

Note:

For small quantities, decimals of the above units, for example centimetre (cm) or millimetre (mm), gram (g) or milligram (mg) etc. may be used provided the units are always clearly specified.

B.1.2 Non-SI Equivalent

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 B.3.C 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.

Note:

All information relating to dangerous goods quantities must be provided in SI units.

B.1.3 Conversion Factors and Authorized Equivalents

Precise conversion factors for commonly used SI units are given in *Annex 5 to the Chicago Convention*. Tables B.3.A and B.3.B show conversion factors, to four

significant figures, for some units widely used in dangerous goods transport.

B.1.4 Number Format

The preferred decimal marker is a point on the line (period), e.g. 2.5 kg. However, use of the European format with a comma is also acceptable, e.g. 2,5 kg. When writing numbers less than one, a zero should be written before the decimal marker.

B.1.5 Pressure

Pressures of all kinds related to cylinders (such as test pressure, internal pressure) are always indicated in gauge pressure (pressure in excess of atmospheric pressure); however, the vapour pressure of substances is always expressed in absolute pressure.

B.2 Symbols and Abbreviations

B.2.1 Symbols

The following symbols have the meanings shown:

Symbol—Meaning

†—Indicates brief description in Appendix A. (Note: this symbol is not part of the proper shipping name).

★—The technical name or chemical group name(s) is required to be shown, in parentheses, following the proper shipping name. (Note: this symbol is not part of the proper shipping name).

⊗—Indicates a more restrictive requirement than ICAO

Y—Prefix letter indicating a Limited Quantity Packing Instruction. Also used to indicate compliance with the air transport requirements in the limited quantities mark.

>—Greater than

≥—Equal to or greater than

<—Less than

≤—Equal to or less than

□—Indicates addition of new item

△—Indicates change in this item

⊗—Indicates cancellation of item previously shown in this space (not implemented in electronic version)

☢—Indicates that the item relates entirely to Radioactive Shipments. Used in Subsection 2.8, State and operator variations and Appendix A—Glossary.

B.2.2 Abbreviations

△ B.2.2.1 General Abbreviations

The following general abbreviations have the meanings shown:

Abbreviation—General Term

CSI—Criticality Safety Index

Dang.—Dangerous (List 4.2, Column D)

Desc.—Description

Div.—Division

e.g.—for example

EQ—Excepted Quantity (List 4.2, Column F)

ERG—Emergency Response Guide (List 4.2, Column N)

etc.—and so forth

Fl.—fluid

Flamm.—Flammable (List 4.2, Column D)

G—Gross mass or weight of package as prepared for transport

IBC—Intermediate Bulk Container

ID—Identification number

i.e.—that is

Imp.—Imperial

IP—inner packaging

ISO—International Organization for Standardization

LC—lethal concentration

LD—lethal dose

LPG—liquefied petroleum gas

LTD QTY—Limited Quantity of Dangerous Goods

max—maximum

N/A—not applicable

NEC—Net Explosive Content

NEM—Net Explosive Mass

NEQ—Net Explosive Quantity

NEW—Net Explosive Weight

n.o.s.—not otherwise specified

PG—Packing Group

PI—Packing Instruction

Pkg—Packing

Pkg Instr.—Packing Instruction

Pkge—Package

ppm—parts per million (i.e. mg/kg)

PPR—Particular Packing Requirement

Qty—Quantity

SADT—the lowest temperature at which self accelerating decomposition may occur with a substance in the packaging as used in transport

SI—International System of Units

S.P.—Special Provision (List 4.2, Column M)

Spec.—Specification

Spont. Comb.—Spontaneously Combustible (List 4.2, Column D)

TI—Transport Index

UN—UN number assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods.

B.2.2.2 Technical Abbreviations

The following abbreviations for technical terms have the meanings shown:

Abbreviation—Technical Term

A/m—amperes per metre

bar—bar = unit of pressure in liquids/gases

Bq—becquerel = unit of radioactivity

°C—degree Celsius

Ci—curie = unit of radioactivity

cm—centimetre

cm²—square centimetre

ft—feet

g—gram

g/m²—grams per square metre

Gy—gray

h—hour

Hz—hertz

in—inch

J/kg—joule per kilogram

K—Kelvin = unit of temperature

keV—kilo electron volt

kg—kilogram

kgf—kilogram force

kg/m²—kilogram per square metre

kPa—kilopascal

L—litre

L—List 4.2 column N only, ERG (q.v.) code letter for low/other risk

m—metre

m²—square metre

m³—cubic metre

μm—micrometre

MeV—mega electron volt

mCi—millicurie

nCi—nanocurie
 μ Ci—microcurie
 mg—milligram
 mL—millilitre
 mm—millimetre
 mm^2/s —square millimetre per second = unit of kinematic viscosity
 mR/h—milliroentgen per hour
 mrem/h—millirem per hour
 mS/m—millisiemens per metre
 mSv—millisievert
 μ Sv/h—microsieverts per hour
 N—newton = unit of force
 N/mm² —newton per square millimetre = unit of mechanical strength (tensile, compressive strength)
 Ω/m —ohm per metre
 Pa—pascal = unit of pressure or stress
 R/h—roentgen per hour
 rem/h—rem per hour
 s—second = unit of time
 Sv—sievert
 Wh—Watt-hour
 W/m²—watts per square metre
 W/m/K—watts per metre per Kelvin

B.2.2.3 Prefixes for Decimal Multiples of SI Units

The following prefixes and symbols are used for decimal multiples of SI Units:

Prefix	Symbol	Multiplication Factor
peta	P	1 000 000 000 000 000 = 10^{15}
tera	T	1 000 000 000 000 = 10^{12}
giga	G	1 000 000 000 = 10^9
mega	M	1 000 000 = 10^6
kilo	k	1 000 = 10^3
hecto	h	100 = 10^2
deka	da	10 = 10^1
deci	d	0.1 = 10^{-1}
centi	c	0.01 = 10^{-2}
milli	m	0.001 = 10^{-3}
micro	μ	0.000 001 = 10^{-6}
nano	n	0.000 000 001 = 10^{-9}

△ B.2.2.4 IATA Cargo IMP Codes

The following Cargo-IMP Codes are used extensively within the airline industry and have the meanings shown:

Code—Meaning

CAO—Cargo Aircraft Only
 DGD—Shipper's Declaration for Dangerous Goods
 ELI—Lithium ion batteries excepted as per Section II of PI 965–967
 ELM—Lithium metal batteries excepted as per Section II of PI 968–970
 ICE—Carbon dioxide, solid (dry ice)
 IMP—Interline Message Procedure
 MAG—Magnetized Material
 RCL—Cryogenic Liquid (Packing Instruction 202)
 RCM—Corrosive
 RCX—Explosives 1.3C
 RDS—Biological Substance, Category B (UN 3373)
 REQ—Dangerous Goods in Excepted Quantities
 REX—To be reserved for normally forbidden Explosives, Divisions 1.1, 1.2, 1.3, 1.4F, 1.5 and 1.6
 RFG—Flammable Gas
 RFL—Flammable Liquid
 RFS—Flammable Solid
 RFW—Dangerous When Wet
 RGX—Explosives 1.3G
 RIS—Infectious Substance (UN 2814 or UN 2900)
 RLI—Fully regulated lithium ion batteries (Class 9) as per Section IA and IB of PI 965 and Section I of PI 966–967
 RLM—Fully regulated lithium metal batteries (Class 9) as per Section IA and IB of PI 968 and Section I of PI 969–970
 RMD—Miscellaneous Dangerous Goods
 RNG—Non-Flammable Non-toxic Gas
 ROP—Organic Peroxide
 ROX—Oxidizer
 RPB—Toxic substance
 RPG—Toxic Gas
 RRE—Excepted Packages of Radioactive Material
 RRW—Radioactive Material Category I-White
 RRY—Radioactive Material Categories II-Yellow and III-Yellow
 RSB—Polymeric Beads/Plastics Moulding Compound (Packing Instruction 957)



RSC—Spontaneously Combustible

RXB—Explosives 1.4B

RXC—Explosives 1.4C

RXD—Explosives 1.4D

RXE—Explosives 1.4E

B.2 RXG—Explosives 1.4G

RXS—Explosives 1.4S

B.3 Conversion Factors

Precise conversion factors for commonly used SI units are given in *Annex 5 to the Chicago Convention on International Civil Aviation*. Tables B.3.A and B.3.B show conversion factors, to four significant figures, for some units widely used in dangerous goods transport.

TABLE B.3.A
Conversion to SI Units

To convert	to	Multiply by
bar	kilopascal (kPa)	100.0
curie (Ci)	gigabecquerel (GBq)	37.00
temperature in degree Fahrenheit (°F)	temperature in degree Celsius (°C)	subtract 32°F and multiply by 5/9
temperature in degree Celsius (°C)	temperature in Kelvin	add 273.15
foot (ft)	metre (m)	0.3048
gallon (Imperial)	litre (L)	4.546
gallon (US liquid)	litre (L)	3.785
inch (in)	millimetre (mm)	25.40
kilogram per square centimetre (kg/cm ²)	kilopascal (kPa)	98.07
oersted	ampere per meter (A/m)	79.58
ounce (avoirdupois)	gram (g)	28.35
ounce, fluid (Imperial)	millilitre (mL)	28.41
ounce, fluid (US)	millilitre (mL)	29.57
pint (Imperial)	litre (L)	0.5683
pint (US)	litre (L)	0.4732
pound (avoirdupois)	kilogram (kg)	0.4536
pound per square inch (lb/sq.in)	kilopascal (kPa)	6.895
quart (Imperial)	litre (L)	1.137
quart (US)	litre (L)	0.9464
rad	gray (Gy)	0.01000
rem	sievert (Sv)	0.01000

Note:

Atmospheric pressure is the pressure exerted by the atmosphere. Gauge pressure is the pressure of a system measured by a gauge, which excludes atmospheric pressure. Absolute pressure is the sum of the available atmospheric pressure and the gauge pressure of the system.

Absolute Pressure = Gauge Pressure + Atmospheric Pressure.

= 150 psig (gauge pressure) + 14.7 psi (atmospheric pressure) = 164.7 psia, for example.

TABLE B.3.B
Conversion from SI Units

To convert	to	Multiply by
ampere per metre (A/m)	Oersted	0.01257
temperature in degree Celsius (°C)	temperature in degree Fahrenheit (°F)	multiply by 9/5 and add 32°F
temperature in Kelvin	temperature in degree Celsius (°C)	subtract 273.15
gram (g)	ounce (avoirdupois)	0.03527
gray (Gy)	rad	100.00
kilogram (kg)	pound (lb)	2.205
kilopascal (kPa)	bar	0.01000
kilopascal (kPa)	kilogram per square centimetre (kg/cm ²)	0.01020
kilopascal (kPa)	pound per square inch	0.1450
litre (L)	gallon (Imperial)	0.2200
litre (L)	gallon (US liquid)	0.2642
litre (L)	pint (Imperial)	1.760
litre (L)	pint (US)	2.113
litre (L)	quart (Imperial)	0.8799
litre (L)	quart (US)	1.057
metre (m)	foot (ft)	3.281
millilitre (mL)	ounce, fluid (Imperial)	0.03520
millilitre (mL)	ounce, fluid (US)	0.03381
millimetre (mm)	inch (in)	0.03937
sievert (Sv)	rem	100.00
terabecquerel (TBq)	curie (Ci)	27.03

TABLE B.3.C
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 weight, for 500 kg or less, quantities expressed in pounds may be substituted on the basis of 1 kg = 2 lb.



APPENDIX C—CURRENTLY ASSIGNED SUBSTANCES

C

C.1 Self-Reactive Substances of Division 4.1

This list is based on paragraph 2.4.2.3.2.4 of the 17th revised edition of the *UN Recommendations on the Transport of Dangerous Goods*, with irrelevant material removed.

Notes:

1. Self-reactive substances to be transported must fulfill the classification and the control and emergency temperatures (derived from the SADT) as listed.
2. Self-reactive substances not listed in Table C.1 are subject to classification approval by the appropriate national authority of the State of origin (See 3.4.1.2.4.1)

TABLE C.1
List of Currently Assigned Self-reactive Substances of Division 4.1 in Packages

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	1
Azodicarbonamide, formulation type C, temperature controlled	< 100			3234	1
Azodicarbonamide, formulation type D	< 100			3226	1
Azodicarbonamide, formulation type D, temperature controlled	< 100			3236	1
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-Disulphonylhydrazide, as a paste	52			3226	
Benzenesulphonyl hydrazide	100			3226	
4-(Benzyl(methyl)amino)-3-ethoxybenzenediazonium zinc chloride	100	+40	+45	3236	
4-(Benzyl(ethyl)amino)-3-ethoxybenzenediazonium zinc chloride	100			3226	
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	5
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	
Diethylenglycol 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)	100	+40	+45	3236	
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	3

TABLE C.1
List of Currently Assigned Self-reactive Substances of Division 4.1 in Packages (continued)

Self-Reactive Substance	Concentration (%)	Control Temperature (°C)	Emergency Temperature (°C)	UN Generic Entry	Notes
Diphenyloxide-4,4'-Di-sulphonyl hydrazide	100			3226	
4-Di-propylaminobenzenediazonium zinc chloride	100			3226	
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) Benzene diazonium zinc chloride	100	+40	+45	3236	
2-(N,N-Methylaminoethylcarbonyl)-4-(3,4-Dimethyl-phenylsulphonyl) Benzenediazonium hydrogen sulfate	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	4
Self-reactive liquid, sample, temperature controlled				3233	4
Self-reactive solid, sample				3224	4
Self-reactive solid, sample, temperature controlled				3234	4
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. For a complete description of the classification of Azodicarbonamide formulations see 2.4.2.3.3.2 of the UN Orange Book.
2. "Explosive" subsidiary risk label required and consequently forbidden for transport by air under any circumstances.
3. With a compatible diluent having a boiling point of not less than 150°C.
4. Approval of the appropriate national authority required.
5. 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 on the Transport of Dangerous Goods.

C.2 Organic Peroxides (Division 5.2)

This list is based on paragraph 2.5.3.2.4 of the 17th revised edition of the *UN Recommendations on the Transport of Dangerous Goods*, with irrelevant material removed.

Allocation of new organic peroxides or new formulations of currently assigned organic peroxides to a generic entry should be made by the competent authority of the country of manufacture and notification sent to the competent authority of the country of destination if so required by it.

Notes:

1. The *UN Orange Book* contains a complete description of the classification of Division 5.2, Organic Peroxides.
2. Peroxides to be transported must fulfill the classification and the control and emergency temperature (derived from the SADT) as listed.
3. Organic peroxides not listed in Table C.2 are subject to classification approval by the appropriate national authority of the State of origin (See 3.5.2.3.1)

TABLE C.2
List of Currently Assigned Organic Peroxides in Packages

Organic Peroxide	Concentration (%)	Diluent Type A (%)*	Diluent Type B (%)**	Inert solid (%)	Water (%)	Control Temperature (°C)	Emergency Temperature (°C)	UN Number (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 peroxypropionate	≤ 77		≥ 23			+10	+15	3113	
tert-Amylperoxy-3,5,5-trimethylhexanoate	≤ 100							Forbidden	
tert-Butyl cumyl peroxide	> 42-100							3107	
tert-Butyl cumyl peroxide	≤ 52			≥ 48				3108	
n-Butyl-4,4-di-(tert-butylperoxy) valerate	≤ 52			≥ 48				3108	
n-Butyl-4,4-di-(tert-butylperoxy) valerate	> 52-100							3103	
tert-Butyl hydroperoxide	> 79-90				≥ 10			3103	13
tert-Butyl hydroperoxide	≤ 79				> 14			3107	13, 23
tert-Butyl hydroperoxide	≤ 80	≥ 20				≥ 28		3105	4, 13
tert-Butyl hydroperoxide	≤ 72					≥ 7		3109	13
tert-Butyl hydroperoxide with Di-tert-Butyl peroxide	< 82 + > 9							3103	13
tert-Butyl monoperoxyxymaleate	> 52-100							Forbidden	3
tert-Butyl monoperoxyxymaleate	≤ 52							3108	
tert-Butyl monoperoxyxymaleate	≤ 52 as a paste							3108	
tert-Butyl monoperoxyxymaleate	≤ 52	≥ 48						3103	
tert-Butyl peroxyacetate	> 52-77	≥ 23						Forbidden	3
tert-Butyl peroxyacetate	> 32-52	≥ 48						3103	
tert-Butyl peroxyacetate	≤ 32							3109	
tert-Butyl peroxybenzoate	> 77-100		≥ 68					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	

TABLE C.2
List of Currently Assigned Organic Peroxides in Packages (continued)

Organic Peroxide	Concentration (%)	Diluent Type A (%) [*]	Diluent Type B (%) ^{**}	Inert solid (%)	Water (%)	Control Temperature (°C)	Emergency Temperature (°C)	UN Number (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 with 2,2-Di-(tert-butylperoxy) butane	≤ 31 + ≤ 36		≥ 33			+35	+40	3115	
tert-Butyl peroxy-2-ethylhexanoate with 2,2-Di-(tert-butylperoxy) butane	≤ 12 + ≤ 14	≥ 14		≥ 60				3106	
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 peroxyneohexanoate	≤ 77	≥ 23				0	+10	3115	
tert-Butyl peroxyneohexanoate	≤ 42 as a stable dispersion in water					0	+10	3117	
tert-Butyl peroxy-pivalate	> 67-77	≥ 23				0	+10	3113	
tert-Butyl peroxy-pivalate	> 27-67		≥ 33			0	+10	3115	
tert-Butyl peroxy-pivalate	≤ 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	≤ 77			≥ 6	≥ 17			3106	
3-Chloroperoxybenzoic acid	≤ 57			≥ 3	≥ 40			3106	
Cumyl hydroperoxide	> 90-98	≤ 10						3107	13
Cumyl hydroperoxide	≤ 90	≥ 10						3109	13, 18
Cumyl peroxyneodecanoate	≤ 52 as a stable dispersion in water					-10	0	3119	
Cumyl peroxyneodecanoate	≤ 77		≥ 23			-10	0	3115	
Cumyl peroxyneodecanoate	≤ 87	≥ 13				-10	0	3115	
Cumyl peroxyneohexanoate	≤ 77		≥ 23			-10	0	3115	
Cumyl peroxy-pivalate	≤ 77		≥ 23			-5	+5	3115	
Cyclohexanone peroxide(s)	≤ 91				≥ 9			3104	13
Cyclohexanone peroxide(s)	≤ 72 as a paste	≥ 28						3106	5, 20
Cyclohexanone peroxide(s)	≤ 72							3105	5
Cyclohexanone peroxide(s)	≤ 32			≥ 68				Exempt	29

TABLE C.2
List of Currently Assigned Organic Peroxides in Packages (continued)

Organic Peroxide	Concentration (%)	Diluent Type A (%) [*]	Diluent Type B (%) ^{**}	Inert solid (%)	Water (%)	Control Temperature (°C)	Emergency Temperature (°C)	UN Number (Generic Entry)	Notes
([3r-(3r,5as,6s,8as,9r,10r,12s,12ar**)]- Decahydro-10-methoxy-3,6,9- trimethyl-3,12-epoxy-12h-pyrano[4,3- j]-1,2-benzodioxepin)	≤ 100							3106	
Diacetone alcohol peroxides	≤ 57		≥ 26		≥ 8	+30	+35	3115	6
Diacetyl peroxide	≤ 27		≥ 73			+20	+25	3115	7, 13
Di-tert-Amyl peroxide	≤ 100							3107	
2,2-Di-(tert-amylperoxy)butane	≤ 57	≥ 43						3105	
1,1-Di-(tert-amylperoxy) cyclohexane	≤ 82	≥ 18						3103	
Dibenzoyl peroxide	> 36-42	≥ 18			≤ 40			3107	
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	≤ 56.5 as a paste				≥ 15			3108	
Dibenzoyl peroxide	> 52-62 as a paste							3106	20
Dibenzoyl peroxide	≤ 52 as a paste							3108	20
Dibenzoyl peroxide	> 35-52		≥ 48					3106	
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-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	≤ 72		≥ 28					3103	30
1,1-Di-(tert-butylperoxy)cyclohexane	> 52-80	≥ 20						3103	
1,1-Di-(tert-butylperoxy)cyclohexane	> 42-52	≥ 48						3105	
1,1-Di-(tert-butylperoxy)cyclohexane	≤ 42	≥ 13		≥ 45				3106	
1,1-Di-(tert-butylperoxy)cyclohexane	≤ 27	≥ 25						3107	21
1,1-Di-(tert-butylperoxy)cyclohexane	≤ 42	≥ 58						3109	
1,1-Di-(tert-butylperoxy)cyclohexane	≤ 13	≥ 13	≥ 74					3109	
1,1-Di-(tert-butylperoxy)cyclohexane with 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	≤ 27		≥ 73			-10	0	3117	
Di-n-butyl peroxydicarbonate	≤ 42 as a stable dispersion in water (frozen)					-15	-5	3118	
Di-sec-butyl peroxydicarbonate	> 52-100					-20	-10	3113	
Di-sec-butyl peroxydicarbonate	≤ 52	≥ 48				-5	-5	3115	
Di-(tert-butylperoxyisopropyl) benzene(s)	> 42-100			≤ 57				3106	
Di-(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

C
C.2

TABLE C.2
List of Currently Assigned Organic Peroxides in Packages (continued)

Organic Peroxide	Concentration (%)	Diluent Type A (%) [*]	Diluent Type B (%) ^{**}	Inert solid (%)	Water (%)	Control Temperature (°C)	Emergency Temperature (°C)	UN Number (Generic Entry)	Notes
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	≤ 90		≥ 10					3103	30
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)-3,5,5-trimethylcyclohexane	≤ 32	≥ 26	≥ 42			+30	+35	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
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					+20	+25	3118	
Di-2,4-dichlorobenzoyl peroxide	≤ 52 as a paste with silicon oil							3106	
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	
Diisobutryl peroxide	> 32-52		≥ 48			-20	-10	Forbidden	3
Diisobutryl 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	≤ 32		≥ 68			-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

TABLE C.2
List of Currently Assigned Organic Peroxides in Packages (continued)

Organic Peroxide	Concentration (%)	Diluent Type A (%) [*]	Diluent Type B (%) ^{**}	Inert solid (%)	Water (%)	Control Temperature (°C)	Emergency Temperature (°C)	UN Number (Generic Entry)	Notes
Di-(4-methylbenzoyl) peroxide	≤ 52 as a paste with silicon oil							3106	
Di-(3-methylbenzoyl) peroxide + Benzoyl (3-methylbenzoyl) peroxide + dibenzoyl peroxide	≤ 20 + ≤ 18 + ≤ 4		≥ 58			+35	+40	3115	
2,5-Dimethyl-2,5-di-(benzoylperoxy)hexane	> 82-100							Forbidden	3
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	> 90-100							3103	
2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexane	> 52-90	≥ 10						3105	
2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexane	≤ 52	≥ 48						3109	
2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexane	≤ 77			≥ 23				3108	
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				≥ 18	+20	+25	3113	
2,5-Dimethyl-2,5-dihydroperoxyhexane	≤ 82							3104	
2,5-Dimethyl-2,5-di-(3,5,5-trimethylhexanoylperoxy)hexane	≤ 77	≥ 23						3105	
1,1-Dimethyl-3-hydroxybutyl peroxyneodecanoate	≤ 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 peroxy-pivalate	≤ 52	≥ 45	≥ 10			-20	-10	3115	
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	

TABLE C.2
List of Currently Assigned Organic Peroxides in Packages (continued)

Organic Peroxide	Concentration (%)	Diluent Type A (%) [*]	Diluent Type B (%) ^{**}	Inert solid (%)	Water (%)	Control Temperature (°C)	Emergency Temperature (°C)	UN Number (Generic Entry)	Notes
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 Note 8)	≥ 48						Forbidden	3, 8, 13
Methyl ethyl ketone peroxide(s)	(see Note 9)	≥ 55						3105	9
Methyl ethyl ketone peroxide(s)	(see Note 10)	≥ 60						3107	10
Methyl isobutyl ketone peroxide(s)	≤ 62	≥ 19						3105	22
Methyl isopropyl ketone peroxide(s)	See Note 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	
Pinanyl hydroperoxide	≤ 56	≥ 44						3109	
Polyether poly-tert-butylperoxycarbonate	≤ 52		≥ 48					3107	
1,1,3,3-Tetramethylbutyl hydroperoxide	≤ 100							3105	
1,1,3,3-Tetramethylbutylperoxy-2 ethyl-hexanoate	≤ 100					+15	+20	3115	
1,1,3,3- Tetramethylbutyl peroxyneodecanoate	≤ 72		≥ 28			-5	+5	3115	
1,1,3,3- Tetramethylbutyl peroxyneodecanoate	≤ 52 as a stable dispersion in water					-5	+5	3119	
1,1,3,3-Tetramethylbutyl peroxyipivalate	≤ 77	≥ 23				0	+10	3115	
3,6,9-Triethyl-3,6,9-trimethyl-1,4,7 triperoxonane	≤ 17	≥ 18		≤ 65				3110	
3,6,9-Triethyl-3,6,9 trimethyl-1,4,7 triperoxonane	≤ 42	≥ 58						3105	28

* "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 desensitising all organic peroxides.

** "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 flashpoint of not less than 5°C. Type B diluents may only be used for desensitisation of organic peroxides for which the temperature control is required. The boiling point of the liquid should be at least 50°C higher than the control temperature of the organic peroxide.

> = greater than.

≥ = equal to or greater than.

< = less than.

≤ = equal to or less than.

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%.

3. "Explosive" subsidiary risk label required (see Figure 7.3.A) and consequently forbidden for transport by air under any circumstances.
4. Diluent may be replaced by Di-tert-butyl peroxide.
5. Available oxygen ≤ 9%.
6. With ≤ 9% hydrogen peroxide; available oxygen ≤ 10%.
7. Only non-metallic packagings allowed.
8. Available oxygen > 10% and ≤ 10.7%, with or without water.
9. Available oxygen ≤ 10%, with or without water.
10. Available oxygen ≤ 8.2%, with or without water.
11. See 3.5.2.6.
12. Not used.
13. "Corrosive" subsidiary risk label required (see Figure 7.3.U).
14. Peroxyacetic acid formulations which fulfil the criteria of organic peroxide type D.
15. Peroxyacetic acid formulations which fulfil the criteria of organic peroxide type E.
16. Peroxyacetic acid formulations which fulfil the criteria of organic peroxide type F.
17. Addition of water to this organic peroxide will decrease its thermal stability.
18. No "Corrosive" subsidiary risk label required for concentrations below 80%.
19. Mixtures with hydrogen peroxide, water and acid(s).
20. With diluent type A, with or without water.
21. With ≥ 25% diluent type A by mass, and in addition ethylbenzene.
22. With ≥ 19%, diluent type A by mass, and in addition methyl isobutyl ketone.
23. With < 6% di-tert-butyl peroxide.
24. With ≤ 8% 1-isopropylhydroperoxy-4-isopropylhydroxy benzene.
25. Diluent Type B with boiling point > 110°C.
26. With < 0.5% hydroperoxides content.
27. For concentrations more than 56%, "Corrosive" subsidiary risk label required (see Figure 7.3.U).
28. Available active oxygen ≤ 7.6% in diluent type A having a 95% boil-off point in the range of 220–260°C.
29. Not subject to the requirements of these Regulations for Division 5.2.
30. Diluent type B with boiling point > 130°C.
31. Active oxygen ≤ 6.7%.



APPENDIX D—COMPETENT AUTHORITIES

D.0 General

This Appendix contains two lists of authorities. The first list (D.1) is composed of authorities responsible for dangerous goods in general. The second list (D.2) is composed of competent authorities responsible for radioactive materials.

Where known, the International Vehicle Registration Code (VRI Code) is given in parentheses after the name of each country. In some cases, the ISO Code is shown (identified by an asterisk (*)).

D

Country	VRI Code	D.1 Dangerous Goods	D.2 Radioactive Materials
Afghanistan	AFG		X
Albania	AL		X
Algeria	DZ	X	X
Argentina	RA	X	X
Australia	AUS	X	X
Austria	A	X	X
Bahamas	BS	X	
Bahrain	BRN	X	
Bangladesh	BD	X	X
Belarus	BY		X
Belgium	B	X	X
Bermuda	BM*	X	
Bolivia	BOL	X	X
Bosnia and Herzegovina	BIH	X	X
Brazil	BR	X	X
Bulgaria	BG	X	X
Burkina Faso	BF		X
Cambodia	K		X
Cameroon	CAM	X	X
Canada	CDN	X	X
Chile	RCH	X	X
China, People's Republic of	CN	X	X
Chinese Taipei	RC	X	
Colombia	CO	X	X
Cook Islands	CK*	X	
Costa Rica	CR	X	X
Côte d'Ivoire	CI	X	X
Croatia	HR	X	X
Cuba	CU	X	X
Cyprus	CY	X	X
Czech Republic	CZ	X	X
Democratic Republic of the Congo	CGO	X	X
Denmark	DK	X	X
Dominican Republic	DOM	X	X

Country	VRI Code	D.1 Dangerous Goods	D.2 Radioactive Materials
Ecuador	EC	X	X
Egypt	ET	X	X
El Salvador	ES	X	X
Estonia	EST	X	X
Ethiopia	ETH		X
Fiji	FJI	X	
Finland	FIN	X	X
France	F	X	X
Gabon	G		X
Germany	D	X	X
Ghana	GH	X	X
Greece	GR	X	X
Guatemala	GCA		X
Haiti	RH	X	X
Hong Kong, China	HK	X	X
Hungary	H	X	X
Iceland	IS	X	X
India	IND	X	X
Indonesia	RI	X	X
Iran, Islamic Republic of	IR	X	X
Iraq	IRQ		X
Ireland	IRL	X	X
Israel	IL	X	X
Italy	I	X	X
Jamaica	JA	X	X
Japan	J	X	X
Jordan	HKJ	X	X
Kazakhstan	KZ	X	X
Kenya	EAK	X	X
Korea, Democratic People's Republic of	KP*	X	X
Korea, Republic of	ROK	X	X
Kosovo	KOS	X	
Kuwait	KWT	X	X
Latvia	LV	X	X
Lebanon	RL	X	X
Liechtenstein	FL		X
Lithuania	LT	X	X
Luxembourg	L	X	X
Macao	MO	X	
Madagascar	RM	X	X
Malaysia	MAL	X	X
Maldives, Republic of	MV*	X	
Mali	RMM		X
Malta	M	X	X
Mauritius	MS		X

Country	VRI Code	D.1 Dangerous Goods	D.2 Radioactive Materials
Mexico	MEX	X	X
Moldova, Republic of	MD		X
Monaco	MC		X
Mongolia	MGL		X
Morocco	MA	X	
Myanmar	MYA	X	X
Nauru	NAU	X	
Netherlands	NL	X	X
New Zealand	NZ	X	X
Nicaragua	NIC		X
Niger	RN	X	X
Nigeria	NGR	X	X
Norway	N	X	X
Oman	OM*	X	
Pakistan	PK	X	X
Palau, Republic of	PW*	X	
Panama	PA	X	X
Papua New Guinea	PNG	X	
Paraguay	PY	X	X
Peru	PE	X	X
Philippines	RP	X	X
Poland	PL	X	X
Portugal	P	X	X
Qatar	Q	X	X
Romania	RO	X	X
Russian Federation	RUS	X	X
Samoa	WS	X	
Saudi Arabia	SA	X	X
Senegal	SN	X	X
Serbia	SRB	X	X
Seychelles	SY	X	
Sierra Leone	WAL	X	X
Singapore	SGP	X	X
Slovakia	SK	X	X
Slovenia	SLO		X
Soloman Islands	SB*	X	
South Africa	ZA	X	X
Spain	E	X	X
Sri Lanka	CL	X	X
Sudan	SUD	X	X
Sweden	S	X	X
Switzerland	CH	X	X
Syrian Arab Republic	SYR	X	X
Tajikstan	TJ		X
Tanzania	EAT		X



Dangerous Goods Regulations

Country	VRI Code	D.1 Dangerous Goods	D.2 Radioactive Materials
Thailand	T	X	X
Tonga, Kingdom of	TO*	X	
Trinidad and Tobago	TT	X	
Tunisia	TN	X	X
Turkey	TR	X	X
Uganda	EAU		X
Ukraine	UA	X	X
United Arab Emirates	AE*	X	X
United Kingdom	GB	X	X
United States	USA	X	X
Uruguay	ROU	X	X
Uzbekistan	UZ		X
Vanuatu	VU*	X	
Vatican City State	V	X	X
Venezuela	YV	X	X
Vietnam	VN	X	X
Yemen, Republic of	YAR		X
Zambia	RNR	X	X
Zimbabwe	ZW	X	X

D.1 Competent Authorities for Dangerous Goods

IATA invites Competent Authorities to contact us as necessary to amend the information in this Appendix. Please send your changes to the Cargo Safety and Dangerous Goods Administrator, e-mail: dangood@iata.org or please refer to the "IATA CONTACTS" page for a mailing address and Fax number.

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Tel: +213 21 92 98 85 to 89
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AUSTRIA (A)

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E-mail: dgo@caa.co.uk

UNITED STATES (USA)

Regulatory branch:
U.S. Department of Transportation
Associate Administrator for Hazardous Materials Safety
Pipeline and Hazardous Materials Safety Administration
1200 New Jersey Ave., SE
East Building, Second Floor
Washington, DC
U.S.A.
20590
Tel: +1 (202) 366 4488
Fax: +1 (202) 366 3753
E-mail: infocntr@dot.gov

Enforcement Branch:

Federal Aviation Administration
Hazardous Materials Program
Office of Civil Aviation Security
800 Independence Avenue, S.W.
Washington, DC
U.S.A.
20591
Tel: +1 (202) 267 3951
Fax: +1 (202) 267 8496

URUGUAY (ROU)

Direcció General de Aviación Civil
Yi 1444
Montevideo
URUGUAY
Tel: +598 (2) 908 079
Telex: 981 DIRACIV UY

VANUATU (VU)*

Civil Aviation Department
PMB 068
Port Vila
VANUATU
Tel: +678 23301
Fax: +678 23783

VATICAN CITY STATE (V)

Office of the Governor of the State of Vatican City
(Governorato della Città del Vaticano)
00120 Città del Vaticano
VATICAN CITY STATE
Tel: +39 (6) 698 3158
Fax: +39 (6) 698 3955
Telex: 2024 DIRGENTEL VA

VENEZUELA (YV)

Director de Aeronáutica Civil
Caracas
VENEZUELA
Telex: 22751 VE

VIETNAM (VN)

Civil Aviation Administration of Vietnam
119 Nguyen Son Street
Long Bien District
Hanoi
VIETNAM
Tel: +84 (4) 3827 1843
Fax: +84 3827 1933
E-mail: caav@caa.gov.vn

ZAMBIA (RNR)

Department of Civil Aviation
P.O. Box 50137
Lusaka
Ridgeway
ZAMBIA
Telex: 42280 ZA

ZIMBABWE (ZW)

Department of Civil Aviation
Sarum House
78 Manica Road
Box 7716
Harare
ZIMBABWE
Tel: +263 (4) 792631
Telex: 4738 ZW

**D.2 Competent Authorities
for Radioactive Materials**

The following list of National Competent Authorities responsible for Approvals and Authorizations in respect of the Transport of Radioactive Material is based on information provided by the International Atomic Energy Agency, Vienna, and incorporates subsequent amendments notified direct to IATA. Where known, the International Vehicle Registration Code (VRI Code) is given in parentheses after the name of each country. In some cases, the ISO Code is shown (identified by an asterisk (*)).

The agencies shown are responsible for transport by all modes, unless otherwise stated.

AFGHANISTAN (AFG)

The Faculty of Science
Kabul University
Kabul
AFGHANISTAN

ALBANIA (AL)

Radiation Protection Commission (RPC)
c/o Radiation Protection Office
Institute of Public Health
80, Alexander Moisiu str.
Tirana
ALBANIA
Tel: +355 (42) 62731
Fax: +355 (42) 70058
E-mail: iphealth@icc.al.eu.org

ALGERIA (DZ)

Commissariat à l'Énergie Atomique
2, Bl. Frantz Fanon
B.P. 399
Alger-Gare
ALGERIA
Tel: +213 (21) 433 549
Fax: +213 (21) 433 539
E-mail: centrale@comena-dz.org

ARGENTINA (RA)

Autoridad Regulatoria Nuclear (ARN)
Avda. Del Libertador 8250
C1429 BNP Buenos Aires
ARGENTINA
Tel: +54 (11) 6323 1722; 6323 1708
Fax: +54 (11) 6323 1771; 6323 1798
E-mail: transporte@sede.arn.gov.ar

AUSTRALIA (AUS)

For transport by air:

Civil Aviation Safety Authority
GPO Box 2005
Canberra, ACT
AUSTRALIA
2601
Tel: +61 131 757
Fax: +61 (2) 6217 1209
E-mail: DG@casa.gov.au

For transport by sea:

Australian Maritime Safety Authority
Maritime Operations Division
GPO Box 2181
Canberra, ACT
AUSTRALIA
2601
Tel: +61 (2) 6279 5070
Fax: +61 (2) 6279 5058
E-mail: dangerousgoods@amsa.gov.au

For transport by road and rail:

Australian Radiation Protection and Nuclear Safety Agency
P.O. Box 655
Miranda, NSW
AUSTRALIA
1490
Tel: +61 (2) 9541 8333
Fax: +61 (2) 9541 8314
E-mail: info@arpansa.gov.au

AUSTRIA (A)

Federal Ministry for Transport, Innovation and Technology Unit II/ST/8
Transport of Dangerous Goods
Radetzkystrasse 2
A-1030 Vienna
AUSTRIA
Tel: +43 (1) 711 6265 5723
Fax: +43 (1) 711 6265 5725
E-mail: St8@bmvit.gv.at

BANGLADESH (BD)

Bangladesh Atomic Energy Commission
Nuclear Safety and Radiation Control Division
4, Kazi Nazrul Islam Avenue
P.O. Box 158
Dhaka—1000
BANGLADESH
Tel: +880 (2) 862 1386; 505 022
Fax: +880 (2) 861 3051
E-mail: nsred@bdcom.com

BELARUS (BY)

Directorate for the Supervision of Industrial and Nuclear Safety
Ministry for Emergencies of the Republic of Belarus
(Promatomnadzor)
86/1 Kazintsa Street
Minsk 220108
BELARUS
Tel: +375 (17) 278-4302
Fax: +375 (17) 278-4313
E-mail: Priemnaia_pan@tut.by

BELGIUM (B)

Federal Agency for Nuclear Control
Ravensteinstraat 36
B-1000 Brussels
BELGIUM
Tel: +32 (2) 289 2111
Fax: +32 (2) 289 21 82
E-mail: eric.cottens@fanc.fgov.be

BOLIVIA (BOL)

Instituto Boliviano de Ciencia y Tecnología Nuclear
(IBTEN)
Av. 6 de Agosto 2905
Casilla Postal 4821
La Paz
BOLIVIA
Tel: +591 (2) 2433 481; 2433 877
Fax: +591 (2) 2433 063
E-mail: ibten@caoba.entelnet.bo

BOSNIA and HERZEGOVINA (BIH)

Ministry of Health and Social Protection
Zdravka Korde 8
51000 Banja Luka
BOSNIA and HERZEGOVINA
Tel: +387 5121 6600
Fax: +387 5121 6601

BRAZIL (BR)

National Nuclear Energy Commission
Radiological Protection and Nuclear Safety Directorate
General Coordination for Licensing and Control
Rua General Severiano, 90 - Botafogo
CEP-22.294-900 Rio de Janeiro
BRAZIL
Tel: +55 (21) 2546 2298
Fax: +55 (21) 2295 1795

BULGARIA (BG)

Nuclear Regulatory Authority
69 Shipchenski Prokhod blvd.
1574 Sofia
BULGARIA
Tel: +359 (2) 940 6800
Fax: +359 (2) 940 6919
Website: www.bnsa.bas.bg

BURKINA FASO (BF)

Ministère de l'Environnement et du Cadre de Vie
 03 BP 7044
 Ouagadougou 03
 BURKINA FASO
 Tel: +226 50 31 16 69
 Fax: +226 50 31 06 75
 E-mail: zephirin25@hotmail.com

BURMA—see MYANMAR

CAMBODIA (K)

M. Nhek Chroeung
 Directeur du Département de l'Energie
 Ministère de l'Industrie, de l'Energie et des Mines
 Phnom Penh
 CAMBODIA
 Tel: +855 (18) 200 298
 Fax: +855 (23) 278 51

CAMEROON (CAM)

Please send all applications through:

Ministère des Affaires Etrangères
 Ministère de la Recherche Scientifique et Technique
 (MRST)
 Comité, National de Développement
 des Technologies
 B.P. 1457
 Yaoundé
 CAMEROON
 Tel: +237 (22) 236 044
 Telex: 8418 KN MESRES
 Ministère de la Santé Publique (MINSANTE)
 Yaoundé
 CAMEROON
 Tel: +237 (22) 222 901; 233 501
 Ministère des Mines, de l'Eau et de l'Energie (MINMEE)
 Yaoundé
 CAMEROON

CANADA (CDN)

Emergency response registration and special arrangements approval:

Director General
 Dangerous Goods Directorate
 Transport Canada
 330 Sparks Street, Tower C
 Ottawa, Ontario
 CANADA
 K1A 0N5
 Tel: +1 (613) 990 1147
 Fax: +1 (613) 993 5925

Packaging and Security approvals:

Canadian Nuclear Safety Commission
 Transportation Section
 P.O. Box 1046
 Ottawa, Ontario
 CANADA
 K1P 5S9
 Tel: +1 (613) 995 0553
 Fax: +1 (613) 995 0556
 E-mail: foran@cnsc-ccsn.gc.ca

CHILE (RCH)

Comisión Chilena de Energia Nuclear
 Amunátegui No. 95
 Casilla 188-D
 Santiago
 CHILE
 Tel: +56 (2) 470 2500
 Fax: +56 (2) 470 2585
 E-mail: Ifrangin@cchen.cl

CHINA, PEOPLE'S REPUBLIC OF (CN)

State Environmental Protection Agency
 115 Nanxiaojie, Xizhimen
 Haidian District
 100035 Beijing
 CHINA, PEOPLE'S REPUBLIC OF
 Tel: +86 (10) 6612 6713
 Fax: +86 (10) 6612 6715
 E-mail: Ma.CH@263.net
 China Atomic Energy Authority
 A8, Fucheng Road
 Haidian District
 Beijing 100037
 CHINA, PEOPLE'S REPUBLIC OF
 Tel: +86 (10) 8858 1381, 8858 1382
 Fax: +86 (10) 8858 1516
 Website: www.caea.gov.cn
 Ministry of Health
 1 South Road, Xizhimen
 Beijing 100044
 CHINA, PEOPLE'S REPUBLIC OF
 Tel: +86 (10) 6879 2397
 Fax: +86 (10) 6879 2400
 E-mail: HeQingHua@163.net
 Website: www.moh.gov.cn
 Ministry of Railways
 10 Fuxing Road
 Haidian District
 Beijing 100084
 CHINA, PEOPLE'S REPUBLIC OF
 Tel: +86 (10) 5184 5192
 Fax: +86 (10) 5184 4192
 Website: www.china-mor.gov.cn

COLOMBIA (CO)

Instituto de ciencias nucleares y energias alternativas (INEA)
Avenida el Dorado, Carrera 50
Santafé de Bogotá D.C.
Apartado Aéreo 8595
Bogotá
COLOMBIA
Tel: +57 (1) 222 4555; 222 3565
Fax: +57 (1) 222 3883

COSTA RICA (CR)

Ministerio de Salud
Programa Control de Radiaciones
P.O. Box 10123-1000
San José
COSTA RICA
Tel: +50 (6) 222 1748
Fax: +50 (6) 233 2149

CÔTE D'IVOIRE (CI)

Ministère de l'Enseignement Supérieur et de la Recherche Scientifique
BP V 151
Abidjan
CÔTE D'IVOIRE
Tel: +225 210 666
Telex: 26138 RECTU CI

Ministère de l'Economie, des Finances et du Plan
BP V 163
Abidjan
CÔTE D'IVOIRE
Tel: +225 218 022
Telex: 23747 MINIFIN CI

Ministère de l'Equipement, des Transports et du Tourisme
BP V 141
Abidjan
CÔTE D'IVOIRE
Tel: +225 295 164
Telex: 22108 MINITRAVO

Ministère de la Santé et de la Protection Sociale
BP V 4
Abidjan
CÔTE D'IVOIRE
Tel: +225 210 871; 225 811
Telex: 22597 MINAFSO

CROATIA (HR)

State Office for Radiation Protection
Frankopanska 11
HR-10 000 Zagreb
CROATIA
Tel: +385 (1) 4881 770
Fax: +385 (1) 4881 780
E-mail: dznrs@dznrs.hr
Website: www.dznrs.hr

CUBA (CU)

Ministerio de Ciencia, Tecnología y Medio Ambiente (CITMA)
Centro Nacional de Seguridad Nuclear
Calle 28 No. 504 entre 5ta y 7ma Avenidas
Miramar, La Habana
CUBA
Tel: +537 202 7051; 209 6147
+537 570 625 or 632 or 631
Fax: +537 202 3166; 338 654
E-mail: direccioncnsn@cnsn.cu

CYPRUS (CY)

Radiation Inspection and Control Service
Department of Labour Inspection
Ministry of Labour and Social Insurance
12 Apollis Street
CY-1493 Lefkosia (Nicosia)
CYPRUS
Tel: +357 (2) 230 0340
Fax: +357 (2) 266 3788
E-mail: roc.dli@cytanet.com.cy

CZECH REPUBLIC (CZ)

State Office for Nuclear Safety
Senovázne námestí 9
110 00 Praha 1
CZECH REPUBLIC
Tel: +420 221 624 111
Fax: +420 221 624 704
E-mail: pr@sujb.cz

DEMOCRATIC REPUBLIC OF THE CONGO (ZAIRE) (CGO)

Commissaire Général à l'Energie Atomique
B.P. 184
Kinshasa XI
CONGO (DEMOCRATIC REPUBLIC)
Tel: +243 (12) 33 424; 33 425
Fax: P.N.U.D. 8741 503 261;
Fax: P.N.U.D. 8711 503 261
Telex: P.N.U.D. No. 21164 ZR

DENMARK (DK)

National Institute of Radiation Hygiene
Knapholm 7
DK-2730 Herlev
DENMARK
Tel: +45 4454 3454
Fax: +45 4454 3450
E-mail: sis@sis.dk

DOMINICAN REPUBLIC (DOM)

Comisión Nacional de Asuntos Nucleares
 Apartado postal 30333
 Ens. La Fe
 Santo Domingo
 DOMINICAN REPUBLIC
 Tel: +1 (809) 549 7409; 549 7509
 Fax: +1 (809) 549 7609
 E-mail: cnan@codetel.net.do

ECUADOR (EC)

Comisión Ecuatoriana de Energía Atómica
 Juan Larrea 534 y Riofrio
 Casilla Postal 2517
 Quito
 ECUADOR
 Tel: +593 (22) 225 166
 Fax: +593 (22) 563 336
 E-mail: comecen1@comecenat.gov.ec

EGYPT (ET)

Atomic Energy Authority
 3 Ahmad El-Zomor Street
 P.O. Box 7551, 8th Sector
 Nasr City
 11762 Cairo
 EGYPT
 Tel: +20 (2) 2287 8663
 Fax: +20 (2) 2287 8162
 E-mail: r-elshinawy@hotmail.com

National Center for Nuclear Safety and Radiation Control (NCNSRC)

3 Ahmed El-Zomor St.
 P.O. Box 7551, 8th Sector
 Nasr City
 11762 Cairo
 EGYPT

Tel: +20 (2) 2740 236 or 237 or 239

The Suez Canal Authority
 Ismailia
 EGYPT

Tel: ++20 (64) 3300 00/9
 Fax: +20 (64) 320 784
 Fax: +20 (3) 4829 714

Alexandria Port Authority
 Alexandria
 EGYPT

Tel: +20 (3) 483 1640

EL SALVADOR (ES)

Unidad Reguladora y Asesora para el Uso de Radiaciones Ionizantes (UNRA)
 Ministerio de Salud Pública y Asistencia Social
 3 a Calle Poniente y 13 Avenida Norte #256
 San Salvador
 EL SALVADOR
 Tel: +503 222 6790
 Fax: +503 6790
 E-mail: cescobar@mspas.gov.sv

ESTONIA (EST)

Radiation Protection Centre
 Kopli 76
 10 416 Tallinn
 ESTONIA
 Tel: +372 2 6603 335
 Fax: +372 2 6603 352
 E-mail: radprot@eol.ee

ETHIOPIA (ETH)

National Radiation Protection Authority (NRPA)
 P.O. Box 20486
 Code 1000
 Addis Ababa
 ETHIOPIA
 Tel: +251 (1) 620 494
 Fax: +251 (1) 620 495
 E-mail: nrpa@telecom.net.et

FINLAND (FIN)

Radiation and Nuclear Safety Authority (STUK)
 P.O. Box 14
 FIN-00881 Helsinki
 FINLAND
 Tel: +358 (9) 759 881
 Fax: +358 (9) 7598 8500
 E-mail: stuk@stuk.fi

FRANCE (F)

Address all license applications to:

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
 FRANCE
 Tel: +33 (0)1 58 09 49 70
 Fax: +33 (0)1 58 09 45 52

and send copy to:

Direction de la Sécurité des Installations Nucléaire et de la Radioprotection (DGSNR)
 Première sous-direction (SD1)
 10, Route du panorama Robert Schuman
 92266 FONTENAY AUX ROSES CEDEX
 FRANCE
 Tel: +33 (0)1 43 19 70 02
 Fax: +33 (0)1 43 19 70 27

GABON (G)

Ministère des Mines, de l'Énergie et des Ressources Hydrauliques
 B.P. 1172
 Libreville
 GABON
 Tel: +241 761 925; 763 299; 763 554
 Fax: +241 724 990
 Telex: MERHGAB 5629 GO

GERMANY (D)

Applications for approval of Type B packages, packages containing fissile material shipments, special arrangements, and notifications should also be addressed to:

Bundesamt für Strahlenschutz
Postfach 100149
D-38201 Salzgitter
GERMANY
Tel: +49 3018 333 1770
Fax: +49 3018 333 1705
E-mail: fnitsche@bfs.de

Applications for approval of special form material should also be addressed to:

Bundesanstalt für Materialforschung und-prüfung
Unter den Eichen 87
D-12205 Berlin
GERMANY
Tel: +49 (30) 8104 1330
Fax: +49 (30) 8104 1237
E-mail: bernhard.droste@bam.de

GHANA (GH)

The Director General
Ghana Atomic Energy Commission
P.O. Box 80
Legon-Accra
GHANA
Tel: +233 (21) 400 303
Fax: +233 (21) 400 807
E-mail: secgaec@ncs.com.gh

GREECE (GR)

Greek Atomic Energy Commission
153 10 Aghia paraskevi—Attiki
P.O. Box 60092
GREECE
Tel: +30 210 650 6803
Fax: +30 210 650 6762
E-mail: thzorbak@eeae.gr

GUATEMALA (GCA)

Dirección General de Energía
Ministerio de Energía y Minas
24 Calle 21-12, Zona 12
Apartado Postal 1421
Ciudad de Guatemala
GUATEMALA
Tel: +502 (2) 477 0746; 477 0747
Fax: +502 (2) 475 2007
E-mail: diredge@mem.gob.gt

HAITI (RH)

Ministère des Affaires Etrangères de la République
d'Haïti
Port-au-Prince
HAITI

HONG KONG (SAR), CHINA (HK)

Department of Health
Radiation Board
3/F Sai Wan Ho Health Centre
28 Tai Hong Street,
Sai Wan Ho
HONG KONG (SAR), CHINA
Tel: +852 2977 1888
Fax: +852 2834 1224
E-mail: rhu_ic@dh.gov.hk

HUNGARY (H)

Országos Atomenergia Hivatal
(Hungarian Atomic Energy Authority)
Fényes Adolf utca 4
H-1036 Budapest
HUNGARY
Tel: +36 (1) 436 48 41
Fax: +36 (1) 436 48 43
E-mail: safar@haea.gov.hu

ICELAND (IS)

Icelandic Radiation Protection Institute
Raudrararstigur 10
IS-150 Reykjavik
ICELAND
Tel: +354 552 8200
Fax: +354 552 8202
E-mail: gr@gr.is

INDIA (IND)

Atomic Energy Regulatory Board
Niyamak Bhavan
Anushakti Nagar
Mumbai 400-0094
INDIA
Tel: +91 (22) 2556 2343
Fax: +91 (22) 2556 2344
Cable: ATOMERG
E-mail: sksharma@aerb.gov.in

INDONESIA (RI)

Nuclear Energy Control Board (BAPETEN)
Jl. Gajah mada No. 8
Jakarta 10350
INDONESIA
Tel: +62 (21) 6385 8269
Fax: +62 (21) 6385 6613
E-mail: m.sinaga@bapeten.go.in

IRAN, ISLAMIC REPUBLIC OF (IR)

Atomic Energy Organization of the Islamic Republic of Iran
 Nuclear Safety and Radiation Protection Management
 P.O. Box 14155-4494
 Tehran
 IRAN, ISLAMIC REPUBLIC OF
 Tel: +98 (21) 8020 905
 Fax: +98 (21) 800 9298
 Telex: 213383 AEOI IR

IRAQ (IRQ)

Application for approval should be addressed to both:

Iraqi Atomic Energy Commission
 P.O. Box 765
 Tuwaitha, Baghdad
 IRAQ
 Tel: +964 (1) 773 8410
 Telex: 2312 ATOM IK
 Cable: IRATOM Baghdad
 Radiation Protection Center
 Alwiyia
 Andalus sq.
 Baghdad
 IRAQ
 Tel: +964 (1) 717 0890

IRELAND (IRL)

Radiological Protection Institute of Ireland
 3 Clonskeagh Square
 Clonskeagh Road
 Dublin 14
 IRELAND
 Tel: +353 (1) 269 7766
 Fax: +353 (1) 269 7437
 Telex: 30610
 E-mail: rpii@rpii.ie

ISRAEL (IL)

Israel Atomic Energy Commission
 P.O. Box 7061
 61070 Tel Aviv
 ISRAEL
 Tel: +972 (3) 646 2914
 Fax: +972 (3) 646 2550
 E-mail: extrel@soreg.gov.il

ITALY (I)

Competent Authority for the approval of packages and transport, technical advisor for carrier authorisation:

Agency for Environmental Protection and Technical Services (APAT)
 Dipartimento nucleare, rischio tecnologico e industriale
 Via V. Brancati 48
 I-00144 Roma
 ITALY
 Tel: +39 (06) 5007 2570
 Fax: +39 (06) 5007 2584
 E-mail: trasporti@apat.it

IVORY COAST—see CÔTE D'IVOIRE

JAMAICA (JA)

Ministry of Health
 Radiation Protection Committee
 10 Caledonia Avenue
 P.O. Box 472
 Kingston
 JAMAICA
 Tel: +1 (809) 926 9220
 Fax: +1 (809) 926 3857

JAPAN (J)

For approval of package designs:

Science and Technology Policy Bureau
 Nuclear Safety Division
 3-2-2 Kasumigaseki
 Chiyoda-ku
 Tokyo-100-8959
 JAPAN
 Tel: +81 (3) 6734 4024
 Fax: +81 (3) 6734 4027

For approval of shipments by all modes (in case of special transport, include approval of package designs for transport by sea or air):

Technology and Safety Division, Policy Bureau
 Ministry of Land, Infrastructure and Transport
 2-1-3 Kasumigaseki
 Chiyoda-ku
 Tokyo-100
 JAPAN
 Tel: +81 (3) 5253 8111
 Fax: +81 (3) 5253 1560

JORDAN (HKJ)

Jordan Atomic Energy Commission
 P.O. Box 70, Shafa Badran
 Amman (11934)
 JORDAN
 Tel: +962 (6) 523 0978
 Fax: +962 (6) 523 1017
 E-mail: jaec1@go.com.jo

KAZAKHSTAN (KZ)

Kazakhstan Atomic Energy Committee
Department of Nuclear Safety and Radiation Safety
Lisa Chaikina street 4
Almaty 480020
KAZAKHSTAN
Tel: +7 (3272) 633 356; 646 631
Fax: +7 (3272) 633 356; 637 613
E-mail: adm@atom.almaty.kz

KENYA (EAK)

Ministry of Health
Radiation Protection Board
P.O. Box 19841
00202 Nairobi
KENYA
Tel: +254 (20) 271 4558; 271 4397
Fax: +254 (20) 271 4383
Telex: 22272
Cable: MINHEALTH NAIROBI
E-mail: rpbkenya@nbnet.co.ke

KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF (KP)*

Mr. Pak Yong Nam
Director General
General Department of Atomic Energy
Haeundong
Pyongchen District
Pyongyang
KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF
Tel: +850 (2) 3 99 73
Telex: 37048 GBKP
Cable: WONZA

KOREA, REPUBLIC OF (ROK)

Ministry of Science and Technology
Radiation Safety Bureau
Government Complex
Gwacheon-city 427-715
Gyeonggi-do
KOREA, REPUBLIC OF
Tel: +82 (2) 2110 3670/7
Fax: +82 (2) 2110 3679
E-mail: wgsong@most.go.kr

KUWAIT (KWT)

Ministry of Public Health
Radiation Protection Committee
Radiation Section
P.O. Box 5 Safat
13001 Safat
KUWAIT
Tel: +965 246 2900
Fax: +965 246 3239
Telex: 22729 HEALTH KT
Cable: HEALTH KUWAIT

LATVIA (LV)

Radiation Safety Centre
Maskavas iela 165
Riga, LV-1019
LATVIA
Tel: +371 6 703 2660
Fax: +371 6 703 2659
E-mail: pasts@rdc.gov.lv

LEBANON (RL)

The Lebanese Atomic Energy Commission (LAEC)
National Council for Scientific Research
P.O. Box 11-8281
Beirut
LEBANON
Tel: +961 (1) 450 811 through 813
Fax: +961 (1) 450 810
E-mail: naec@cnrs.edu.lb

LIECHTENSTEIN (FL)

Federal Office of Energy
Nuclear Safety Inspectorate
CH-5232 Villigen/HSK
LIECHTENSTEIN
Tel: +41 (56) 310 3911; 310 3948
Fax: +41 (56) 310 3907
Telex: 59058 ASK CH
E-mail: info@landtag.li

LITHUANIA (LT)

Radiation Protection Centre
Kalvariju 153
LT-08221 Vilnius
LITHUANIA
Tel: +370 (5) 236 1936
Fax: +370 (5) 276 3633
E-mail: rsc@rsc.lt

LUXEMBOURG (L)

Direction de la Santé
Division de la Radioprotection
Villa Louvigny
Allée Marconi
L-2120 Luxembourg
BOURG
Tel: +352 2478 5677
Fax: +352 467 522
E-mail: secretariat.radioprotection@ms.etat.lu

MADAGASCAR (RM)

Office des Mines Nationales et des Industries
Stratégiques (OMNIS)
B.P. 1 Bis, 21 rue Razanakombana
Antananarivo 101
MADAGASCAR
Tel: +261 (20) 222 4283
Fax: +261 (20) 222 2985
Telex: 22370

Institut National des Sciences et Technique Nucléaires (INSTN)
 Secretariat d'État à l'Enseignement Supérieur (SEES)
 B.P. 4279
 101 Antananarivo
 MADAGASCAR
 Tel: +261 (20) 226 1181; 223 5584
 Fax: +261 (20) 223 5583
 E-mail: instn@dts.mg

MALAYSIA (MAL)

The Atomic Energy Licensing Board of Malaysia
 Ministry of Science, Technology and Innovation
 Batu 24, Jalan Dengkil
 43800 Dengkil, Selangor
 MALAYSIA
 Tel: +60 3 8926 7699
 Fax: +60 3 8925 4578
 E-mail: pauzi@aelb.gov.my

MALI (RMM)

Direction Nationale de l'Hydraulique et de l'Energie
 B.P. 66
 Bamako
 MALI

MALTA (M)

For transport by air:

Civil Aviation Department
 Luqa Airport

Luqa CMR 02
 MALTA

Tel: +356 249 175
 Fax: +356 239 278

Radiation Protection Board
 17 Edgar Ferro Street
 OHSA Building
 Pieta PTA 1533
 MALTA

Tel: +356 21 247 677
 Fax: +356 21 232 909
 E-mail: paul.brejza@gov.mt

MAURITIUS (MS)

The Chairman
 Radiation Protection Board
 Ministry of Health
 Emmanuel Anquetil Building
 Port Louis
 MAURITIUS
 Tel: +230 201 1902
 Fax: +230 201 3093; 201 3545
 E-mail: cmomoh@intnet.mu

MEXICO (MEX)

Comisión Nacional de Seguridad Nuclear y
 Salva-guardias
 Dr. José Ma. Barragán No. 779, 50 Piso
 Colonia Narvarte Benito Juárez
 03020 México, D.F.
 MEXICO
 Tel: +52 (55) 5095 3219
 Fax: +52 (55) 5095 3291
 E-mail: jldelgado@cnsnc.gob.mx
 Website: www.cnsns.gob.mx

Secretaría de Comunicaciones y Transporte
 Dirección General de Autotransporte Federal
 Calzada de las Bombas No. 411, Piso 11
 Colonia los Girasoles Coapa
 Delegación Coyoacán
 México, DF, C.P. 040920
 MEXICO
 Tel: +52 (55) 5684 0638
 Fax: +52 (55) 5684 0721

MOLDOVA, REPUBLIC OF (MD)*

National agency for Regulation of Nuclear and
 Radiological Activities (NARNRA)
 1, Alecu Russo str.
 MD-2068 Chisinau
 MOLDOVA, REPUBLIC OF
 Tel: +373 22 31 11 37
 Fax: +373 22 31 11 37
 E-mail: narnra@mail.md

MONACO (MC)

Monsieur le Conseiller de Gouvernement pour
 l'Intérieur
 Palais du Gouvernement
 Place de la Visitation
 Monaco-Ville
 MC-98000 Monaco
 MONACO
 Tel: +377 9315 4646
 Fax: +377 9350 8245
 Telex: 469 942 GOUVPR MC

MONGOLIA (MGL)

Nuclear Energy Commission
 Government Building 3
 Bagatoiruu 44
 Ulaanbaatar 11
 MONGOLIA
 Tel: +976 (1) 329 019
 Fax: +976 (1) 323 158
 E-mail: moncrl@erdem.edu.mn

MYANMAR (MYA)

Director General
Department of Atomic Energy
Ministry of Science and Technology
No. 6, Kaba Aye Pagoda Road
Yangon
MYANMAR
Tel: +95 (1) 663 025; 664 233; 664 546
Fax: +95 (1) 665 292

NETHERLANDS (NL)

Ministry of Housing, Spatial Planning and the Environment
External Safety Division
Directorate for Chemicals, External Safety and Radiation Protection/655
Rijnstraat 8
P.O. Box 30945
2500 GX The Hague
NETHERLANDS
Tel: +31 (70) 339 4965
Fax: +31 (70) 339 1297

Applications for permits or approvals should be addressed to:

Ministry of Social Affairs and Employment
Labour Inspectorate Central Office
P.O. Box 90801
2509 LV The Hague
NETHERLANDS
Tel: +31 (70) 333 5535
Fax: +31 (70) 333 4041

NEW ZEALAND (NZ)

Office of Radiation Health and Safety
Ministry of Health
P.O. Box 3877
Christchurch 8024
NEW ZEALAND
Tel: +64 (3) 974 2356
Fax: +64 (3) 372 1015

NICARAGUA (NIC)

Presidente
Comisión Nacional de Energía Atómica (CONEA)
Dirección: Centro Nacional de Radioterapia
Costado Oeste del Centro Comercial Nejapa 300 m al sur
Managua
NICARAGUA
Tel: +505 265 3404; 265 3420
Fax: +505 265 3213
E-mail: cnr@tmx.com.ni, radioter@ibw.com.ni

NIGER (RN)

Centre National de Radioprotection
B.P. 10.153
Niamey
NIGER
Tel: +227 736 398
Fax: +227 736 398

NIGERIA (NGR)

DG/CEO
Nigerian Nuclear Regulatory Authority
P.M.B. 559, Garki
Abuja
NIGERIA
Tel: +234 (9) 523 4924
Fax: +234 (9) 523 4925
E-mail: nnra@linkserve.com

NORWAY (N)

Norwegian Radiation Protection Authority
P.O. Box 55 N-1345
Østeras
NORWAY
Tel: +47 6716 2500
Fax: +47 6714 7407
E-mail: nrpa@nrpa.no

PAKISTAN (PK)

Chairman
Pakistan Nuclear Regulatory Authority
13-C Jan Chambers, College Road
Jinnah Super Market, F-7 Markas
Islamabad
PAKISTAN
Tel: +92 (51) 920 3946
Fax: +92 (51) 920 4112
E-mail: shakil@hg.pnra.org

PANAMA (PA)

For transport by land:

Direccion General de Salud
Ministerio de Salud
Edificio Ancón No. 261, Primer Piso
Apartado Postal 2048
Panamá 1
PANAMA
Tel: +507 212 9265; 212 9100
Fax: +507 212 9472

For transport by inland waterways except Panama Canal:

Autoridad Marítima de Panamá
Oficina del Administrador
Balboa, Ancón
Diablo-Antiguas Oficinas de la Autoridad Portuaria
Apartado Postal 8062
Panamá 7
PANAMA
Tel: +507 2325 561
Fax: +507 2325 527

For transport through the Panama Canal:

Comisión del Canal de Panamá
 Oficina de Capitán de Puerto
 División de Operaciones de Tránsito
 Departamento de Operaciones Marítima
 Panamá
 PANAMA
 Tel: +507 272 1312; 272 4219
 Fax: +507 272 3015

For transport by air:

Aeropuerto Marco A. Gelabert
 Dirección de Transporte y Trabajo Aéreo
 Antigo Aeropuerto de Albrook
 Apartado 7501 ó 7515
 Panamá 5
 PANAMA
 Tel: +507 3150 225 (Central); 3150 243
 Fax: +507 3150 395

PARAGUAY (PY)

Comisión Nacional de Energía Atómica
 Universidad Nacional de Asunción
 Campus Universitario, San Lorenzo
 Presidente: Ing. Cibar Caceres Aguilera
 Asunción
 PARAGUAY
 Tel: +595 (21) 585 617
 +595 (21) 585 540; 585 543
 Fax: +595 (21) 585 618
 E-mail: cnea@sce.cnc.una.py

PERU (PE)

Instituto Peruano de Energía Nuclear (IPEN)
 Av. Canadá 1470
 San Borja
 Lima 41
 PERU
 Tel: +51 (1) 224 8950; 224 8951;
 +51 (1) 224 8998; 488 5233
 Fax: +51 (1) 224 8991; 488 5224
 Telex: 25746 PE IPENPERU

PHILIPPINES (RP)

Philippine Nuclear Research Institute
 Commonwealth Avenue, Diliman
 P.O. Box 213, UP, Quezon City or
 P.O. Box 932
 Manila
 PHILIPPINES
 Tel: +63 (2) 929 4719; 929 6011 to 19
 Fax: +63 (2) 920 1646; 929 4719
 Telex: 66804 PNRI PN
 Cable: PHILNUCLEAR

POLAND (PL)

National Atomic Energy Agency
 ul. Krucza 36
 PL-00-522 Warszawa
 POLAND
 Tel: +48 (22) 695 9800
 Fax: +48 (22) 629 0164
 Telex: 816915 ATOM PL
 E-mail: tadeusz.dziubiak@paa.gov.pl

Address applications for approvals and notifications to:

National Atomic Energy Agency
 Department for Regulatory Control and Radiation
 Applications
 Konwaliowa 7
 03-194 Warszawa
 POLAND
 Tel: +48 (22) 676 9707
 Fax: +48 (22) 614 4252

PORTUGAL (P)

Instituto Tecnológico e Nuclear
 Estrada Nacional n 10 Apartado 21
 2686-953 Sacavem
 PORTUGAL
 Tel: +351 (2) 1994 6000
 Fax: +351 (2) 1955 0117
 Website: www.itn.pt

QATAR (Q)

Ministry of Energy and Industry

Department of Industrial Development
 P.O. Box 2599
 Doha
 QATAR
 Tel: +974 832 121—5 lines
 Fax: +974 832 024
 Telex: 4323 DH

Ministry of Municipal Affairs and Agriculture

Environment Department
 P.O. Box 7634
 Doha
 QATAR
 Tel: +974 320 825
 Fax: +974 415 246

ROMANIA (RO)

National Commission for Nuclear Activities Control
 Bulevardul Libertății Nr. 12
 Sector V
 P.O. Box 42
 Bucharest
 ROMANIA
 Tel: +40 (1) 410 0572; 410 2441
 Fax: +40 (1) 411 1436

RUSSIAN FEDERATION (RUS)

Applications for approval should be sent to:

MINATOM
Ministry of the Russian Federation for Atomic Energy
Department of Safety, Ecology and Emergency
Situations
ul. B. Ordynka 24/26
101000 Moscow
RUSSIAN FEDERATION
Tel: +7 (95) 239 2288
Fax: +7 (95) 951 6843; 953 5484
E-mail: VPK@mape.msk.su

Approval is issued by MINATOM in agreement with:

GOSATOMNADZOR
Russian Federal Supervisory Body for Nuclear and
Radiation Safety
109147 Taganskaya str. 34
Moscow
Russia
RUSSIAN FEDERATION
Tel: +7 (95) 912 3911
Fax: +7 (95) 278 8990

SAUDI ARABIA (SA)

King Abdulaziz City for Science and Technology
P.O. Box 6086
11442 Riyadh
SAUDI ARABIA
Tel: +966 (1) 488 3444; 488 3555
Fax: +966 (1) 488 3756
Telex: 401590 KACST SJ
Cable: MAWSOAH

SENEGAL (SN)

Délégation aux Affaires Scientifiques et Techniques
Ministère de la Recherche
Scientifique et de la Technologie
23, rue Calmette
Boîte postale 218
Dakar
SENEGAL
Tel: +221 213 260
Fax: +221 224 563
E-mail: dastba@telecom-plus.sn

SERBIA (SRB)

Serbian Radiation Protection and Nuclear Safety
Agency
Vlajkoviceva 3
11000 Belgrade
SERBIA
Tel: +381 11 339 88 28
Fax: +381 11 339 88 25

SIERRA LEONE (WAL)

The Permanent Secretary
Ministry of Education
New England
Freetown
SIERRA LEONE
Tel: +232 (22) 2928
Cable: MINEDUC FREETOWN

SINGAPORE (SGP)

Centre for Radiation Protection and Nuclear Science
Basement 1, HAS Building
11 Outram Road
Singapore 169078
SINGAPORE
Tel: +65 6213 0766
Fax: +65 6226 2353
E-mail: Koh_Kim_Hock@nea.gov.sg
Director General
Civil Aviation Authority of Singapore (CAAS)
P.O. Box 1
Singapore Changi Airport
Singapore 918141
SINGAPORE
Tel: +65 5412 499
Fax: +65 5456 515
Telex: RS 21231 AVIATEL

SLOVAKIA (SK)

Director
Nuclear Regulatory Authority
Bajkalská 27
P.O. Box 24
820 07 Bratislava
SLOVAKIA
Tel: +42 (12) 5342 1032
Fax: +42 (12) 5342 1015
The Ministry of Transport, Post and
Telecommunications
Námestie slobody 6
P.O. Box 100
810 05 Bratislava
SLOVAK REPUBLIC
Tel: +42 (12) 5949 4111
Fax: +42 (12) 5244 2274

SLOVENIA (SLO)

Slovenian Nuclear Safety Administration
Železna cseta 16
P.O. Box 5759
SI-1001 Ljubljana
SLOVENIA
Tel: +386 (1) 472 1100
Fax: +386 (1) 472 1199
E-mail: gp.ursjv@gov.si

In respect of transport of radioactive material which is used in medicine:

Slovenian Radiation Protection Administration (SRPA)
 Ajdovščina
 1000 Ljubljana
 SLOVENIA
 Tel: +386 (1) 478 87 09
 Fax: +386 (1) 478 87 15
 E-mail: gp-ursjv.mz@gov.si

SOUTH AFRICA (ZA)

National Nuclear Regulator
 P.O. Box 7106
 Centurion 0046
 SOUTH AFRICA
 Tel: +27 (12) 674 7100
 Fax: +27 (12) 663 5513

SPAIN (E)

For transport co-operation:

Ministerio de Fomento
 Comisión de Coordinación del Transporte de Mercancías Peligrosas
 Paseo de la Castellana 67
 E-28071 Madrid
 SPAIN
 Tel: +34 (91) 597 5021
 Fax: +34 (91) 597 5027

For approval of shipments of material and safety certificates:

Ministerio de Economía
 Dirección General de Política Energética y Minas
 Paseo de la Castellana 160
 E-28071 Madrid
 SPAIN
 Tel: +34 (91) 349 7418
 Fax: +34 (91) 349 7529
 E-mail: fjarana@mityc.es

SRI LANKA (CL)

Sri Lanka Atomic Energy Authority
 343 Olcott Mawatha
 Colombo 11
 SRI LANKA
 Tel: +94 (1) 441 735 through 38
 Fax: +94 (1) 472 749
 E-mail: srlaea@slt.lk

SUDAN (SUD)

Sudan Atomic Energy Commission
 The Technical Committee on Radiation Protection
 P.O. Box 3001
 Khartoum
 SUDAN
 Tel: +249 183 238 870
 Fax: +249 183 244 766
 E-mail: rptc@saec-sd.org

SWEDEN (S)

Approvals of Special Form; approvals and notifications of Type-B packages, shipments, special arrangements, notifications, for all packages except fissile packages:

Swedish Radiation Protection Authority
 S-171 16 Stockholm
 SWEDEN
 Tel: +46 (8) 729 7100
 Fax: +46 (8) 729 7108
 E-mail: ssi@ssi.se

Approvals and notifications of Type-B packages, shipments, special arrangements, notifications, non-excepted fissile packages:

Swedish Nuclear Power Inspectorate
 S-106 58 Stockholm
 SWEDEN
 Tel: +46 (8) 698 8400
 Fax: +46 (8) 661 9086
 E-mail: ski@ski.se

SWITZERLAND (CH)

Approvals of special form. Calculation of unlisted A values. Approvals and notifications for all Type-B packages, fissile packages, shipments and special arrangements:

Swiss Federal Nuclear Safety Inspectorate
 Section for Transport and Waste Management
 CH-5232 Villigen/HSK
 SWITZERLAND
 Tel: +41 (56) 310 3918
 Fax: +41 (56) 310 3855
 E-mail: Stefan.theis@hsk.ch

Import, export, transport and transit licences for nuclear materials and nuclear wastes:

Federal Office of Energy
 Nuclear Energy Section
 CH-3003 Bern
 SWITZERLAND
 Tel: +41 (31) 322 5642
 Fax: +41 (31) 322 0078
 E-mail: office@bfe.admin.ch

Copy of application to:

Swiss Federal Nuclear Safety Inspectorate
 Section for Transport and Waste Management
 CH-5232 Villigen/HSK
 SWITZERLAND

Licences for the import/export of non-nuclear radioactive material and carriers' licences for radioactive material:

Federal Office of Public Health
 Division of Radiation Protection
 CH-3003 Bern
 SWITZERLAND
 Tel: +41 (31) 322 9603
 Fax: +41 (31) 322 8383
 E-mail: Werner.zeller@bag.admin.ch

Advice concerning the sending of radioactive material by post:

Swiss Post
Paketpost
CH-3030 Bern
SWITZERLAND
Tel: +41 (31) 338 2724
Fax: +41 (31) 338 0500
E-mail: gefahrgut@post.ch

SYRIAN ARAB REPUBLIC (SYR)

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Atomic Energy Commission
P.O. Box 6091
Damascus
SYRIAN ARAB REPUBLIC
Tel: +963 (11) 213 2580
Fax: +963 (11) 6112 289
Cable: TAKA
E-mail: atomic@aec.org.sy

TAJIKSTAN (TJ)

Academy of Sciences
33 Rudaky Avenue
734025 Dushanbe
TAJIKSTAN
Tel: +992 372 215 083
Fax: +992 372 215 084; 214 911

TANZANIA (EAT)

Tanzania Atomic Energy Commission (TAEC)
P. O. Box 743
Arusha
TANZANIA
Tel: +255 (27) 250 8554
Fax: +255 (27) 250 9709
E-mail: nrctz@habari.co.tz
Website: www.taec.or.tz

THAILAND (T)

The Secretary General
Office of the Atomic Energy for Peace
16 Vibhavadi Rangsit Road
Chatuchak
Bangkok 10900
THAILAND
Tel: +66 (2) 562 0123, Ext. 1520
Fax: +66 (2) 561 3013
Cable: ATENPEA BANGKOK 10900
E-mail: sombuun@oaep.go.th

TUNISIA (TN)

Centre National de Radioprotection
Belvédère
Tunis
TUNISIA
Tel: +216 71 568 628
Fax: +216 71 571 697
E-mail: Aza.hammou@rns.tn

TURKEY (TR)

Radiological Health and Safety Department
Turkish Atomic Energy Authority
06530, Lodumlu
Ankara
TURKEY
Tel: +90 (312) 285 9668
Fax: +90 (312) 285 4284

UGANDA (EAU)

The Permanent Secretary
Ministry of Energy, Minerals and Environment
Protection
P.O. Box 7270
Kampala
UGANDA
Tel: +256 (41) 230 220; 235 889; 230 243
Fax: +256 (41) 34996
Telex: 61098

UKRAINE (UA)

State Nuclear Regulatory Committee
9/11 Arsenalna str
Kyiv, 01011
UKRAINE
Tel: +380 (44) 254 3451
Fax: +380 (44) 254 3311
E-mail: sakalo@hq.ssrc.gov.ua

UNITED ARAB EMIRATES (AE)

General Civil Aviation Authority
P.O. Box 6558
Abu Dhabi
UNITED ARAB EMIRATES
Tel: +971-2-4447666
Fax: +971-2-4054461
E-mail: avsafsec@emirates.net.ae

UNITED KINGDOM (GB)

For transport by all modes except post:

Department for Transport
Radioactive Materials Transport Division
76 Marsham Street
London SW1P 4DR
UNITED KINGDOM
Tel: +44 (20) 7944 5795; 7944 5768
Fax: +44 (20) 7944 2187
E-mail: ca@dft.gsi.gov.uk

For International Post:

Royal Mail International Headquarters
Heathrow Worldwide Distribution Centre
Axis Park
Sutton Lane
Langley SL3 8AQ
UNITED KINGDOM
Tel: +44 (0) 1753 484961
Fax: +44 (0) 1753 484769
E-mail: julian.tubbs@royalmail.co.uk

For Post within UK only:

Royal Mail
 Engineering Services (Materials)
 Wheatstone House Wheatstone Road
 Swindon SN3 5XX
 UNITED KINGDOM
 Tel: +44 (0) 1793 483875
 Fax: +44 (0) 1793 483921
 E-mail: paul.x.brown@royalmail.co.uk

UNITED STATES (USA)

Office of Hazardous Materials Technology
 Pipeline and Hazardous Materials Safety Administration
 U.S. Department of Transportation
 Washington, DC
 U.S.A.
 20590
 Tel: +1 (202) 366 4545
 Fax: +1 (202) 366 3753
 Telex: 892 427
 TWX: (710) 822 9426
 E-mail: rick.boyle@dot.gov

Technical point of contact for Type B and fissile packages:

Spent Fuel Project Office
 Office of Nuclear Materials Safety and Safeguards
 U.S. Nuclear Regulatory Commission
 Washington, DC
 U.S.A.
 20555
 Tel: +1 (301) 415 8500
 Fax: +1 (301) 415 8555
 E-mail: EWB@nrc.gov

URUGUAY (ROU)

Dirección Nacional de Tecnología Nuclear
 Mercedes 1041
 Montevideo
 URUGUAY
 Tel: +598 (2) 9086 783
 Fax: +598 (2) 9021 619 or 629
 E-mail: a.nader@autoridadreguladora.miem.gubuy

UZBEKISTAN (UZ)

State Committee on Safety in Industry and Mining
 27 Navoi Street
 700011 Tashkent C-14
 UZBEKISTAN
 Tel: +998 (71) 144 2332; 144 2104; 144 1317
 Fax: +998 (71) 144 2104; 144 1317

VATICAN CITY STATE (V)

Office of the Governor of the State of Vatican City
 (Governatorato della Città del Vaticano)
 00120 Città del Vaticano
 VATICAN CITY STATE
 Tel: +39 (06) 698-8 3158
 Fax: +39 (06) 698-8 3955
 Telex: 2024 DIRGENTEL VA

VENEZUELA (YV)

Dirección de Asuntos Nucleares
 Dirección General Sectorial de Energía
 Ministerio de Energía y Minas
 Avenue Liberator
 Torre Oeste, piso 5
 La Campiña
 Caracas
 VENEZUELA
 Tel: +58 212 708 7761
 Fax: +58 212 708 7799

VIETNAM (VN)

Ministry of Science, Technology and Environment
 Vietnam Agency for Radiation Protection and Nuclear Safety and Control
 70 Tran Hung Dao St.
 Hoan Kiem District
 Hanoi
 VIETNAM
 Tel: +84 (4) 3822 0298
 Fax: +84 (4) 3822 0298
 Website: www.varansac.gov.vn

YEMEN, REPUBLIC OF (YAR)

National Atomic Energy Commission
 P.O. Box 4720
 Sana'a
 Republic of Yemen
 YEMEN, REPUBLIC OF
 Tel: +967 (1) 259 159
 Fax: +967 (1) 259 460

ZAMBIA (RNR)

National Institute for Scientific and Industrial Research
 International Airport Road
 P.O. Box 310158
 Lusaka 15302
 Chelston
 ZAMBIA
 Tel: +260 (1) 283 533; 226 200; 243 533
 Fax: +260 (1) 283 533; 283 502; 226 200
 E-mail: unepazam@zamnet.zm

D

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ZIMBABWE (ZW)

Ministry of Health and Child Welfare
Environmental Health Department
Hazardous Substances and Articles Unit
P.O. Box CY 1122 Causeway
Harare
ZIMBABWE
Tel: +263 793 095
Fax: +263 793 634
Telex: 22211 MEDICUS ZW

D

D.2



Dangerous Goods Regulations



Dangerous Goods Regulations



Dangerous Goods Regulations

APPENDIX E—PACKAGING TESTING FACILITIES, MANUFACTURERS AND SUPPLIERS

E

E.0 General

This Appendix contains three lists relating to UN specification packaging. The first list (E.1) is composed of package manufacturers and suppliers of UN specification packaging. The second list (E.2) is composed of facilities which can perform the package performance tests required by these Regulations. A third list (E.3) shows all packagings which are specified in the United Nations *Recommendations on the Transport of Dangerous Goods* and which are permitted for air transport.

The information in these lists has been provided by many sources and is provided solely as an aid to shippers. The lists are not to be construed as being part of the Regulations or as an endorsement of the facilities and companies listed. While IATA believes the information to be accurate, it takes no responsibility for any errors or omissions.

Packaging suppliers wishing to be included in the list of UN Specification Suppliers are invited to contact:

International Air Transport Association
800 Place Victoria
P.O. Box 113
Montreal
Quebec
CANADA
H4Z 1M1
Tel: +1 (514) 390 6732
Fax: +1 (514) 874 9659
E-mail: advertising@iata.org

An administrative fee will be charged.

E.1 UN Specification Packaging Suppliers

This list will assist shippers and manufacturers of dangerous goods in locating UN specification packagings of the type they require. Suppliers are listed alphabetically by country and the types of packagings available are listed. The list includes packaging types normally used only in combination packagings. Shippers should note that combination packagings must be tested and certified as complete packages as intended for transport.



Dangerous Goods Regulations

Packaging Suppliers	Telephone/Fax/E-mail/www	Drums	Boxes	Others
AUSTRALIA (+61)				
DGI Brisbane, QLD 4009	7 38604424 7 38604428 gareth.hutchinson@dgiglobal.com www.dgiglobal.com	1A1 1A2	4GV	Div. 6.2 (PI 620/650) Temperature Sensitive
DGI Erskineville, NSW 2043	2 95579579 2 95579843 simon.hauser@dgiglobal.com www.dgiglobal.com	1A1 1A2	4GV	Div. 6.2 (PI 620/650) Temperature Sensitive
DGI Perth Airport, WA 6105	8 94785184 8 94785183 andrew.booth@dgiglobal.com www.dgiglobal.com	1A1 1A2	4GV	Div. 6.2 (PI 620/650) Temperature Sensitive
DGI Tullamarine, VIC 3043	3 9338 3812 3 9338 2812 evan.ali@dgiglobal.com www.dgiglobal.com	1A1 1A2	4GV	Div. 6.2 (620/650), Temperature Critical
Hazpak Pty Ltd. Dandenong South, VIC 3175	(03) 9706 8058 (03) 9706 7593 sales@hazpak.com.au www.hazpak.com.au	1A1 1A2	4D 4G	4H2Combination Packages with Inner Packagings 3A1 3A2 3H1 3H2 5H3 5H4 5M2 Div. 6.2 (PI 620/650)
Integra Packaging Pty Ltd Bomaderry, NSW 2541	(0) 2 4421 2935 (0) 2 4423 1437 info@integrapackaging.com www.integrapackaging.com		4D 4DV DG	
AUSTRIA (+43)				
Nefab Eder Verpackungstechnik GmbH A-4020 Linz	(0) 732 660 620 0 (0) 732 660 620 20 info@nefab.at www.nefab.at		4D 4DV 4G	
BAHRAIN (+973)				
DGI Muharraq	3 1732 4911 3 1732 4922 jeff.calisse@dgiglobal.com www.dgiglobal.com	1A1 1A2	4GV	
BELGIUM (+32)				
Nefab Packaging Belgium N.V. 9042 Desteldonk (Gent)	9 231 8282 9 231 8239 info@nefab.be www.nefab.be		4D 4DV 4G	
BRAZIL (+55)				
A Igaraí S/A Sao Paulo	11 2219 8560 robson@igarai.com igarai@igarai.com http://www.igarai.com	1A1 1A2 1H1 1H2 1G	4G 4GU 4GV	3H1 3H2 Inner Packag- ings, Div. 6.2 Category A and B (PI 650)

Packaging Suppliers	Telephone/Fax/E-mail/www	Drums	Boxes	Others
A Imer do Brasil Ltda. Rio de Janeiro	21-2450 9300 21-2450 9301 imer@imer.com.br www.imer.com.br	1A1 1A2 1G 1H 1H2	4C1 4C2 4D 4DV 4G 4GU 4GV (various sizes)	Inner Packagings IP7 IP7A IP7B 3A1 3A2 3H1 3H2 5H4 5M2 Div. 6.2 (PI 620/622/650) Category A and B (various sizes)
A Imer do Brasil Ltda. Sao Paulo	11-3186-4600 11-5041-1931 imer@imer.com.br www.imer.com.br	1A1 1A2 1G 1H 1H2	4C1 4C2 4D 4DV 4G 4GU 4GV (various sizes)	Inner Packagings IP7 IP7A IP7B 3A1 3A2 3H1 3H2 5H4 5M2 Div. 6.2 (PI 620/650) Category A and B (various sizes)
Concepta DG Compliance Ltda. Sao Paulo	11 2602 1700 11 2602 1701 concepta@concepta.com.br http://www.concepta.com.br	1A1 1A2 1B1 1B2 1D 1G 1H1 1H2 1N1 1N2	4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4GV, 4GU, 4H1, 4H2	3A1 3A2 3B1 3B2 3H1 3H2 5H1 5H2 5H3, 5H4 5L2 5L3 5M1 5M2
Nefab Embalagens Ltda. 06818-200 Embu, SP	(0)11-4785 5050 (0)11-4785-5051 embalagens@nefab.com.br www.nefab.com.br		4D 4DV 4G	
Slotter Industria de Embalagens Ltda Sao Paulo	11 4791-2020 11 4791-3700 ari@slotter.com.br leonardo@slotter.com.br renato@slotter.com.br http://www.slotter.com.br	1A1 1A2 1G 1H1 1H2	4G 4GV 4H1 Various Sizes	Inner Packagings (Glass, Plastic, Metal cans, Plastic bags) 3A1 3A2 Div. 6.2 (PI 620/622/650) Various Sizes
CANADA (+1)				
Nefab Inc. Canada Peterborough, ON	705 748 4888 705 748 0034 mail@nefab.com www.nefab.com		4D 4DV 4G	
CHINA, PEOPLE'S REPUBLIC OF (+86)				
Bureau of Dangerous Goods China/Tianjin	022 6087289 022 23695890 bdg_china@163.com www.bdg-china.com.cn	1A1 1A2 1B1 1B2 1D 1G 1H1 1H2	4C1 4C2 4D 4G 4GV 4H1 4H2	Inner Packagings
Nefab Packaging Engineering (Wuxi) Co. Ltd. Wuxi, Jiangsu Province	510 8520 0310 510 8520 0402 info@nefab.com.cn www.nefab.com.cn		4D 4DV 4G	
CHINESE TAIPEI (+88)				
DG Packaging (Taiwan) CO., LTD. Taipei City 105	6 2 8866 1458 6 2 8192 7205 gigi_tsai@dg-packaging.idv.tw www.dg-packaging.com	1A1 1A2 1H2	4D 4DV 4G 4GV 4GU Various Sizes	Inner Packagings 5H4, Div 6.2 (PI 620/650)
DENMARK (+45)				
Nefab Danmark A/S DK4000 Roskilde	43 54 30 13 43 54 30 73 mail@danmark.dk www.nefab.com		4D 4DV 4G	

Packaging Suppliers	Telephone/Fax/E-mail/www	Drums	Boxes	Others
EGYPT (+202) DGL Int For International Transport Cairo	22676424-5-6 22668713 info@dgleypt.com www.dgleypt.com		4GV2 4GV5 4GV7 4GV22 4GV 55 4GV140	
ESTONIA (+372) Nefab Eesti AS 75303 Harjumaa, Eesti	634 98 00 634 98 01 info@nefab.ee www.nefab.com		4D 4DV 4G	
FINLAND (+358) OY Nefab AB FI-01650 Vantaa	10 830 1100 10 830 1101 info@nefab.fi www.nefab.fi		4D 4DV 4G	
FRANCE (+33) DGI 77230 Paris	(0)1 64 30 46 93 (0)1 64 30 42 03 baptiste.moncomble@ dgiglobal.com http://www.dgiglobal.com	1A1 1A2	4GV	Div 6.2 (PI 620/650), Temperature Sensitive
E3 Cortex 77230 Thieux	01 60 26 91 91 01 60 26 84 62 info@e3cortex.fr www.e3cortex.fr	1H1 1H2 1A1 1A2	4GV 4G 4DV 4B 4C1 4D	Inner Packagings Div. 6.2 (PI 620/650) Radioactive Type A
Nefab Packaging France 41300 Salbris	254 96 82 55 254 96 35 77 info@nefab.fr www.nefab.fr		4D 4DV 4G	
GERMANY (+49) A. Pohli GmbH & Co. KG 42279 Wuppertal	202648240 2026482424 info@pohli.de www.pohli.de			3H1 4H1 6PH1 6PH2
Alex Breuer GmbH 50859 Köln	02234 4070 24 02234 4070 29 info@alexbreuer.de www.alexbreuer.de		4D 4DV 4G 4GV	
Nefab Deutschland GmbH 71696 Möglingen	(0) 7141 49 00 40 (0) 7141 49 00 42 info@nefab.de www.nefab.de		4D 4DV 4G	
GREECE (+30) R.M.R. Vaiopoulou-Toufexis O.E. 41222 Larissa Exclusive Distributor of E3 Cortex, FR	2410669040 info@rnr.gr www.rnr.gr	1H1 1H2 1A1 1A2 1G	4B 4BV 4C1 4D 4DV 4G 4GV 4H2	3A1 3A2 3B1 3B2 3H1 3H2 5H4 Inner Packagings Div. 6.2 (PI620/650) 4G/Class 6.2 4GU/Class 6.2 Radioactive Type A

Packaging Suppliers	Telephone/Fax/E-mail/www	Drums	Boxes	Others
HONG KONG (SAR), CHINA (+852)				
Aquatic Paper Products Printing Co. Ltd. Aberdeen	2555 1447 2555 1990 unbox@aquaticpaper.com www.aquaticpaper.com		4G Various Sizes	
ImDG Logistics Co., Ltd Hong Kong	2670 1711 2670 1722 info@imdgnet.com www.imdgnet.com	1A1 1A2 1H1 1H2	4G Various Sizes	3A1 3A2 3H1
South Centre Limited Shatin N.T	2414 2349 2412 2102 ceron@netvigator.com		4G	
HUNGARY (+36)				
Nefab Packaging Hungary Kft. H-2151 Fót	27 395 960 27 395 968 info@nefab.hu www.nefab.hu		4D 4DV 4G	
INDIA (+91)				
Ace Pack International Mumbai 400091	9820008270 28981610 acepackinternational@gmail.com www.acepackint.com	1A1 1H1 1H2 1G	4D 4G 4GU 4GV	Inner Packagings (Glass, metal, plastic) 3H1 Hazard class labels, Handling labels, Absorbent and cushioning material
DGM India Mumbai 400099	22 2826 1554 22 2836 8909 d.rufus@dgmindia.in www.dgmsupport.com		4GV Various Sizes	Explosafe 7.5™ Explosafe 500™
DGPACK AVIONI PVT LTD Mumbai	22 2820 2658 22 2825 1367 22 2820 2659 FAX 22 285 1371 dgpak_avoni@yahoo.com www.dgpackavoni.com	1A1 1A2 1H2 1G	4D 4G 4GV	Inner Packagings 3H1
Jubilee Cargo Mumbai 400099	22 65276193 98 21236654 22 28253160 jubileecgo@hotmail.com jubilee2665@yahoo.com	1H2	4GV Various Sizes	3H1
Nefab India Private Ltd Powai, Mumbai-400076	22 6710 8862 22 6710 8861 india@nefab.se www.nefab.com		4D 4DV 4G	
INDONESIA (+62)				
DGEX Indonesia (Dangerous Goods Expert Indonesia) Jakarta 19110	21 927 513 97-98 sales@dgex.net www.dgex.net	1A1, 1A2, 1A1 Salvage, 1A2 Salvage	4G, 4GV	1A2, 1B2, 1D, 1G, 1H2, 1N2, 3A2, 3B2, 3H2, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2
DGM Indonesia Cengkareng-Jakarta	21 5591 3029 21 5591 1337 dgmindonesia@cbn.net.id www.dgmsupport.com	1A1 1A2	4D 4DV 4G 4GV Various Sizes	Inner Packagings 3H1 Div. 6.2 (PI 620/650) (various) Explosafe 7.5™ Explosafe 500™

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E.1

Packaging Suppliers	Telephone/Fax/E-mail/www	Drums	Boxes	Others
PT. DG Packaging Indonesia	2 889 66881 21 889 66920 dgsa@dg-packaging.com www.dg-packaging.com	1A1 1A2 1H2	4D 4DV 4G 4GV 4GU Various Sizes	Inner Packagings 5H4, Div 6.2 (PI 620/650)
Pt. Multi Mulia Anugerah, Jakarta	0813 196 30379 bayu@mma-indonesia.com	1A1 1A2 1H1 1H2 1G Various Sizes	4G 4GV Various Sizes	Inner Packagings 3H1 Div 6.2 (PI 620/650) Labels, Vermiculites
IRELAND (+353) Mega-Pak Limited (Ireland) Swords, Co. Dublin	01 840 2063 01 840 2063 megapakireland@eircom.net www.mega-pak.com	1A1 1A2	4D 4DV 4G 4GV	Div 6.2 (PI 620/650) Labels/Declarations
ITALY (+39) Air Sea Italia S.R.L. 43036 Fidenza (PR) Agent for Air Sea Containers Ltd, UK	0524 528 418 0524 520 159 info@airsea.it www.airsea.it	1A1 1A2 1G 1H1 1H2	4D 4DV 4G 4GV 4H 4H2	Inner Packagings 3H1 6HA1 Div. 6.2 (PI 620/650)
CEFIS SRL. 20032 Cormano (MI)	02 3501835 02 3506455 info@cefis-mi.it www.cefis-mi.it	1A1 1A2 1H1 1H2	4D 4DV 4G 4GV	3H1
DGM Italia Srl 20060 Vignate (MI)	02-956 6933 02-9536 4763 info@dgmsrl.it www.dgmsrl.it	1A1 1A2 1G 1H1 1H2 1H2T	4D 4DV 4G 4GV	various sizes 3H1 various Div. 6.2 (PI 620/650) Explosafe 7.5™ Explosafe 500™
Nefab S.r.l. 200 37 Paderno Dugnano, Milan	02 990 48520 02 990 48521 info@nefab.it www.nefab.it		4D 4DV 4G	
OVERPACK S.R.L. Milan	02 6431275 02 64100319 info@overpack.it http://www.overpack.it	1A1 1A2 1H1 1H2	4G 4GV 4D 4DV	3A1 3A2 3H1 3H2 Div. 6.2 Labels
SERPAC srl 20090 Segrate (MI)	02 21 87 15 85 02 26 95 20 31 info@serpac.it www.serpac.it		4G 4GU 4GV 4D 4DV	Packaging for: UN 3373 (PI 650), Class 6.2 (PI 620), UN 1845 (PI 904) Stem cells. Labels/declarations/ UN certifications
JAPAN (+81) M & P Corporation Tokyo Exclusive Distributor of E3 Cortex, FR	03 5462 7661 03 3471 0801 unbox@mandpcorp.cp.jp www.undg.jp	1G 1A2 (Various Sizes)	4DV 4GV (Various Sizes)	Div. 6.2 (PI 620/650) Temp Ambient/Controlled 3H1 (Various Sizes)
KOREA (+82) DG WorldNet Service Co., Ltd. Seoul	2 2666 9996 2 2666 9978 info@dgworldnet.com www.dgworldnet.com	1A1 1A2 1H1 1H2	4G 4GV Various sizes	3A1 3A2 3H1 4C1 4C2

Packaging Suppliers	Telephone/Fax/E-mail/www	Drums	Boxes	Others
ImDG Logistics Co., Ltd. Seoul	2 2666 9911 2 2666 1040 info@imdg.co.kr www.imdg.co.kr	1A1 1A2 1H1 1H2	4C1 4C2 4G Various Sizes	3A1 3A2 3H1 Various Sizes Labels/ Declarations/ Vermiculites
Safe GLS Co Ltd Seoul	2 2666 1701 2 2666 1702 sf10@safegls.com www.safegls.com	1A1 1A2 1H1 1H2	4G 4GV 4C1 Various Sizes	4GU/Div. 6.2 (PI 620/650) Temp Ambient/Controlled 3H1 3A1 3A2 Labels/Declarations
MALAYSIA (+60)				
DGR Packaging & Supply Sdn. Bhd. Johor Bahru	(13) 7375646 7 5114494 info@dgrpack.com www.dgrpack.com	1A1 1A2 1G 1H1 1H2 3H1 3H2	4G 4GV various sizes wooden crates	Various types of Inner packaging i.e., glass, plastics bottles, metal tins.
DPS 4GV Packaging & Supply (M) Sdn Bhd 81200 Johor Bahru	7 23 82150 7 23 62150 enquiry@dps4gv.com www.dps4gv.com	1A1 1A2 1H1 1H2	4G 4GV Various Sizes	Inner Packagings 3H1 Div. 6.2 Labels, Vermiculites
Polytainer Industries Sdn Bhd 4000 Selangor Darul Ehsan	3 33440818 3 33448770 polytainer@polytainer.com.my www.polytainer.com.my			10 Litre 15 Litre 20 Litre 25 Litre 30 Litre Heavy duty Jerrican and non removable head
MEXICO (+52)				
Envases y Laminados S.A. de C.V. México	55 5888 0899 adolfo.ibanez@elsamex.com.mx www.elsamex.com.mx	1A1 1A2 1G 1H1 1H2		3H1 31HA1
Nefab Packaging Mexico SA de CV México, D.F.	44 221 70138 55 1084 2893 mail@nefab.com www.nefab.com.mx		4D 4DV 4G	
Soluciones y Comercialización en Mercancías Peligrosas, S.A. de C.V. México, D.F.	55 5784 4991 55 5784 9867 ventas@mercanciaspeligrosas.com.mx www.mercanciaspeligrosas.com.mx	1A1 1A2 1H1 1H2 Various Sizes	4G 4GV Various Sizes	Inner Packagings 3H1 Various Sizes
NETHERLANDS (+31)				
CarePack Holland BV 1117 ZN Schiphol Oost	020 354 0787 020 354 0650 info@carepack.nl www.carepack.nl	1A1 1A2 1A2T 1G 1H1 1H2 1H2T (various sizes)	4B 4D 4DV 4G 4GU 4GV 4H 4H2 4HV (various sizes)	Inner Packagings 3A1 3H1 5H2 Div. 6.2 (PI 620/650) (Temp. Controlled Various Sizes)
Nefab Bijl B.V. NL-3770 AB Barneveld	342 4901 47 342 4168 45 info@nefab.nl www.nefab.com		4D 4DV 4G	
NEW ZEALAND (+64)				
DGI Auckland	9 255 5207 9 255 3120 david.fenderson@dgiglobal.com www.dgiglobal.com	1A1 1A2	4GV	Div. 6.2 (PI 620/650), Temperature Sensitive



Dangerous Goods Regulations

Packaging Suppliers	Telephone/Fax/E-mail/www	Drums	Boxes	Others
NORWAY (+47)				
DGM Bergen N-5269 Bergen Airport	5 511 7200 5 511 7201 dgmbgo@dgm.no www.dgmsupport.com		4D 4DV 4G 4GV Various Sizes	Various Div. 6.2 (PI 620/650) Explosafe 7.5™ Explosafe 500™
DGM Oslo N-2065 Gardemoen	6 394 7670 6 301 5311 johnerik@dgm.no arvid@dgm.no (ops) www.dgmsupport.com		4D 4DV 4G 4GV Various Sizes	Various Div. 6.2 (PI 620/650) Explosafe 7.5™ Explosafe 500™
DGM Stavanger N-4055 Stavanger Airport	51 715 540 51 715 541 dgmsvg@dgm.no www.dgmsupport.com		4D 4DV 4G 4GV Various Sizes	Various Div. 6.2 (PI 620/650) Explosafe 7.5™ Explosafe 500™
Nefab Packaging Norway A/S N-3070 Oslo	033 78 58 50 033 78 58 51 norge@nefab.no www.nefab.no		4D 4DV 4G	
Vestfold Ships & Industriservice a.s N-3101 Tonsberg Agent for Air Sea Containers Ltd, UK	333 18888 333 18889 post@vestships.no www.air-sea.co.uk	1A1 1A2 1G 1H1 1H2	4D 4DV 4G 4GV 4H 4H2	Inner Packagings 3H1 6HA1 Div. 6.2 (PI 620/650)
POLAND (+48)				
Nefab Packaging Poland Sp. Z o.o. 83-110 Tczew	58 7777 950 58 7777 953 info@nefab.pl www.nefab.com		4D 4DV 4G	
PORTUGAL (+351)				
DG Representacoes Lisbon Agent for Air Sea Containers Ltd, UK	21 812 0090 21 793 9393 geral@dgembalagens.com www.dgembalagens.com	1A1 1A2 1G 1H1 1H2	4D 4DV 4G 4GV 4H 4H2	Inner Packagings 3H1 6HA1 Div 6.2 (PI 620/650)
Nefab RA Produtos de Embalagem Lda 4470-640 Moreira Da Maia	22 943 92 20 22 942 80 10 info@nefab.pt www.nefab.pt		4D 4DV 4G	
ROMANIA (+40)				
Nefab Packaging Romania SRL 3001212 Timisoara	256 283 423 info@nefab.ro www.nefab.ro		4D 4DV 4G	
RUSSIAN FEDERATION (+7)				
DGM Moscow Moscow	495 9671194 495 258 6610 dgmmoscow@mtu-net.ru www.dgmsupport.com www.icedgr.ru	1A1 1A2 1G 1H1 1H2	4D 4G 4GV Various Sizes	3H1 3H2 Various Div 6.2 (PI 620/650) 6HA1 Various Sizes
SAUDI ARABIA (+966)				
Envirocare Al-Khobar Agent for Air Sea Containers Ltd, UK	3 867 2763 3 867 5910 envirocare@yahoo.com www.air-sea.co.uk	1A1 1A2 1G 1H1 1H2	4G 4GV 4D 4DV 4H 4H2	Inner Packagings 3H1 6HA1 Div. 6.2 (PI 620/650)

Packaging Suppliers	Telephone/Fax/E-mail/www	Drums	Boxes	Others
SINGAPORE (+65)				
Air Sea Packaging Singapore 608598 Agent for Air Sea Containers Ltd, UK	6665 0378 6565 6562 airsea@singnet.com.sg www.air-sea.co.uk	1A1 1A2 1G 1H1 1H2	4G 4GV 4D 4DV 4H 4H2	Inner Packagings 3H1 6HA1 Div. 6.2 (PI 620/650)
DGI 918108 Singapore	65424140 65424145 chongwee.poh@dgiglobal.com www.dgiglobal.com	1A1 1A2	4GV	Div 6.2 (PI 620/650), Temperature Sensitive
DG Packaging Pte Ltd Singapore	6543 7063 6543 4882 accounts@dg-packaging.com www.dg-packaging.com	1A1 1A2 1H2	4D 4DV 4G 4GV 4GU Various Sizes	Inner Packagings 5H4 Div. 6.2 (PI 620/650)
DG Packaging Solutions (Singapore) Pte Ltd	6242 2562 6242 2192 alan@dgpac.com.sg www.dgpac.com.sg	1A1 1A2	4G 4GV 4D	
DGR Packaging & Supply (S) Pte Ltd Singapore	6841 9227 6841 6229 dgspecialist@dgr.com.sg www.dgr.com.sg	1A1 1A2 1H1 1H2 1G Various Sizes	4G 4GV Various Sizes	Inner Packagings 3H1 Div 6.2 (PI 620/650) Labels, Vermiculites
Hazardous Packaging & Supply Services Pte Ltd 128383 Singapore	6774 5148 6774 1569 hpss@starhub.net.sg www.hp-ss.com	1A1 1A2 1H1 1H2	4G 4GV 4D	Inner Packagings
Nefab Singapore Pte. Ltd. 637674 Singapore	862 0178 862 9628 nefab@singnet.com.sg www.nefab.com		4D 4DV 4G	
SLOVAKIA (+421)				
Nefab Packaging Slovakia s.r.o. SK-934 01 Levice	3663 56 500 3663 56 517 mail@nefab.sk www.nefab.sk		4D 4DV 4G	
SOUTH AFRICA (+27)				
Air Sea Packaging SA. Kempton Park Agent for Air Sea Containers Ltd, UK	11 396 2074 11 979 3232 airseapackaging@worldon line.co.za www.air-sea.co.uk	1A1 1A2 1G 1H1 1H2	4D 4DV 4G 4GV 4H 4H2	Inner Packagings 3H1 6HA1 Div. 6.2 (PI 620/650)
Aulax Distributors cc Cape Town	21 705 9773 21 705 9773 aulax@absamail.co.za www.aulaxsa.co.za		4GU	Div. 6.2 (PI 620/650) (specialised medical packagings)
Dangerous Goods Packers for Air cc (DGPA cc) Kempton Park, Gauteng	11 394 9438 11 394 9525 dgpa@global.co.za www.dgpa.co.za	1A1 1A2 1H1 1H2	4G 4GV	Inner Packagings 3H1
DGI Airport Industria 7490	213862583 213862581 Sean.okkers@dgiglobal.com www.dgiglobal.com	1A1 1A2	4GV	Div. 6.2 (PI 620/650) Temperature Sensitive

Packaging Suppliers	Telephone/Fax/E-mail/www	Drums	Boxes	Others
DGI Johannesburg	11 397 6034 11 397 8740 jason.spero@ dgiglobal.com www.dgiglobal.com	1A1 1A2	4GV	Div 6.2 (PI 620/650), Temperature Sensitive
DGM South Africa Kempton Park, Gauteng	11 396 2755 11 396 2758 info@dgmsa.com www.dgmsa.com	1A1 1A2 1H1 1H2	4G 4GV 4GU	Various Div. 6.2 (PI 620/650) incl. thermal Explosafe 7.5™ Explosafe 500™
Hexagon Packaging (PTY) Ltd. Kempton Park, Gauteng	86 111 1059 86 111 1058 andre@ hexagonpackaging.co.za www.hexagonpackaging.co.za	1H1 1H2	4GV	Inner Packagings 3H1
SPAIN (+34)				
Air Sea España 28006 Madrid Agent for Air Sea Containers Ltd, UK	91 1401 1637 91 1401 1637 ventas@airsea-es.com www.air-sea.co.uk	1A1 1A2 1G 1H1 1H2	4G 4D 4DV 4GV4H 4H2	Inner Packagings 3H1 6HA1 Div. 6.2 (PI 620/650)
Dangerous Goods Packaging, S.L 28042 Madrid	91 329 53 31 91 329 56 38 embalaje@mercancias peligrosas.com www.mercancias peligrosas.com	1A1 1A2 1H1 1H2	4D 4G 4GV	Various Div. 6.2 (PI 620/650)
DGM Spain Delegacion Barcelona 08630 Barcelona	9337 40006 9337 40966 infobarcelona@ dgm-spain.com www.dgm-spain.com	1A1 1A2 1A2T 1H1 1H2 1H2T	4G 4GV various sizes	Inner Packagings various Div. 6.2 (PI 620/650) Explosafe 7.5™ Explosafe 500™
Embalajes Mercancías Peligrosas S.L. 28703 San Sebastian de Los Reyes - Madrid	610 56 60 92 91 653 02 55 emmerpe@aetrim.es www.aetrim.es	1A1 1A2 1H1 1H2	4D 4DV 4G 4GV	Inner Packagings 3H1 Div. 6.2 (PI 620/650)
Kern Frio, S.L, 08907 Barcelona Exclusive Distributor for E3 Cortex, FR	93 366 10 25 93 366 10 28 info@kernfrio.com www.kernfrio.com		4GV 4G	Div. 6.2 (PI620/650)
Nefab, S.A. 28906 Getafe (Madrid)	91-696 69 11 91-696 74 42 info@nefab.es www.nefab.es		4D 4DV 4G	
SWEDEN (+46)				
Nefab Packaging Sweden 822 92 Alfta	0771 590 000 0271 590 10 emballage@nefab.se www.nefab.com		4D 4DV 4G	
Tre Well Emballage AB 19560 Arlandastad	859451030 859111202 info@trewell.se http://www.trewell.se		4G 4GV	Packagings designed for Limited and Ex- pected Quantities

Packaging Suppliers	Telephone/Fax/E-mail/www	Drums	Boxes	Others
SWITZERLAND (+41)				
CDF Emballage SA 2300 La Chaux-de-Fonds	021 806 5085 021 806 5086 rseghir@cdf-emballage.ch www.cdf-emballage.ch	1A1 1A2	4D 4G 4GV 4H2	Div. 6.2 (PI 620/650)
Kim Imhof AG 6436 Muotathal	8301544 8302614 Kim.Imhof@mythen.ch www.kim-imhof.ch		4D	
Zaugg Emballeur AGSchlieren 8952 Zurich	44 732 40 40 44 732 40 50 michael.zaugg@zauggag.com www.zauggag.com		4D 4DV 4G 4GV	Div. 6.2 (PI620)
THAILAND (+66)				
DG Packaging (Thailand) Co. Ltd.	2 291 2800 (101) 2 291 5955 info@dg-packaging.co.th www.dg-packaging.com	1A1 1A2 1H2	4D 4DV 4G 4GU 4GV	Inner Packagings 5H4 Div. 6.2 (PI 620/650)
Lyon Supplies Co. Ltd.* Bangkok 10120 Agent for Air Sea Containers Ltd, UK	2-681-2970 2-681-2061 lyon@asiaaccess.net.th www.air-sea.co.uk	1A1 1A2 1G 1H1 1H2	4D 4DV 4G 4GV 4H 4H2	Inner Packagings 3H1 6HA1 Div. 6.2 (PI 620/650)
UNITED ARAB EMIRATES (+971)				
Ace Pack International FZE Ajman	505258890 67426980 acepackinternational@ gmail.com www.acepackint.com	1A1 1A2 1H1 1H2 1G	4D 4G 4GU 4GV	Inner Packagings (Glass, Metal, Plastic) Hazard class labels, Handling labels, Absorbent and cushioning material
DGPACK AVONI Dubai	503425587 553090423 dgpak_avoni@yahoo.com www.dgpackavoni.com	1A1 1A2 1H2 1G	4D 4G 4GV	Inner Packagings, 3H1
UNITED KINGDOM (+44)				
Air Sea Containers Ltd. Birkenhead	0151 653 1500 0151 653 1515 sales@air-sea.co.uk www.air-sea.co.uk	1A1 1A2 1G 1H1 1H2	4D 4DV 4G 4GV 4H 4H2	Inner Packagings 3H1 6HA1 Div. 6.2 (PI 620/650)
DGI London	208 814 0404 208 814 1881 arthur.dexter@dgi-global.com http://www.dgi-global.com	1A1 1A2	4GV	Div 6.2 (PI 620/650), Temperature Sensitive
DG Packaging (UK) Ltd London	20 8894 4101 lon@dg-packaging.com www.dg-packaging.com	1A1 1A2 1H2	4D 4DV 4G 4GV 4GU Various Sizes	Inner Packagings 5H4, Div 6.2 (PI 620/650)
Mega-Pak Ltd Slough, Berkshire	01753 218600 01753 534600 paulmcq@mega-pak.com www.mega-pak.com	1A1 1A2 1H1 1H2	4D 4DV 4G 4GV	Div. 6.2 (PI 620/650) Labels/Declarations



Dangerous Goods Regulations

Packaging Suppliers	Telephone/Fax/E-mail/www	Drums	Boxes	Others
Nefab (UK) Packaging Ltd. Milton Keynes MKA 1LH	(0) 1908 42 43 00 (0) 1908 42 43 01 info@nefab.co.uk www.nefab.co.uk		4D 4DV 4G	
UNITED STATES (+1) A Imer do Brasil Ltda. Located in all states	 1-800-905-4637 1-800-905-IMER imer@imer.com.br www.imer.com.br	1A1 1A2 1G 1H 1H2	4C1 4C2 4D 4DV 4G 4GU 4GV (various sizes)	Inner Packagings IP7 IP7A IP7B 3A1 3A2 3H1 3H2 5H4 5M2 Div. 6.2 (PI 620/650) Category A and B (various sizes)
Air Sea Atlanta Inc. Atlanta, GA Exclusive Agent in USA for Air Sea Containers Ltd, UK	404 351 8600 404 351 4005 proane@airseaatlanta.com www.airseaatlanta.com	1A1 1A2 1G 1H1 1H2	4D 4DV 4G 4GV 4H 4H2	Inner Packagings 3H1 6HA1 Div. 6.2 (PI 620/650)
Air Sea Containers, Inc. Miami, FL	305 599 9123 305 599 1668 sales@airseaccontainers.com www.airseaccontainers.com	1A1 1A2 1G 1H1 1H2	4DV 4G 4GU 4GV 4H	Inner Packagings 3H1 6HA1 Div. 6.2 (PI 620/650)
DG Supplies Inc. Cranbury, NJ	609 860 9220 609 860 0096 Sales@DGSupplies.com www.DGSupplies.com	1A1 1A2 1G 1H1 1H2	4DV 4G 4GV	Inner Packagings 3H1 3H2 DOT Exemption Packaging (for US shipments)
EXAKT Technologies, Inc Oklahoma City OK 73116	405 848 5800 405 848 7701 linda.durbin@exaktusa.com http://www.exaktpak.com		4G	Div. 6.2 (PI 620/650/Exempt Human/Exempt Animal) Inner Packagings
HAZMATPAC, Inc. Houston, TX Philadelphia, PA	800 923 9123 713 923 1111 hazmatpac@hazmatpac.com www.hazmatpac.com	1A1 1A2 1H1 1H2 3H1	4C1 4C2 4G 4GU 4GV	Div. 6.2 (PI 620/650) DOT Exemption Pack- aging Temperature Controlled
DGM Chicago Chicago, IL	866 655 5539 866 599 9936 skrouse@lmps-dgm.com www.lmps-dgm.com	1A1 1A2 1H1 1H2	4D 4G	3H1
LPS Industries Moonachie, NJ	201 438 3515 201 438 0040 hazmat@lpsind.com www.lpsind.com	1A1 1A2	4G 4GV	Inner Packagings 6HA1 Exempt packs for Toxic (International and North America)
Nefab Chick Companies Coppell, TX	866 332 4425 469 464 2202 mail@nefab.com www.chickpackaging.com		4D 4DV 4G	
ProPack, Inc. Essington, PA	610 521 4050 610 521 8737 gerry@propackinc.com info@propackinc.com	1A1 1A2 1G 1H1 1H2	4G 4GV	3H1
Specialized Shipping LLC Linden, NJ	908 862 1010 908 862 7888 info@dgspecialists.com www.dgspecialists.com	1A1 1A2 1G 6HA1 6HA2	4C1 4C2 4D 4G 4GV	3H1 3H2 Dangerous goods repacking, documentation and warehouse services

Note:

Combination packagings are tested and certified as complete packages assembled for transport.

E.2 Packaging Testing Facilities

In some States, the testing facilities are authorised to grant approvals to use specification marking. As an aid to shippers, the names, addresses and contacts of Packaging Testing Facilities have been provided. Since this information has been obtained from many sources at different times we cannot guarantee the accuracy at the time of use.

AUSTRALIA

Refer to:

National Association of Testing Authorities

Attn: Engineering Materials Officer

7 Leeds Street

Rhodes

N.S.W.

AUSTRALIA

2138

Tel: +61 (2) 9736 8222

Fax: +61 (2) 9743 5311

Falcon Test Engineers

44 Stephen Road

Dandenong South

Victoria

AUSTRALIA

3175

Tel: +61 (3) 9706 7758

Fax: +61 (3) 9706 7593

E-mail: falcon@falcontestengineers.com

Website: www.falcontestengineers.com.au

AUSTRIA

¹Österreichisches Institut für Verpackungswesen

an der Wirtschaftsuniversität Wien

Augasse 2–6

A-1090 Vienna

AUSTRIA

BELGIUM

Belgian Packaging Institute

Researchpark

Kranenberg 10

1731 Zellik

BELGIUM

Tel: +32 (02) 464 0210

Fax: +32 (02) 464 0239

(Approvals of test reports from the Belgian Packaging Institute are received from the Ministerial Coordination Commission on the Transport of Dangerous Goods.)

BRAZIL

Concepta DG Compliance Ltda

São Paulo

BRAZIL

Tel: +55 (11) 2602 1700

Fax: +55 (11) 2602 1701

E-mail: concepta@concepta.com.br

Website: www.concepta.com.br

CTA—Centro Técnico Aeroespacial
Divisão de Normalização e Qualidade Industrial
Praça Marechal do Ar Eduardo
Gomes, 50—Vila das Acáias
São José dos Campos
São Paulo
BRAZIL
Tel: +55 (12) 340 3353
Fax: +55 (12) 341 4766

Igarai S/A Ind. e Com. de Embalagens
Rua Antonio Frederico, 556—Vila Carioca
04224-030—São Paulo—SP
BRAZIL
Tel: +55 (11) 2063 5863
E-mail: igarai@igarai.com
E-mail: robson@igarai.com
Website: www.igarai.com

CANADA

Laboratoires Micom Inc./Micom Laboratories Inc.
556 Avenue Lepine

Dorval

Quebec

CANADA

H9P 2V6

Tel: +1 (514) 633 0078

Mobile: +1 (514) 926 7188

Fax: +1 (514) 633 7188

E-mail: mcomtois@mocomlab.com

Norampac
Testing Services Department
525 Abilene Drive
Mississauga
Ontario
CANADA
L5T 2H7

Tel: +1 (905) 564 5606

Fax: +1 (905) 564 5607

North American Testing Services, Inc.
5988 Ambler Drive

Mississauga

Ontario

CANADA

L4W 2P2

Tel: +1 (905) 212 1524

Fax: +1 (905) 212 1367

E-mail: info@natestingservices.com

Website: www.natestingservices.com

Nova Scotia Research Foundation
Environmental Test Facility
P.O. Box 790
Dartmouth
Nova Scotia
CANADA
B2Y 3Z7

Tel: +1 (902) 424 8670

¹ These facilities are authorized to grant approvals to use specification marking.

Ortech International, Packaging Technologies Group
Sheridan Park Research Community
Mississauga
Ontario
CANADA
L5K 1B3
Tel: +1 (416) 822 4111

Prairie Agricultural Machinery Institute
P.O. Box 1060
Portage La Prairie
Manitoba
CANADA
R1N 3C5
Tel: +1 (204) 239 5445

Smurfit-MBI
Research & Technical Services
730 Islington Avenue S.
Etobicoke
Ontario
CANADA
M8Z 4N8
Tel: +1 (416) 259 8421
Fax: +1 (416) 259 9236

Smurfit-MBI
Research & Technical Services
1035 rue Hodge
St. Laurent
Quebec
CANADA
H4N 2B4
Tel: +1 (514) 744 6461
Fax: +1 (514) 744 9089

CHINA, PEOPLES REPUBLIC OF

Hazardous Products Central Laboratory
General Administration of Quality Supervision
Inspection and Quarantine of the P.R. of China
No. 33 Youyi Road, Hexi District
Tianjin 300201

PEOPLES REPUBLIC OF CHINA
Tel: +86 (22) 2837 1121
Fax: +86 (22) 2837 1121
E-mail: lij4@tjciq.gov.cn

Department of Identification and Inspection of
Dangerous Goods and Packaging
Shanghai Entry-Exit
Inspection and Quarantine Bureau of the P.R. of China
No. 145, Lane 822, Zhennan Road
Shanghai 200331
PEOPLES REPUBLIC OF CHINA
Tel: +86 (21) 5284 1507
Fax: +86 (21) 6250 9941
E-mail: Wanght@shciq.gov.cn
E-mail: Chenx@shciq.gov.cn
Website: www.shciq.gov.cn:8018/yuancailiao/index.html

Shanghai Research Institute of Chemical Industry
Testing Centre
Shanghai
PEOPLES REPUBLIC OF CHINA
Tel: +86 (21) 5281 5377
Fax: +86 (21) 5250 5134
E-mail: lg@msds.gov.cn
E-mail: fb@msds.gov.cn
Website: www.msds.gov.cn

CHINESE TAIPEI

No facilities available at this time.

CZECH REPUBLIC

¹C.I.M.T.O. Prague
U michelského lesa 366
140 00 Praha 4—Krc
CZECH REPUBLIC
Tel: +42 (2) 472 1369
¹IMET Prague
Bažantní 697
16500 Prague 6—Suchdol
CZECH REPUBLIC
Tel: +42 (2) 393 298
Fax: +42 (2) 292 370

DENMARK

¹Danish Technological Institute These facilities are authorized to grant approvals to use specification marking.
The Danish Packaging and Transportation Research Institute
Gregersensvej
P.O. Box 141
DK-2630 Taastrup
DENMARK
Tel: +45 43 50 43 50
Fax: +45 43 50 72 50

FINLAND

Technical Research Center of Finland
Vuorminiehentie 5
FIN-02150 Espoo
FINLAND

For testing of pressure vessels only:

Technical Inspectorate
P.O. Box 204
FIN-00181 Helsinki
FINLAND

¹ These facilities are authorized to grant approvals to use specification marking.

FRANCE

¹BVT (Bureau de Vérifications Techniques)
ZAC de la CERISAIE
31 Rue de Montjean
F-94266 Fresnes Cedex
FRANCE

Tel: +33 (1) 46.68.50.30
Fax: +33 (1) 46.68.53.35
E-mail: BVT@wanadoo.fr

¹CeFEA Centre Français de l'Emballage Agréé
5 rue Janssen
75019 Paris
FRANCE

Tel: +33 1 42 01 90 51
Fax: + 33 1 42 01 9090
E-mail: contact@cefea.fr
Website: www.cefea.fr

¹L.E.R.E.M.
(Laboratoire d'Études et de Recherches des
Emballages Métalliques)
3 rue Fernand Hainaut
F-93400 Saint Ouen
FRANCE

Tel: +33 240.12.51.00
Fax: +33 240.12.16.46

¹L.N.E. (Laboratoire National d'Essais)
Z.A. Trappes-Elancourt
F-78190 Trappes
FRANCE

Tel: +33 (1) 30.69.10.00
Fax: +33 (1) 30.69.12.34

GERMANY

¹Bundesanstalt für Materialforschung
Unter den Eichen 87
D-12205 Berlin
GERMANY

Tel: +49 30 8104-0
Fax: +49 30 8112029
E-mail: info@bam.de
Website: www.bam.de

Bundesbahn Zentralamt (BZA)
Pionierstrasse 10
D-4950 Minden
GERMANY

GUATEMALA

No facilities available at this time.

ICELAND

No facilities available at this time.

INDIA

Indian Institute of Packaging
E-2, MIDC Area
P.O. Box 9432
Andheri (East)
Mumbai 400 093
INDIA
Tel: +91 (22) 821 9803; 821 6751; 821 9469
Fax: +91 (22) 837 5302

IRAN, ISLAMIC REPUBLIC OF

No facilities available at this time.

ITALY

ENEA
Settore Servizi Ambientali
Via Anguillarese 301
I-00060 S.M. Galeria—Roma
ITALY
Tel: +39 (6) 3048 6554
Fax: +39 (6) 3048 3220
¹CSI Spa
Viale Lombardia 20
20021 Bollate (Mi)
ITALY
Tel: +39 (02) 3833 0267
Fax: +39 (02) 3833 0221
Website: www.csi-spa.com

JAPAN

Research Institute of Marine Engineering
Higashimurayama
5-12 Fujimicho 1-chome
Higashimurayama City
Tokyo-189
JAPAN

JORDAN

¹Royal Scientific Society
P.O. Box 6945
Amman
JORDAN
Tel: +962 (6) 844701-9

KOREA (REPUBLIC OF)

Korea Environment & Merchandise Testing Institute
(KEMTI)
1572-18 Shillim
11-Dong Kwan-AK KU
Seoul
KOREA (REPUBLIC OF)
Tel: +82 (2) 856 5623
Fax: +82 (2) 866 8626
Telex: KIMIFK 26645

E

E.2

¹ These facilities are authorized to grant approvals to use specification marking.

LUXEMBOURG

No facilities available at this time.

MOROCCO

Institut Marocain d'Essais et de Conseils (IMEC)
B.P. 8006 Casa—Oasis
Casablanca
MOROCCO
Tel: +212 (2) 23.09.50; 23.06.86; 23.06.87
Fax: +212 (2) 23.06.90
Telex: 24.086 M

NETHERLANDS

TNO Product Testing and Consultancy B.V.
Packaging Research Department
P.O. Box 6031
2600 JA Delft
NETHERLANDS
Tel: +31 (15) 269 6487
Fax: +31 (15) 269 6280
E-mail: packaging@ptc.tno.nl
Website: www.tno.nl

NEW ZEALAND

National Can (NZ) Ltd.
80 Mount Wellington Highway
Panmure
Auckland
NEW ZEALAND
Tel: +64 (9) 570 2890
Fax: +64 (9) 570 2250

NORWAY

SINTEF
Attn: Terje Christensen
AVD. 16
N-7034 Trondheim
NORWAY

(*Recommends approval only. Final approval is made by respective sea/land/air authority.*)

POLAND

Polish Research and Development Center of
Packagings
11 Konstancinska Street
PL-02-942 Warsaw
POLAND
Tel: +48 (2) 42 20 11

PORTUGAL

¹C.N.E.—Centro Nacional de Embalagen
Rua do Telhal, 37
Matinha
P-1900 Lisboa
PORTUGAL
Tel: +351 (1) 858 5991/2
Fax: +351 (1) 858 5993

SINGAPORE

TÜV SÜD PSB Pte Ltd
No. 1 Science Park Drive
Singapore 118221
SINGAPORE
Tel: +65 6778 7777
Fax: +65 6779 7088
E-mail: testing@tuv-sud-psb.sg
Website: www.tuv-sud-psb.com

SOUTH AFRICA

¹Director General
South African Bureau of Standards
Private Bag X191
Pretoria 0001
SOUTH AFRICA
TEN-E Packaging Services, Inc.
138 Edison Crescent
Hennopspark X 15
P.O. Box 11544, Wierdapark South 0057
Centurion
SOUTH AFRICA
Tel: +27 (012) 653 8897
Fax: +27 (012) 653 8308
E-mail: TEN-E@mweb.co.za
Website: www.TEN-E.com

SPAIN

INTA—Instituto Nacional de Técnica Aeroespacial
Torrejón de Ardoz
Madrid
SPAIN
C.A.S.A
Rey Francisco, 4
Madrid E-28008
SPAIN

SWEDEN

¹SP Technical Research Institute of Sweden
P.O. Box 857
SE-501 15 Boras
SWEDEN
(*Nationally approved.*)

SWITZERLAND

¹Federal Inspectorate of Dangerous Goods
Richtistrasse 15
P.O. Box
CH-8304
Wallisellen
SWITZERLAND
Tel: +41 (1) 877 6111
Fax: +41 (1) 877 6215

¹ These facilities are authorized to grant approvals to use specification marking.

TANZANIA

No facilities available at this time.

UNITED KINGDOM

Scheme exists for the performance testing, certification and marking of UN packagings. For further information contact:

Civil Aviation Authority

Dangerous Goods Office

1W Aviation House, South Area

Gatwick Airport

Gatwick

West Sussex

UNITED KINGDOM

RH6 0YR

Tel: +44 (1293) 573 800

Fax: +44 (1293) 573 999

Telex: 878753 CAASRG G

UNITED STATES

¹Advanced Packaging Technology Laboratories, Inc.

200 Larkin Drive, No. 4, Unit H

Wheeling

Illinois

U.S.A.

60090

Tel: +1 (847) 520 4343

Fax: +1 (847) 520 4365

E-mail: dpetersons@flash.net

Website: www.advanced-labs.com

¹Charles E. Tudor CP-P/MH

3869 Mammoth Cave Court

Pleasanton

California

U.S.A.

94588

Tel: +1 (925) 462 4493

Fax: +1 (925) 462 8396

¹Construction Technology Labs (CTL)

5420 Old Orchard Road

Skokie

Illinois

U.S.A.

60077

Tel: +1 (708) 965 7500

¹Container-Quinn Testing Labs

170 Shepard Avenue

Wheeling

Illinois

U.S.A.

60090

Tel: +1 (847) 537 9470

Fax: +1 (847) 537 9098

E-mail: spowell@container-quinn.com

¹Container Technologies Laboratory, Inc.

9567 Alden

Lenexa

Kansas

U.S.A.

64034

Tel: +1 (913) 888 2000

Fax: +1 (913) 888 2993

¹Container Testing Laboratory, Inc.

607 Fayette Avenue

Mamaroneck

New York

U.S.A.

10543

Tel: +1 (914) 381 2600

Fax: +1 (914) 381 0143

¹DDL, Inc.

10200 Valley View Road

Suite 101

Eden Prairie

Minnesota

U.S.A.

55344

¹DDL West

3303 Harbor Blvd.

Suite B9

Costa Mesa

California

U.S.A.

92626

Tel: +1 (800) 229 4235

Fax: +1 (952) 941 9318

E-mail: corey.hensel@testedandproven.com

Website: www.testedandproven.com

¹DelValCo Consultants

21 Ardmoor Lane

Chadds Ford

Pennsylvania

U.S.A.

19317

Tel: +1 (610) 388 1270

Fax: +1 (610) 388 5819

¹Ecolab Inc.

Package Testing Services

940 Lone Oak Lane

Eagan

Minnesota

U.S.A.

55121

Tel: +1 (612) 452 1460

Fax: +1 (612) 688 1638

E

E.2

¹ These facilities are authorized to grant approvals to use specification marking.

¹Gaynes Laboratories, Inc.
9708 Industrial Drive
Bridgeview
Illinois
U.S.A.
60455

Tel: +1 (708) 233 6655
Fax: +1 (708) 233 6985
Website: www.internetresults.com/gaynes

¹Georgia Pacific Corp.
Bldg. 801, Corporation Park
Schenectady
New York
U.S.A.
12302

Tel: +1 (518) 346 6151
Fax: +1 (518) 346 8504

¹GH Package/Product Testing and Consulting of Arizona, Inc.
21609 N. 12th Ave. Suite 300
Phoenix
Arizona
U.S.A.
85027

Tel: +1 (623) 869 8008
Fax: +1 (623) 869 8003
E-mail: ghtesting@aol.com

¹GH Package & Product Testing and Consulting, Inc.
4090 Thunderbird Lane
Fairfield
Ohio
U.S.A.
45014

Tel: +1 (513) 870 0080
Fax: +1 (513) 870 0017

¹Hedwin Corporation
1600 Roland Heights Avenue
Baltimore
Maryland
U.S.A.
21211

Tel: +1 (410) 467 8209

¹Jefferson-Smurfit Corporation and Container Corp. of America
450 East North Avenue
Carol Strem
Illinois
U.S.A.
60188-2195

Tel: +1 (708) 260 3590
Fax: +1 (708) 260 3545

¹Lansmont Corporation
1287 Reamwood Avenue
Sunnyvale
California
U.S.A.
94089

Tel: +1 (408) 734 9724
Fax: +1 (408) 734 9762
E-mail: james_earle@lansmont.com
Website: www.lansmont.com

¹6539 Westland Way, Suite 25
Lansing
Michigan
U.S.A.
48917

Tel: +1 (517) 322 2400
Fax: +1 (517) 322 2404
E-mail: michael_kuebler@lansmont.com
Website: www.lansmont.com

¹McDonnell Douglas Helicopter Co.
5000 East McDowell Road
Mesa
Arizona
U.S.A.
82505-9797

Tel: +1 (602) 891 8816

¹3850 Nyssa Laboratories, Suite D5
Ramada Drive
Paso Robles
California
U.S.A.
93446

Tel: +1 (805) 434 3432
Fax: +1 (805) 434 3408

¹Owens—Illinois
One Seagate—25L-GC
Toledo
Ohio
U.S.A.
42666

Tel: +1 (419) 247 7424
Fax: +1 (419) 247 2839

¹Package Design and Testing Corporation of New England
10 Hazelwood Road
East Granby
Connecticut
U.S.A.
06026

Tel: +1 (203) 653 8086
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¹ These facilities are authorized to grant approvals to use specification marking.

¹Package Research Laboratory
 41 Pine Street
 Rockaway
 New Jersey
 U.S.A.
 07866
 Tel: +1 (973) 627 4405
 Fax: +1 (973) 627 4407
 E-mail: bberg@package-testing.com
 Website: www.package-testing.com

¹Packaging Development Services
 7140 West 117th Avenue C-5
 Broomfield
 Colorado
 U.S.A.
 80020
 Tel: +1 (303) 469 8779
 Fax: +1 (303) 469 8785

¹Park City Packaging Inc.
 490 Sniffen Lane
 Stratford
 Connecticut
 U.S.A.
 06497
 Tel: +1 (203) 378 7384
 Fax: +1 (203) 378 9555

¹Professional Service Industries, Inc.
 Pittsburgh Testing Laboratory Division
 850 Poplar Street
 Pittsburgh
 Pennsylvania
 U.S.A.
 15220
 Tel: +1 (412) 922 4000
 Fax: +1 (412) 922 4014

¹Propack, Inc.
 76 Jansen Avenue
 Essington
 Pennsylvania
 U.S.A.
 19029
 Tel: +1 (610) 521 4050
 Fax: +1 (610) 521 8737
 E-mail: info@propackinc.com

¹Pro-Pack Testing Laboratory, Inc.
 2385 Amann Drive
 Belleville
 Illinois
 U.S.A.
 62220
 Tel: +1 (618) 277 1160
 Fax: +1 (618) 277 1163
 E-mail: m.rosa@propacktestlab.com

¹RVR Package Testing Center
 1702 Taylor Street
 Houston
 Texas
 U.S.A.
 77007
 Tel: +1 (713) 861 8221
 Fax: +1 (713) 861 9939
¹SGS US Testing Company, Inc.
 291 Fairfield Ave.
 Fairfield
 New Jersey
 U.S.A.
 07004
 Tel: +1 (800) 777 8378
 Fax: +1 (973) 575 8271
 E-mail: rick.roberti@sgs.com
 Website: www.us.sgs.com/cts

¹Signode Packaging Systems
 3640 West Lake Avenue
 Glenview
 Illinois
 U.S.A.
 60025
 Tel: +1 (708) 724 6100
 Fax: +1 (708) 657 5365
¹Smurfit Plastic Packaging Inc.
 1204 East 12th Street
 Wilmington
 Delaware
 U.S.A.
 19802
 Tel: +1 (302) 573 2581

¹Stone Container Corp.
 P.O. Box 105
 Contonment
 Florida
 U.S.A.
 32533
 Tel: +1 (904) 968 5414
 Fax: +1 (904) 968 5452

¹Techni-Coritems
 350 Rochester
 Kalamazoo
 Michigan
 U.S.A.
 49007
 Tel: +1 (616) 381 0900
 Fax: +1 (616) 381 2919

E

E.2

¹ These facilities are authorized to grant approvals to use specification marking.

¹TEN-E Packaging Services, Inc.

1666 County Road 74

Newport

Minnesota

U.S.A.

55055

Tel: +1 (651) 459 0671

Fax: +1 (651) 459 1430

E-mail: info@TEN-E.com

Website: www.ten-e.com

¹TEN-E Packaging Services, Inc.

326 N. Corona Avenue

Ontario

California

U.S.A.

91764

Tel: +1 (909) 937 1260

Fax: +1 (909) 937 1262

E-mail: info@TEN-E.com

Website: www.ten-e.com

¹Transportation Test Center

P.O. Box 11130

Pueblo

Colorado

U.S.A.

81001

Tel: +1 (719) 584 0545

Fax: +1 (719) 584 0721

¹Union Carbide Corporation

P.O. Box 670

Bound Brook

New Jersey

U.S.A.

08805

Tel: +1 (908) 563 5000

Fax: +1 (908) 563 5412

¹United States Testing Company, Inc.

1415 Park Avenue

Hoboken

New Jersey

U.S.A.

07030

Tel: +1 (201) 575 5252

Fax: +1 (201) 575 8271

¹Westpak, Inc.

83 Great Oaks Blvd

San Jose

California

U.S.A.

95119

Tel: +1 (408) 224 1300

Fax: +1 (408) 224 5113

E-mail: pal@westpak.com

Website: www.westpak.com

Wyle Laboratories

7800 Governors Drive West

P.O. Box 077777

Huntsville

Alabama

U.S.A.

35807

Tel: +1 (205) 837 4411

Fax: +1 (205) 721 0144

¹Wyle Laboratories

1841 Hillside Avenue

Norco

California

U.S.A.

91760

Tel: +1 (714) 737 0871

Fax: +1 (714) 735 4030

¹Yowell International

One Air Cargo Place, No. 3

Melbourne

Florida

U.S.A.

32904

Tel: +1 (407) 725 3611

+1 (800) 327 2833

Fax: +1 (407) 723 3277

ZIMBABWE

No facilities available at this time.

E.3 UN Specification Packagings

This list contains all packagings specified in the *United Nations Recommendations on the Transport of Dangerous Goods*. Not all these packagings may be used for air transport and these are identified. This list is an extension of that found in Table 5.0.C. For further details of the package specifications and nomenclature, see Section 6.

Drums

Steel	1A1	non-removable head
	1A2	removable head
Aluminium	1B1	non-removable head
	1B2	removable head
Metal other than Aluminium or Steel	1N1	non-removable head
	1N2	removable head
Plywood	1D	
Fibreboard	1G	
Plastic	1H1	non-removable head
	1H2	removable head

E
E.3

Jerricans

Steel	3A1	non-removable head
	3A2	removable head
Aluminium	3B1	non-removable head
	3B2	removable head
Plastic	3H1	non-removable head
	3H2	removable head

Boxes

Steel	4A	Steel
Aluminium	4B	aluminium
Natural wood	4C1	ordinary
	4C2	with sift-proof walls
Plywood	4D	
Reconstituted	4F	
Fibreboard	4G	
Plastic	4H1	expanded plastic
	4H2	solid plastic
<input type="checkbox"/> Other Metal	4N	

Bags

Woven plastic	5H1	without inner liner or coating ²
	5H2	siftproof
	5H3	water resistant
Plastic film	5H4	
Textile	5L1	without inner liner or coating ¹
	5L2	siftproof
	5L3	water-resistant
Paper	5M1	multiwall ²
	5M2	multiwall, water resistant

Composite Packagings: Plastic

6HA1	plastic receptacle, outer steel drum
6HA2	plastic receptacle, outer steel crate ³ /box

6HB1	plastic receptacle, outer aluminium drum
6HB2	plastic receptacle, outer aluminium crate ³ /box
6HC	plastic receptacle, outer wooden box
6HD1	plastic receptacle, outer plywood drum
6HD2	plastic receptacle, outer plywood box
6HG1	plastic receptacle, outer fibreboard drum
6HG2	plastic receptacle, outer fibreboard box
6HH1	plastic receptacle, outer plastic drum
6HH2	plastic receptacle, outer solid plastic box

**Composite Packagings: Glass,
porcelain or stoneware
(not used in these Regulations)**

6PA1	receptacle, outer steel drum
6PA2	receptacle, outer steel crate ³ /box
6PB1	receptacle, outer aluminium drum
6PB2	receptacle, outer steel crate ³ /box
6PC	receptacle, outer wooden box
6PD1	receptacle, outer plywood drum
6PD2	receptacle, outer plywood box
6PG1	receptacle, outer fibreboard drum
6PG2	receptacle, outer fibreboard box
6PH1	receptacle, outer plastic drum
6PH2	receptacle, outer solid plastic box

Inner Packagings

Glass	
Plastic	
Metal cans, tins or tubes	
Paper bags	
Plastic bags	
Fibre cans or boxes	
IP7	Metal receptacles (aerosols) non-refillable
IP7A	Metal receptacles (aerosols) non-refillable
IP7B	Metal receptacles (aerosols) non-refillable
IP7C	Plastic receptacles (aerosols) non-refillable
	Metal or plastic flexible tubes

¹ Not used in the IATA Dangerous Goods Regulations.

² Specialised use only.

³ Crates are outer packagings with incomplete surfaces. For air transport, crates may not be used as outer packagings of composite packagings.

APPENDIX F—RELATED SERVICES

F.0 Publications and Training Materials

IATA Dangerous Goods Training Standards Workbook Series

A series of training standards workbooks are available for training all categories of staff involved in the carriage of dangerous goods by air. The separate books are:

Workbook 1—Shippers; Packers; Dangerous Goods Acceptance Personnel (Freight Forwarders', Operators' and Ground Handling Agents');

Workbook 2—Flight Crew and Load Planners;

Workbook 3—Cabin Crew; Passenger Handling Personnel; Security Screening Personnel;

Workbook 4—Ramp and Warehouse Personnel;

Workbook 5—General Cargo Acceptance Personnel (Freight Forwarders, Operators and Ground Handling Agents).

The training standards series of workbooks are designed to assist those developing or validating a dangerous goods training programme by providing a benchmark by which to evaluate their programmes for content, accuracy and completeness in meeting the legal responsibilities in training personnel involved in the transport of dangerous goods by air. The workbooks may also be used as a supplement to dangerous goods training programmes for classroom use. It is anticipated these training workbooks will be adopted by operators and States as the official standards for the establishment of dangerous goods training programmes. Currently available in English only.

Guidelines for Instructors of Dangerous Goods Courses—Toolkit

The new Toolkit incorporates in one CD-ROM:

- Guidelines for Instructors;
- Dangerous Goods Regulations;
- Training Workbooks 1, 2, 3, 4, & 5;
- a fillable Shipper's Declaration PDF file; and
- Microsoft® PowerPoint® templates that can be used to develop presentations.

The Guidelines contain detailed instructions for the preparation of dangerous goods courses based upon the IATA *Dangerous Goods Regulations*. Guidance is provided on the subjects to be covered and the level of detail that should be devoted to each subject. Supplementing the outline and constituting 90% of the Guidelines are recommended teaching aids, background papers for use by instructors, handouts for students and numerous exercises covering each section of the Regulations. The CD-ROM incorporates hyperlinks that allow the user to

move around all the documents on the CD-ROM. The Toolkit also contains:

- a Safety Awareness CD-ROM;
- the DGR Quick Reference;
- a 8.5 in × 11 in "Have You Declared It?" self-standing poster;
- a pointer-pen;
- a package of hazard labels; and
- a UN Specification fibreboard (4G) box.

Poster on Dangerous Goods Labels

This poster clearly displays the IATA dangerous goods hazard and handling labels which must be used on all packages containing dangerous goods destined to be shipped by air. Labels depicting the hazard of all nine classes of dangerous goods are shown as well as the handling labels. Available in English only.

"Have You Declared It?" Cargo Poster

Undeclared dangerous goods in items declared as "general cargo" continue to pose a risk to safety. For this reason operators and ground handling agents are required, as set out in 9.5.3, to prominently display notices at all points where cargo is accepted. This poster meets those requirements. An international wall poster, 24 in × 36 in (61 cm × 91.4 cm) is available in English, French, Spanish and German. Available in the same size is an English version that meets specific United States Regulations.

A smaller version, 8.5 in × 11 in (21.6 cm × 27.9 cm), with a back support for counter top display is available in English only.

F.1 Electronic Services

Dangerous Goods E-list

Content of the IATA *Dangerous Goods Regulations* is available in an electronic format for license to aviation stakeholders. Critical data from the most current versions of the DGR has been packaged into XML files for integration into various aviation systems. The Electronic Lists, or E-Lists, are used by companies to create customer applications that make processes faster and more efficient. The DGR E-List contains the following sections and is updated throughout the year:

- Section 2.8: State and Operator Variations;
- Section 4.2: List of Dangerous Goods;
- Section 4.4: Special Provisions; and
- Section 5: Packing Instructions.

Dangerous Goods Regulations in Electronic Format (eDGR)

The eDGR is a single user application of the IATA *Dangerous Goods Regulations* available on both CD-ROM and USB key. The eDGR contains all information currently available in the printed book and in addition has search, sort and report features. Minimum requirements for the eDGR are:

- Microsoft® Windows® 98, Windows® Millenium, Windows® 2000 sp3, Windows® XP sp2, Windows® Vista™;
- Intel® Pentium® or compatible processor;
- 128 Mb RAM;
- 16-bit colour display, 800 × 600 resolution (1024 × 768 or higher recommended);
- CD-ROM drive or USB port, depending on installation media;
- 50 Mb available hard disk space;
- Microsoft® Internet Explorer 6.0 or higher;
- Microsoft® .NET Framework 2.0 and its system prerequisites (Microsoft. NET Framework 2.0 installer is included in the product software setup package);
- Adobe® Acrobat® or Adobe® Reader® version 7.0 or higher (Adobe Reader installation software is included with the CD);
- administrator permissions during product installation.

For more information on all IATA DGR solutions please visit www.iata.org/dgr

Internet

IATA has a World Wide Web internet page at: www.iata.org/dangerousgoods dedicated to Dangerous Goods issues, products and services.

For more detailed information on these products and services, please contact:

Product Manager—Dangerous Goods Regulations Publications
International Air Transport Association
800 Place Victoria
PO Box 113
Montreal
Quebec
CANADA
H4Z 1M1
Tel: +1 (514) 874 0202 Ext. 3708
Fax: +1 (514) 874 2660
E-mail: carlonen@iata.org

F.2 Sales Agents

The IATA Dangerous Goods Regulations may also be purchased from the following companies. Please contact the company for price and ordering procedure.

ARGENTINA

Dangerous Goods Management (Argentina) S.R.L.

Martinez Rosas 1340
C1414ADJ Ciudad de Buenos Aires
ARGENTINA
Tel: +54 11 4855 8880
Fax: +54 11 4855 0880
E-mail: info@dgm-argentina.com.ar
Website: www.dgm-argentina.com.ar

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¹Airfreight Academy of Australia
A Division of Australian Federation of International Forwarders Ltd. (AFIF)
Suite 403, Level 3, Office Tower
152 Bunnerong Road
Eastgardens, New South Wales 2036
AUSTRALIA
Tel: +61 (2) 9314 3055
Fax: +61 (2) 9314 3116
E-mail: afif@afif.asn.au
E-mail: Jodie@afif.asn.au
Website: www.afif.asn.au

¹Labeline Australia
222 Baroona Road
Paddington, QLD 4064
AUSTRALIA

Tel: +61 (7) 3368 1923
E-mail: sales@labeline.com
Website: www.labeline.com

AUSTRIA

LOGAR Günther Hasel e.K.
Dangerous Goods Consulting/Dangerous Goods Training c/o Deutsche Handelskammer in Österreich
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Tel: +43 (0) 1 205 1213
Fax: +49 7229 1868 165
E-mail: g.hasel@logar.de
Website: www.logar.de

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Fax: +43 (01) 713 53 34-85
E-mail: walter.loeffler@kitzler-verlag.at

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E-mail: sales@thecompliancecenter.com
Website: www.thecompliancecenter.com

¹CFT Canada
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Dorval, Quebec
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Fax: +1 (514) 631 7250
E-mail: cftsales@cftcanada.com
Website: www.cftcanada.com

¹ These companies also sell supplies of the labels shown in Subsection 7.3 and 10.7.2 and the form "Shipper's Declaration for Dangerous Goods".



Dangerous Goods Regulations

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Fax: +1 (866) 821 0735
E-mail: sales@thecompliancecenter.com
Website: www.thecompliancecenter.com

¹ICC The Compliance Center Inc.
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E-mail: sales@thecompliancecenter.com
Website: www.thecompliancecenter.com

Saf-T-Pak Inc.
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¹ These companies also sell supplies of the labels shown in Subsection 7.3 and 10.7.2 and the form "Shipper's Declaration for Dangerous Goods".

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 D-60549 Frankfurt am Main
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F

F.2

¹ These companies also sell supplies of the labels shown in Subsection 7.3 and 10.7.2 and the form "Shipper's Declaration for Dangerous Goods".

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Funabashi. Chiba-Ken 273-0035
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Fax: +7 7122 203552
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E-mail: azamat@crs.kz
E-mail: admin@crs.kz

¹ These companies also sell supplies of the labels shown in Subsection 7.3 and 10.7.2 and the form "Shipper's Declaration for Dangerous Goods".

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MEXICO

Centro de Capacitación ALAS DE AMÉRICA
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 Col. Pensador Mexicano,
 México D.F., C.P. 15520
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 E-mail: publications@kreisler.nl
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Legislation Direct
 C/- Printlink
 33-43 Jackson Street
 Petone, Wellington
 NEW ZEALAND
 Tel: +64 (4) 568 0004
 Fax: +64 (4) 568 0003
 E-mail: donna.savaii@legislationdirect.co.nz
 Website: www.legislationdirect.co.nz
 Malcolm Total Logistics Limited
 AKA: Dangerous Goods Management Ltd.
 132 Pavilion Drive
 Auckland Airport
 NEW ZEALAND
 Tel: +64 (9) 275 5559
 Fax: +64 (9) 275 6188
 E-mail: sales@dgm.co.nz
 Website: www.malcolm.co.nz

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 Website: www.dgm.no
 Dangerous Goods Management Oslo AS
 Flyspeditorenes Senter-Gardemoen Naeringspark
 N-2065 Gardemoen
 NORWAY
 Tel: +47 95 057 090
 Fax: +47 95 070 601
 E-mail: dgmodl@dgm.no
 Website: www.dgm.no
 Dangerous Goods Management AS
 Flyfraktterminal-Flyplasseveien 186 (BOX 528)
 N-4055 Stavanger Airport
 NORWAY
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 E-mail: dgmsvg@dgm.no
 Website: www.dgm.no

¹ These companies also sell supplies of the labels shown in Subsection 7.3 and 10.7.2 and the form "Shipper's Declaration for Dangerous Goods".

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PEOPLE'S REPUBLIC OF CHINA

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Tianzhu Free Trade Zone
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¹ These companies also sell supplies of the labels shown in Subsection 7.3 and 10.7.2 and the form "Shipper's Declaration for Dangerous Goods".

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¹ These companies also sell supplies of the labels shown in Subsection 7.3 and 10.7.2 and the form "Shipper's Declaration for Dangerous Goods".

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¹ These companies also sell supplies of the labels shown in Subsection 7.3 and 10.7.2 and the form "Shipper's Declaration for Dangerous Goods".

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Website: www.thecompliancecenter.com

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E-mail: sales@thecompliancecenter.com
Website: www.thecompliancecenter.com

¹ICC The Compliance Center Inc.
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E-mail: sales@thecompliancecenter.com
Website: www.thecompliancecenter.com

Lab Safety Supply, Inc.
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53547-1368
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F

F.2

¹ These companies also sell supplies of the labels shown in Subsection 7.3 and 10.7.2 and the form "Shipper's Declaration for Dangerous Goods".

F.3 IATA Dangerous Goods Accredited Training Schools

Dangerous goods training for shippers and freight forwarders is provided by many Member airlines of IATA. To supplement this training, IATA has developed an Accredited Training School Programme to certify independent training schools whose training programmes meet airline requirements. Schools that are accredited by IATA are listed in a central registry maintained by IATA, and their students who have passed the approved test are recorded in IATA's International Student Registry.

Organisations interested in having their Dangerous Goods courses accredited by IATA are invited to direct their enquiries to:

Assistant Director, Cargo Training

International Air Transport Association

800 Place Victoria

P.O. Box 113

Montreal

Quebec

CANADA

H4Z 1M1

Tel: +1 (514) 874 0202

Fax: +1 (514) 874 9659

E-mail: atsnetwork@iata.org

Website: http://www.iata.org/training/Pages/endorsed_schools.aspx

F

F.3

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(A.F.I.F.)

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DGM Training Institute
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Global Transport Training Services (USA)
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Blue Bell
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19422
Tel: +1 (215) 283 0983
Fax: +1 (215) 283 4833
E-mail: gttsusa@gttstraining.com
Website: www.gttstraining.com

Logistical Outsourcing Group
P.O. Box 434
Fairless Hills
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Tel: +1 (800) 220 1091
+1 (215) 547 6045
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E-mail: rtruck4924@aol.com
Website: www.logisticaloutsourcing.com

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UNITED KINGDOM
Tel: +44 (1224) 773 776
Fax: +44 (1224) 773 622
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Dango Training Services Ltd.
169 Affric Road
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UNITED KINGDOM
Tel: +44 (1592) 748 234
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Website: www.dangerousgoodstrainingdts.co.uk

Petrofac Training Services
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E-mail: booking@petrofactraining.com
Website: www.petrofactraining.com



Dangerous Goods Regulations

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to

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E-mail: serge.soucek@aviationtraining.com.vn
Website: www.lkc.asia

Note:

Only training programmes which were certified at time of printing as meeting the criteria for the IATA Accredited Training School Programme are listed above. These schools are the only ones that may advertise as providing IATA Dangerous Goods courses.

For a continued up to date list of these schools, please visit our website:

http://www.iata.org/training/Pages/endorsed_schools.aspx

F.4 IATA Dangerous Goods Accredited Training Schools—Infectious Substances

FRANCE

DG Expert
11 rue Voltaire Ezanville
95460
FRANCE

Tel: +33 1 39 91 77 13
E-mail: ffillias@dgexpert.fr
Website: www.dgexpert.fr

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Dangerous Goods Management (Singapore) Pte Ltd.
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Singapore 609198
SINGAPORE

Tel: +65 6268 6328
Fax: +65 6268 6691
E-mail: dgm.singapore@pacific.net.sg

F.5 IATA Dangerous Goods Accredited Training Schools—Radioactive Materials

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KVS & Partners BVBA—Dangerous Goods
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BELGIUM
B-1910
Tel: +32 (16) 65 08 12
Fax: +32 (16) 89 88 96
E-mail: kristel.vermeersch@pandora.be

NETHERLANDS

Dangerous Goods Management BV-Training Institute
Safety and Security Academy
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NETHERLANDS
Tel: +31 (20) 449 65 65
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Brunei International Air Cargo Centre
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In-House Aviation Training Academy
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Japan Aircargo Forwarders Association (JAFA)
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E-mail: honda@jafa.or.jp
E-mail: yokohama@jafa.or.jp
Website: www.jafa.or.jp

Note:

For information on other JAFA Training centres, please contact the location detailed above.

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JAPAN
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Fax: +81(48) 474 6324
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KK Security Limited
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Trans-Eastern Airlines Aviation College
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Mexican Cargo Sales Representative S.A. de C.V.
Angelina No.10-B
Col. San Angel Inn
México D.F. 01000
MEXICO
Tel: +52 55 5662 4685
Fax: +52 55-5662-3168
E-mail: pablo-alcocer@cargo-sales.net
Website: www.cargo-sales.net

MOROCCO

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 MOROCCO
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 Fax: +212 528 8219 39
 E-mail: hq@asemorocco.aero
 Website: www.aseeducation.org

PAKISTAN

Pakistan International Airlines
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 Aeródromo Municipal de Cascais
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APPENDIX G—IATA SAFETY STANDARDS PROGRAMMES

G.0 General

Safety is paramount to IATA, and by defining standards and by actively promoting the adoption and use of those standards by the air cargo industry, a very high degree of safety has been achieved in dangerous goods transport. Working closely with governments in the development of the regulations, including ICAO and national authorities, IATA ensures that these rules and regulations are both effective and efficient. The goal is to make it just as easy to ship dangerous goods by air as any other product since that will remove any incentive to by-pass the regulations.

Furthermore, information is key to any safety programme, no less for dangerous goods in air transport. By taking initiatives and leading the industry, IATA has developed several safety standards programmes which are available to assist the airline industry in developing the most comprehensive and wide-reaching safety programmes possible.

The purpose of this Appendix is to highlight some of the critical safety standards programmes that are available through IATA and to provide an overview of these initiatives. Contact information for each programme is provided following the overview.

G.1 IATA Dangerous Goods Board

General Overview

The goal of the Dangerous Goods Board (DGB) is the initiation, adoption and ratification of harmonized worldwide standards for the safe carriage of dangerous goods by all modes. The implementation of which embrace effective, efficient protocols and procedures that enhance commerce.

Objectives

The primary objectives of the IATA Dangerous Goods Board include:

- input to the development of recommendations for amendments to the ICAO Technical Instructions. Document and ensure the successful implementation of the requirements of the ICAO Technical Instructions into the DGR;
- provision for an open forum for member airlines to exchange and develop information specific to the transport of dangerous goods contained in company material (COMAT);
- implementing a strategy to ensure the application of effective dangerous goods training standards worldwide for operators and also with specific focus on ground handling agents (GHA) and freight forwarders;

- promotion of an open dialogue with civil aviation authorities and the shipping industry throughout the world to ensure safe and compliant operations;
- development of checklists and other tools to be used in establishing “proof of compliance” checks for dangerous goods safety standards.

The IATA *Dangerous Goods Regulations* are developed by the IATA Dangerous Goods Board pursuant to authority of the IATA Cargo Services Conference.

Meeting Schedule

The Board meets twice per year and meetings are usually scheduled prior to ICAO Working Group or Panel meetings.

Membership

The IATA Dangerous Goods Board consists of 12 individuals representing IATA member airlines, appointed by the IATA Cargo Services Conference, each being an expert in the dangerous goods field, and each serving on the Panel for a period of four years.

The current members are:

Mr. T. Amos	Qantas
Mr. P. Balasubramanian	Emirates
Mr. R. Blenkush	Delta Airlines
Ms. C. Chan	Cathay Pacific Airways
Mr. N. Hanif	Malaysia Airlines
Mr. T. Howard	Air Canada
Mr. F. Jacquemont	Air France
Mr. D. Kampman	KLM Royal Dutch Airlines
Mr. P. Liu	China Airlines
Mr. A. McCulloch	UPS Airlines
Mr. P. Oppenheimer	Fedex Express
Mr. G. Sokayan	Singapore Airlines Cargo

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Secretary:

Mr. David Brennan
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The IATA Dangerous Goods Board also welcomes observers from member airlines, IATA industry partners and other associations such as the International Federation of Air Line Pilots' Associations (IFALPA) and International Federation of Freight Forwarders Associations (FIATA). For information on upcoming meetings or for information on how to request observer status to attend a Dangerous Goods Board meeting, please contact the Secretary, David Brennan.

G.2 Dangerous Goods Training Task Force

General Overview

The IATA Dangerous Goods Training Task Force was originally established by the Dangerous Goods Board to review, amend and update all matters pertaining to dangerous goods training and focus on training standards harmonization across the industry.

Objectives

The primary objectives of the IATA Dangerous Goods Training Task Force include:

- developing industry "best practice" dangerous goods training standards to support member airlines in maintaining the highest safety standards;
- reviewing and developing the IATA Dangerous Goods Training Programme to ensure that the programme is current and fully aligned to the IATA Dangerous Goods Regulations;
- maintaining the content of the IATA Guidelines for Instructors of Dangerous Goods Courses and other training aids to assist instructors in the development and implementation of professional training standards;
- reviewing and updating qualification standards for instructors conducting dangerous goods training; and
- exploring, evaluating and promoting the use of new training technologies.

The IATA Dangerous Goods Training Workbook series and the *Guidelines for Instructors of Dangerous Goods* courses are developed by the IATA Dangerous Goods Training Task Force.

Meeting Schedule

The Training Task Force meets twice per year, generally in May and October. The task force meetings are usually scheduled following the IATA Dangerous Goods Board meetings.

Membership

The IATA Dangerous Goods Training Task Force consists of 12 individuals representing IATA member airlines, appointed by the IATA Dangerous Goods Board, each being an expert in the field of dangerous goods training.

The current members are:

Ms. R. Brunelle	UPS Airlines
Ms. P. Clifford	Qantas
Mr. T. Herben	Air Canada
Mr. M. Hoysler	Federal Express
Mr. R. Jarvis	Etihad
Mr. R. Katrak	Emirates
Mr. S. Labate	TAM Airlines
Mr. A. Majeres	Cargolux
Mr. D. Muir	bmi
Mr. G. Murphy	Scandinavian Airlines System
Mr. J. Van Epps	Delta Airlines

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The IATA Dangerous Goods Training Task Force also welcomes observers from member airlines, IATA industry partners and other associations such as IFALPA and FIATA Airfreight Institute. For information on upcoming meetings or for information on how to request observer status to attend a Dangerous Goods Training Task Force meeting, please contact the Secretary, Brendan Sullivan.

G.3 IATA Airline/Operator Dangerous Goods Training Validation Programme

Newly launched in 2006, this programme has been designed to provide airlines and operators with the opportunity to acquire certification from the International Air Transport Association attesting that their dangerous goods acceptance training (Category 6) is benchmarked against and meets IATA's high quality safety training standards. This validation of training is granted after an operator's or airline's training instructors, detailed lesson plan, course materials and final exam have all been evaluated by IATA and found to meet the programme's criteria.

The programme's standards and criteria have been developed in conjunction with the IATA Dangerous Goods Training Task Force and represents an industry wide "best practices" approach to dangerous goods training, as well as meeting all of the requirements of the IATA Dangerous Goods Regulations.

All successful applicants to IATA's Airline/Operator Dangerous Goods Training Validation Programme are entitled to the following benefits:

- acknowledgement (a formal certificate) that the airline/operator's course has been benchmarked against and meets the programme's criteria as set by IATA;
- global recognition of the airline/operator's dangerous goods IATA validated training by governments, freight forwarders, cargo agents, and the like;
- the list of airlines/operators whose training has been validated will be published annually in the IATA Dangerous Goods Regulations, IATA Training Workbook 1 and the IATA dangerous goods website; and
- advance information on regulatory and training issues relating to upcoming DGR changes and ICAO amendments.

Note:

The training validation granted by IATA does not permit the airline/operator to offer commercial training as an IATA "Accredited School". It is for airline/operator internal use only in order to promote and enhance safety through standardisation of dangerous goods training programmes across the industry.

Airlines Currently Validated

The following airlines have submitted their training programmes to IATA and have been validated as meeting IATA's dangerous goods training standards:

Air Canada Cargo

Air France

Austrian Airlines

Avianca

Continental Airlines

Continental Micronesia

DHL/European Air Transport

Emirates

Qantas Airways

Qatar Airways

SAS

Contacts

For further information and details regarding the Airline/Operator Dangerous Goods Training Validation Programme please contact:

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G.4 IATA Safety Data Management and Analysis (SDMA) Programme

IATA Safety Data Management and Analysis (SDMA) programme is a holistic programme designed to cover the entire spectrum of airline and industry data requirements, from the few accidents to the multitude of normal operational occurrences.

At one end of the spectrum, the Safety Report uses accident reporting to share the lessons learned among all aviation stakeholders. IATA has compiled, classified and analysed accident data for over 40 years under the annual IATA Safety Report. However, IATA is well into the transition from the reactive nature of looking at what went wrong causing an accident and learning to avoid such recurrences, to identifying accident precursors by using incident data in the IATA Safety Trend Evaluation, Analysis and Data Exchange System (STEADES).

IATA is now moving towards becoming more proactive and diagnostic by looking at safety data from "normal operations". IATA's new Flight Data Analysis (FDA) Service allows airlines to submit flight data to IATA, have it analysed, then receive information and summary results on their normal operations. Combined, these three elements form IATA's comprehensive SDMA programme covering the entire spectrum of safety data analysis.

The IATA Safety Report

IATA pulls together an extensive scope of accident data in order to publish the most comprehensive and unbiased yearly assessment of global airline safety. The Safety Report contains valuable safety information, including:

- a review of the past decade's accidents;
- fully detailed accident analysis; and
- integrated accident prevention programmes and prevention strategies.

The Report is data-driven, with over 65 tables, charts and figures presented in either hard-copy format or downloadable from a CD-ROM version. The CD-ROM material also includes electronic versions of the IATA Safety Report going back to 2002, a Safety Manager's Toolkit and a wealth of informative supporting documentation.

The key benefits of the IATA Safety Report are: access to the hard figures on aircraft hull loss rates, ten-year trends by aircraft category and a multitude of other safety metrics. The Report provides one comprehensive safety resource to enable organisations to enhance and improve their safety and accident prevention programmes.

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For further information regarding the IATA Safety Report please contact:

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Safety Trend Evaluation, Analysis, and Data Exchange System (STEADES)

The Safety Trend Evaluation, Analyses and Data Exchange System (STEADES) is a subscription-based data sharing and analysis service for airlines, airport authorities, air traffic control organisations and other peripheral agencies in the commercial air transport industry. The incoming data is de-identified, pooled with over 55 other STEADES participants' data and merged into the STEADES global database, which now contains over 350,000 incident reports. Members receive the quarterly STEADES Safety Trend Analysis Report featuring operator feedback, feature articles and summary statistics, all supported with data tables, detailed figures and raw statistics on leading global safety trends.

STEADES subscribers submit quarterly, via the IATA secure network, an electronic copy or "data dump" of all incident data occurring within 12 months of the submission date. Most software platforms have an export function in order to accomplish this. Feedback and communication, either by indicating the organisation name or anonymously, is always appreciated from participants in the programme. However, this is at the discretion of the member organisation. At no point is a STEADES subscriber identified or information on a participant released without the full consent of all parties concerned.

STEADES members benefit from:

- feedback, lessons learned and the combined worldwide experience of over 55 airline safety departments;
- feature articles on critical safety topics, supported by summary data tables, detailed graphs and prevention strategies developed by industry safety experts;
- assistance in identifying the organisation's risk exposure to accident precursors; and
- optimisation of operational safety and efficiency by avoiding recurrent and costly incidents, such as ground damage and accidental slide deployment.

IATA maintains responsibility for the security of the original data submitted under the STEADES Programme and withholds the submitted files for up to 90 days before confirming deletion from the system. The completely de-identified records are pooled and entered into the STEADES database, but is free from information linking the data to an individual operator, electronically or otherwise.

IATA performs analysis on a quarterly basis for publication of the STEADES Safety Trend Analysis Report, which outlines trends and issues found in the database. Incident data may also be published as part of the IATA Monthly Safety Bulletin or IATA Safety Report, which are both included as part of STEADES subscription.

In addition to STEADES membership, STEADES provides customized analysis services. Upon request, the STEADES analysis team researches various topics to help organizations validate and data drive their safety initiatives, and measure the effectiveness of such programmes.

STEADES Members include:

Air Astana
Air Canada
Air France
Air Macau
Air New Zealand
Air Transat
Air Zimbabwe
Arkia Israeli Airlines
Avianca
BA CityFlyer
Bond Offshore Helicopters
Bristow Helicopters
British Airways
Cargolux Airlines
Cathay Pacific
China Airlines
COPA
Dragonair
Egyptair
El Al Israel Airlines
Emirates
Etihad Airways
GOL Transportes Aéreos S.A.
Gulf Air
Hainan
Kenya Airways
KLM
Korean Air
LAN Airlines
Malaysia Airlines
Monarch Airlines
Philippine Airlines
Qatar Airways
Royal Air Maroc
Royal Jordanian
SAS Norge
South African Airways
TACA
TAM
Thomas Cook
Virgin Atlantic

Note:

The list above is not all-inclusive. For a full list, please visit the website http://www.iata.org/ps/intelligence_statistics/steades/index.htm

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Flight Data Analysis (FDA) Service

Airlines have long recognised the value of the systematic collection and analysis of flight data to improve safety and operational efficiency. For airlines looking to gain flight data analysis expertise, optimise safety improvements and programme cost effectiveness, the IATA Flight Data Analysis (FDA) Service is the ultimate one-stop solution to launch an airline's flight data analysis programme. The comprehensive FDA service provides programme start-up and configuration, recurrent data processing and event detection, programme monitoring and trend analysis, and detailed event analysis and incident investigation.

Key benefits of the programme include:

- safety performance monitoring 24 hours a day, 7 days a week, from anywhere in the world;
- full ownership and access to the airline's own flight data;
- taking advantage of IATA's economies of scale, lower set-up and on-going costs;
- meeting the recommendations for both the IATA Operational Safety Audit (IOSA) and ICAO standards and best practices;
- access to a team of experts with accident investigation and flight data experience; and
- being part of a network of industry leading experts from aircraft manufacturers, governments, and airline safety professionals.

Developed jointly by IATA and Flightscape, the programme performance criteria reflect IATA's goal to be at the forefront of the safety intelligence industry. By allowing the FDA Service to concentrate on the processing and analysis of flight data, an airline is better

placed to then concentrate on implementing safety actions within the airline.

Should an issue arise in air traffic management, airport infrastructure, or any other operational area, IATA's expert resources can assist in devising a solution. With over 1600 employees working in every region of the world, IATA's technical, regional and operational expertise is always available. Likewise, the IATA/Flightscape partnership brings over 60 years of flight data and accident/incident analysis, so airlines' can rest assured that they are receiving the best industry expertise available.

The FDA Service participants include:

ABC Aerolineas Interjet
Aeropostal
Air Transat
Air Wisconsin
Ethiopian Airways
First Air
Harmony Airways
Jade Cargo International
Kenya Airways
LAM Mozambique
Oman Air
PHI Helicopters
Surinam Air
Zoom Airlines

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Bureau of Explosives Pamphlet No. 2

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07073

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2400 West Loop South
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Dangerous Goods Regulations

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Transportation of Dangerous Commodities by Rail

Canadian Transport Commissioner
Ottawa
Ontario
Canada
K1A 0N9

2013

DANGEROUS GOODS CHECKLIST FOR A NON-RADIOACTIVE SHIPMENT

The recommended checklist appearing on the following pages is intended to verify shipments at origin.

Never accept or refuse a shipment before all items have been checked.

Is the following information correct for each entry?

SHIPPERS DECLARATION FOR DANGEROUS GOODS (DGD)

	YES	NO*	N/A
1. Two copies in English and in the IATA format including the air certification statement [8.1.1, 8.1.2, 8.1.6.12]	<input type="checkbox"/>	<input type="checkbox"/>	
2. Full name and address of Shipper and Consignee [8.1.6.1, 8.1.6.2]	<input type="checkbox"/>	<input type="checkbox"/>	
3. If the Air Waybill number is not shown, enter it. [8.1.6.3]	<input type="checkbox"/>		
4. The number of pages shown [8.1.6.4]	<input type="checkbox"/>		
5. The non-applicable Aircraft Type Deleted or not shown [8.1.6.5]	<input type="checkbox"/>		
6. If full name of Airport or City of Departure or Destination is not shown, enter it. [8.1.6.6 and 8.1.6.7] Information is optional.....	<input type="checkbox"/>		<input type="checkbox"/>
7. The word "Radioactive" deleted or not shown [8.1.6.8]	<input type="checkbox"/>	<input type="checkbox"/>	
Identification			
8. UN or ID Number, preceded by prefix [8.1.6.9.1, Step 1].....	<input type="checkbox"/>	<input type="checkbox"/>	
9. Proper Shipping Name and the technical name in brackets for asterisked entries [8.1.6.9.1, Step 2]	<input type="checkbox"/>	<input type="checkbox"/>	
10. Class or Division, and for Class 1, the Compatibility Group, [8.1.6.9.1, Step 3]	<input type="checkbox"/>	<input type="checkbox"/>	
11. Subsidiary Risk, in parentheses, immediately following Class or Division [8.1.6.9.1, Step 4].....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Packing Group [8.1.6.9.1, Step 5].....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantity and Type of Packing			
13. Number and Type of Packages [8.1.6.9.2, Step 6].....	<input type="checkbox"/>	<input type="checkbox"/>	
14. Quantity and unit of measure (net, or gross followed by "G", as applicable) within per package limit [8.1.6.9.2, Step 6]	<input type="checkbox"/>	<input type="checkbox"/>	
15. When different dangerous goods are packed in one outer packaging, the following rules are complied with:			
– Compatible according to Table 9.3.A.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
– UN packages containing Division 6.2 [5.0.2.11(c)]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
– "All packed in one (type of packaging)" [8.1.6.9.2, Step 6(f)]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
– Calculation of "Q" value must not exceed 1 [5.0.2.11 (g) & (h); 2.7.5.6; 8.1.6.9.2, Step 6(g)]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Overpack			
– Compatible according to Table 9.3.A. [5.0.1.5.1 and 5.0.1.5.3].....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
– Wording "Overpack Used" [8.1.6.9.2, Step 7]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Packing Instructions			
17. Packing Instruction Number [8.1.6.9.3, Step 8]	<input type="checkbox"/>	<input type="checkbox"/>	
Authorizations			
18. Check all verifiable special provisions. The Special Provision Number if A1, A2, A51, A81, A88, A99 or A130 [8.1.6.9.4, Step 9].....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Indication that governmental authorization is attached, including a copy in English and additional approvals for other items under [8.1.6.9.4, Step 9].....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Additional Handling Information			
20. The mandatory statement shown for self-reactive and related substances of Division 4.1 and organic peroxides of Division 5.2, or samples thereof, for PBE and for fireworks [8.1.6.11.1, 8.1.6.11.2, 8.1.6.11.3 and 8.1.6.11.5]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Name and Telephone Number of a responsible person for Division 6.2 Infectious Substance shipment [8.1.6.11.4]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Name and Title (or Department) of Signatory, Place and Date indicated and Signature of Shipper [8.1.6.13, 8.1.6.14 and 8.1.6.15]	<input type="checkbox"/>	<input type="checkbox"/>	
23. Amendment or alteration signed by Shipper [8.1.2.6]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

YES NO* N/A

AIR WAYBILL-HANDLING INFORMATION

24. The statement: "Dangerous goods as per attached Shipper's Declaration" or "Dangerous Goods as per attached DGD" [8.2.1(a)] YES
25. "Cargo Aircraft Only" or "CAO", if applicable [8.2.1(b)] NO
26. Where non-dangerous goods are included, the number of pieces of dangerous goods shown [8.2.2] ... N/A

PACKAGE(S) AND OVERPACKS

27. Packaging conforms with packing instruction and is free from damage or leakage [The relevant PI and 9.1.3] YES
28. Same number and type of packagings and overpacks delivered as shown on DGD [9.1.3]..... NO

Markings

29. UN Specification Packaging, marked according to 6.0.4 and 6.0.5:
 - Symbol and Specification Code YES
 - X, Y or Z meets or exceeds Packing Group/Packing Instruction requirements NO
 - Gross Weight within limits (Solids, Inner Packagings or IBCs [SP A179]) N/A
 - Infectious substance package marking [6.5.3.1]..... YES
30. The UN or ID number(s) [7.1.5.1(a)]..... YES
 31. The Proper Shipping Name(s) including technical name where required [7.1.5.1(a)]..... NO
 32. The full name(s) and Address(es) of Shipper and Consignee [7.1.5.1(b)] YES
 33. For consignments of more than one package of all classes (except ID 8000 and Class 7) the net quantity, or gross weight followed by "G", as applicable, unless contents are identical, marked on the packages [7.1.5.1(c)] YES
 34. Carbon Dioxide, Solid (Dry Ice), the net quantity marked on the packages [7.1.5.1(d)] YES
 35. The Name and Telephone Number of a responsible person for Division 6.2 Infectious Substances shipment [7.1.5.1(e)] YES
 36. The Special Marking requirements shown for Packing Instruction 202 [7.1.5.1(f)] YES
 37. Limited Quantities mark [7.1.5.3] YES
 38. The Environmentally Hazardous Substance Mark [7.1.6.3]..... YES

Labelling

39. The label(s) identifying the Primary risk as per 4.2, Column D [7.2.3.2; 7.2.3.3(b)]..... YES
 40. The label(s) identifying the Subsidiary risk, as per 4.2, Column D [7.2.3.2; 7.2.6.2.3]..... NO
 41. Cargo Aircraft Only label [7.2.4.2; 7.2.6.3]..... YES
 42. "Orientation" labels on two opposite sides, if applicable [7.2.4.4]..... YES
 43. "Cryogenic Liquid" labels, if applicable [7.2.4.3] YES
 44. "Keep Away From Heat" label, if applicable [7.2.4.5]..... YES
 45. All required labels are displayed correctly [7.2.6] and all irrelevant marks and labels removed or obliterated [7.1.1; 7.2.1]..... YES

For Overpacks

46. Packaging Use markings and hazard and handling labels, as required must be clearly visible or reproduced on the outside of the overpack [7.1.4.1, 7.2.7] YES
 47. The word "Overpack" marked if markings and labels are not visible [7.1.4.1]..... YES
 48. If more than one overpack is used, identification marks shown and total quantity of dangerous goods [7.1.4.2] YES
 49. "Cargo Aircraft Only" restrictions [5.0.1.5.3]..... YES

GENERAL

50. State and Operator variations complied with [2.8]..... YES
 51. Cargo Aircraft Only shipments, a cargo aircraft operates on all sectors YES

Comments: _____

Checked by: _____

Place: _____ Signature: _____

Date: _____ Time: _____

* IF ANY BOX IS CHECKED "NO", DO NOT ACCEPT THE SHIPMENT AND GIVE A DUPLICATE COPY OF THIS COMPLETED FORM TO THE SHIPPER.

2013
DANGEROUS GOODS CHECKLIST FOR A RADIOACTIVE SHIPMENT

The recommended checklist appearing on the following pages is intended to verify shipments at origin.

Never accept or refuse a shipment before all items have been checked.

Is the following information correct for each entry?

SHIPPERS DECLARATION FOR DANGEROUS GOODS (DGD)

	YES	NO*	N/A
1. Two copies in English and in the IATA format including the air certification statement [10.8.1.2; 10.8.1.4, 8.1.1 and 10.8.3.12.2].....	<input type="checkbox"/>	<input type="checkbox"/>	
2. Full name and address of Shipper and Consignee [[10.8.3.1, 10.8.3.2]	<input type="checkbox"/>	<input type="checkbox"/>	
3. If the Air Waybill number is not shown, enter it. [10.8.3.3]	<input type="checkbox"/>		
4. The number of pages shown [10.8.3.4]	<input type="checkbox"/>		
5. The non-applicable Aircraft Type deleted [10.8.3.5]	<input type="checkbox"/>		
6. If full name of Airport or City of Departure or Destination is not shown, enter it. [10.8.3.6 and 10.8.3.7] Information is optional.....	<input type="checkbox"/>		<input type="checkbox"/>
7. The word "Non-Radioactive" deleted [10.8.3.8]	<input type="checkbox"/>	<input type="checkbox"/>	
Identification			
8. UN Number, preceded by prefix "UN" [10.8.3.9.1, Step 1]	<input type="checkbox"/>	<input type="checkbox"/>	
9. Proper Shipping Name [10.8.3.9.1, Step 2].....	<input type="checkbox"/>	<input type="checkbox"/>	
10. Class 7 [10.8.3.9.1, Step 3]	<input type="checkbox"/>	<input type="checkbox"/>	
11. Subsidiary Risk, in parentheses, immediately following Class [10.8.3.9.1, Step 4] and Packing Group if required for Subsidiary Risk [10.8.3.9.1, Step 5]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantity and Type of Packing			
12. Name or Symbol of Radionuclide(s) [10.8.3.9.2, Step 6 (a)].....	<input type="checkbox"/>	<input type="checkbox"/>	
13. A description of the physical and chemical form if in other form [10.8.3.9.2, Step 6 (b)]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. "Special Form" (not required for UN 3332 or UN 3333) or low dispersible material [10.8.3.9.2, Step 6 (b)]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. The number and type of packages and the activity in becquerel or multiples thereof in each package. For Fissile Material the total weight in grams or kilograms of fissile material may be shown in place of activity [10.8.3.9.2, Step 7].....	<input type="checkbox"/>	<input type="checkbox"/>	
16. For different individual radionuclides, the activity of each radionuclide and the words "All packed in one" [10.8.3.9.2, Step 7]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Activity within limits for Type A packages [Table 10.3.A], Type B, or Type C (see attached competent authority certificate).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Words "Overpack Used" shown on the DGD [10.8.3.9.2, Step 8]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Packing Instructions			
19. Category of package(s) or overpack [10.8.3.9.3, Step 9 and Table 10.5.C]	<input type="checkbox"/>	<input type="checkbox"/>	
20. Transport Index and dimensions (Length x Width x Height) for Category II and Category III only [10.8.3.9.3, Step 9].....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. For Fissile Material the Criticality Safety Index or the words "Fissile Excepted" [10.8.3.9.3, Step 9]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Authorizations			
22. Identification marks shown and a copy of the document in English attached to DGD for the following [10.8.3.9.4, Step 10; 10.5.7.2.2]: - Special Form approval certificate..... - Low dispersible material approval certificate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Type B package design approval certificate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Other approval certificates as required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Additional Handling Information [10.8.3.11]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Name and Title (or Department) of Signatory, Place and Date indicated [10.8.3.13 and 10.8.3.14] and Signature of Shipper [10.8.3.15]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Amendment or alteration signed by Shipper [10.8.1.7]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

YES NO* N/A

AIR WAYBILL-HANDLING INFORMATION

- | | | | |
|---|--------------------------|-------------------------------------|--------------------------|
| 26. The statement: "Dangerous goods as per attached Shipper's Declaration" or "Dangerous Goods as per attached DGD" [10.8.8.1(a)] | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 27. Cargo Aircraft Only or CAO, if applicable [10.8.8.1(b)]..... | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 28. Where non-dangerous goods are included, the number of pieces of dangerous goods shown [10.8.8.2]..... | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

PACKAGE(S) AND OVERPACKS

- | | | |
|--|--------------------------|-------------------------------------|
| 29. Same number and type of packagings and overpacks delivered as shown on DGD..... | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 30. Unbroken transportation seal [10.6.2.4.1.2] and package in proper condition for carriage [9.1.3; 9.1.4]..... | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Markings

- | | | | |
|---|--------------------------|-------------------------------------|--------------------------|
| 31. The UN Number [10.7.1.3.1]..... | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 32. The Proper Shipping Name [10.7.1.3.1] | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 33. The full Name and Address of the Shipper and Consignee [10.7.1.3.1] | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 34. The permissible gross weight if it exceeds 50 kg [10.7.1.3.1] | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 35. Type A packages, marked as per 10.7.1.3.4 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 36. Type B packages, marked as per 10.7.1.3.5 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 37. Type C packages, Industrial Packages and packages containing Fissile material marked as per 10.7.1.3.6, 10.7.1.3.3 or 10.7.1.3.7..... | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Labelling

- | | | | |
|---|--------------------------|-------------------------------------|--------------------------|
| 38. Two correctly completed Radioactive Hazard labels on opposite sides [10.7.3.3; 10.7.4.3.1]..... | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 39. Applicable label(s) identifying the Subsidiary [10.7.3.2; 10.7.4.3] | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 40. Two Cargo Aircraft Only labels, if required, on the same surface near the Hazard labels [10.7.4.2.4; 10.7.4.3.1; 10.7.4.4.1] | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 41. For fissile materials, two correctly completed Criticality Safety Index (CSI) labels on the same surface as the hazard labels [10.7.3.3.4; 10.7.4.3.1]..... | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 42. All displayed labels correctly located, affixed, and irrelevant marks and labels removed or obliterated [10.7.1.1; 10.7.2.1; 10.7.4] | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |

For Overpacks

- | | | | |
|--|--------------------------|-------------------------------------|--------------------------|
| 43. Packaging markings as required must be clearly visible or reproduced on the outside of the overpack [10.7.1.4.1] | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 44. If more than one overpack is used, identification marks shown [10.7.1.4.2] | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 45. Hazard labels reflect total for overpack [10.7.3.4] | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

GENERAL

- | | | | |
|---|--------------------------|-------------------------------------|--------------------------|
| 46. State and Operator variations complied with [2.8] | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 47. Cargo Aircraft Only shipments, a cargo aircraft operates on all sectors | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 48. Packages containing Carbon dioxide solid (dry ice), the marking, labelling and documentary requirements complied with [Packing Instruction 954; 7.1.5.1 (d); 7.2.3.9] | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Comments: _____

Checked by: _____

Place: _____ Signature: _____

Date: _____ Time: _____

* IF ANY BOX IS CHECKED "NO", DO NOT ACCEPT THE SHIPMENT AND GIVE A DUPLICATE COPY OF THIS COMPLETED FORM TO THE SHIPPER.

2013

ACCEPTANCE CHECKLIST FOR DRY ICE (Carbon Dioxide, solid)

**(For use when a Shipper's Declaration
for Dangerous Goods is not required)**

A checklist is required for all shipments of dangerous goods (9.1.4) to enable proper acceptance checks to be made. The following example checklist is provided to assist shippers and carriers with the acceptance of dry ice when packaged on its own or with non-dangerous goods.

Is the following information correct for each entry?

DOCUMENTATION

	YES	NO*	N/A
The Air Waybill contains the following information in the "Nature and Quantity of Goods" box (8.2.3)			
1. The UN Number "1845", preceded by the prefix "UN"	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
2. The words "Carbon dioxide, solid" or "Dry ice"	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. The number of packages of dry ice (may be in the pieces field of the AWB when they are the only packages in the consignment)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
4. The net quantity of dry ice in kilograms	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Note: The packing instruction "954" is optional.

Quantity

5. The quantity of dry ice per package is 200 kg or less [4.2]

PACKAGES AND OVERPACKS

6. The number of packages containing dry ice delivered as shown on the Air Waybill.....
7. Packages are free from damage and in a proper condition for carriage
8. The packaging conforms with Packing Instruction 954 and the package is vented to permit the release of gas

Markings & Labels (Packages and Overpacks)

9. The UN number "1845" preceded by prefix "UN" [7.1.5.1(a)]
10. The words "Carbon dioxide, solid" or "Dry ice" [7.1.5.1(a)].....
11. Full name and address of the shipper and consignee [7.1.5.1(b)]
12. The net quantity of dry ice within each package [7.1.5.1(d)]
13. Class 9 label affixed [7.2.3.9].....
14. Irrelevant marks and labels removed or obliterated [7.1.1(b); 7.2.1(a)].....

Note: The Marking and labelling requirements do not apply to ULDs containing dry ice

State and Operator Variations

15. State and operator variations complied with [2.8].....

Comments: _____

Checked by:_____

Place: _____ Signature: _____

Date: _____ Time: _____

*** IF ANY BOX IS CHECKED "NO", DO NOT ACCEPT THE SHIPMENT AND GIVE A DUPLICATE COPY OF THIS COMPLETED FORM TO THE SHIPPER.**

2013
ACCEPTANCE CHECKLIST FOR LITHIUM BATTERIES SECTION IB
**(For use when a Shipper's Declaration
for Dangerous Goods is not required)**

A checklist is required for all shipments of dangerous goods (9.1.4) to enable proper acceptance checks to be made. The following example checklist is provided to assist shippers and carriers with the acceptance of lithium batteries prepared in accordance with Section IB of PI 965 or Section IB of PI 968.

Is the following information correct for each entry?

DOCUMENTATION

YES NO* N/A

The following information is shown in the "nature and quantity of Goods" box or on an alternative document (PI 965 & PI 968 Section IB)

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 1. The UN Number "3480" or "3090", preceded by the prefix "UN" | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. The words "lithium ion batteries PI 965 IB"..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. The words "lithium metal batteries PI 968 IB"..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. The number of packages (may be in the pieces field of the AWB when they are the only packages in the consignment) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. The gross mass of each package (kg G)..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. One "lithium battery document" with the required information accompanying the consignment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Quantity

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 7. The gross weight of each package does not exceed 10 kg G/package (PI 965 IB); or | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. The gross weight of each package does not exceed 2.5 kg G/package (PI 968 IB)..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

PACKAGES AND OVERPACKS

- | | | |
|---|--------------------------|--------------------------|
| 9. The number of packages containing lithium batteries delivered as shown on the Air Waybill | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Packages are in strong outer packaging and free from damage and in a proper condition for carriage..... | <input type="checkbox"/> | <input type="checkbox"/> |

Markings & Labels (Packages)

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 11. The UN number "3480" or "3090" preceded by prefix "UN" [7.1.5.1(a)] | <input type="checkbox"/> | <input type="checkbox"/> | |
| 12. The words "Lithium ion batteries" or "Lithium metal batteries" [7.1.5.1(a)]..... | <input type="checkbox"/> | <input type="checkbox"/> | |
| 13. Full name and address of the shipper and consignee [7.1.5.1(b)] | <input type="checkbox"/> | <input type="checkbox"/> | |
| 14. For consignments of more than one package of non-identical packages, the gross weight [7.1.5.1(c)] | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. Class 9 label affixed [7.2.3.9]..... | <input type="checkbox"/> | <input type="checkbox"/> | |
| 16. The correctly completed lithium battery handling label affixed [7.2.4.7, 7.4.H] | <input type="checkbox"/> | <input type="checkbox"/> | |
| 17. Irrelevant marks and labels removed or obliterated [7.1.1(b); 7.2.1(a)]..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

For Overpacks

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 18. Package Use markings and hazard and handling labels, as required must be clearly visible or reproduced on the outside of the overpack [7.1.4.1, 7.2.7] | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. The word "Overpack" marked if markings and labels are not visible [7.1.4.1]..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. If more than one overpack is used, identification marks shown and total quantity of dangerous goods [7.1.4.2] | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

State and Operator Variations

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 21. State and operator variations complied with [2.8]..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--|--------------------------|--------------------------|--------------------------|

Comments: _____

Checked by: _____

Place: _____ Signature: _____

Date: _____ Time: _____

*** IF ANY BOX IS CHECKED "NO", DO NOT ACCEPT THE SHIPMENT AND GIVE A DUPLICATE COPY OF THIS COMPLETED FORM TO THE SHIPPER.**



NOTE TO USER

In order to make these Regulations as easy to use as possible, we are providing this form for any suggestions you may have for improvement, e.g. unclear paragraphs, incorrect or misspelled words. When completed, fold along the dotted lines so that IATA's address is on the outside, add necessary postage and drop in the mail. Alternatively, the information may be sent by fax to the number shown below.

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Dangerous Goods Regulations
International Air Transport Association
33, Route de l'Aéroport
1215 Geneva 15 Airport
Switzerland

Tel: +41 22 770 2947
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E-mail: dangood@iata.org

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