

DANGEROUS GOODS PANEL (DGP)

NINETEENTH MEETING

Montreal, 27 October to 7 November 2003

Agenda Item 2: Development of recommendations for amendments to the Technical Instructions for incorporation in the 2005/2006 edition

PACKING INSTRUCTIONS

(Presented by G.A. Leach)

1. BACKGROUND

1.1 Further to DGP WG-02-WP/45 and DGP WG-03-WP/51 this working paper presents the final version of the revised packing instructions which it is proposed will replace the existing packing instructions. This paper is in 4 parts:

Part 1 the Packing instructions;

Part 2 the list of substances together with the new packing instruction assigned under this exercise;

Part 3 a consolidated list of particular packing requirements;

Part 4 a concordance of packing instruction numbers i.e. a comparison of the current packing instruction number against what it would become when revised.

1.2 It is suggested that the changes proposed are of such a fundamental nature that to expect their implementation in the next edition of the Technical Instructions is impractical. Therefore it is proposed to include the new packing instructions in the 2005-2006 edition for advice only, with the explanation that they will replace the existing packing instructions in the 2007-2008 edition. This will give industry time to make the necessary changes to systems, training etc; it will also present an opportunity for industry to highlight any problems they may have and also identify an errors that may have been overlooked in the rationalisation exercise.

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ANNEX 1

DRAFT PACKING INSTRUCTIONS

THE NEW PIS ARE SHOWN AS WHITE TEXT ON A BLACK BACKGROUND

Class 3

301	301	PACKING INSTRUCTION 301	301
The general packing requirements of Part 4, Chapter 1 must be met. Aircraft hydraulic power unit fuel tanks containing a mixture of anhydrous hydrazine and methyl hydrazine (M86 fuel) and designed for installation as complete units in aircraft are acceptable, subject to either of the following conditions: a) the unit must consist of an aluminium pressure vessel made from tubing and having welded heads. Primary containment of the fuel within this vessel must consist of a welded aluminium bladder having a maximum internal volume of 46 L. The outer vessel must have a minimum design gauge pressure of 1 275 kPa and a minimum burst gauge pressure of 2 755 kPa. Each vessel must be leak tested during manufacture and before shipment and must be found leakproof. The complete inner unit must be securely packed in non combustible cushioning material, such as vermiculite, in a strong outer tightly closed metal packaging which will adequately protect all fittings. Maximum quantity of fuel per unit and package is 42 L; or b) the unit must consist of an aluminium pressure vessel. Primary containment of the fuel within this vessel must consist of a welded hermetically sealed fuel compartment with an elastomeric bladder having a maximum internal volume of 46 L. The pressure vessel must have a minimum design gauge pressure of 2 860 kPa and a minimum burst gauge pressure of 5 170 kPa. Each vessel must be leak-checked during manufacture and before shipment and must be found leakproof. The complete inner unit must be securely packed in non-combustible cushioning material, such as vermiculite, in a strong outer tightly closed metal packaging which will adequately protect all fittings. Maximum quantity of fuel per unit and package is 42 L.			

311	300	PACKING INSTRUCTION 311	311
The general packing requirements of Part 4, Chapter 1 must be met. The general packing requirements of Part 4, Chapter 1 must be met. Nitroglycerin solution in alcohol, UN 3064, must be shipped in IP.3 metal cans (other than aluminium) of not more than 1 L capacity each, overpacked in a wooden box (4C1, 4C2, 4D or 4F) containing not more than 5 L capacity each. Metal cans must be completely surrounded with absorbent cushioning material of sufficient quantity to absorb the entire liquid content. Wooden boxes must be completely lined with a suitable material impervious to water, alcohol and nitroglycerin.			

312

302

PACKING INSTRUCTION 312

312

A polyester resin kit or fibreglass repair kit (UN 3269) consists of two components: a base material in class 3, packing group II or III, and an activator (organic peroxide).

The general packing requirements of Part 4, Chapter 1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER: The activator must be in IP.2 plastic packagings or metal or plastic tubes. The quantity must not exceed 125 ml per inner packaging if liquid, and 500 grams per inner packaging if solid.

The flammable liquid must be in IP.1 glass or earthenware, IP.2 plastic, IP.3 metal inner packagings.

The components may be placed in the same outer packaging provided they will not react dangerously in the event of leakage (see 4;1.1.7).

OUTER:

Boxes	Drums	Jerricans
aluminium (4B) fibreboard (4G) plywood (4D) reconstituted wood (4F) expanded plastic (4H1) solid plastic (4H2) steel (4A) wooden (4C1, 4C2)	aluminium (1B2) fibre (1G) plywood (1D) steel (1A2) plastic (1H2) other metal (1N2)	aluminium (3B2) steel (3A2) plastic (3H2)

Y312

Y302

PACKING INSTRUCTION

Y312

The following requirements apply to polyester resin kits (UN3269) transported as limited quantities:

The requirements of Part 3, Chapter 4 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER: The activator (organic peroxide) must be in IP.2 plastic packagings or metal or plastic tubes and the quantity must not exceed 30 mL if liquid or 100 g if solid. The net quantity of activator per package must not exceed 125 mL if liquid or 500 g if solid.

The flammable liquid must be in IP.1 glass or earthenware, IP.2 plastic, IP.3 metal packagings. The components may be placed in the same outer packaging provided they will not interact dangerously in the event of leakage.

OUTER:

Boxes	Drums	Jerricans
aluminium fibreboard plywood reconstituted wood expanded plastic solid plastic steel wooden	aluminium fibre plywood steel plastic other metal	aluminium steel plastic

The general packing requirements of Part 4, Chapter 1 must be met.

COMBINATION PACKAGINGS:

INNER:

The following inner packagings are permitted for the indicated volumes of liquid for passenger or cargo aircraft . When a packaging is not permitted the word “forbidden” is indicated.

Inner packagings	<i>Passenger Aircraft</i>			<i>Cargo Aircraft</i>		
	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>
Glass or earthenware (IP.1)	0.5	1 L	2.5 L	1 L	2.5 L	5 L
Plastic (IP.2)	Forbidden	5 L	10 L	Forbidden	5 L	10 L
Metal (IP.3, IP.3A)	1	5 L	10 L	5 L	10 L	25 L

OUTER:

Boxes

Drums

Jerricans

aluminium (4B)
fibreboard (4G)
plywood (4D)
reconstituted wood (4F)
expanded plastic (4H1)
solid plastic (4H2)
steel (4A)
wooden (4C1, 4C2)

aluminium (1B2)
fibre (1G)
plywood (1D)
steel (1A2)
plastic (1H2)
other metal (1N2)

aluminium (3B2)
steel (3A2)
plastic (3H2)

SINGLE PACKAGINGS:

The following packagings are permitted:

<i>Passenger Aircraft</i>			<i>Cargo Aircraft</i>		
<i>PG I</i>	<i>PG II</i>	<i>PG III</i>	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>
Forbidden	Forbidden	Drums: 1A1, 1A2, 1B1, 1B2, 1H1, 1H2, 1N1, and 1N2	Drums: 1A1, 1B1, and 1N1	Drums: 1A1, 1B1, 1H1, 1N1	Drums: 1A1, 1A2, 1B1, 1B2, 1H1, 1H2, , 1N1, and 1N2
		Jerricans: 3A1, 3A2, 3B1, 3B2, 3H1 and 3H2	Jerricans: 3A1 and 3B1	Jerricans: 3A1 3B1,and 3H1	Jerricans: 3A1, 3A2, 3B1, 3B2, 3H1 and 3H2
		Composites (plastic): 6HA1, 6HB1, 6HG1, 6HH1 and 6HD1.	Composites (plastic): 6HA1, 6HB1, 6HG1, 6HH1 and 6HD1.	Composites (plastic): 6HA1, 6HB1, 6HG1, 6HH1, and 6HD1.	Composites (plastic): 6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2
		Cylinders: As permitted in Packing Instruction 200	Cylinders: As permitted in Packing Instruction 200	Cylinders: As permitted in Packing Instruction 200	Cylinders: As permitted in Packing Instruction 200

Particular Packing Requirements

PPR 1 For UN 3079, Methacrylonitrile, stabilized experience has shown that this substance may leak from packagings that ordinarily are leakproof to other chemicals. Special precautions should be taken to ensure that the packaging remains leak tight. Inner packagings must be packed with absorbent material in sufficient quantity to absorb the entire liquid content.

The general packing requirements of Part 4, Chapter 1 must be met.

COMBINATION PACKAGINGS:

INNER: The following inner packagings are permitted for the indicated volumes of liquid for passenger or cargo aircraft . When a packaging is not permitted the word “forbidden” is indicated.

Inner packagings	<i>Passenger Aircraft</i>			<i>Cargo Aircraft</i>		
	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>
Glass or earthenware (IP.1)	0.5 L	1 L	1 L	1 L	2.5 L	2.5 L
Plastic (IP.2)	Forbidden	1 L	1 L	Forbidden	2.5 L	2.5 L
Metal (IP.3, IP.3A)	1 L	1 L	1 L	2.5 L	2.5 L	2.5 L

OUTER: The following packages are permitted.

Boxes

aluminium (4B)
fibreboard (4G)
plywood (4D)
reconstituted wood (4F)
expanded plastic (4H1)
solid plastic (4H2)
steel (4A)
wooden (4C1, 4C2)

Drums

aluminium (1B2)
fibre (1G)
plywood (1D)
steel (1A2)
plastic (1H2)
other metal (1N2)

Jerricans

aluminium (3B2)
steel (3A2)
plastic (3H2)

SINGLE PACKAGINGS: The following packagings are permitted:

<i>Passenger Aircraft</i>			<i>Cargo Aircraft</i>		
<i>PG I</i>	<i>PG II</i>	<i>PG III</i>	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>
Forbidden	Forbidden	Drums: 1A1, 1A2, 1B1, 1B2, 1H1, 1H2, 1N1, and 1N2	Drums: 1A1, 1B1, and 1N1	Drums: 1A1, 1B1, 1H1, 1N1	Drums: 1A1, 1A2, 1B1, 1B2, 1H1, 1H2, , 1N1, and 1N2
		Jerricans: 3A1, 3A2, 3B1, 3B2, 3H1 and 3H2	Jerricans: 3A1 and 3B1	Jerricans: 3A1 3B1,and 3H1	Jerricans: 3A1, 3A2, 3B1, 3B2, 3H1 and 3H2
		Composites (plastic): 6HA1, 6HB1, 6HG1, 6HH1 and 6HD1.	Composites (plastic): 6HA1, 6HB1, 6HG1, 6HH1 and 6HD1.	Composites (plastic): 6HA1, 6HB1, 6HG1, 6HH1, and 6HD1.	Composites (plastic): 6HA1, 6HB1, 6HG1, 6HH1, and 6HD1.
		Cylinders: As permitted in Packing Instruction 200	Cylinders: As permitted in Packing Instruction 200	Cylinders: As permitted in Packing Instruction 200	Cylinders: As permitted in Packing Instruction 200

Additional Requirements

- 1 Plastic or glass inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packaging. Inner packaging must be packed with absorbent material in sufficient quantity to absorb the entire liquid content.
- 2 Steel packagings must be corrosion resistant or with protection against corrosion
- 3 Pure aluminium or aluminium alloys are permitted only for halogenated hydrocarbons that will not react with aluminium.

Particular Packing Requirements

PPR 2 For UN 1302, Vinyl ethyl ether, stabilized only metal cylinders that meet the requirements of P200 only are permitted.

PPR 7 For UN 1184, Ethylene dichloride aluminium packagings are not permitted.

The general packing requirements of Part 4, Chapter 1 must be met. Combination packagings with inner plastic packagings and single outer plastic packagings are not permitted for PG I liquids.

COMBINATION PACKAGINGS:

INNER: The following inner packagings are permitted for the indicated volumes of liquid for passenger or cargo aircraft . When a packaging is not permitted the word “forbidden” is indicated.

Glass or earthenware (IP.1)

Plastic (IP.2)

Metal (IP.3, IP.3A)

<i>Passenger</i>		<i>Cargo</i>	
<i>PG I</i>	<i>PG II</i>	<i>PG I</i>	<i>PG II</i>
0.5 L	0.5 L	0.5 L	1.0 L
Forbidden	0.5 L	Forbidden	1.0 L
0.5 L	0.5 L	0.5 L	1.0 L

OUTER:

Boxes

aluminium (4B)
fibreboard (4G)
plywood (4D)
reconstituted wood (4F)
expanded plastic (4H1)
solid plastic (4H2)
steel (4A)
wooden (4C1, 4C2)

Drums

aluminium (1B2)
fibre (1G)
plywood (1D)
steel (1A2)
plastic (1H2)
other metal (1N2)

Jerricans

aluminium (3B2)
steel (3A2)
plastic (3H2)

SINGLE PACKAGINGS:

The following packagings are permitted:

<i>Passenger Aircraft</i>		<i>Cargo Aircraft</i>	
Forbidden	Forbidden	PG I	PG II
		Drums: 1A1 and 1N1	Drums: 1A1, 1H1, 1N1
		Jerricans: 3A1	Jerricans: 3A1 and 3H1
		Composites (plastic): 6HA1	Composites (plastic): 6HA1, 6HG1, 6HH1 and 6HD1
		Cylinders: As permitted in Packing Instruction 200	Cylinders: As permitted in Packing Instruction 200

Additional Requirements

1. Plastic or glass inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packaging. Inner packaging must be packed with absorbent material in sufficient quantity to absorb the contents.

2. Aluminium packagings are not permitted.

Particular Packing Requirements:

PPR 3 For UN 1723, Allyl iodide metal packagings are not permitted.

PPR 4 For UN 1921, UN 1204, UN 1298, UN 2356 and UN 2456 plastic packagings are not permitted.

3X4	306	PACKING INSTRUCTION 3X4	3X4
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The general packing requirements of Part 4, Chapter 1 must be met.

COMBINATION PACKAGINGS:

INNER: The following inner packagings are permitted for the indicated quantities of liquid for cargo aircraft only unless otherwise indicated. When a packaging is not permitted the word “forbidden” is indicated.

<i>Cargo Aircraft Only</i>		
<i>Glass or Earthenware (IP1)</i>	<i>Plastic (IP2)</i>	<i>Metal (IP3, IP3A)</i>
<i>1l</i>	Forbidden	5 L

OUTER:

Boxes

aluminium (4B)
 fibreboard (4G)
 plywood (4D)
 reconstituted wood (4F)
 expanded plastic (4H1)
 solid plastic (4H2)
 steel (4A)
 wooden (4C1, 4C2)

Drums

aluminium (1B2)
 fibre (1G)
 plywood (1D)
 steel (1A2)
 plastic (1H2)
 other metal (1N2)

Jerricans

aluminium (3B2)
 steel (3A2)
 plastic (3H2)

SINGLE PACKAGINGS: The following packagings are permitted:

<i>Cargo Aircraft Only</i>			
Drums: 1A1, 1B1, and 1N1	Jerricans: 3A1	Composites (plastic): 6HA1, 6HB1, 6HD1	Cylinders: As permitted in Packing Instruction 200

Additional Requirement: Glass or earthenware inner packagings must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packaging in sufficient quantity to absorb the entire liquid content.

Particular Packing Requirements

PPR 72 For UN 1278, Propyl chloride plastic inner packagings are permitted . The maximum quantity per inner packaging must not exceed 2.5 L.

3X5	307	PACKING INSTRUCTION 3X5	3X5
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The general packing requirements of Part 4, Chapter 1 must be met.

COMBINATION PACKAGINGS:

INNER: The following inner packagings are permitted for the indicated quantities of liquid for cargo aircraft only unless otherwise indicated. When a packaging is not permitted the word “forbidden” is indicated.

<i>Cargo Aircraft Only</i>		
<i>Glass or Earthenware (IP1)</i>	<i>Plastic (IP2)</i>	<i>Metal (IP3, IP3A)</i>
0.5 L	Forbidden	2.5 L

OUTER:

Boxes aluminium (4B) fibreboard (4G) plywood (4D) reconstituted wood (4F) expanded plastic (4H1) solid plastic (4H2) steel (4A) wooden (4C1, 4C2)	Drums aluminium (1B2) fibre (1G) plywood (1D) steel (1A2) plastic (1H2) other metal (1N2)	Jerricans aluminium (3B2) steel (3A2) plastic (3H2)
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SINGLE PACKAGINGS: The following packagings are permitted:

Drums: 1A1, 1B1, and 1N1	Cylinders: As permitted in Packing Instruction 200
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Additional Requirement:

Glass or earthenware inner packagings must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packaging in sufficient quantity to absorb the entire liquid content.

Particular Packing Requirements

PPR 2 For UN 2983, Ethylene oxide and propylene oxide mixture, only metal cylinders that meet the requirements of P200 are permitted.

Y3XX	Y303	PACKING INSTRUCTION Y3XX	Y3XX												
The requirements of Part 3, Chapter 4 must be met. Single packagings are not permitted.															
COMBINATION PACKAGINGS:															
INNER: The following inner packagings are permitted for the indicated volumes of liquid for passenger or cargo aircraft. When a packaging is not permitted the word “forbidden” is indicated.															
<table><tr><td>Inner packaging</td><td>PG II</td><td>PG III</td></tr><tr><td>Glass or earthenware (IP.1)</td><td>0.5 L</td><td>2.5 L</td></tr><tr><td>Plastic (IP.2) 2</td><td>0.5 L</td><td>5 L</td></tr><tr><td>Metal (IP.3, IP.3A)</td><td>0.5 L</td><td>5 L</td></tr></table>				Inner packaging	PG II	PG III	Glass or earthenware (IP.1)	0.5 L	2.5 L	Plastic (IP.2) 2	0.5 L	5 L	Metal (IP.3, IP.3A)	0.5 L	5 L
Inner packaging	PG II	PG III													
Glass or earthenware (IP.1)	0.5 L	2.5 L													
Plastic (IP.2) 2	0.5 L	5 L													
Metal (IP.3, IP.3A)	0.5 L	5 L													
OUTER:															
<table><tr><td>Boxes</td><td>Drums</td><td>Jerricans</td></tr><tr><td>aluminium fibreboard plywood reconstituted wood expanded plastic solid plastic steel wooden</td><td>aluminium fibre plywood steel plastic other metal</td><td>aluminium steel plastic</td></tr></table>				Boxes	Drums	Jerricans	aluminium fibreboard plywood reconstituted wood expanded plastic solid plastic steel wooden	aluminium fibre plywood steel plastic other metal	aluminium steel plastic						
Boxes	Drums	Jerricans													
aluminium fibreboard plywood reconstituted wood expanded plastic solid plastic steel wooden	aluminium fibre plywood steel plastic other metal	aluminium steel plastic													
Single Packagings are not permitted															
PARTICULAR PACKAGING REQUIREMENTS:															
PPR 5 For UN 1111, UN 1228,UN 2347, UN 2402, UN 2478, UN 2486, or any substance containing a Class 8 subsidiary risk, glass or earthenware inner packagings must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings...															
PPR 6 For UN 1111,UN 1228, UN 1717, UN 1723, UN 2347, and UN 2402, plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings..															
PPR 7 For UN 1184, Ethylene dichloride, aluminium packagings are not permitted.															

Class 4

400	400	PACKING INSTRUCTION 400	400
Films, nitrocellulose base must be packed in accordance with the general packing requirements of Part 4, Chapter 1 and as follows: a) in steel drums (1A2), aluminium drums (1B2), aluminium jerricans (3B2), steel jerricans (3A2), aluminium (4B), steel (4A), wooden (4C1, 4C2), plywood (4D) or reconstituted wood (4F) boxes or plywood drums (ID) of Packing Group II with each reel in a tightly closed metal can or strong cardboard or fibreboard inner packaging with cover held in place by adhesive tape or paper; or b) in fibreboard (4G) or solid plastic (4H2) boxes or fibre drums (1 G) of Packing Group II with a single tightly closed metal can or strong cardboard or fibreboard inner packaging with cover held in place by adhesive tape or paper; permitted only for not over 600 m of film.			

Y400	Y400	PACKING INSTRUCTION Y400	Y400
The requirements of Part 3, Chapter 4 must be met. Single packagings are not permitted. COMBINATION PACKAGINGS: Films, nitrocellulose base must be packed as follows: a) in steel or aluminium drums, aluminium or steel jerricans, aluminium, steel, wooden, plywood or reconstituted wood boxes or plywood drums with each reel in a tightly closed metal can or strong cardboard or fibreboard inner packaging with cover held in place by adhesive tape or paper, up to a maximum net quantity of 1 kg of film in each inner packaging; or b) in fibreboard or solid plastic boxes or fibre drums with a single tightly closed metal can or strong cardboard or fibreboard inner packaging with cover held in place by adhesive tape or paper; authorized only for not over 600 m or 1 kg (whichever is the more restrictive) of film in one outer packaging.			

401	411	PACKING INSTRUCTION 401	401
The general packing requirements of Part 4, Chapter 1 must be met. Nitrocellulose membrane filters must be packed as follows: a) in fibreboard (4G) boxes of Packing Group II; or b) in other packagings of Packing Group II, provided that explosion is not possible by reason of increased internal pressure.			

Y401	Y411	PACKING INSTRUCTION Y401	Y401
The requirements of Part 3, Chapter 4 must be met. Single packagings are not permitted. Nitrocellulose membrane filters must be packed in tightly closed metal, plastics, or strong cardboard or fibreboard inner packagings. Inner packagings must be securely packed in aluminium or steel drums, aluminium or steel jerricans, aluminium, steel, wooden, plywood, reconstituted wood, fibreboard or plastics boxes, plywood or fibre drums.			

404	407	PACKING INSTRUCTION 404	404
Matches, safety (book, card or strike on box) must be of a type that will not ignite spontaneously under normal conditions of air transport and can be readily ignited by friction only by striking on the manufacturer's box, book or card. Matches must be packed in accordance with the general packing requirements of Part 4, Chapter 1 and be tightly packed to prevent movement within the package and ignition by rubbing against an adjoining box, book or card; they must be securely wrapped in paper or foil, or packed in tightly closed inner packagings. Not more than 50 books of matches may be packed in one inner packaging. Inner packagings must be securely packed in steel drums (1A2), aluminium drums (1B2), steel jerricans (3A2), aluminium jerricans (3B2), steel (4A), aluminium (4B), wooden (4C1, 4C2), plywood (4D), reconstituted wood (4F), fibreboard (4G) or solid plastic (4H2) boxes, plywood (ID) or fibre (1 G) drums of Packing Group II. Alternatively, book safety matches only, up to a maximum of 50 books, may be packed in a strong fibreboard carton, which is made of straw-board, covered with kraft paper, having a securely glued inside lining consisting of aluminium foil at least 0.01 mm thick, the carton to have a full depth lid with all joints secured with gummed paper tape; no additional outer packaging is required.			

Y404	Y407	PACKING INSTRUCTION Y404	Y404
The requirements of Part 3, Chapter 4 must be met. Single packagings are not permitted. COMBINATION PACKAGINGS: Matches, safety (book, card or strike on box) must be of a type that will not ignite spontaneously under normal conditions of air transport and can be readily ignited by friction only by striking on the manufacturer's box, book or card. Matches must be tightly packed to prevent movement within the package and ignition by rubbing against an adjoining box, book or card; they must be securely wrapped in paper or foil, or packed in tightly closed inner packagings. Not more than 50 books of matches may be packed in one inner packaging. Inner packagings must be securely packed in aluminium or steel drums, aluminium or steel jerricans, aluminium, steel, wooden, plywood, reconstituted wood, fibreboard or plastic boxes, plywood or fibre drums. Alternatively, book safety matches only, up to a maximum of 50 books, may be packed in a strong fibreboard carton, which is made of straw-board,			

covered with kraft paper, having a securely glued inside lining consisting of aluminium foil at least 0.01 mm thick, the carton to have a full depth lid with all joints secured with gummed paper tape; no additional outer packaging is required.

407 PACKING INSTRUCTION 407 407

The general packing requirements of Part 4, Chapter 1 must be met.

433 408 PACKING INSTRUCTION 433 433

Cells must be packed in accordance with the general packing requirements of Part 4, Chapter 1 and be in steel drums (1A2), aluminium drums (1B2), plywood drums (1D), fibre drums (1G), plastic drums (1H2), aluminium jerricans (3B2), steel boxes (4A), aluminium boxes (4B), wooden boxes (4C 1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G) or solid plastic boxes (4H2). Packagings must meet Packing Group 11 requirements. Sufficient cushioning material must be provided to prevent contact between cells, and between cells and the internal surfaces of the outer packagings, and to ensure that no dangerous movement of the cells within the outer packaging occurs in transport.

Batteries may be offered for transport and transported unpacked, or in protective enclosures such as fully enclosed or wooden slatted crates that are not subject to the requirements of Part 6 of these Instructions.

435 499 PACKING INSTRUCTION 435 435

Packagings must be as specified by the competent authority.

4X1 401 PACKING INSTRUCTION 4X1

The general requirements of Part 4 Chapter 1 must be met.

COMBINATION PACKAGINGS

The following inner packagings are permitted for the indicated mass of solid for passenger or cargo aircraft. When a packaging is not permitted the word “forbidden” is indicated.

INNER

Glass or earthenware (IP.1)

Plastics (IP.2)

Metal (IP.3)

<i>Passenger Aircraft</i>	<i>Cargo Aircraft</i>
<i>PGI</i>	<i>PGI</i>
0.5kg	1kg
0.5kg	1kg
Forbidden	1kg

OUTER

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
aluminium (4B) fibreboard (4G) plywood (4D) reconstituted wood (4F) expanded plastics (4H1) solid plastics (4H2) steel (4A) wooden (4C1, 4C2)	aluminium (1B2) fibre (1G) plywood (1D) steel (1A2) plastics (1H2) other metal (1N2)	aluminium (3B2) steel (3A2) plastics (3H2)

SINGLE PACKAGINGS: The following packagings are permitted:

<i>Passenger Aircraft</i>	<i>Cargo Aircraft</i>
<i>PGI</i>	<i>PGI</i>
Forbidden	Boxes: 4A, 4B, 4C1, 4C2, 4D, 4F, 4G and 4H2
	Drums: LAL, 1A2 1B1, 1B2, 1D, 1G, 1H1, 1H2, 1N1 and 1N2
	Jerricans: 3A1, 3A2, 3B1, 3B2, 3H1 and 3H2
	Composites (plastic): 6HA1, 6HB1 6HG1, 6HH1,6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.

Additional Requirements

1. Packagings shall be designed and constructed to prevent the loss of water or alcohol content or the content of the phlegmatizer.
2. Packagings shall be so constructed and closed so as to avoid an explosive over pressure or pressure build-up of more than 300 kPa (3 bar)
- 3 The type of packaging and maximum permitted quantity per packaging are limited by the provisions of Part 2, 1.5.2 and may be less than the limits shown above.
4. 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.

Particular Packing requirements

PPR 8 For UN Nos. 1310, 1320, 1321, 1322, 1344, 1348, 1349, 1517, 3317 packagings must be lead free.

PPR 9 For UN 1310 Ammonium picrate, wetted, only glass inner packagings are permitted.

PPR 10 For UN1310, 1354, 1355, 1356 and 1571 inner packagings are limited to 0.5Kg.

PPR 11 For UN 2852 Dipicryl sulphide, wetted, inner packagings of glass are limited to 0.25Kg.

PPR 12 For UN 1420, 1422, 1423, 1428, and 2257 plastics inner packagings and plastics single packaging are not permitted.

PPR 13 For UN 1389, 1407, 1415, 1420, 1422, 1423, 1428 and 2257, if the substance is a dispersion in organic liquid, the organic liquid must have a flashpoint above 50°C.

4X2	402	PACKING INSTRUCTION					4X2
The general requirements of Part 4 Chapter 1 must be met.							
COMBINATION PACKAGINGS							
The following inner packagings are permitted for the indicated mass of solid for passenger and cargo aircraft							
	Passenger Aircraft			Cargo Aircraft			
	PGI	PGII	PGIII	PGI	PGII	PGIII	
	Glass or earthenware (IP.1)	Forbidden	1kg	5kg	1kg	2.5kg	5kg
	Plastics (IP.2)	Forbidden	2.5k g	10kg	2.5kg	5kg	10kg
	Metal (IP.3)	Forbidden	2.5kg	10kg	2.5kg	5kg	10kg
	Plastics bags (IP.5)	Forbidden	1kg	5kg	2.5kg	2.5kg	5kg

The following outer packagings are permitted for all inner packagings permitted above

Boxes	Drums	Jerricans
aluminium (4B) fibreboard (4G) plywood (4D) reconstituted wood (4F) expanded plastics (4H1) solid plastics (4H2) steel (4A) wooden (4C1, 4C2)	aluminium (IB2) fibre (1G) plywood (1D) steel (1A2) plastics (1H2) other metal (1N2)	aluminium (3B2) steel (3A2) plastics (3H2)

SINGLE PACKAGINGS

The following packagings are permitted

Passenger Aircraft			Cargo Aircraft		
<i>PGI</i>	<i>PGII</i>	<i>PGIII</i>	<i>PGI</i>	<i>PGII</i>	<i>PGIII</i>
Boxes: 4A, 4B, 4C1, 4C2, 4D, 4F, 4G and 4H2	Boxes: 4A, 4B, 4C1, 4C2, 4D, 4F, 4G and 4H2	Boxes: 4A, 4B, 4C1, 4C2, 4D, 4F, 4G and 4H2	Boxes: 4A, 4B, 4C1, 4C2, 4D, 4F, 4G and 4H2	Boxes: 4A, 4B, 4C1, 4C2, 4D, 4F, 4G and 4H2	Boxes: 4A, 4B, 4C1, 4C2, 4D, 4F, 4G and 4H2
Drums: 1A1, 1A2 1B1, 1B2, 1D, 1G, 1H1, 1H2, 1N1 and 1N2	Drums: 1A1, 1A2 1B1, 1B2, 1D, 1G, 1H1, 1H2, 1N1 and 1N2	Drums: 1A1, 1A2 1B1, 1B2, 1D, 1G, 1H1, 1H2, 1N1 and 1N2	Drums: 1A1, 1A2 1B1, 1B2, 1D, 1G, 1H1, 1H2, 1N1 and 1N2	Drums: 1A1, 1A2 1B1, 1B2, 1D, 1G, 1H1, 1H2, 1N1 and 1N2	Drums: 1A1, 1A2 1B1, 1B2, 1D, 1G, 1H1, 1H2, 1N1 and 1N2
Jerricans: 3A1 3A2, 3B1, 3B2 3H1 and 3H2	Jerricans: 3A1 3A2, 3B1, 3B2 3H1 and 3H2	Jerricans: 3A1 3A2, 3B1,3B2 3H1 and 3H2	Jerricans: 3A1 3A2, 3B1,3B2 3H1 and 3H2	Jerricans: 3A1 3A2, 3B1, 3B2 3H1 and 3H2	Jerricans: 3A1 3A2, 3B1, 3B2 3H1 and 3H2
Composites (plastic): 6HA1, 6HB1 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.	Composites (plastic): 6HA1, 6HB1 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.	Composites (plastic): 6HA1, 6HB1 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.	Composites (plastic): 6HA1, 6HB1 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.	Composites (plastic): 6HA1,6HB1 6HG1, 6HH1,6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.	Composites (plastic): 6HA1, 6HB1 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.

Additional Requirements (AR):

- Boxes (4A, 4C1, 4D, 4G and 4H2) and fibre (1G), plastics (1H2) and plywood (1D) drums must be fitted with a water resistant inner bag, plastics film lining or water resistant coating.
- Glass, plastic, or earthenware inner packagings must be packed with cushioning material in tightly closed metal or rigid plastic receptacles before packing into outer packagings.

Particular Packing requirements;

PPR 14 For UN 1369 1382, 1384, 1385, 1409,1437, 1871, 2004 and 3182 plastics bag (IP.5) are not permitted

PPR 15 For UN 2318, 3205 and 3206. Inner packaging for passenger aircraft are limited to 1Kg and 2.5Kg for cargo aircraft. Plastics bags (IP.5) are not permitted.

PPR 16 For UN 1378 only glass or earthenware or metal inner packagings are permitted and shall not exceed 1Kg

PPR 17 For UN 1418, 1436, 2806, 2813, 3131, 3132, 3134 and 3135 in Packing Group I inner packagings shall have threaded closures.

PPR 18 For UN1350 there is no limit to package sizes.

PPR 19 For UN 1326, 1352, 1358, 1437 and 1871 in packing group II bags are not allowed

The general requirements of Part 4 Chapter 1 must be met.

COMBINATION PACKAGINGS

The following inner packagings are permitted for the indicated mass of solid for passenger and cargo aircraft.

	<i>Passenger Aircraft</i>	<i>Cargo Aircraft</i>
Glass or earthenware (IP.1)	1 kg	1 kg
Plastics (IP.2)	1 kg	1 kg
Metal (IP.3)	1 kg	1 kg
Plastics bags (IP.5)	0.1 kg	2.5 kg

The following outer packagings are permitted for all inner packagings permitted above

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
aluminium (4B)	Aluminium (IB2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	steel (3A2)
plywood (4D)	plywood (1D)	plastics (3H2)
reconstituted wood (4F)	steel (1A2)	
expanded plastics (4H1)	plastics (1H2)	
solid plastics (4H2)	other metal (1N2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS

The following packagings are permitted

<i>Passenger Aircraft</i>	<i>Cargo Aircraft</i>
Forbidden	Boxes: 4A, 4B, 4C1, 4C2, 4D, 4F, 4G and 4H2
	Drums: 1A1, 1A2 1B1, 1B2, 1D, 1G, 1H1, 1H2, 1N1 and 1N2
	Jerricans: 3A1, 3A2, 3B1, 3B2, 3H1 and 3H2
	Composites (plastic): 6HA1, 6HB1 6HG1, 6HH1,6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.

The general requirements of Part 4 Chapter 1 must be met.

COMBINATION PACKAGINGS

The following inner packagings are permitted for the indicated mass of solid for passenger and cargo aircraft.

	<i>Passenger Aircraft</i>	<i>Cargo Aircraft</i>
Glass or earthenware (IP.1)	1 kg	2.5 kg
Plastics (IP.2)	1 kg	2.5 kg
Metal (IP.3)	5 kg	10 kg

The following outer packagings are permitted for all inner packagings permitted above

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	steel (3A2)
plywood (4D)	plywood (1D)	plastics (3H2)
reconstituted wood (4F)	steel (1A2)	
expanded plastics (4H1)	plastics (1H2)	
solid plastics (4H2)	other metal (1N2)	
steel (4A)		
wooden (4C1, 4C2)		

SINGLE PACKAGINGS

The following packagings are permitted

<i>Passenger Aircraft</i>	<i>Cargo Aircraft</i>
Forbidden	Boxes: 4A, 4B, 4C1, 4C2, 4D, 4F, 4G and 4H2
	Drums: 1A1, 1A2 1B1, 1B2, 1H1, 1H2, 1N1 and 1N2
	Jerricans: 3A1, 3A2, 3B1, 3B2, 3H1 and 3H2
	Composites (plastic): 6HA1, 6HB1 6HG1, 6HH1,6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HC2, and 6HH2.

Particular Packing Requirements

PPR20 For UN 3241 metal inner packagings metal outer packagings and metal single packagings are not permitted. The net mass in glass earthenware inner packagings must not exceed 0.5Kg, Plastics bags (IP.5) are permitted in addition to the above inner packagings providing the net mass contained in them does not exceed 1Kg.

PPR 21 For UN 1338 the net mass in glass or earthenware inner packagings must not exceed 0.5kg for passenger aircraft and 1kg for cargo aircraft

The general requirements of Part 4 Chapter 1 must be met

COMBINATION PACKAGINGS

The following inner packagings are permitted for the indicated volume of liquid for passenger and cargo aircraft. When a packaging is not permitted the word “forbidden” is indicated.

	<i>Passenger Aircraft</i>			<i>Cargo Aircraft</i>		
	<i>PGI</i>	<i>PGII</i>	<i>PGIII</i>	<i>PGI</i>	<i>PGII</i>	<i>PGIII</i>
Glass or earthenware (IP.1)	Forbidden	1L	2.5L	1L	2.5L	5L
Plastics (IP.2)	Forbidden	1L	2.5L	Forbidden	2.5L	5L
Metal (IP.3)	Forbidden	1L	5L	1L	5L	10L

The following outer packagings are permitted for all inner packagings permitted above

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
aluminium (4B) fibreboard (4G) plywood (4D) reconstituted wood (4F) expanded plastics (4H1) solid plastics (4H2) steel (4A) wooden (4C1, 4C2)	aluminium (IB2) fibre (1G) plywood (1D) steel (1A2) plastics (1H2) other metal (1N2)	aluminium (3B2) steel (3A2) plastics (3H2)

SINGLE PACKAGINGS: The following packagings are permitted

<i>Passenger Aircraft</i>			<i>Cargo Aircraft</i>		
<i>PGI</i>	<i>PGII</i>	<i>PGIII</i>	<i>PGI</i>	<i>PGII</i>	<i>PGIII</i>
FORBIDDEN	FORBIDDEN	FORBIDDEN	FORBIDDEN	Drums: LA1, 1A2, 1B1, 1B2, 1H1, 1H2, 1N1 and 1N2	Drums: LA1, 1A2, 1B1, 1B2, 1H1, 1H2, 1N1 and 1N2
				Jerricans: 3A1 3A2, 3B1, 3B2 3H1 and 3H2	Jerricans: 3A1 3A2, 3B1, 3B2 3H1 and 3H2
				Composites (plastic): 6HA1,6HB1 6HG1, 6HH1,6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.	Composites (plastic): 6HA1, 6HB1 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.

Additional Requirements:

Glass, plastic, or earthenware inner packagings must be packed with cushioning material in tightly closed metal or rigid plastic receptacles before packing into outer packagings.

Particular Packing requirements

PPR 22 For UN 3207, 3208 and 3209 plastics inner packagings and plastics single packagings are not permitted.

PPR 23 For UN1411, 1928 and 3207, plastic single where metal packagings are used they must be either metal pressure cylinders or metal pressure vessels

The general requirements of Part 4 Chapter 1 must be met.

COMBINATION PACKAGINGS

INNER

	<i>Passenger Aircraft</i>	<i>Cargo Aircraft</i>
Glass or earthenware (IP.1)	1 kg	2.5 kg
Plastics (IP.2)	1 kg	2.5 kg
Metal (IP.3)	1 kg	5 kg

OUTER

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
aluminium (4B) fibreboard (4G) plywood (4D) reconstituted wood (4F) expanded plastics (4H1) solid plastics (4H2) steel (4A) wooden (4C1, 4C2)	aluminium (1B2) fibre (1G) plywood (1D) steel (1A2) plastics (1H2) other metal (1N2)	aluminium (3B2) steel (3A2) plastics (3H2)

SINGLE PACKAGINGS

The following packagings are permitted

<i>Passenger Aircraft</i>	<i>Cargo Aircraft</i>
Forbidden	Boxes: 4A, 4B, 4C1, 4C2, 4D, 4F, 4G and 4H2
	Drums: 1A1, 1A2 1B1, 1B2, 1D, 1G, 1H1, 1H2, 1N1 and 1N2
	Jerricans: 3A1, 3A2, 3B1, 3B2, 3H1 and 3H2
	Composites (plastic): 6HA1, 6HB1 6HG1, 6HH1,6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.

Additional Requirements

Glass, earthenware or plastic, or inner packagings must be packed with cushioning material in tightly closed metal or rigid plastic receptacles before packing into outer packagings

The general requirements of Part 4 Chapter 1 must be met.

COMBINATION PACKAGINGS

INNER

	<i>Passenger Aircraft</i>	<i>Cargo Aircraft</i>
Glass or earthenware (IP.1)	0.5 kg	1 kg
Plastics (IP.2)	0.5 kg	1 kg
Metal (IP.3)	0.5 kg	1 kg

OUTER

Boxes

aluminium (4B)
fibreboard (4G)
plywood (4D)
reconstituted wood (4F)
expanded plastics (4H1)
solid plastics (4H2)
steel (4A)
wooden (4C1, 4C2)

Drums

aluminium (1B2)
fibre (1G)
plywood (1D)
steel (1A2)
plastics (1H2)
other metal (1N2)

Jerricans

aluminium (3B2)
steel (3A2)
plastics (3H2)

SINGLE PACKAGINGS: The following packagings are permitted

<i>Passenger Aircraft</i>	<i>Cargo Aircraft</i>
Forbidden	Boxes: 4A, 4B, 4C1, 4C2, 4D, 4F, 4G and 4H2
	Drums: 1A1, 1A2 1B1, 1B2, 1D, 1G, 1H1, 1H2, 1N1 and 1N2
	Jerricans: 3A1, 3A2, 3B1, 3B2, 3H1 and 3H2
	Composites (plastic): 6HA1, 6HB1 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.

4X17	412	PACKING INSTRUCTION	4X17
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The general requirements of Part 4 Chapter 1 must be met.

COMBINATION PACKAGINGS

INNER

	Passenger Aircraft	Cargo Aircraft
UN 3223, UN 3225	.5 L	1 L
UN 3227, UN 3229	1 L	2.5 L
UN 3224, UN 3226	0.5 kg	1 kg
UN 3228, UN 3230	1 kg	2.5 kg

OUTER

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
aluminium (4B)	aluminium (IB2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	steel (3A2)
plywood (4D)	plywood (1D)	plastics (3H2)
reconstituted wood (4F)	steel (1A2)	
expanded plastics (4H1)	plastics (1H2)	
solid plastics (4H2)	other metal (1N2)	
steel (4A)		
wooden (4C1, 4C2)		

Y4X1	Y401	PACKING INSTRUCTION	Y4X1
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The requirements of Part 3 Chapter 4 must be met.

COMBINATION PACKAGINGS

INNER

	PGI	PGII	PGIII
Glass or earthenware (IP.1)	Forbidden	0.5 kg	1 kg
Plastics (IP.2)	Forbidden	0.5 kg	1 kg
Metal (IP.3)	Forbidden	0.5 kg	1 kg
Plastics bags (IP.5)	Forbidden	0.5 kg	1 kg

The following outer packagings are permitted for all inner packagings permitted above

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
aluminium	aluminium	aluminium
fibreboard	fibre	steel
plywood	plywood	plastics
reconstituted wood	steel	
expanded plastics	plastics	
solid plastics	other metal	
steel		
wooden		

SINGLE PACKAGINGS NOT PERMITTED

Particular Packing requirements:

PPR 13- For UN 3208 if the substance is a dispersion in organic liquid, the organic liquid must have a flashpoint above 50° C

PPR 24 For UN 1409 and 1437 plastics bag (IP.5) are not permitted

PPR 25 For UN 1326, 1352, 1358, 1437 and 1871 in plastics bags in packing group II (IP5) are not permitted

PPR 26 For UN 3208 plastics packaging are not permitted.

PPR 27 For UN 1390 and 1402 glass, earthenware or plastic inner packagings must be packed with cushioning material in tightly closed metal or rigid plastic receptacles before packing into outer packagings

Class 5

The general requirements of Part 4 Chapter 1 must be met.

COMBINATION PACKAGINGS

The following inner packagings are permitted for the indicated mass of solid for passenger and cargo aircraft.

	<i>Passenger Aircraft</i>	<i>Cargo Aircraft</i>
<i>UN 3103, UN 3105</i>	0.5 L	1 L
<i>UN 3107, UN 3109</i>	1 L	2.5 L
<i>UN 3104, UN 3106</i>	0.5 kg	1 kg
<i>UN 3108, UN 3110</i>	1 kg	2.5 kg

The following outer packagings are permitted for all inner packagings permitted above

Boxes

aluminium (4B)
fibreboard (4G)
plywood (4D)
reconstituted wood (4F)
expanded plastics (4H1)
solid plastics (4H2)
steel (4A)
wooden (4C1, 4C2)

Drums

aluminium (1B2)
fibre (1G)
plywood (1D)
steel (1A2)
plastics (1H2)
other metal (1N2)

Jerricans

aluminium (3B2)
steel (3A2)
plastics (3H2)

Additional Requirements:

1. Packaging should comply with the provisions for medium danger (Packing Group II).
2. Cushioning materials shall not be readily combustible.

Particular Packing Requirements

PPR 28 For UN3103 and 3104 type C Organic peroxides presenting an explosive subsidiary risk must comply with the provisions of Part: 3.2.2 and 3.2.3.

5X2	501	PACKING INSTRUCTION	5X2
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The general requirements of Part 4 Chapter 1 must be met.

COMBINATION PACKAGINGS

INNER

	<i>Passenger Aircraft</i>			<i>Cargo Aircraft</i>		
	<i>PGI</i>	<i>PGII</i>	<i>PGIII</i>	<i>PGI</i>	<i>PGII</i>	<i>PGIII</i>
Glass or earthenware (IP.1)	1 kg	1 kg	2.5 kg	2.5 kg	2.5 kg	5 kg
Plastics (IP.2)	1 kg	1 kg	2.5 kg	2.5 kg	2.5 kg	5 kg
Metal (IP.3)	1 kg	1 kg	2.5 kg	5 kg	5 kg	5 kg
Plastics bags (IP.5)	1 kg	1 kg	2.5 kg	2.5 kg	2.5 kg	5 kg
Fibre (IP.6)	1 kg	1 kg	2.5 kg	2.5 kg	2.5 kg	5 kg

OUTER

Boxes

aluminium (4B)
fibreboard (4G)
plywood (4D)
reconstituted wood (4F)
expanded plastics (4H1)
solid plastics (4H2)
steel (4A)
wooden (4C1, 4C2)

Drums

Aluminium (IB2)
fibre (1G)
plywood (1D)
steel (1A2)
plastics (1H2)
other metal (1N2)

Jerricans

aluminium (3B2)
steel (3A2)
plastics (3H2)

SINGLE PACKAGINGS: The following packagings are permitted

<i>Passenger Aircraft</i>			<i>Cargo Aircraft</i>			
<i>PGI</i>	<i>PGII</i>	<i>PGIII</i>	<i>PGI</i>	<i>PGII</i>	<i>PGIII</i>	
Forbidden	Forbidden	Forbidden	Boxes: 4A, 4B, 4C1, 4C2, 4D, 4F, 4G and 4H2	Boxes: 4A, 4B, 4C1, 4C2, 4D, 4F, 4G and 4H2	Boxes: 4A, 4B, 4C1, 4C2, 4D, 4F, 4G and 4H2	
			Drums: 1A1, 1A2 1B1, 1B2, 1D, 1G, 1H1, 1H2, 1N1 and 1N2	Drums: 1A1, 1A2 1B1, 1B2, 1D, 1G, 1H1, 1H2, 1N1 and 1N2	Drums: 1A1, 1A2 1B1, 1B2, 1D, 1G, 1H1, 1H2, 1N1 and 1N2	
			Jerricans: 3A1 3A2, 3B1,3B2 3H1 and 3H2	Jerricans: 3A1 3A2, 3B1, 3B2 3H1 and 3H2	Jerricans: 3A1 3A2, 3B1, 3B2 3H1 and 3H2	
			Composites (plastic): 6HA1, 6HB1,6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.	Composites (plastic): 6HA1,6HB1 6HG1, 6HH1,6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.	Composites (plastic): 6HA1, 6HB1 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.	

Additional Requirements:

Single packagings which are of boxes (4C1, 4C2, 4D, 4F, 4G and 4H2) and drums (1D and 1G) must be fitted with a water resistant inner bag, plastics film lining or water resistant coating.

Particular Packing requirements

- PPR 29** For UN1458, 1459 and 1483 PGIII fibre inner packagings (IP.6) are not permitted
- PPR 30** For UN 1442, 1445, 1449, 1452, 1453, 1458, 1459, 1461, 1471, 1472, 1485, 1506, 1513, 1748 and 2741 plastics bags (IP5) must be packed in tightly closed metal or rigid plastics receptacles before packing into outer packagings

5X3	502	PACKING INSTRUCTION	5X3
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The general requirements of Part 4 Chapter 1 must be met.

COMBINATION PACKAGINGS

INNER

	Passenger Aircraft			Cargo Aircraft		
	PGI	PGII	PGIII	PGI	PGII	PGIII
Glass or earthenware (IP.1)	Forbidden	1 L	2.5 L	2.5 L	5 L	5 L
Plastics (IP.2)	Forbidden	1 L	2.5 L	2.5 L	5 L	5 L
Metal (IP.3)	Forbidden	1 L	2.5 L	2.5 L	5 L	5 L

OUTER

- | | | |
|--|---|--|
| <p><i>Boxes</i></p> <ul style="list-style-type: none"> aluminium (4B) fibreboard (4G) plywood (4D) reconstituted wood (4F) expanded plastics (4H1) solid plastics (4H2) steel (4A) wooden (4C1, 4C2) | <p><i>Drums</i></p> <ul style="list-style-type: none"> Aluminium (IB2) fibre (1G) plywood (1D) steel (1A2) plastics (1H2) other metal (1N2) | <p><i>Jerricans</i></p> <ul style="list-style-type: none"> aluminium (3B2) steel (3A2) plastics (3H2) |
|--|---|--|

SINGLE PACKAGINGS: The following packagings are permitted

Passenger Aircraft			Cargo Aircraft		
PGI	PGII	PGIII	PGI	PGII	PGIII
Forbidden	Forbidden	Forbidden	Forbidden	Forbidden	Drums: 1A1, 1B1, 1H1 and 1N1
					Jerricans: 3A1 3B1 and 3H1
					Composites (plastic): 6HA1, 6HB1 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.

Particular Packing requirements

- PPR 31** For UN2014, Hydrogen peroxide aqueous solution, the minimum ullage must be 10%.

Y5XX
Y5XX

Y501

PACKING INSTRUCTION 5X2

The general packing requirements of Part 4, Chapter 1 must be met.

COMBINATION PACKAGINGS:

INNER

	<i>Passenger Aircraft and Cargo Aircraft</i>		
	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>
Glass or earthenware (IP.1)	Forbidden	.5 KG	1 kg
Plastics (IP.2)	Forbidden	.5 kg	1 kg
Metal (IP.3)	Forbidden	.5 kg	1 kg
Plastics Bag (IP.5)	Forbidden	.5 kg	1 kg
Fibre (IP.6)	Forbidden	.5 kg	1 kg

OUTER

Boxes

aluminium
expanded plastics
fibreboard
plywood
reconstituted wood
solid plastics
steel
wooden

Drums

Aluminium
fibre
plastics
plywood
steel
other metal

Jerricans

aluminium
plastics
steel

Particular Packing requirements

PPR 30 For UN 1442, 1445, 1449, 1452, 1453, 1458, 1459, 1461, 1471, 1472, 1485, 1506, 1513, 1748 and 2741 plastics bags (IP5) must be packed in tightly closed metal or rigid plastics receptacles before packing into outer packagings

PPR 29 For UN1458, 1459 and 1483 PGIII fibre inner packagings (IP.6) are not permitted.

Y5XY

Y502

PACKING INSTRUCTION

Y5XY

The general packing requirements of Part 4, Chapter 1 must be met.

COMBINATION PACKAGINGS:

INNER

	Passenger Aircraft and cargo aircraft			Passenger Aircraft and Cargo Aircraft	
	PG I	PG II	PG II	PG III	PG III
		Solids	Liquids	Solids	Liquids
	Forbidden	0.X	0.X	0.X	0.X
Glass or earthenware (IP.1)	Forbidden	0.X	0.X	0.X	0.X
Plastics (IP.2)	Forbidden	0.X	0.X	0.X	0.X
Metal (IP.3)	Forbidden	0.X	0.X	0.X	0.X

OUTER

Boxes	Drums	Jerricans
aluminium expanded plastics fibreboard plywood reconstituted wood solid plastics steel wooden	aluminium fibre plastics plywood steel other metal	Aluminium Plastics Steel

Particular Packing requirements

PPR 31 For UN2014, Hydrogen peroxide aqueous solution, the minimum ullage shall be 10%

523

523

PACKING INSTRUCTION 523

523

The general packing requirements of Part 4, Chapter 1, except for 1.1.12, must be met.

Oxygen generator, chemical containing oxidizing substances, including when fitted in associated equipment, e.g. passenger ice units (PSUs), portable breathing equipment (PBE) etc., must meet all the following conditions:

- 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;
- when a generator is equipped with an actuating device, it must have at least two positive means of preventing unintentional actuation. For PBE, which are in a vacuum-sealed bag as part of their containment system, the vacuum-sealed bag may be considered the second positive means of preventing unintentional actuation;
- the generator(s) must be transported in a package which will meet the following requirements when one generator in the package is actuated:
 - other generators in the package will not be actuated;
 - packaging material will not ignite; and
 - the outside surface temperature of the completed package will not exceed 100°C;

(Note. - To enable test c) 1), 2) and 3) to be conducted on PBE, it is acceptable to break the vacuum-sealed bag to actuate the generator before placing it in the package.)

d) generator(s) must be tightly packed in steel drums (1A2), aluminium drums (1B2), plywood drums (1D), fibre drums (1G), plastic drums (1H2), steel jerricans (3A2), plastic jerricans (3H2), metal boxes (4A, 4B), wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G) or solid plastic boxes (4H2).

Class 6

600		600	PACKING INSTRUCTION 600	600
Ammunition, tear-producing or toxic may be carried provided it is without ignition elements, bursting charges, detonating fuses or other explosive components and when packed according to the general packing requirements of Part 4, Chapter 1 and in steel (4A), aluminium (4B) or wooden (4C1, 4C2) boxes, steel drums (1A2) or aluminium drums (1B2) or aluminium jerricans (3B2).				

601		601	PACKING INSTRUCTION 601	601
Tear gas grenades or candles may be carried when packed according to the general packing requirements of Part 4, Chapter 1 and in steel (4A), aluminium (4B) or metal strapped wooden (4C1, 4C2) boxes, steel drums (1A2), aluminium drums (1B2) or aluminium jerricans (3B2). Unless functioning elements are so packed that they cannot accidentally function, elements must not be assembled in grenades or devices, but must be packed in a separate compartment or in a separate wooden (4C1, 4C2) box and so cushioned that they cannot come into contact with each other or with the walls of the packaging during transport. Not more than 24 grenades and 24 functioning devices per package are permitted.				

602		620	PACKING INSTRUCTION 602	602
The packing instruction working group did not address this because it will be updated according to the 13 th revised ed. of the UN Model Regulations.				

6X1	602	PACKING INSTRUCTION 6X1	6X1
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The general packing requirements of Part 4, Chapter 1 must be met.

COMBINATION PACKAGINGS:

INNER:

The following inner packagings are permitted for the indicated quantities of liquid for passenger or cargo aircraft unless otherwise indicated.

	<i>Passenger Aircraft</i>			<i>Cargo Aircraft</i>		
	PG I	PG II	PG III	PG I	PG II	PG III
Glass or earthenware (IP.1)	0.5 L	1 L	2.5 L	1 L	2.5 L	5 L
Plastic (IP.2)	0.5 L	1 L	2.5 L	1 L	2.5 L	5 L
Metal (IP.3, IP.3A)	1 L	2.5 L	5 L	2.5 L	5 L	10 L

OUTER:

Boxes

aluminium (4B)
fibreboard (4G)
plywood (4D)
reconstituted wood (4F)
expanded plastic (4H1)
solid plastic (4H2)
steel (4A)
wooden (4C1, 4C2)

Drums

aluminium (1B2)
fibre (1G)
plywood (1D)
steel (1A2)
plastic (1H2)
other metal (1N2)

Jerricans

aluminium (3B2)
steel (3A2)
plastic (3H2)

SINGLE PACKAGINGS:

<i>Passenger Aircraft</i>			<i>Cargo Aircraft</i>		
PG I	PG II	PG III	PG I	PG II	PG III
F	F	Drums: 1A1, 1B1, 1H1, and 1N1	Drums: 1A1, 1B1, and 1N1	Drums: 1A1, 1B1, 1H1, and 1N1	Drums: 1A1, 1B1, 1H1, and 1N1
O	O	Jerricans: 3A1, 3B1, and 3H1	Jerricans: 3A1 and 3B1	Jerricans: 3A1, 3B1, and 3H1	Jerricans: 3A1, 3B1 and 3H1
R	R	Composites (plastic): 6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2	Composites (plastic): 6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.	Composites (plastic): 6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.	Composites (plastic): 6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2
B	B	Cylinders: As permitted in Packing Instruction 200	Cylinders: As permitted in Packing Instruction 200	Cylinders: As permitted in Packing Instruction 200	Cylinders: As permitted in Packing Instruction 200
I	I				
D	D				
D	D				
E	E				
N	N				

Particular Packaging Requirements:

PPR 32 For UN 1737, 1738, 1750, 1888, 2574 and 3071, glass or earthenware inner packagings must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packaging in sufficient quantity to absorb the entire liquid content.

PPR 33 For UN 2661, 2668, 2669 and 3071, plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

PPR 34 For UN1593, 1702, 1710, 1846, 1888, 1897, and 2831, pure aluminium or aluminium alloys are permitted only for halogenated hydrocarbons that will not react with aluminium.

PPR 35 For UN 1638, 1737, 1738, 1750, 1916, 1935 and 2024, aluminum inner or single packagings are not permitted.

PPR 36 For UN 2574, Tricresyl phosphate, plastic inner or single packagings are not permitted.

PPR 37 For UN 1888, Chloroform, the quantities permitted in inner packagings must not exceed those for PGII substances.

6X2	603	PACKING INSTRUCTION 6X2	6X2
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The general packing requirements of Part 4, Chapter 1 must be met.
COMBINATION PACKAGINGS:

INNER:

Cargo Aircraft Only				
UN No.	Glass or Earthenware (IP1)	Plastic (IP2)	Metal (IP3)	Aluminium (IP.3A)
1545	1 L	Forbidden	2.5 L	2.5 L
1649	0.5 L	Forbidden	1 L	Forbidden
1694	Forbidden	Forbidden	0.5 L	Forbidden
1697	1 L	Forbidden	2.5 L	Forbidden
1701	1 L	1 L	2.5 L	Forbidden

OUTER:

Boxes

aluminium (4B)
fibreboard (4G)
plywood (4D)
reconstituted wood (4F)
expanded plastic (4H1)
solid plastic (4H2)
steel (4A)
wooden (4C1, 4C2)

Drums

Aluminium (1B2)
fibre (1G)
plywood (1D)
steel (1A2)
plastic (1H2)
other metal (1N2)

Jerricans

aluminium (3B2)
steel (3A2)
plastic (3H2)

SINGLE PACKAGINGS:

Cargo Aircraft Only		
PG I	PG II	PG III
Drums: 1A1, 1H1, and 1N1	Drums: 1A1, 1B1, 1H1, and 1N1	Drums: 1A1, 1B1, 1H1, and 1N1
Jerricans: 3A1, 3H1	Jerricans: 3A1, 3B1, and 3H1	Jerricans: 3A1, 3B1, and 3H1
Composites (plastic): 6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.	Composites (plastic): 6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2.	Composites (plastic): 6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2
Cylinders: As permitted in Packing Instruction 200	Cylinders: As permitted in Packing Instruction 200	Cylinders: As permitted in Packing Instruction 200

Particular Packaging Requirements

PPR 38 For UN 1545, 1649, 1697 and 1701 glass or earthenware inner packagings must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packaging.

PPR 33 For UN 1701, Xylol bromide, plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

PPR 39 For UN 1545, 1649 and 1697 plastic single packagings are not permitted.

PPR 40 For UN 1649, 1697 and 1701 aluminium single packagings are not permitted.

6X3	604	PACKING INSTRUCTION 6X3	6X3
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The general packing requirements of Part 4, Chapter 1 must be met.

COMBINATION PACKAGINGS:

INNER:

	Passenger Aircraft			Cargo Aircraft		
	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>
Glass or earthenware (IP.1)	0.5 kg	1 kg	5 kg	1 kg	2.5 kg	5 kg
Plastic (IP.2)	1 kg	2.5 kg	10 kg	2.5 kg	5 kg	10 kg
Metal (IP.3, IP.3A)	1 kg	2.5 kg	10 kg	2.5 kg	5 kg	10 kg
Paper (IP.4)	Forbidden	1 kg	5 kg	Forbidden	2.5 kg	5 kg
Plastic (IP.5)	0.5 kg	1 kg	5 kg	1 kg	2.5 kg	5 kg
Fibre (IP.6)	0.5 kg	1 kg	5 kg	1 kg	2.5 kg	5 kg
Paper, plastic/aluminium (IP.10)	0.5 kg	1 kg	5 kg	1 kg	2.5 kg	5 kg

OUTER:

Boxes

aluminium (4B)
fibreboard (4G)
plywood (4D)
reconstituted wood (4F)
expanded plastic (4H1)
solid plastic (4H2)
steel (4A)
wooden (4C1, 4C2)

Drums

aluminium (1B2)
fibre (1G)
plywood (1D)
steel (1A2)
plastic (1H2)
other metal (1N2)

Jerricans

aluminium (3B2)
steel (3A2)
plastic (3H2)

SINGLE PACKAGINGS:

	Passenger Aircraft			Cargo Aircraft		
	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>
FORBIDDEN	FORBIDDEN		Bags: 5M2, 5H2, 5H3, and 5H4	-	-	Bags: 5M2, 5H2, 5H3, and 5H4
			Drums: 1A1, 1A2, 1B1, 1B2, 1D (with inner plastic liner), 1G (with inner plastic liner), 1H1, 1H2, 1N1 and 1N2	Drums: 1A1, 1A2, 1B1, 1B2, 1D (with inner plastic liner), 1G (with inner plastic liner), 1H1, 1H2, 1N1 and 1N2	Drums: 1A1, 1A2, 1B1, 1B2, 1D (with inner plastic liner), 1G (with inner plastic liner), 1H1, 1H2, 1N1 and 1N2	Drums: 1A1, 1A2, 1B1, 1B2, 1D (with inner plastic liner), 1G (with inner plastic liner), 1H1, 1H2, 1N1 and 1N2
			Jerricans: 3A1, 3A2, 3B1, 3B2, 3H1, and 3H2	Jerricans: 3A1, 3A2, 3B1, 3B2, 3H1, and 3H2	Jerricans: 3A1, 3A2, 3B1, 3B2, 3H1, and 3H2	Jerricans: 3A1, 3A2, 3B1, 3B2, 3H1, and 3H2
			Composites (plastic): 6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2	Composites (plastic): 6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2	Composites (plastic): 6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2	Composites (plastic): 6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6H2, 6HB2, 6HC, 6HD2, 6HG2, and 6HH2

Particular Packaging Requirements:

PPR 41 For UN 1699, 2471, 3048 and 3146 packing group I and II, glass or earthenware inner packagings must be packed with cushioning material in tightly closed metal or rigid plastic receptacles before packing in outer packaging.

PPR 42 For UN 1699 and 3249 packing group III, the quantities permitted in inner packagings must not exceed those for packing group II substances. Bags are not permitted as a single packaging.

PPR 43 For UN 1751, Chloroacetic acid, solid only glass or earthenware, plastic or metal (no aluminium) inner packagings are permitted. Aluminium, fibre, and plywood single packagings are not permitted.

PPR 44 For UN 2730, Nitroanisoles only glass or earthenware, plastic or metal inner packagings are permitted. Bags are not permitted as a single packaging.

PPR 45 For UN 2471, only glass or earthenware and plastic inner packagings are permitted. The net mass in inner packagings must be exceed 0.5Kg. Single packagings are not permitted.

PPR 46 For UN 3146 packing group I and II, only glass or earthenware, plastic or metal (no aluminium) inner packagings are permitted. Single packagings are not permitted for PG I. Aluminium, plywood, fibre and plastic single packagings are not permitted for packing group II.

PPR 47 For UN1697, only glass or earthenware and metal (not aluminium) inner packagings are permitted. Aluminium, plywood, fibre and plastic single packagings are not permitted.

PPR 38 For UN 3048, only glass or earthenware, plastic and metal inner packagings are permitted.

Y6X1	Y602	PACKING INSTRUCTION Y6X1	Y6X1
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The general packing requirements of Part 4, Chapter 1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

	<i>Passenger Or Cargo Aircraft</i>		
	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>
Glass or earthenware (IP.1)	Forbidden	0.1 L	0.5 L
Plastic (IP.2)	Forbidden	0.1 L	0.5 L
Metal (IP.3, IP.3A)	Forbidden	0.1 L	0.5 L

OUTER:

Boxes

aluminium
fibreboard
plywood
reconstituted wood
expanded plastic
solid plastic
steel
wooden

Drums

Aluminium
fibre
plywood
steel
plastic
other metal

Jerrican

aluminium
plastic
steel

Particular Packaging Requirements:

PPR 48 For UN 1737, 1738, 1750, 2022, 2076, 2267, 2574, 2742, 2743, 2744, 2745, 2746, 2748, 2788, 2927, 3071, 3073, 3277 and 3289, glass or earthenware inner packagings must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

PPR 33 For UN 3071, Mercaptans, liquid, toxic, flammable, n.o.s. plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

PPR 34 For UN 1593, 1702, 1710, 1846, 1888, 1897, and 2831, pure aluminium or aluminium alloys are permitted only for halogenated hydrocarbons that will not react with aluminium.

PPR 49 For UN 2574, plastic inner packagings are not permitted.

PPR 50 For UN 1638, 1737, 1738, 1750, 1916, 1935, 2024, and 2788, aluminium inner packagings are not permitted.

PPR 51 For UN 1851 and 1888, the net quantity in inner packaging quantity must not exceed 0.1 L.

Y6X2	Y603	PACKING INSTRUCTION Y6X2	Y6X2
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The general packing requirements of Part 4, Chapter 1 must be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

	PG I	PG II	PG III
Glass or earthenware (IP.1)	Forbidden	0.5 kg	1 kg
Plastic (IP.2)	Forbidden	0.5 kg	1 kg
Metal (IP.3, IP.3A)	Forbidden	0.5 kg	1 kg
Paper (IP.4)	Forbidden	0.5 kg	1 kg
Plastic bag (IP.5)	Forbidden	0.5 kg	1 kg
Fibre (IP.6)	Forbidden	0.5 kg	1 kg
Paper, plastic/aluminium (IP.10)	Forbidden	0.5 kg	1 kg

OUTER:

Boxes

Aluminium
fibreboard
plywood
reconstituted wood
expanded plastic
solid plastic
steel
wooden

Drums

Aluminium
fibre
plywood
steel
plastic
other metal

Jerrican

aluminium
plastic
steel

Particular Packaging Requirements:

PPR 41 For UN 3146, glass or earthenware inner packagings must be packed with cushioning material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

PPR 52 For UN 1751 and 3146, only glass or earthenware, plastic, and metal (not aluminium) inner packagings are permitted.

PPR 53 For UN 2730, only glass or earthenware, plastic, metal (including aluminium) inner packagings are permitted.

622	621	PACKING INSTRUCTION 622	622
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The general packing requirements of Part 4, Chapter 1 must be met.

Consignments must be prepared in such a manner that they arrive at their destination in good condition and present no hazard to persons or animals during transport.

Consignments must be packed in steel drums (1A2), aluminium drums (1B2), plywood drums (1D), fibre drums (1G), plastic drums (1H2), steel jerricans (3A2), plastic jerricans (3H2), wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F) or fibreboard boxes (4G). Packagings must meet Packing Group II requirements.

The packaging tests may be those appropriate for solids when there is sufficient absorbent material to absorb the entire amount of liquid present and the packaging is capable of retaining liquids.

In all other circumstances, the packaging tests must be those appropriate for liquids. Packagings intended to contain sharp objects such as broken glass and needles must be resistant to puncture and retain liquids under the performance test conditions for the packaging.

650	650	PACKING INSTRUCTION 650	650
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The packing instruction working group did not address this because it will be updated according to the 13th revised ed. of the UN Model Regulations.

Class 8

800	803	PACKING INSTRUCTION 800	800
Batteries must be packed in accordance with the general packing requirements of Part 4, Chapter 1 and be in wooden (4C1, 4C2), plywood (4D), fibreboard (4G) or reconstituted wood (4F) boxes, plywood drums (1D), fibre drums (1G), plastic drums (1H2), plastic jerricans (3H2) or solid plastic boxes (4H2) of Packing Group II and must incorporate an acid/alkali-proof liner of sufficient strength and adequately sealed to positively preclude leakage in the event of spillage. The batteries must be packed so that the fill openings and vents, if any, are upward; they must be incapable of short-circuiting and be securely cushioned in the packagings. The upright position of the package must be indicated on it by the Package Orientation label shown in Part 5;3.2.10 b). The words This side up or This end up may also be displayed on the top of the package. If batteries are shipped as an integral component of assembled equipment, they must be securely installed and fastened in an upright position and protected against contact with other articles so as to prevent short circuits. Batteries must be removed and packed according to this Packing Instruction if the assembled equipment is likely to be carried in other than an upright position. For batteries, electric storage, packed with battery fluid in the same outer packaging, see UN Numbers 2796 and 2797.			

801	801	PACKING INSTRUCTION 801	801
Bombs, smoke may be carried provided they are without ignition elements, bursting charges, detonating fuses or other explosive components and when packed according to the general packing requirements of Part 4, Chapter 1 and in wooden (4C1, 4C2), plywood (4D) or reconstituted wood (4F) boxes, or plywood drums (1D).			

802	802	PACKING INSTRUCTION 802	802
Batteries, dry, containing potassium hydroxide solid must be packed in accordance with the general packing requirements of Part 4, Chapter 1 and be in wooden (4C1, 4C2), plywood (4D), fibreboard (4G), solid plastic (4H2) or reconstituted wood (4F) boxes of Packing Group II. The batteries must be securely cushioned in the packagings.			

8XX**800****PACKING INSTRUCTION 8XX****8XX**

The general packing requirements of Part 4, Chapter 1 must be met.

COMBINATION PACKAGINGS:**INNER:**

	UN 2809	UN 2803
	<i>Mercury</i>	<i>Gallium</i>
Glass or earthen ware (IP.1)	3.5 kg	Forbidden
Plastic (IP.2)	3.5 kg	2.5 kg
Iron or steel "quicksilver flask"	3 5 kg	Forbidden

OUTER:

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
fibreboard (4G) plywood (4D) reconstituted wood (4F) expanded plastic (4H1) solid plastic (4H2) steel (4A) wooden (4C1, 4C2)	fibre (1G) plastic (1H2) plywood (1D) steel (1A2) other metal (1N2)	Plastic (3H2) Steel (3A2)

Additional Requirements

Either the inner packagings or the outer packagings shall have inner liners or bags of strong leakproof and puncture resistant material impervious to the contents and completely surrounding the contents to prevent it from escaping from the package irrespective of its position or orientation. Combination packagings must meet Packing Group I performance requirements.

Particular Packing Requirements

PPR 54 UN 2809 may also be packed in a single packaging which may only be a welded steel bottle with an inner vaulted bottom, an opening not exceeding 20 mm and a closure which must be a bolt with a conical thread.

PPR 55 For UN 2803, 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 a strong water-resistant outer packaging 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 shall be chemically and physically resistant to the refrigerant and shall have impact resistance at the low temperatures of the refrigerant employed. If dry ice is used, the outer packaging shall permit the release of carbon dioxide gas.

The general packing requirements of Part 4, Chapter 1 must be met.

a) Except as otherwise provided for in b) below, manufactured articles or apparatuses of which metallic mercury is a component part, such as manometers, pumps, thermometers, switches, etc., must be in strong outer packagings, having sealed inner liners or bags 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. Mercury switches and relays are excepted from the requirement for a sealed inner liner or bag providing they are of the totally enclosed leakproof type in sealed metal or plastic units.

b) Electron tubes, mercury vapour tubes and similar tubes must be packed as follows:

1) tubes which are packed in strong outer packagings with all seams and joints sealed with self-adhesive, pressure-sensitive tape which will prevent the escape of mercury from the package, may be accepted up to a total net quantity of 450 g of mercury per package;

2) tubes with more than 450 g of mercury are permitted only when packed in strong outer packagings, having sealed inner liners or bags of strong leak-proof and puncture-resistant material impervious to mercury which will prevent escape of mercury from the package irrespective of its position;

3) tubes which do not contain more than 5 g of mercury each and which are packed in the manufacturer's original packagings, may be accepted up to a total net quantity of 30 g of mercury per package; and

4) tubes which are completely jacketed in sealed leakproof metal cases may be accepted in the manufacturer's original packagings;

c) For electron tubes, mercury vapour tubes and similar tubes the shipper must indicate the quantity of mercury on the dangerous goods transport document.

Thermometers, switches and relays, each containing a total quantity of not more than 15 g of mercury, are excepted from the requirements of these Instructions if they are installed as an integral part of a machine or apparatus and so fitted that shock or impact damage, leading to leakage of mercury, is unlikely to occur under conditions normally incident to transport.

Batteries can be considered as non-spillable provided that they are capable of withstanding the vibration and pressure differential tests given below, without leakage of battery fluid.

Vibration test: The battery is rigidly clamped to the platform of a vibration machine and a simple harmonic motion having an amplitude of 0.8 mm (1.6 mm maximum total excursion) is applied. The frequency is varied at the rate of 1 Hz/min between the limits of 10 Hz to 55 Hz. The entire range of frequencies and return is traversed in 95 ± 5 minutes for each mounting position (direction of vibration) of the battery. The battery must be tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for equal time periods.

Pressure differential test: Following the vibration test, the battery is stored for six hours at $24^{\circ}\text{C} \pm 4^{\circ}\text{C}$ 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.

Batteries must be protected against short circuits and must be securely packed in strong outer packagings.

*Note. **C** 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.*

8X1

809

PACKING INSTRUCTION 8X1

8X1

The general packing requirements of Part 4, Chapter 1 must be met.

COMBINATION PACKAGINGS:

INNER:

	<i>Passenger Aircraft</i>			<i>Cargo Aircraft</i>		
	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>
Glass or earthen ware (IP.1)	0.5 L	1 L	2.5 L	1 L	2.5 L	5 L
Plastic (IP.2)	0.5 L	1 L	2.5 L	1 L	2.5 L	5 L
Metal (IP.3, IP.3A)	0.5 L	1 L	5 L	1 L	2.5 L	10 L

OUTER:

Boxes

aluminium (4B)
fibreboard (4G)
plywood (4D)
reconstituted wood (4F)
expanded plastic (4H1)
solid plastic (4H2)
steel (4A)
wooden (4C1, 4C2)

Drums

Aluminium (1B2)
Fibre (1G)
plastic (1H2)
plywood (1D)
steel (1A2)
other metal (1N2)

Jerricans

aluminium (3B2)
plastic (3H2)
steel (3A2)

SINGLE PACKAGINGS:

<i>Passenger Aircraft</i>				<i>Cargo Aircraft</i>		
<i>PG I</i>	<i>PG II</i>	<i>PG III</i>	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>	
FORBIDDEN	FORBIDDEN	FORBIDDEN	FORBIDDEN	Drums: 1A1, 1B1, 1H1, 1N1 Jerricans: 3A1, 3H1 Composite (plastic): 6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6HA2, 6HB2, 6HC, 6HD2, 6HG2, 6HH2 Cylinders: As permitted in Packing Instruction 200	Drums: 1A1, 1B1, 1H1, 1N1 Jerricans: 3A1, 3H1 Composite (plastic): 6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6HA2, 6HB2, 6HC, 6HD2, 6HG2, 6HH2 Cylinders: As permitted in Packing Instruction 200	

Additional Requirements

Packagings for Packing Group III substances must meet Packing Group II performance requirements

Particular Packing Requirements

PPR 56 For UN 1732 Antimony pentafluoride, single packagings are not permitted.

PPR 33 For UN 1715, 1732, 1777, 2029, 2789 and 2790, plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packaging.

PPR 38 For UN 1715, 1732, 1777, 1828, 2029, 2401, 2604 and 2789, glass or earthenware inner packagings must be packed with absorbent material in tightly closed metal or rigid plastics inner packagings before packing in outer packagings.

PPR 57 For UN 1777 and 1732, glass or earthenware inner packagings are permitted if the item is free from hydrofluoric acid

PPR 58 For UN 1715, 1732, 1777, 1828, 2029 and 2789, steel packagings must be corrosion-resistant or with protection against corrosion.

PPR 59 For UN 1715, 1732, 1777, 1828, 2029, 2401 and 2789, when aluminium or aluminium alloys are used they must be resistant to corrosion.

8X2**804****PACKING INSTRUCTION 8X2****8X2**

The general packing requirements of Part 4, Chapter 1 must be met.

COMBINATION PACKAGINGS:**INNER:**

	<i>Passenger Aircraft</i>			<i>Cargo Aircraft</i>		
	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>
Glass or earthen ware (IP.1)	0.5 L	1 L	2.5 L	1 L	2.5 L	5 L
Plastic (IP.2)	0.5 L	1 L	2.5 L	1 L	2.5 L	5 L
Metal (IP.3) (not aluminium)	0.5 L	1 L	2.5 L	1 L	2.5 L	5 L

OUTER:**Boxes**

aluminium (4B)
 fibreboard (4G)
 plywood (4D)
 reconstituted wood (4F)
 expanded plastic (4H1)
 solid plastic (4H2)
 steel (4A)
 wooden (4C1, 4C2)

Drums

Aluminium (1B2)
 Fibre (1G)
 Plastic (1H2)
 Plywood (1D)
 Steel (1A2)
 Other metal (1N2)

Jerricans

aluminium (3B2)
 plastic (3H2)
 steel (3A2)

SINGLE PACKAGINGS:

<i>Passenger Aircraft</i>				<i>Cargo Aircraft</i>	
<i>PG I</i>	<i>PG II</i>	<i>PG III</i>	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>
FORBIDDEN	FORBIDDEN	FORBIDDEN	FORBIDDEN	Drums: 1A1, 1H1, 1N1 Jerricans: 3A1, 3H1 Composite (plastic): 6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6HA2, 6HB2, 6HC, 6HD2, 6HG2, 6HH2 Cylinders: As permitted in Packing Instruction 200	Drums: 1A1, 1H1, 1N1 Jerricans: 3A1, 3H1 Composite (plastic): 6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6HA2, 6HB2, 6HC, 6HD2, 6HG2, 6HH2 Cylinders: As permitted in Packing Instruction 200

Additional Requirements

Packagings for Packing Group III substances must meet Packing Group II performance requirements

Particular Packing Requirements

PPR 56 For UN 1802 and 2031, single packagings are not permitted

PPR 33 For UN 1758, 1760, 1764, 1765, 1768, 1775, 1776, 1778, 1782, 1786, 1787, 1788, 1789 (PGII), 1790, 1808, 1818, 1838, 1903, 1908 (PGII), 2031, 2054, 2240, 2258, 2308, 2443, 2444, 2502, 2564 (PGII), 2692, 2699, 2734, 2735, 2801, 2879, 2920, 2922, 3093, 3094, 3145, 3264, 3265, 3266, 3267 and 3301, plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packaging

PPR 38 For, UN1739, 1758, 1760, 1764, 1765, 1787, 1788, 1789, 1796, 1798, 1808, 1818, 1826, 1830, 1832, 1837, 1838, 1903, 1906, 1908, 2031, 2054, 2240, 2258, 2308, 2444, 2502, 2564, 2692, 2699, 2734, 2735, 2796, 2801, 2879, 2920, 2922, 3093, 3094, 3145, 3264, 3265, 3266, 3267 and 3301, glass or earthenware inner packagings must be packed with absorbent material in tightly closed metal or rigid plastics inner packagings before packing in outer packagings

PPR 57 For UN 1775, 1776, 1778, 1782 and 2699, glass or earthenware inner packagings are permitted if the item is free from hydrofluoric acid

PPR 60 For UN 1740, 1768, 1786, 1790, 1811, 2439 and 2817, glass or earthenware inner packagings are not permitted

PPR 61 For UN 1796, 1798, 1826 and 2031, plastic inner or single packagings are not permitted

PPR 62 For UN 1739, 1774, 1787, 1788, 1789, 1798, 1802, 1803, 1818, 1838 and 2031, metal inner or single packagings are not permitted

[**PPR 58** For UN1724, 1728, 1747, 1753, 1758, 1762, 1763, 1764, 1765, 1766, 1767, 1768, 1769, 1771, 1775, 1776, 1778, 1781, 1782, 1784, 1786, 1790, 1791, 1796, 1799, 1800, 1801, 1804, 1808, 1810, 1816, 1826, 1830, 1832, 1837, 1906, 1940, 2240, 2308, 2435, 2443, 2444, 2502, 2564, 2692, 2699, 2796, 2879, 3093 and 3094, steel packagings must be corrosion-resistant or with protection against corrosion]

PPR 63 For UN 1724, 1728, 1732, 1747, 1753, 1762, 1763, 1766, 1767, 1769, 1771, 1784, 1787, 1788, 1799, 1800, 1801, 1803, 1804, 1816, 2029, 2435 and 2443, plastic single packagings are not permitted

8X3	807	PACKING INSTRUCTION 8X3	8X3
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The general packing requirements of Part 4, Chapter 1 must be met.

COMBINATION PACKAGINGS:

INNER:

	Passenger Aircraft		Cargo Aircraft	
	<i>PG II</i>	<i>PG III</i>	<i>PG II</i>	<i>PG III</i>
Glass or earthen ware (IP.1)	1 kg	2.5 kg	2.5 kg	5 kg
Plastic (IP.2)	2.5 kg	5 kg	5 kg	10 kg
Metal (IP.3) (not aluminium)	2.5 kg	5 kg	5 kg	10 kg

OUTER:

Boxes

aluminium (4B)
fibreboard (4G)
plywood (4D)
reconstituted wood (4F)
expanded plastic (4H1)
solid plastic (4H2)
steel (4A)
wooden (4C1, 4C2)

Drums

aluminium (1B2)
fibre (1G)
plastic (1H2)
plywood (1D)
steel (1A2)
other metal (1N2)

Jerricans

aluminium (3B2)
plastic (3H2)
steel (3A2)

SINGLE PACKAGINGS:

Passenger Aircraft

PG II PG III

Drums:
1A1, 1A2, 1H1, 1H2, 1N1, 1N2

Cargo Aircraft

PG II

PG III

Drums:
1A1, 1A2, 1H1, 1H2, 1N1, 1N2

Jerricans:

3A1, 3A2, 3H1, 3H2

Composite (plastic):6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6HA2,
6HB2, 6HC, 6HD2, 6HG2, 6HH2**Jerricans:**

3A1, 3A2, 3H1, 3H2

Composite (plastic):6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6HA2,
6HB2, 6HC, 6HD2, 6HG2, 6HH2**Additional Requirements**

Packagings for Packing Group III substances must meet Packing Group II performance requirements

Particular Packing Requirements

PPR 57 For UN 1727, 1740, 1811 and 2439, glass or earthenware inner packagings are permitted if the item is free from hydrofluoric acid

PPR 64 For UN 1939, phosphorous oxybromide, metal inner and single packagings are not permitted.

PPR 58 For UN 1806, 1807, 1839, 1938, 2509, 2691 and 2869, steel packagings must be corrosion-resistant or with protection against corrosion.

8X4**808****PACKING INSTRUCTION 8X4****8X4**

The general packing requirements of Part 4, Chapter 1 must be met.

COMBINATION PACKAGINGS:**INNER:**

	<i>Passenger Aircraft</i>			<i>Cargo Aircraft</i>		
	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>
Glass or earthen ware (IP.1)	0.5 kg	1 kg	2.5 kg	1 kg	2.5 kg	5 kg
Plastic (IP.2)	0.5 kg	2.5 kg	2.5 kg	2.5 kg	5 kg	5 kg
Metal (IP.3, IP.3A)	0.5 kg	2.5 kg	5 kg	2.5 kg	5 kg	10 kg
Plastic bag (IP.5)	Forbidden	1 kg	2.5 kg	Forbidden	2.5 kg	5 kg

OUTER:***Boxes***

aluminium (4B)
 fibreboard (4G)
 plywood (4D)
 reconstituted wood (4F)
 expanded plastic (4H1)
 solid plastic (4H2)
 steel (4A)
 wooden (4C1, 4C2)

Drums

aluminium (1B2)
 fibre (1G)
 plastic (1H2)
 plywood (1D)
 steel (1A2)
 other metal (1N2)

Jerricans

aluminium (3B2)
 plastic (3H2)
 steel (3A2)

SINGLE PACKAGINGS:***Passenger Aircraft***

PG I PG II PG III

FORBIDDEN**FORBIDDEN****FORBIDDEN*****Cargo Aircraft***

PG II PG III

Drums:

1A1, 1A2, 1H1, 1H2

Jerricans:

3A1, 3A2, 3H1, 3H2

Composite (plastic):

6HA1, 6HB1, 6HG1,
 6HH1, 6HD1, 6HA2,
 6HB2, 6HC, 6HD2, 6HG2,
 6HH2

Drums:

1A1, 1A2, 1B1, 1B2,
 1G(with inner plastic
 liner), 1H1, 1H2, 1D (with
 inner plastic liner), 1N1,
 1N2

Jerricans:

3A1, 3A2, 3H1, 3H2

Composite (plastic):

6HA1, 6HB1, 6HG1,
 6HH1, 6HD1, 6HA2,
 6HB2, 6HC, 6HD2, 6HG2,
 6HH2

Drums:

1A1, 1A2, 1B1, 1B2,
 1G(with inner plastic liner),
 1H1, 1H2, 1D (with inner
 plastic liner), 1N1, 1N2

Jerricans:

3A1, 3A2, 3H1, 3H2

Composite (plastic):

6HA1, 6HB1, 6HG1, 6HH1,
 6HD1, 6HA2, 6HB2, 6HC,
 6HD2, 6HG2, 6HH2

Additional Requirements

Packagings for Packing Group III substances must meet Packing Group II performance requirements

Particular Packing Requirements

PPR 65 For UN 2949, plastic bags (IP.5) are not permitted as inner packagings

Y8X1**Y809****PACKING INSTRUCTION Y8X1****Y8X1**

The requirements of Part 3, Chapter 4 must be met.

Single packagings are not permitted

COMBINATION PACKAGINGS:**INNER:**

	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>	
Glass or earthen ware (IP.1)	Forbidden	0.1 L	0.5 L	
Plastic (IP.2)	Forbidden	0.1 L	0.5 L	
Metal (IP.3, IP.3A)	Forbidden	0.1 L	0.5 L	

OUTER:

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
aluminium fibreboard plywood reconstituted wood expanded plastic solid plastic steel wooden	aluminium fibre plastic plywood steel other metal	aluminium plastic steel

Additional Requirements

Glass or earthenware inner packagings must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings

Particular Packing Requirements

PPR 33 For UN 1715, 2789 and 2790 plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packaging

PPR 58 For UN 1715, 2789 and 2790, steel packagings must be corrosion-resistant or with protection against corrosion

PPR 66 For UN 1715, 2789, and 2790, when aluminium or aluminium alloys are used they must be resistant to corrosion

Y8X2	Y804	PACKING INSTRUCTION Y8X2	Y8X2
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The requirements of Part 3, Chapter 4 must be met.

Single packagings are not permitted

COMBINATION PACKAGINGS:

INNER:

	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>	
Glass or earthen ware (IP.1)	Forbidden	0.1 L	0.5 L	
Plastic (IP.2)	Forbidden	0.1 L	0.5 L	
Metal (IP.3) (not aluminium)	Forbidden	0.1 L	0.5 L	

OUTER:

Boxes

aluminium
fibreboard
plywood
reconstituted wood
expanded plastic
solid plastic
steel
wooden

Drums

Aluminium
Fibre
Plastic
Plywood
Steel
other metal

Jerricans

aluminium
plastic
steel

Additional Requirements

Glass or earthenware inner packagings they must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

Particular Packing Requirements

PPR 33 For UN 1764, 1765, 1768, 1775, 1776, 1778, 1782, 1787, 1788, 1789, 1790, 1818, 1908, 2031, 2258, 2308, 2502, 2564 and 3093 plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packaging.

PPR 57 For UN 1775, 1776, 1778, and 1782, glass or earthenware inner packagings are permitted only if the item is free from hydrofluoric acid.

PPR 58 For UN 1764, 1765, 1768, 1775, 1776, 1778, 1782, 1790, 1791, 1940, 2031, 2502, 2564 and 3093 steel packaging must be corrosion resistant or with protection against corrosion.

PPR 66 For UN 1715, 1776, 1828, 2401, 2735, 2789 when aluminium or aluminium alloys are used they must be resistant to corrosion.

PPR 67 For UN 1740, 1768, 1790, 1811, 2439 and 2817, glass or earthenware inner packagings are not permitted.

PPR 68 For UN 1774, 1787, 1788, 1789, 1803, 1818 and 2031, metal inner packagings are not permitted.

Y8X3**Y807****PACKING INSTRUCTION Y8X3****Y8X3**

The requirements of Part 3, Chapter 4 must be met.

Single packagings are not permitted

COMBINATION PACKAGINGS:**INNER:**

The following inner packagings are permitted for the indicated mass of solid for passenger or cargo aircraft. When a packaging is not permitted the word “forbidden” is indicated.

	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>
Glass or earthen ware (IP.1)	Forbidden	0.5 kg	1 kg
Plastic (IP.2)	Forbidden	0.5 kg	1 kg
Metal (IP.3) (not aluminium)	Forbidden	0.5 kg	1 kg

OUTER:***Boxes***

aluminium
fibreboard
plywood
reconstituted wood
expanded plastic
solid plastic
steel
wooden

Drums

aluminium
fibre
plastic
plywood
steel
other metal

Jerricans

aluminium
plastic
steel

Particular Packing Requirements

PPR 57 For UN 1727, 1740, 1811 and 2439, glass or earthenware inner packagings are permitted only if the item is free from hydrofluoric acid

PPR 58 For UN 1807, 1839, 1938, 2509 and 2869, steel packagings must be corrosion-resistant or with protection against corrosion

Y8X4**Y808****PACKING INSTRUCTION Y8X4****Y8X4**

The requirements of Part 3, Chapter 4 must be met.

Single packagings are not permitted

COMBINATION PACKAGINGS:**INNER:**

	<i>PG I</i>	<i>PG II</i>	<i>PG III</i>
Glass or earthen ware (IP.1)	Forbidden	0.5 kg	1 kg
Plastic (IP.2)	Forbidden	0.5 kg	1 kg
Metal (IP.3, IP.3A)	Forbidden	0.5 kg	1 kg
Plastic bag (IP.5)	Forbidden	0.5 kg	1 kg

OUTER:***Boxes***

aluminium
fibreboard
plywood
reconstituted wood
expanded plastic
solid plastic
steel
wooden

Drums

aluminium
fibre
plastic
plywood
steel
other metal

Jerricans

aluminium
plastic
steel

Particular Packing Requirements

PPR 71 For UN 2949, Sodium hydrosulphide, plastic bags (IP.5) are not permitted as inner packagings

PPR 58 For UN 2949, Sodium hydrosulphide, steel packagings must be corrosion-resistant or with protection against corrosion

Class 9

Vehicles, machines or equipment containing internal combustion engines or batteries must meet the following requirements:

a) except as otherwise provided for in this Packing Instruction, fuel tanks must be drained of fuel and tank caps fitted securely. Special precautions are necessary to ensure complete drainage of the fuel system of vehicles, machines or equipment incorporating internal combustion engines, such as lawn mowers and outboard motors, where such machines or equipment could possibly be handled in other than an upright position. When it is not possible to handle in other than an upright position, vehicles, except those with diesel engines, must be drained of fuel as far as practicable, and if any fuel remains, it must not exceed one-quarter of the tank capacity. Vehicles equipped with diesel engines are excepted from the requirement to drain the fuel tanks, provided that a sufficient ullage space has been left inside the tank to allow fuel expansion without leakage, and the tank caps are tightly closed. A careful check must be made to ensure there are no fuel leakages;

b) for flammable gas-powered vehicles, machines or equipment, pressurized vessels containing the flammable gas must be completely emptied of flammable gas. Lines from vessels to gas regulators, and gas regulators themselves, must also be drained of all trace of flammable gas. To ensure that these conditions are met, gas shut-off valves must be left open and connections of lines to gas regulators must be left disconnected upon delivery of the vehicle to the operator. Shut-off valves must be closed and lines reconnected at gas regulators before loading the vehicle aboard the aircraft;

c) if non-spillable batteries, as defined in Packing Instruction 806, are installed, they must be securely fastened in the battery holder of the vehicle, machine or equipment and be protected in such a manner as to prevent damage and short circuits;

d) if spillable batteries are installed, they must be securely fastened in the battery holder of the vehicle, machine or equipment and be protected in such a manner as to prevent damage and short circuits. However, if it is possible for the vehicle, machine or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 433 or 800 as applicable;

e) dangerous goods required for the operation of the vehicle, machine or equipment, such as fire extinguishers, tire inflation canisters, safety devices, 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 Table 3-1 as forbidden on passenger aircraft may only be transported on cargo aircraft; and

f) in the event that vehicles, machines or equipment containing internal combustion engines are being shipped in a dismantled state such that fuel lines have been disconnected, those fuel lines must be sealed securely.

g) when internal combustion engines are being shipped separately, all fuel, coolant or hydraulic systems remaining in or on the engine must be drained as far as practicable and all disconnected fluid pipes must be sealed with leak-proof caps, which are positively retained.

h) Vehicles equipped with theft-protection devices, installed radio communications equipment or navigational system must have such devices, equipment or system disabled.

Replacements for the dangerous goods permitted in paragraphs a) to e) must not be carried under this packing instruction.

Magnetized material will be accepted only when:

- a) devices such as magnetrons and light meters have been packed so that the polarities of the individual units oppose one another;
- b) permanent magnets, where possible, have keeper bars installed;
- c) the magnetic field strength at a distance of 4.6 m from any point on the surface of the assembled consignment:
 - 1) does not exceed 0.418 A/m; or
 - 2) produces a magnetic compass deflection of 2 degrees or less.

Determination of shielding requirements

The magnetic field strength of magnetized materials must be measured using measuring devices having a sensitivity sufficient to measure magnetic fields greater than 0.0398 A/m within a tolerance of plus or minus 5 per cent, or with a magnetic compass sensitive enough to read a 2 degree variation, preferably in 1 degree increments or finer. If the maximum field strength observed at a distance of 2.1 m is less than 0.159 A/m or there is no significant compass deflection (less than 0.5 degree), the article is not restricted as a magnetized material. Methods of determining if a magnetized article meets the definition of a magnetized material include:

- a) When an oersted meter is used, it is placed on one of two points positioned 4.6 m apart and located in an area that is free from magnetic interference other than the earth's magnetic field. The oersted meter is then aligned with the second point and balanced to a zero reading. The magnetic article is then placed on the other point and the magnetic field strength is measured by reading the meter while rotating the package 360 degrees in its horizontal plane. If the maximum field strength observed is 0.418 A/m or less, the article is acceptable for air transport. When the maximum field strength exceeds 0.418 A/m, shielding should be applied until a reading of 0.418 A/m or less has been attained.
- b) When a magnetic compass is used as a sensing device, it should be placed on one of two points positioned 4.6 m apart which are aligned in an East/West direction and in an area that is free from any magnetic interference other than the earth's magnetic field. The packaged item to be tested is placed on the other point and rotated 360 degrees in its horizontal plane for indication of compass deflection. When the maximum compass deflection observed is 2 degrees or less, the article is acceptable for air transport. When the maximum compass deflection of an item exceeds 2 degrees, shielding must be applied until the maximum deflection is not more than 2 degrees.

Note.C For loading restrictions, see Part 7;2.10.

Solid carbon dioxide (dry ice) when offered for transport by air must be packed in accordance with the general packing requirements of Part 4, Chapter 1 and be in packaging designed and constructed to permit the release of carbon dioxide gas to prevent a build-up of pressure that could rupture the packaging. Arrangements between shipper and operator(s) must be made for each shipment, to ensure that ventilation safety procedures are followed. The dangerous goods transport document requirements of Part 4, Chapter 1 are not applicable provided alternative documentation containing the information required by 5;4.1, excluding the packing instruction number and packing group, is supplied.

Note. C For loading restrictions see Part 7;2.11; for special marking requirement see Part 5;2.4.7.

905**905****PACKING INSTRUCTION 905****905**

The description ›Life-saving appliances, self-inflating‹ (UN 2990) is intended to apply to life-saving appliances that present a hazard if the self-inflating device is activated accidentally.

Life-saving appliances, such as life-rafts, life vests, aircraft survival kits or aircraft evacuation slides, may only contain the dangerous goods listed below:

- a) Division 2.2 gases, in cylinders as permitted in Packing Instruction 200; these may be connected to the life-saving appliance;
- b) signal devices (Class 1), which may include smoke and illumination signal flares; signal devices must be packed in plastic or fibreboard inner packagings;
- c) small quantities of flammable substances, corrosive solids and organic peroxides (Class 3, Class 8, Division 4.1 and 5.2), which may include a repair kit and not more than 30 strike-anywhere matches. The organic peroxide may only be a component of a repair kit and the kit must be packed in strong inner packaging. The strike-anywhere matches must be packed in a cylindrical metal or composition packaging with a screw-type closure and be cushioned to prevent movement;
- d) electric storage batteries (Class 8) and lithium batteries (Class 9); and
- e) first aid kits which may include flammable, corrosive and toxic articles or substances.

The appliances must be packed, so that they cannot be accidentally activated, in strong outer packagings and, except for life vests, the dangerous goods must be in inner packagings packed so as to prevent movement. The dangerous goods must be an integral part of the appliance without which it would not be operational and in quantities which do not exceed those appropriate for the actual appliance when in use.

Passenger restraint systems consisting of a cylinder charged with a non-liquefied, non-flammable compressed gas and no more than two actuating cartridges per passenger restraint system that meet the requirements of the State of Manufacture must be packed in strong outer packagings so they cannot be accidentally activated.

Life-saving appliances may also include articles and substances not subject to these Instructions which are an integral part of the appliance.

906**911****PACKING INSTRUCTION 906****906**

The general packing requirements of Part 4, Chapter 1 must be met.

908**912****PACKING INSTRUCTION 908****908**

The general packing requirements of Part 4, Chapter 1 must be met.

Polymeric beads or granules, expandable, impregnated with flammable gas or liquid as a blowing agent and plastic moulding materials in dough, sheet or extruded rope form must be packed in wooden (4C1, 4C2), plywood (4D), fibreboard (4G) or reconstituted wood (4F) boxes with sealed inner plastic liner, plywood drums (1D), fibre drums (1G) with sealed inner plastic liner or in metal (1A1, 1A2, 1B1, 1B2) packagings.

Note. C For loading restrictions see Part 7;2.12.

909	913	PACKING INSTRUCTION 909	909
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The general packing requirements of Part 4, Chapter 1 must be met.

Ammonium nitrate fertilizers (UN 2071) must be carried in:

- a) rigid, sift-proof packagings (1A2, 1B2, 3A2, 1D, 1G, 1H2, 3H2 or 4C2); or
- b) 5L2, 5L3, 5H2, 5H3 or 5H4 bags.

White asbestos (UN 2590) must be carried in:

- a) rigid, sift-proof packagings (1A2, 1B2, 3A2, 1D, 1G, 1H2, 3H2, 4C2, 4D, 4G, 4F, 4H1 or 4H2); or
- b) 5L2, 5L3, 5H2, 5H3 or 5H4 bags, which must be palletized and unitized by methods such as shrink-wrapping in plastic film or wrapping in fibreboard secured by strapping.

Packagings for white asbestos must prevent the release of dust or fibers.

Y909	Y913	PACKING INSTRUCTION Y909	Y909
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The requirements of Part 3, Chapter 4 must be met. The general packing requirements of Part 4, Chapter 1 need not be met.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

INNER:

	<i>Passenger and Cargo Aircraft</i>
Glass or earthenware (IP.1)	5 kg
Plastic (IP.2)	5 kg
Metal (IP.3, IP.3A)	5 kg
Paper (IP.4)	5 kg
Plastic bag (IP.5)	5 kg
Fibre (IP.6)	5 kg
Paper, plastic/aluminium (IP.10)	5 kg

OUTER:

Boxes	Drums	Jerricans
Aluminium	aluminium	aluminium
fibreboard	fibre	plastic
plastic	plastic	steel

plywood reconstituted wood steel wooden	plywood steel
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Additional Requirement:

The maximum gross mass per package is 30 kg.

910	910	PACKING INSTRUCTION 910	910
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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 Part 4, Chapter 1 or Part 6 of these Instructions; they must, however, comply with all other applicable requirements.

- a) Each packaging must be designed and constructed to prevent leakage that may be caused by changes in altitude and temperature during air transport.
- b) Inner packagings that are breakable (such as earthenware, glass or brittle plastic) must be packed to prevent breakage and leakage under conditions normally incident to transport. These completed packagings must be capable of withstanding a 1.2 m drop on solid concrete in the position most likely to cause damage.
- c) When filling receptacles for liquids, sufficient ullage (outage) must be left to ensure that neither leakage nor permanent distortion of the receptacle will occur as a result of an expansion of the liquid caused by temperatures likely to prevail during transport. Unless specific requirements are prescribed in national rules or international agreements, liquids must not completely fill a receptacle at a temperature of 55°C. At this temperature a minimum ullage of 2 per cent should be left. The primary packaging (which may include composite packaging), for which retention of the liquid is a basic function, must be capable of withstanding, without leakage, an internal pressure which produces a pressure differential of not less than 75 kPa or a pressure related to the vapour pressure of the liquid to be conveyed, whichever is the greater. The pressure related to the vapour pressure must be determined by the method shown in Part 4;1.1.6.1. Tests on sample receptacles must be carried out to demonstrate the capability of the primary packaging to withstand the above pressure.
- d) Stoppers, corks or other such friction-type closures must be held securely, tightly and effectively in place by positive means. The closure device must be so designed that it is extremely improbable that it can be incorrectly or incompletely closed and must be such that it may be easily checked to determine that it is completely closed.
- e) Inner packagings must be tightly packed in strong outer packagings and must be so packed, secured or cushioned as to prevent any breakage, leakage or significant movement within the outer packaging(s) during normal conditions of transport. Absorbent material must be provided for glass or earthenware inner packaging(s) containing consumer commodities in Class 2 or 3 or liquids of Division 6.1, in sufficient quantity to absorb the liquid contents of the largest of such inner packagings contained in the outer packaging. Absorbent and cushioning material must not react dangerously with the contents of the inner packagings. Notwithstanding the above, absorbent material may not be required if the inner packagings are so protected that breakage of the inner packagings and leakage of their contents from the outer packaging will not occur during normal conditions of transport.
- f) 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.
- g) Each completed package as prepared for shipment must not exceed a gross mass of 25 kg.
- h) Class 2 substances must be further limited to aerosol products containing non-toxic compressed or liquefied gas(es) that are necessary to expel liquids, powders or pastes, packed in inner non-refillable non-metal receptacles not exceeding 120 mL capacity each, or in inner non-refillable metal receptacles not exceeding 820 mL capacity each (except that flammable aerosols must not exceed 500 mL capacity each), subject in either case to the following provisions:
 - 1) the pressure in the aerosol must not exceed 1 500 kPa at 55°C and each receptacle must be capable of withstanding without bursting a pressure of at least 1.5 times the equilibrium pressure of the contents at 55°C;

2) if the pressure in the aerosol exceeds 970 kPa at 55°C but does not exceed 1 105 kPa at 55°C, an inner IP.7, IP.7A or IP.7B metal receptacle must be used;

3) if the pressure in the aerosol exceeds 1 105 kPa at 55°C but does not exceed 1 245 kPa at 55°C, an IP.7A or IP.7B metal receptacle must be used;

4) if the pressure in the aerosol exceeds 1 245 kPa at 55°C, an IP.7B metal receptacle must be used;

5) IP.7B metal receptacles having a minimum burst pressure of 1 800 kPa may be equipped with an inner capsule charged with a non-flammable, non-toxic compressed gas to provide the propellant function. In this case, the pressures indicated in 1), 2), 3) or 4) above do not apply to the pressure within the capsule. The quantity of gas contained in the capsule must be so limited such that the minimum burst pressure of the receptacle would not be exceeded if the entire gas content of the capsule were released into an aerosol.

6) the liquid contents must not completely fill the closed receptacle at 55°C;

7) each aerosol exceeding 120 mL capacity must have been heated until the pressure in the aerosol is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect; and

8) the valves must be protected by a cap or other suitable means during transport.

i) For aerosols containing a biological or medical preparation which will be deteriorated by a heat test and which are non-toxic and non-flammable, packed in inner non-refillable receptacles not exceeding 575 mL capacity each, the following provisions are applicable:

1) the pressure in the aerosol must not exceed 970 kPa at 55°C;

2) the liquid contents must not completely fill the closed receptacle at 55°C;

3) one aerosol out of each lot of 500 or less must be heated until the pressure in the aerosol is equivalent to the equilibrium pressure of the contents at 55°C, without evidence of leakage, distortion or other defect; and

4) the valves must be protected by a cap or other suitable means during transport.

j) Except for aerosols, inner packagings must not exceed:

1) 500 mL for liquids; and

2) 500 g for solids.

k) Consumer commodities shipped according to these provisions may be shipped in a unit load device prepared by a single shipper provided that no other dangerous goods are included in the unit load device.

l) The gross mass on the dangerous goods transport document must be shown as:

1) for one package, the actual gross mass of the package;

2) for more than one package, either the actual gross mass of each package or as the average mass of the packages. (For example, if there are 10 packages and the total gross mass of them is 100 kg, the dangerous goods transport document may show this as average gross mass per package 10 kg.)

The general packing requirements of Part 4, Chapter 1 must be met.

COMBINATION PACKAGINGS:

INNER:

	<i>Passenger and Cargo Aircraft</i>
Glass or earthenware (IP.1)	5 kg
Plastic (IP.2)	10 kg
Metal (IP.3, IP.3A)	10 kg
Paper (IP.4)	5 kg
Plastic bag (IP.5)	5 kg
Fibre (IP.6)	5 kg
Paper, plastic/aluminium (IP.10)	5 kg

OUTER:

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
aluminium (4B)	aluminium (1B2)	aluminium (3B2)
fibreboard (4G)	fibre (1G)	plastic (3H2)
plastic (4H1, 4H2)	other metal (1N2)	steel (3A2)
plywood (4D)	plastic (1H2)	
reconstituted wood (4F)	plywood (1D)	
steel (4A)	steel (1A2)	
wooden (4C1, 4C2)		

SINGLE PACKAGINGS:

<i>Bags</i>	<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>	<i>Composites (plastic)</i>
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5M2, 5H4, 5L3, and 5H3	4A, 4B, 4C1, 4C2, 4D, 4F, 4G, and 4H2	1A1, 1A2, 1B1, 1B2, 1D, 1G, 1H1, 1H2, 1N1, and 1N2	3A1, 3A2 3B1, 3B2, 3H1, and 3H2	6HA1, 6HB1, 6HG1, 6HH1, 6HD1, 6HA2, 6HB2, 6HC, 6HD2, 6HG2 and or 6HH2
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913	904	PACKING INSTRUCTION 913	913
The general packing requirements of Part 4, Chapter 1 must be met. Genetically modified micro-organisms must be packed according to Packing Instruction 602, except that the packagings need not be tested as provided for in Part 6, Chapter 6. The maximum quantity in a primary receptacle must not exceed 100 mL or 100 g.			

915	901	PACKING INSTRUCTION 915	915
The general packing requirements of Part 4, Chapter 1 must be met except that the requirements of Part 4;1.1.8 and 1.1.16 do not apply.			
COMBINATION PACKAGINGS:			
INNER:			
Inner packagings must not exceed 250 mL for liquids or 250 g for solids and must be protected from other materials in the kit. The total quantity of dangerous goods in any one kit must not exceed 1 L or 1 kg.			
OUTER:			
Kits must be packed in one of the following:			
Boxes aluminium (4B) fibreboard (4G) plastic (4H1, 4H2) plywood (4D) reconstituted wood (4F) steel (4A) wooden (4C1, 4C2)			
Additional Requirements:			
1. The kits may contain dangerous goods which require segregation according to Table 7-1. The packing group assigned to the kit as a whole must be the most stringent packing group assigned to any individual substance contained in the kit.			
2. Kits must not be packed with other dangerous goods in the same outer packaging.			
3. The total quantity of dangerous goods in any one package must not exceed 10 kg.			

Y915	Y915	PACKING INSTRUCTION	Y915
The requirements of Part 3, Chapter 4 must be met except that Part 3;4.3.3 does not apply. Single packagings are not permitted.			
COMBINATION PACKAGINGS: INNER: Inner packagings must not exceed 30 mL for liquids or 100 g for solids and must be protected from other materials in the kit. OUTER: Kits must be packed in metal, wooden, plywood, reconstituted wood, fibreboard or plastic boxes.			

Additional Requirements:

- 1) Kits may contain dangerous goods which require segregation according to Table 7-1.
- 2) Kits must not be packed with other dangerous goods in the same outer packaging.
- 3) The total quantity of dangerous goods in any one kit and in any one package must not exceed 1 kg.

The general packing requirements of Part 4, Chapter 1 must be met except that the requirements of Part 4;1.1.2, 1.1.8, 1.1.10, 1.1.13 and 1.1.16 do not apply.

Machinery or Apparatus (other than fuel system components)

For other than fuel system components, machinery or apparatus may only contain dangerous goods permitted under Part 3;4.1.2. If the machinery or apparatus contains more than one item of dangerous goods, the individual substances must not be capable of reacting dangerously together.

- a) The nature of the containment must be such that:
 - 1) damage to receptacles containing the dangerous goods during air transport is unlikely; and
 - 2) in the event of damage to receptacles containing the dangerous goods, no leakage of the dangerous goods from the machinery or apparatus is possible. A leakproof liner may be required.
- b) 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.
- c) Receptacles containing dangerous goods must be 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.
- d) For Division 2.2 gases, the inner cylinder or pressure vessel for gases, their contents and filling densities must conform to the requirements of the State in which the cylinders or pressure vessels are filled.
- e) The total net quantity of dangerous goods contained in one package must not exceed the following:
 - 1) 1 kg in the case of solids;
 - 2) 0.5 L in the case of liquids;
 - 3) 0.5 kg in the case of Division 2.2 gases;
 or any combination thereof.

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.

Additional Requirement:

»Package orientation labels (Figure 5-25), or pre-printed orientation labels meeting the same specification as either Figure 5-25 or ISO Standard 780-1985 must be affixed on at least two opposite vertical sides with the arrows pointing in the correct direction only when required to ensure liquid dangerous goods remain in their intended orientation.

The general packing requirements of Part 4, Chapter 1 must be met.

Air bag inflators, air bag modules and seat-belt pretensioners must be packed in steel drums (1A2), aluminium drums (1B2), plywood drums (1D) or fibre drums (1G), plastic drums (1H2), plastic jerricans (3H2), steel jerricans (3A2), wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G), solid plastic boxes (4H2), steel or aluminium boxes (4A, 4B).

Air bag inflators, air bag modules and seat-belt pretensioners may also be transported unpackaged on cargo aircraft in dedicated handling devices when transported from where they are manufactured to vehicle assembly plants. When transported in handling devices, the following conditions must be met:

- a) air bag inflators, air bag modules or seat-belt pretensioners as fitted in the handling device must be capable of meeting the test criteria prescribed in Special Provision A56;

b) the handling device must be completely enclosed; and

c) each air bag inflator, air bag module or seat-belt pretensioner unit must be secured within the handling device to prevent movement in transport.

The general packing requirements of Part 4, Chapter 1 must be met.

Lithium cells and batteries may only be transported under this Packing Instruction if they meet the following requirements. The following requirements apply to cells and batteries containing lithium in any form, including lithium polymer and lithium ion cells and batteries:

- a) each cell or battery type has been determined to meet the criteria for assignment to Class 9 on the basis of tests carried out in accordance with the *Manual of Tests and Criteria*, Part III, subsection 38.3;
- b) each cell and battery must incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport;
- c) each cell and battery must be equipped with an effective means of preventing external short circuits;
- d) 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, etc.);

Cells assigned to Class 9 are forbidden for transport if the cells have been discharged to the extent that the open circuit voltage is less than the lower of:

- a) 2 volts; or
- b) two-thirds of the voltage of the undischarged cell; or batteries containing one or more such cells.

1. Lithium Batteries UN3090.

- a) Cells and batteries must be packed within inner packagings to effectively prevent short circuits and to prevent movement which could lead to short circuits;
- b) Cells and batteries must be packed in steel drums (1A2), aluminium drums (1B2), plywood drums (1D) or fibre drums (1G), plastic drums (1H2), plastic jerricans (3H2), steel jerricans (3A2), wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G), solid plastic boxes (4H2), steel or aluminium boxes (4A, 4B) of Packing Group II.

2. Lithium Batteries Contained in Equipment UN 3091.

- a) Equipment containing lithium batteries must be packed in accordance with the general packing requirements of Part 4, Chapter 1 and be contained in strong outer packaging. The outer packaging must be waterproof or made waterproof through the use of a liner, such as a plastic bag unless the equipment is made waterproof by nature of its construction. The equipment must be secured against movement within the outer packaging, be protected against short-circuit, and be packed so as to prevent accidental operation during air transport.
- b) The quantity of lithium metal contained in any piece of equipment must not exceed 12 g per cell and 500 g per battery.
- c) Not more than 5 kg of lithium batteries may be contained in any piece of equipment.

3. Lithium Batteries Packed With Equipment UN 3091. For the purposes of this packaging instruction, ~~equipment~~ means apparatus requiring the lithium batteries with which it is packed for its operation.

- a) Lithium cells and batteries must be packed in fibreboard boxes (4G) or fibre drums (1G) of Packing Group II and in such a manner as to effectively prevent movement which could lead to short circuits.
- b) Each packages must not exceed 5 kg gross mass for passenger aircraft or 35 kg gross mass for cargo aircraft.
- c) The equipment and the packages of lithium cells or batteries must be overpacked.

The general packing requirements of Part 4, Chapter 1 must be met.

COMBINATION PACKAGINGS:

INNER:

The following inner packagings are permitted for the indicated volume of liquid for passenger or cargo aircraft.

Passenger and Cargo Aircraft

Glass or earthenware (IP.1)	5 L
Plastic (IP.2)	5 L
Metal (IP.3, IP.3A)	10 L

OUTER:

Boxes

aluminium (4B)
fibreboard (4G)
plastic (4H1, 4H2)
plywood (4D)
reconstituted wood (4F)
steel (4A)
wooden (4C1, 4C2)

Drums

Aluminium (1B2)
fibre (1G)
other metal (1N2)
plastic (1H2)
plywood (1D)
steel (1A2)

Jerricans

aluminium (3B2)
plastic (3H2)
steel (3A2)

SINGLE PACKAGINGS:

Drums

1A1, 1A2, 1B1, 1B2,
1H1, 1H2, 1N1, and
1N2

Jerricans

3A1, 3A2, 3B1, 3B2,
3H1, and 3H2

Composites (plastic)

6HA1, 6HB1, 6HG1, 6HH1, 6HD1,
6HA2, 6HB2, 6HC, 6HD2, 6HG2 or
6HD

Cylinders

as permitted in Packing
Instruction 200

Particular Packaging Requirements:

PP9X1 For UN 1941, plastic drums (1H1, 1H2) and plastic jerricans (3H1, 3H2) are not permitted as single packagings..

Y9XX	Y914	PACKING INSTRUCTION Y9XX	Y9XX																						
The requirements of Part 3, Chapter 4 must be met.																									
Single packagings are not permitted.																									
COMBINATION PACKAGINGS:																									
INNER:																									
The following inner packagings are permitted for the indicated volume of liquid or mass of solid (as applicable) for passenger or cargo aircraft.																									
<table><tr><th colspan="2">For Liquids</th></tr><tr><td>Glass or earthenware (IP.1)</td><td>1 L</td></tr><tr><td>Plastic (IP.2)</td><td>1 L</td></tr><tr><td>Metal (IP.3, IP.3A)</td><td>2 L</td></tr></table>		For Liquids		Glass or earthenware (IP.1)	1 L	Plastic (IP.2)	1 L	Metal (IP.3, IP.3A)	2 L	<table><tr><th colspan="2">For Solids</th></tr><tr><td>Glass or earthenware (IP.1)</td><td>1 kg</td></tr><tr><td>Plastic (IP.2)</td><td>2 kg</td></tr><tr><td>Metal (IP.3, IP.3A)</td><td>2 kg</td></tr><tr><td>Plastic bag (IP.5)</td><td>1 kg</td></tr><tr><td>Fibre (IP.6)</td><td>1 kg</td></tr><tr><td>Paper, plastic/aluminium (IP.10)</td><td>1 kg</td></tr></table>		For Solids		Glass or earthenware (IP.1)	1 kg	Plastic (IP.2)	2 kg	Metal (IP.3, IP.3A)	2 kg	Plastic bag (IP.5)	1 kg	Fibre (IP.6)	1 kg	Paper, plastic/aluminium (IP.10)	1 kg
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<table><tr><th>Boxes</th><th>Drums</th><th>Jerricans</th><th></th></tr><tr><td>aluminium fibreboard plastic plywood reconstituted wood steel wooden</td><td>aluminium fibre other metal plastic plywood steel</td><td>aluminium plastic steel</td><td></td></tr></table>	Boxes	Drums	Jerricans		aluminium fibreboard plastic plywood reconstituted wood steel wooden	aluminium fibre other metal plastic plywood steel	aluminium plastic steel																		
Boxes	Drums	Jerricans																							
aluminium fibreboard plastic plywood reconstituted wood steel wooden	aluminium fibre other metal plastic plywood steel	aluminium plastic steel																							

Annex 2

List of Substances

List of Substances and new Packing Instruction numbers.

The attached list of UN numbers is taken from the 2003 ADR because it was the only up to date version available to the authors that was in a format that could be easily sorted and searched.

The following points should be noted:

1. A few proper shipping names (not UN numbers) may not be exactly the same as those in the current TIs. As a lot of manual work was needed for this list which is only for the panel, to save time it was decided to leave these unchanged. Further checking can occur prior to and after the Panel meeting.
2. UN numbers from 3377 onwards are the ones added by the UN in the 13th revised edition of the Model Regulations. The packing instructions for these are “place markers” and it is for the DGP to make a final decision on the acceptability of the PIs that have been allocated. It should be noted that no PIs have been identified for 3417.
3. Most of the new UN numbers relate to the splitting of liquid and solid entries. Whilst preparing this list it was noted that a few UN numbers (probably no more than 10) have separate liquid/solid entries in the TIs but the UN has not split the substances. Unfortunately, the authors did not keep a complete list but as an example UN Crotonic acid has a liquid/solid entry in the TIs but not in UN. Where the UN has not split the authors have used UN data. The DGP is invited to consider what action to take on these entries:
 - a. retain these entries and allocate a PI and inform UN or
 - b. delete the entries and align to UN.

It is understood a number of chemists from Netherlands and Germany checked the UN list carefully and a number of working groups discussed the changes in Geneva, so perhaps the substances only exist in a single state. A few solid/liquid entries e.g. 2900, 2814 were intentionally not split.

4. In the list apart from the Packing Instruction number (note these are the new numbers as proposed). The letter ‘S’ appears; the authors believe there will be an entry for these substances in the Supplement.

The letter ‘F’ indicates Forbidden.

5. There is only 2 columns for Packing Instructions, one for the fully regulated shipment and the

other for limited quantities. The quantity limit columns which remain unchanged will indicate whether a substance is forbidden for passenger aircraft of limited quantities.

Annex 3

Particular Packing Requirements

Particular Packing Requirements

PPR	TEXT	PI
1	For UN 3079 experience has shown that this substance may leak from packagings that ordinarily are leakproof to other chemicals. Special precautions should be taken to ensure that the packaging remains leak tight. Inner packagings must be packed with absorbent material in sufficient quantity to absorb the entire liquid content. UN 3079 is F/F therefore this substance and the PPR will be included in the Supplement.	3X1
2	~~For~~ UN 1302 and 2983 only metal cylinders that meet the requirements of P200 only are permitted.	3X2 3X5
72	For UN 1278, Propyl chloride plastic inner packagings are permitted . The maximum quantity per inner packaging must not exceed 2.5 L.	3X4
3	For UN 1723, metal packagings are not permitted.	3X3
4	For UN 1921, UN 1204, UN 1298, UN 2356 and UN 2456 plastic packagings are not permitted.	3X3
5	For UN 1111, UN 1228, UN 2347, UN 2402, UN 2478, UN 2486, or any substance containing a Class 8 subsidiary risk, glass or earthenware inner packagings must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.	Y3XX
6	For UN 1111, UN 1228, UN 1717, UN 1723, UN 2347, and UN 2402, plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.	Y3XX
7	For UN 1184 aluminium inner packagings are not permitted.	3X2 Y3XX
8	For UN Nos. 1310, 1320, 1321, 1322, 1344, 1348, 1349, 1517 and 3317 packagings must be lead free.	4X1
9	For UN 1310, only glass inner packagings are permitted	4X1
10	For UN1310, 1354, 1355, 1356 and 1571 inner packagings are limited to 0.5Kg	4X1
11	For UN 2852 inner packagings of glass are limited to 0.25Kg	4X1
12	For UN 1420, 1422, 1423, 1428, and 2257 plastics inner packagings and plastics	4X1

	single packagings are not permitted	
13	For UN 1389, 1407, 1415, 1420, 1422, 1423, 1428 2257, 3208 and 3209 if the substance is a dispersion in organic liquid, the organic liquid must have a flashpoint above 50 °C	4X1
14	For UN 1369 1382, 1384, 1385, 1409,1437, 1871, 2004 and 3182 plastics bag (IP.5) are not permitted	4X2
15	For UN 2318, 3205 and 3206 inner packaging for passenger aircraft are limited to 1Kg and 2.5Kg for cargo aircraft. Plastics bags (IP.5) are not permitted.	4X2
16	For UN 1378 only glass or earthenware or metal inner packagings are permitted and must not exceed 1Kg	4X2
17	For UN 1418, 1436, 2806, 2813, 3131, 3132, 3134 and 3135 in Packing Group I inner packagings must have threaded closures.	4X2
18	For UN1350 there is no limit to package sizes.	4X2
19	For UN 1326, 1352, 1358, 1437 and 1871 in PGII bags are not allowed	4X2
20	For UN 3241 metal inner packagings metal outer packagings and metal single packagings are not permitted. The net mass in glass earthenware inner packagings must not exceed 0.5Kg; Plastics bags (IP.5) are permitted in addition to the above inner packagings providing the net mass contained in them does not exceed 1Kg.	4X7
21	For UN 1338 the net mass in glass or earthenware inner packagings must not exceed 0.5kg for passenger aircraft and 1kg for cargo aircraft.	4X7
22	For UN 3207, 3208 and 3209 plastics inner packagings and plastics single packagings are not permitted.	4X8
23	For 3207, 1411 inner and 1928 plastic single where metal packagings are used they must be either metal pressure cylinders or metal pressure vessels	4X8
13	For UN 3208 if the substance is a dispersion in organic liquid, the organic liquid must have a flashpoint above 50° C.	Y4X1
24	For UN 1409 and 1437 plastics bag (IP.5) are not permitted	Y4X1
25	For UN 1326, 1352, 1358, 1437 and 1871 in plastics bags in packing group II (IP5) are not permitted	Y4X1
26	For UN 3208 plastics inner packaging are not permitted.	Y4X1
27	For UN 1390 and 1402 glass, or earthenware inner plastics packagings must be packed with cushioning material in tightly closed metal or rigid plastic receptacles before packing into outer packagings	Y4X1
28	For UN3103 and 3104 type C Organic peroxides presenting an explosive subsidiary risk must comply with the provisions of Part: 3.2.2 and 3.2.3.	5X1
29	For UN1458, 1459 and 1483 packing group III fibre inner packagings (IP.6) are not permitted	5X2
30	For UN 1442, 1445, 1449, 1452, 1453, 1458, 1459, 1461, 1471, 1472, 1485, 1506, 1513, 1748 and 2741 plastics bags (IP5) must be packed in tightly closed metal or rigid plastics receptacles before packing into outer packagings	5X2
31	For UN2014 the minimum ullage must be 10%	5X3
32	For UN1458, 1459 and 1483 in packing group III fibre inner packagings (IP.6) are not permitted.	Y5XX
30	For UN 1442, 1445, 1449, 1452, 1453, 1458, 1459, 1461, 1471, 1472, 1485,	Y5XX

	1506, 1513, 1748 and 2741 plastics bags (IP5) must be packed in tightly closed metal or rigid plastics receptacles before packing into outer packagings	
29	For UN1458, 1459 and 1483 in packing group III fibre inner packagings (IP.6) are not permitted.	Y5XX
31	For UN2014 the minimum ullage must be 10%	Y5XY
33	For UN 1737, 1738, 1750, 2574 and 3071, glass or earthenware inner packagings must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packaging in sufficient quantity to absorb the entire liquid content.	6X1
33	For UN 2661, 2668, 2669 and 3071, plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings	6X1
34	For UN1593, 1702, 1710, 1846, 1888, 1897, and 2831, pure aluminium or aluminium alloys are permitted only for halogenated hydrocarbons that will not react with aluminium.	6X1
35	For UN 1638, 1737, 1738, 1750, 1916, 1935 and 2024, aluminium inner or single packagings are not permitted.	6X1
36	For UN 2574, plastic inner or single packagings are not permitted.	6X1
37	For UN 1888, the quantities permitted in inner packagings must not exceed those for PGII substances.	6X1
38	For UN 1545, 1649, 1697 and 1701, glass or earthenware inner packagings must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packaging.	6X2
33	For UN 1701 plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.	6X2
39	For UN 1545, 1649, and 1697 plastic single packagings are not permitted.	6X2
40	For UN 1649, 1697, and 1701 aluminium single packagings are not permitted.	6X2
41	For UN 1699, 2471, 3048 and 3146 PG I and II, glass or earthenware inner packagings must be packed with cushioning material in tightly closed metal or rigid plastic receptacles before packing in outer packaging.	6X3
42	For UN 1699, 3249 PG III, the quantities permitted in inner packagings must not exceed those for packing group II substances. Bags are not permitted as a single packaging.	6X3
43	For UN 1751, only glass or earthenware, plastic or metal (no aluminium) inner packagings are permitted. Aluminium, fibre, and plywood single packagings are not permitted.	6X3
44	For UN 2730, only glass or earthenware, plastic or metal inner packagings are permitted. Bags are not permitted as a single packaging.	6X3
45	For UN 2471, only glass or earthenware and plastic inner packagings are permitted. The net mass in inner packagings must not exceed 0.5Kg. Single packagings are not permitted.	6X3
46	For UN 3146 PG I and II, only glass or earthenware, plastic or metal (no aluminium) inner packagings are permitted. Single packagings are not permitted for PG I. Aluminium, plywood, fibre and plastic single packagings are not permitted for PG II.	6X3

47	For UN1697, only glass or earthenware and metal (not aluminium) inner packagings are permitted. Aluminium, plywood, fibre and plastic single packagings are not permitted.	6X3
38	For UN 3048, only glass or earthenware, plastic and metal inner packagings are permitted	6X3
48	For UN 1737, 1738, 1750, 2022, 2076, 2267, 2574, 2742, 2743, 2744, 2745, 2746, 2748, 2788, 2927, 3071, 3073, 3277, and 3289, glass or earthenware inner packagings must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.	Y6X1
33	For UN 3071, plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.	Y6X1
34	For UN 1593, 1702, 1710, 1846, 1888, 1897, and 2831, pure aluminium or aluminium alloys are permitted only for halogenated hydrocarbons that will not react with aluminium.	Y6X1
49	For UN 2574, plastic inner packagings are not permitted.	Y6X1
50	For UN 1638, 1737, 1738, 1750, 1916, 1935, 2024, and 2788, aluminium inner packagings are not permitted.	Y6X1
51	For UN 1851 and 1888, the net quantity in inner packaging quantity must not exceed 0.1 L	Y6X1
41	For UN 3146, glass or earthenware inner packagings must be packed with cushioning material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.	Y6X2
52	For UN 1751 and 3146, only glass or earthenware, plastic, and metal (not aluminium) inner packagings are permitted.	Y6X2
53	For UN 2730, only glass or earthenware, plastic, metal (including aluminium) inner packagings are permitted.	Y6X2
54	UN 2809 may also be packed in a single packaging which may only be a welded steel bottle with an inner vaulted bottom, an opening not exceeding 20 mm and a closure which must be a bolt with a conical thread.	8XX
55	For UN 2803, 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 a strong water-resistant outer packaging 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 to the refrigerant and must have impact resistance at the low temperatures of the refrigerant employed. If dry ice is used, the outer packaging must permit the release of carbon dioxide gas.	8XX
56	For UN 1732, single packagings are not permitted	8X1
33	For UN 1715, 1732, 1777, 2029, 2789 and 2790, plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packaging	8X1
38	For UN 1715, 1732, 1777, 1828, 2029, 2401, 2604 and 2789, glass or earthenware inner packagings must be packed with absorbent material in tightly closed metal or rigid plastics inner packagings before packing in outer packagings	8X1

57	For UN 1777 and 1732, glass or earthenware inner packagings are permitted if the item is free from hydrofluoric acid	8X1
58	For UN 1715, 1732, 1777, 1828, 2029 and 2789, steel packagings must be corrosion-resistant or with protection against corrosion	8X1
59	For UN 1715, 1732, 1777, 1828, 2029, 2401 and 2789, when aluminium or aluminium alloys are used they must be resistant to corrosion	8X1
56	For UN 1802 and 2031, single packagings are not permitted	8X2
33	For UN 1758, 1760, 1764, 1765, 1768, 1775, 1776, 1778, 1782, 1786, 1787, 1788, 1789 (PGII), 1790, 1808, 1818, 1838, 1903, 1908 (PGII), 2031, 2054, 2240, 2258, 2308, 2443, 2444, 2502, 2564 (PGII), 2692, 2699, 2734, 2735, 2801, 2879, 2920, 2922, 3093, 3094, 3145, 3264, 3265, 3266, 3267 and 3301, plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packaging	8X2
38	For, UN1739, 1758, 1760, 1764, 1765, 1787, 1788, 1789, 1796, 1798, 1808, 1818, 1826, 1830, 1832, 1837, 1838, 1903, 1906, 1908, 2031, 2054, 2240, 2258, 2308, 2444, 2502, 2564, 2692, 2699, 2734, 2735, 2796, 2801, 2879, 2920, 2922, 3093, 3094, 3145, 3264, 3265, 3266, 3267 and 3301, glass or earthenware inner packagings must be packed with absorbent material in tightly closed metal or rigid plastics inner packagings before packing in outer packagings	8X2
57	For UN 1740, 1775, 1776, 1778, 1782 and 2699, glass or earthenware inner packagings are permitted if the item is free from hydrofluoric acid	8X2
60	For UN 1740, 1768, 1786, 1790, 1811, 2439 and 2817, glass or earthenware inner packagings are not permitted	8X2
61	For UN 1796, 1798, 1826 and 2031, plastic inner or single packagings are not permitted	8X2
62	For UN 1739, 1774, 1787, 1788, 1789, 1798, 1802, 1803, 1818, 1838 and 2031, metal inner or single packagings are not permitted	8X2
58	For UN1724, 1728, 1747, 1753, 1758, 1762, 1763, 1764, 1765, 1766, 1767, 1768, 1769, 1771, 1775, 1776, 1778, 1781, 1782, 1784, 1786, 1790, 1791, 1796, 1799, 1800, 1801, 1804, 1808, 1810, 1816, 1826, 1830, 1832, 1837, 1906, 1940, 2240, 2308, 2435, 2443, 2444, 2502, 2564, 2692, 2699, 2796, 2879, 3093 and 3094, steel packagings must be corrosion-resistant or with protection against corrosion	8X2
63	For UN 1724, 1728, 1732, 1747, 1753, 1762, 1763, 1766, 1767, 1769, 1771, 1784, 1787, 1788, 1799, 1800, 1801, 1803, 1804, 1816, 2029, 2435 and 2443, plastic single packagings are not permitted	8X2
57	For UN 1727, 1740, 1811 and 2439, glass or earthenware inner packagings are permitted if the item is free from hydrofluoric acid	8X3
64	For UN 1939, metal inner and single packagings are not permitted	8X3
58	For UN 1806, 1807, 1839, 1938, 2509, 2691 and 2869, steel packagings must be corrosion-resistant or with protection against corrosion	8X3
65	For UN 2949, plastic bags (IP.5) are not permitted as inner packagings	8X4
33	For UN 1715, 2789 and 2790 plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packaging	Y8X1
58	For UN 1715, 2789 and 2790, steel packagings must be corrosion-resistant or	Y8X1

	with protection against corrosion	
66	For UN 1715, 2789, and 2790, when aluminium or aluminium alloys are used they must be resistant to corrosion	Y8X1
33	For UN 1764, 1765, 1768, 1775, 1776, 1778, 1782, 1787, 1788, 1789, 1790, 1818, 1908, 2031, 2258, 2308, 25022564 and 3093 plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packaging	Y8X2
57	For UN 1775, 1776, 1778, and 1782, glass or earthenware inner packagings are permitted only if the item is free from hydrofluoric acid	Y8X2
67	For UN 1740, 1768, 1790, 1811, 2439 and 2817, glass or earthenware inner packagings are not permitted	Y8X2
68	For UN 1774, 1787, 1788, 1789, 1803, 1818 and 2031, metal inner packagings are not permitted	Y8X2
57	For UN 1727, 1740, 1811 and 2439, glass or earthenware inner packagings are permitted only if the item is free from hydrofluoric acid	Y8X3
58	For UN 1807, 1839, 1938, 2509 and 2869, steel packagings must be corrosion-resistant or with protection against corrosion	Y8X3
71	For UN 2949, plastic bags (IP.5) are not permitted as inner packagings	Y8X4
58	For UN 2949 steel packagings must be corrosion-resistant or with protection against corrosion	Y8X4
58	For UN 1764, 1765, 1768, 1775, 1776, 1778, 1782, 1790, 1791, 1940, 2031, 2502, 2564 and 3093 steel packaging must be corrosion resistant or with protection against corrosion	Y8X2
66	For UN 1715, 1776, 1828, 2401, 2735, 2789 when aluminium or aluminium alloys are used they must be resistant to corrosion	Y8X2

Annex 4

**Concordance of Packing
Instruction Numbers**

Concordance of Packing Instruction Numbers

Class 3

Existing ICAO No(s)	Proposed No.	Working Document No.	UN PI
301	301	301	301
311	300	311	300
312	302	312	302
Y312	Y302	Y312	
302/3/5/7/9/10	303	3X1	P001
304/6/8	304	3X2	P001
304/6/8	305	3X3	P001
303	306	3X4	P001
304/8	307	3X5	P001
305/6/9	Y303	Y3XX	

Class 4

Existing ICAO No(s)	Proposed No.	Working Document No.	UN PI No.
400	400	400	P002
Y400	Y400	Y400	
401	411	401	411
Y401	Y411	Y401	
404	407	404	407
Y404	Y407	Y404	
407	410	407	P002
433	408	433	408
435	499	435	
412/416	401	4X1	P001/P002 + 400s
415/416/417 418/419/420 421/422	402	4X2	P001/P002 + 400s
416/418	403	4x5	P001/P002 +400s
421/422/434 409/416/418/422/425	404	4X7 4X8	P001/P002 + 400s
416/418	406	4X15	P001/P002 + 400s
416/418	409	4X16	P001/P002 + 400s
427/428	412		
Various	Y401	Y4X1	

Class 5

Existing ICAO No.	Draft No.	Proposed No.	UN PI
500	5X1	520	520
501	5X3	502	
Y501	Y5XY	Y502	
502	5X1	520	520
503	5X3	502	
Y503	5XY	Y502	
505	5X3	502	
506	5X3	502	
Y506	5XY	Y502	
507	5X3	502	
508	5X2	501	
Y508	Y5XX	Y501	
509	5X2	501	
Y509	Y5XX	Y501	
510	5X1	520	
511	5X2	501	
512	5X2	501	
513	5X1	520	
514	5X3	502	
Y514	Y5XY	502	
515	5X3	502	
516	5X2	501	
Y516	Y5XX	Y501	
517	5X2	501	
Y517	Y5XX	501	
518	5X2	501	
519	5X2	501	
523	No change	500	

Class 6

Existing ICAO No(s).	Proposed No.	Working Document No	UN PI
600	600	600	P002
601	601	601	P002
602	620	602	620
603/604/609/611			

617/618/620	602	6X1	P001
605/610/612	603	6X2	P002
606/607/608/613/614/ 615/616/617	604 Y602	6X3 Y6X1	P002
	Y603	Y6X2	
622	621	622	621
650	650	650	650

Class 8

Existing ICAO No(s)	Proposed No.	Working Document No.	UN PI
800	803	800	801
801	801	801	
802	802	802	801
803/804	800	8XX	800
805	805	805	
806	806	806	P003
808/812/818/820	809	8X1	
807/809/813/821	804	8X2	P001
815/817/825/826	807	8X3	P002
810/811/814/816/82 2/823	808	8X4	P002
	Y809	Y8X1	
	Y804	Y8x2	
	Y807	Y8X3	
	Y808	Y8X4	

Class 9

Existing ICAO No(s)	Proposed No.	Working Document No.	UN PI
900	900	900	
902	908	902	
904	909	904	
905	905	905	905

906	911	906	
908	912	908	002
909	913	909	002
910	910	910	
911	906	911	906
913	904	913	904
915	901	915	901
Y915	Y901	Y915	
916	907	916	907
917	902	917	902
903/912/918	903	9X1	903
907/914	914 Y914	9X2 Y9XX	001