



**WORKING PAPER**

**DANGEROUS GOODS PANEL (DGP)  
MEETING OF THE WORKING GROUP OF THE WHOLE**

**Atlantic City, United States, 4 to 8 April 2011**

**Agenda Item 2: Development of recommendations for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2013-2014 Edition**

**2.4: Part 4 — Packing Instructions**

**DRAFT AMENDMENTS TO THE TECHNICAL INSTRUCTIONS TO ALIGN WITH THE UN  
RECOMMENDATIONS — PART 4**

(Presented by the Secretary)

**SUMMARY**

This working paper contains draft amendments to Part 4 of the Technical Instructions to reflect the decisions taken by the UN Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals at its fifth session (Geneva, 10 December 2010). It also reflects amendments agreed by DGP-WG10 (Abu Dhabi, United Arab Emirates, 7 to 11 November 2010).

The DGP-WG is invited to agree to the draft amendments in this working paper.

## Part 4

# PACKING INSTRUCTIONS

### INTRODUCTORY NOTES

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DGP-WG/10-WP/7:

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[ *Note 1.— Packing groups*

For packing purposes, dangerous goods—of all classes, other than Classes 1, 2 and 7, self-reactive substances of Division 4.1, and Divisions 5.2 and 6.2, have been divided among three packing groups according to the degree of danger they present. The packing groups have the following meanings:

of classes 3, 8, 9 and divisions

- Packing Group I — Substances presenting high danger
- Packing Group II — Substances presenting medium danger
- Packing Group III — Substances presenting low danger

Some substances in Class 9 and liquids in Division 5.1 have been assigned to packing groups by experience rather than through application of technical criteria. The packing group to which a substance is assigned is listed in Table 3-1. The criteria for the packing groups are given in Part 2, Chapters 3, 4, 5, 6 and 8.

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DGP-WG/10-WP/42:

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1.1.4 The body and the closure of any packaging must be so constructed as to be able to adequately resist the effects of temperature and vibration occurring in normal conditions of transport. The closure device must be so designed that it:

- a) is unlikely that it can be incorrectly or incompletely closed, and must be such that it may be checked easily to determine that it is completely closed; and
- b) remains securely closed during transport.

1.1.4.1 In addition, for inner packagings containing liquids ~~substances~~, closures must be held securely, tightly and effectively in place by secondary means. Examples of such methods include: adhesive tape, friction sleeves, welding or soldering, positive locking wires, locking rings, induction heat seals and child-resistant closures. When secondary means of closure cannot be applied to an inner packaging containing liquids, the inner packaging must be securely closed and placed in a leakproof liner and then placed in an outer packaging.

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### Chapter 3

## CLASS 1 — EXPLOSIVES

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### 3.4 PACKING INSTRUCTIONS

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#### Packing Instruction 114

**a) solid wetted**

*Inner packagings*

- Bags
  - plastics
  - textile
  - woven plastics
- Receptacles
  - metal
  - plastics

*Intermediate packagings*

- Bags
  - plastics
  - textile, plastic coated or lined
- Receptacles
  - metal
  - plastics

*Outer packagings*

- Boxes
  - fibreboard (4G)
  - natural wood, ordinary (4C1)
  - natural wood, with siftproof walls (4C2)
  - plywood (4D)
  - reconstituted wood (4F)
  - solid plastics (4H2)
  - steel (4A)
- Drums
  - aluminium, ~~removable head~~ (1B1, 1B2)
  - fibre (1G)
  - other metal (1N1, 1N2)
  - ~~plastics, removable head~~ (1H1, 1H2)
  - plywood (1D)
  - steel, ~~removable head~~ (1A1, 1A2)

**PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:**

- For UN 0077, 0234, 0235 and 0236, packagings must be lead-free.
- For UN 0342, inner packagings are not required when metal (1A2 ~~or~~ 1B2 or 1N2) or plastic (1H2) drums are used as outer packagings.
- Intermediate packagings are not required if leakproof removable head drums are used as the outer packaging.

**b) solid dry**

*Inner packagings*

- Bags
  - paper, kraft
  - plastics
  - textile, siftproof
  - woven plastics, siftproof
- Receptacles
  - fibreboard
  - metal
  - paper
  - plastics
  - wood
  - woven plastics, siftproof

*Intermediate packagings*

Not necessary

*Outer packagings*

- Boxes
  - fibreboard (4G)
  - natural wood, ordinary (4C1)
  - natural wood, with siftproof walls (4C2)
  - plywood (4D)
  - reconstituted wood (4F)
- Drums
  - aluminium, ~~removable head~~ (1B1, 1B2)
  - fibre (1G)
  - other metal (1N1, 1N2)
  - ~~plastics, removable head~~ (1H1, 1H2)
  - plywood (1D)
  - steel, ~~removable head~~ (1A1, 1A2)

**PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:**

- For UN 0077, 0132, 0234, 0235 and 0236, packagings must be lead-free.
- For UN 0508 and 0509, metal packagings must not be used.
- For UN 0160 and 0161, when metal drums (1A2 ~~or~~ 1B2 or 1N2) are used as the outer packaging, metal packagings must be so constructed that the risk of explosion, by reason of increase in internal pressure from internal or external causes, is prevented.
- For UN 0160 and 0161, inner packagings are not required if drums are used as the outer packaging.

### Packing Instruction 130

*Inner packagings*

Not necessary

*Intermediate packagings*

Not necessary

*Outer packagings*

Boxes

aluminium (4B)  
 expanded plastics (4H1)  
 fibreboard (4G)  
 natural wood, ordinary (4C1)  
 natural wood, with siftproof walls (4C2)  
~~other metal (4N)~~  
 plywood (4D)  
 reconstituted wood (4F)  
 solid plastics (4H2)  
 steel (4A)

Drums

aluminium, ~~removable head~~ (1B1, 1B2)  
 fibre (1G)  
~~other metal (1N1, 1N2)~~  
~~plastics, removable head~~ (1H1, 1H2)  
 plywood (1D)  
 steel, ~~removable head~~ (1A1, 1A2)

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### Packing Instruction 131

*Inner packagings*

Bags

paper  
 plastics

Receptacles

fibreboard  
 metal  
 plastics  
 wood

Reels

*Intermediate packagings*

Not necessary

*Outer packagings*

Boxes

aluminium (4B)  
 fibreboard (4G)  
 natural wood, ordinary (4C1)  
 natural wood, with siftproof walls (4C2)  
~~other metal (4N)~~  
 plywood (4D)  
 reconstituted wood (4F)  
 steel (4A)

Drums

aluminium, ~~removable head~~ (1B1, 1B2)  
 fibre (1G)  
~~plastics, removable head~~ (1H1, 1H2)  
~~other metal (1N1, 1N2)~~  
 plywood (1D)  
 steel, ~~removable head~~ (1A1, 1A2)

**PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:**

— For UN 0029, 0267 and 0455, bags and reels must not be used as inner packagings.

### Packing Instruction 133

*Inner packagings*

Receptacles  
 fibreboard  
 metal  
 plastics  
 wood  
 Trays, fitted with dividing partitions  
 fibreboard  
 plastics  
 wood

*Intermediate packagings*

Receptacles  
 fibreboard  
 metal  
 plastics  
 wood

*Outer packagings*

Boxes  
 aluminium (4B)  
 fibreboard (4G)  
 natural wood, ordinary (4C1)  
 natural wood, with siftproof walls (4C2)  
~~other metal (4N)~~  
 plywood (4D)  
 reconstituted wood (4F)  
 solid plastics (4H2)  
 steel (4A)

**PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:**

- Receptacles are only required as intermediate packagings when the inner packagings are trays.
- For UN 0043, 0212, 0225, 0268 and 0306, trays must not be used as inner packagings.

### Packing Instruction 134

*Inner packagings*

Bags  
 water-resistant  
 Receptacles  
 fibreboard  
 metal  
 plastics  
 wood  
 Sheets  
 fibreboard, corrugated  
 Tubes  
 fibreboard

*Intermediate packagings*

Not necessary

*Outer packagings*

Boxes  
 aluminium (4B)  
 fibreboard (4G)  
 natural wood, ordinary (4C1)  
 natural wood, with siftproof walls (4C2)  
~~other metal (4N)~~  
 plywood (4D)  
 reconstituted wood (4F)  
 solid plastics (4H2)  
 steel (4A)  
 Drums  
~~aluminium, removable head (1B1, 1B2)~~  
 fibre (1G)  
~~plastics, removable head (1H1, 1H2)~~  
~~other metal (1N1, 1N2)~~  
 plywood (1D)  
~~steel, removable head (1A1, 1A2)~~

### Packing Instruction 135

*Inner packagings*

Bags  
 paper  
 plastics  
 Receptacles  
 fibreboard  
 metal  
 plastics  
 wood  
 Sheets  
 paper  
 plastics

*Intermediate packagings*

Not necessary

*Outer packagings*

Boxes  
 aluminium (4B)  
 expanded plastics (4H1)  
 fibreboard (4G)  
 natural wood, ordinary (4C1)  
 natural wood, with siftproof walls (4C2)  
~~other metal (4N)~~  
 plywood (4D)  
 reconstituted wood (4F)  
 solid plastics (4H2)  
 steel (4A)  
 Drums  
~~aluminium, removable head (1B1, 1B2)~~  
 fibre (1G)  
~~other metal (1N1, 1N2)~~  
~~plastics, removable head (1H1, 1H2)~~  
 plywood (1D)  
~~steel, removable head (1A1, 1A2)~~

### Packing Instruction 136

*Inner packagings*

Bags  
 plastics  
 textile  
 Boxes  
 fibreboard  
 plastics  
 wood  
 Dividing partitions in the  
 outer packagings

*Intermediate packagings*

Not necessary

*Outer packagings*

Boxes  
 aluminium (4B)  
 fibreboard (4G)  
 natural wood, ordinary (4C1)  
 natural wood, with siftproof walls (4C2)  
other metal (4N)  
 plywood (4D)  
 reconstituted wood (4F)  
 solid plastics (4H2)  
 steel (4A)  
 Drums  
 aluminium, ~~removable head~~ (1B1, 1B2)  
 fibre (1G)  
other metal (1N1, 1N2)  
~~plastics, removable head~~ (1H1, 1H2)  
 plywood (1D)  
 steel, ~~removable head~~ (1A1, 1A2)

### Packing Instruction 137

*Inner packagings*

Bags  
 plastics  
 Boxes  
 fibreboard  
wood  
 Tubes  
 fibreboard  
 metal  
 plastics  
 Dividing partitions in the  
 outer packagings

*Intermediate packagings*

Not necessary

*Outer packagings*

Boxes  
 aluminium (4B)  
 fibreboard (4G)  
 natural wood, ordinary (4C1)  
 natural wood, with siftproof walls (4C2)  
other metal (4N)  
 plywood (4D)  
 reconstituted wood (4F)  
 steel (4A)

**PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:**

- For UN 0059, 0439, 0440 and 0441, when the shaped charges are packed singly, the conical cavity must face downwards and the package marked "THIS SIDE UP". When the shaped charges are packed in pairs, the conical cavities must face inwards to minimize the jetting effect in the event of accidental initiation.

### Packing Instruction 138

*Inner packagings*

Bags  
plastics

*Intermediate packagings*

Not necessary

*Outer packagings*

Boxes  
aluminium (4B)  
fibreboard (4G)  
natural wood, ordinary (4C1)  
natural wood, with siftproof walls (4C2)  
~~other metal (4N)~~  
plywood (4D)  
reconstituted wood (4F)  
solid plastics (4H2)  
steel (4A)

Drums  
aluminium, ~~removable head~~ (1B1, 1B2)  
fibre (1G)  
~~other metal (1N1, 1N2)~~  
plastics, ~~removable head~~ (1H1, 1H2)  
plywood (1D)  
steel, ~~removable head~~ (1A1, 1A2)

**PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:**

— If the ends of the articles are sealed, inner packagings are not necessary.

### Packing Instruction 139

*Inner packagings*

Bags  
plastics  
Receptacles  
fibreboard  
metal  
plastics  
wood  
Reels  
Sheets  
paper  
plastics

*Intermediate packagings*

Not necessary

*Outer packagings*

Boxes  
aluminium (4B)  
fibreboard (4G)  
natural wood, ordinary (4C1)  
natural wood, with siftproof walls (4C2)  
~~other metal (4N)~~  
plywood (4D)  
reconstituted wood (4F)  
solid plastics (4H2)  
steel (4A)

Drums  
aluminium, ~~removable head~~ (1B1, 1B2)  
fibre (1G)  
~~other metal (1N1, 1N2)~~  
plastics, ~~removable head~~ (1H1, 1H2)  
plywood (1D)  
steel, ~~removable head~~ (1A1, 1A2)

**PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:**

— For UN 0065, 0102, 0104, 0289 and 0290, the ends of the detonating cord must be sealed, for example by a plug firmly fixed so that the explosive cannot escape. The ends of “**Cord, detonating, flexible**”, must be fastened securely.

— For UN 0065 and 0289, inner packagings are not required when they are in coils.

### Packing Instruction 140

#### Inner packagings

Bags  
plastics  
Reels  
Sheets  
paper, kraft  
plastics  
Receptacles  
wood

#### Intermediate packagings

Not necessary

#### Outer packagings

Boxes  
aluminium (4B)  
fibreboard (4G)  
natural wood, ordinary (4C1)  
natural wood, with siftproof walls (4C2)  
other metal (4N)  
plywood (4D)  
reconstituted wood (4F)  
solid plastics (4H2)  
steel (4A)  
Drums  
aluminium, ~~removable head~~ (1B1, 1B2)  
fibre (1G)  
other metal (1N1, 1N2)  
~~plastics, removable head~~ (1H1, 1H2)  
plywood (1D)  
steel, ~~removable head~~ (1A1, 1A2)

#### PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

- If the ends of UN 0105 are sealed, no inner packagings are required.
- For UN 0101, the packaging must be siftproof except when the fuse is covered by a paper tube and both ends of the tube are covered with removable caps.
- For UN 0101, steel or aluminium boxes or drums must not be used.

### Packing Instruction 141

#### Inner packagings

Receptacles  
fibreboard  
metal  
plastics  
wood  
Trays, fitted with dividing partitions  
plastics  
wood  
Dividing partitions in the  
outer packagings

#### Intermediate packagings

Not necessary

#### Outer packagings

Boxes  
aluminium (4B)  
fibreboard (4G)  
natural wood, ordinary (4C1)  
natural wood, with siftproof walls (4C2)  
other metal (4N)  
plywood (4D)  
reconstituted wood (4F)  
solid plastics (4H2)  
steel (4A)  
Drums  
aluminium, ~~removable head~~ (1B1, 1B2)  
fibre (1G)  
other metal (1N1, 1N2)  
~~plastics, removable head~~ (1H1, 1H2)  
plywood (1D)  
steel, ~~removable head~~ (1A1, 1A2)



### Packing Instruction 142

<i>Inner packagings</i>	<i>Intermediate packagings</i>	<i>Outer packagings</i>
<p>Bags</p> <ul style="list-style-type: none"> <li>paper</li> <li>plastics</li> </ul> <p>Receptacles</p> <ul style="list-style-type: none"> <li>fibreboard</li> <li>metal</li> <li>plastics</li> <li>wood</li> </ul> <p>Sheets</p> <ul style="list-style-type: none"> <li>paper</li> </ul> <p>Trays, fitted with dividing partitions</p> <ul style="list-style-type: none"> <li>plastics</li> </ul>	<p>Not necessary</p>	<p>Boxes</p> <ul style="list-style-type: none"> <li>aluminium (4B)</li> <li>fibreboard (4G)</li> <li>natural wood, ordinary (4C1)</li> <li>natural wood, with siftproof walls (4C2)</li> <li><del>other metal (4N)</del></li> <li>plywood (4D)</li> <li>reconstituted wood (4F)</li> <li>solid plastics (4H2)</li> <li>steel (4A)</li> </ul> <p>Drums</p> <ul style="list-style-type: none"> <li>aluminium, <del>removable head</del> (1B1, 1B2)</li> <li>fibre (1G)</li> <li><del>other metal (1N1, 1N2)</del></li> <li>plastics, <del>removable head</del> (1H1, 1H2)</li> <li>plywood (1D)</li> <li>steel, <del>removable head</del> (1A1, 1A2)</li> </ul>

### Packing Instruction 143

<i>Inner packagings</i>	<i>Intermediate packagings</i>	<i>Outer packagings</i>
<p>Bags</p> <ul style="list-style-type: none"> <li>paper, kraft</li> <li>plastics</li> <li>textile</li> <li>textile, rubberized</li> </ul> <p>Receptacles</p> <ul style="list-style-type: none"> <li>fibreboard</li> <li>metal</li> <li>plastics</li> <li><del>wood</del></li> </ul> <p>Trays, fitted with dividing partitions</p> <ul style="list-style-type: none"> <li>plastics</li> <li>wood</li> </ul>	<p>Not necessary</p>	<p>Boxes</p> <ul style="list-style-type: none"> <li>aluminium (4B)</li> <li>fibreboard (4G)</li> <li>natural wood, ordinary (4C1)</li> <li>natural wood, with siftproof walls (4C2)</li> <li><del>other metal (4N)</del></li> <li>plywood (4D)</li> <li>reconstituted wood (4F)</li> <li>solid plastics (4H2)</li> <li>steel (4A)</li> </ul> <p>Drums</p> <ul style="list-style-type: none"> <li>aluminium, <del>removable head</del> (1B1, 1B2)</li> <li>fibre (1G)</li> <li><del>other metal (1N1, 1N2)</del></li> <li>plastics, <del>removable head</del> (1H1, 1H2)</li> <li>plywood (1D)</li> <li>steel, <del>removable head</del> (1A1, 1A2)</li> </ul>

**PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:**

- For UN 0271, 0272, 0415 and 0491, when metal packagings are used, metal packagings must be so constructed that the risk of explosion, by reason of increase in internal pressure from internal or external causes, is prevented.
- Instead of the above inner and outer packagings, composite packagings (6HH2) (plastic receptacle with outer solid box) may be used.

## Chapter 4

### CLASS 2 — GASES

*Parts of this Chapter are affected by State Variations CA 17, US 6, US 15; see Table A-1*

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#### 4.2 PACKING INSTRUCTIONS

##### Packing Instruction 200

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- 4) Gas mixtures containing any of the following gases must not be offered for transport in aluminium alloy cylinders unless approved by the appropriate national authority of the State of Origin and the State of the Operator:

UN 1037 **Ethyl chloride**  
 UN 1063 **Methyl chloride**  
 UN 1063 **Refrigerant gas R 40**  
 UN 1085 **Vinyl bromide, stabilized**  
 UN 1086 **Vinyl chloride, stabilized**  
 UN 1860 **Vinyl fluoride, stabilized**  
 UN 1912 **Methyl chloride and methylene chloride mixture**

- 5) ~~Keys for the column~~ "Special packing provisions":

Material compatibility

- a) Aluminium alloy cylinders are forbidden.  
 b) Copper valves are forbidden.  
 c) Metal parts in contact with the contents must not contain more than 65 per cent copper.  
 d) When steel cylinders are used, only those bearing the "H" mark [in accordance with 6:5.2.7.4 p](#)) are permitted.

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##### Packing Instruction 202

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- 6) Pressure-relief devices

Every closed cryogenic receptacle, having a nominal capacity in excess of 550 L, must be provided with at least 2 pressure-relief devices. The pressure-relief device must be of the type that will resist dynamic forces including surge.

Closed cryogenic receptacles, having a nominal capacity of 550 L or less, must be provided with at least 1 pressure-relief device, and may in addition have a frangible disc in parallel with the spring loaded device in order to meet the requirements of 6:5.1.3.6.5. The pressure-relief device must be of the type that will resist dynamic forces including surge.

*Note.— The pressure-relief devices must meet the requirements of 6:5.1.3.6.4 and 6:5.1.3.6.5.*

- 7) Compatibility

Materials used to ensure the leakproofness of the joints or for the maintenance of the closures must be compatible with the contents. In the case of receptacles intended for the transport of oxidizing gases (i.e. with a subsidiary risk of 5.1), these materials must not react with these gases in a dangerous manner.

- 8) Periodic inspection

[The periodic inspection and test frequencies of pressure relief valves in accordance with 6:5.1.6.3 must not exceed five years.](#)

Note.— Insulated packagings containing refrigerated liquid nitrogen fully absorbed in a porous material are not subject to these Instructions provided they meet the requirements of Special Provision A152.

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### Packing Instruction 206

Passenger and cargo aircraft for UN 3167, UN 3168 and UN 3169 only

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#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

*Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

*Drums*

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
  
Steel (1A1, 1A2)

*Jerricans*

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

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### Packing Instruction 215

Passenger and cargo aircraft for UN 3478 and 3479 only

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#### OUTER PACKAGINGS

*Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

*Drums*

Aluminium (1B2)  
Fibre (1G)  
Plastics (1H2)  
Plywood (1D)  
  
Steel (1A2)

*Jerricans*

Aluminium (3B2)  
Plastics (3H2)  
Steel (3A2)

<b>Packing Instruction Y215</b>		
Limited quantities for UN 3478 and 3479 only		
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<b>OUTER PACKAGINGS</b>		
<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium Fibreboard Natural wood <u>Other metal</u> Plastics Plywood Reconstituted wood Steel	Aluminium Fibre Plastics Plywood Steel	Aluminium Plastics Steel

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<b><u>Packing Instruction 218</u></b>
<u>Passenger and cargo aircraft for UN 3500, 3501, 3502, 3503, 3504 and 3505 only</u>
<p><b><u>General requirements</u></b></p> <p><u>Part 4;1.1.1 and 1.1.8 requirements must be met, including:</u></p> <p><b><u>1) Compatibility requirements</u></b></p> <p><u>— Substances must be compatible with their packagings as required by 4;1.1.3.</u></p> <p><u>Unless otherwise indicated in these Instructions, cylinders and pressure drums conforming to the applicable requirements of 6;5 are authorized.</u></p> <p><b><u>ADDITIONAL PACKING REQUIREMENTS</u></b></p> <p><u>— The maximum test period for periodic inspection must be 5 years.</u></p> <p><u>— Cylinders and pressure drums must be so filled that at 50 °C the non-gaseous phase does not exceed 95% of their water capacity and they are not completely filled at 60 °C. When filled, the internal pressure at 65 °C must not exceed the test pressure of the cylinders and pressure drums. The vapour pressures and volumetric expansion of all substances in the cylinders and pressure drums must be taken into account.</u></p> <p><u>— The minimum test pressure must be in accordance with Packing Instruction 200 for the propellant but must not be less than 20 bar.</u></p> <p><u>— <del>Notwithstanding 4.1.6.1.9 (b), n</del> Non-refillable cylinders used may have a water capacity in litres not exceeding 1 000 litres divided by the test pressure expressed in bars provided capacity and pressure restrictions of the construction standard comply with ISO 11118:1999, which limits the maximum capacity to 50 litres.</u></p>

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**Chapter 5**  
**CLASS 3 — FLAMMABLE LIQUIDS**

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**5.1 PACKING INSTRUCTIONS**

**Packing Instructions Y340 – Y344**

Limited quantities  
Passenger and cargo aircraft

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**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

*Boxes*

Aluminium  
Fibreboard  
Natural wood  
Other metal  
Plastics  
Plywood  
Reconstituted wood  
Steel

*Drums*

Aluminium  
Fibre  
Other metal  
Plastics  
Plywood  
Steel

*Jerricans*

Aluminium  
Plastics  
Steel

### Packing Instructions 350 – 355

Passenger aircraft

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#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

*Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

*Drums*

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A1, 1A2)

*Jerricans*

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

...

### Packing Instructions 360 – 366

Cargo aircraft only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

*Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

*Drums*

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plywood (1D)  
Plastics (1H1, 1H2)  
Steel (1A1, 1A2)

*Jerricans*

Aluminium (3B1, 3B2)  
Other metal (3N2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

...

### Packing Instruction 370

Passenger and cargo aircraft for UN 3269 (Packing Group II or III) only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

*Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

*Drums*

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
Steel (1A1, 1A2)

*Jerricans*

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

**Packing Instruction Y370**  
Limited quantities  
Passenger and cargo aircraft for UN 3269 (Packing Group II or III) only

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
<u>Other metal</u>	Plastics	
Plastics	Steel	
Plywood		
Reconstituted wood		
Steel		

**Packing Instruction 371**  
Passenger and cargo aircraft for UN 1204 and UN 3064 only

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B)	Aluminium ( <u>1B1</u> , 1B2)	Aluminium ( <u>3B1</u> , 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics ( <u>3H1</u> , 3H2)
Natural wood (4C1, 4C2)	Other metal ( <u>1N1</u> , 1N2)	Steel ( <u>3A1</u> , 3A2)
<u>Other metal</u> (4N)	Plastics ( <u>1H1</u> , 1H2)	
Plastics (4H1, 4H2)	Steel ( <u>1A1</u> , 1A2)	
Plywood (4D)		
Reconstituted wood (4F)		
Steel (4A)		

...

**Packing Instruction 373**  
Passenger and cargo aircraft for UN 1228 (Packing Group II or III) only

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS**

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B)	Aluminium ( <u>1B1</u> , 1B2)	Aluminium ( <u>3B1</u> , 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics ( <u>3H1</u> , 3H2)
Natural wood (4C1, 4C2)	Other metal ( <u>1N1</u> , 1N2)	Steel ( <u>3A1</u> , 3A2)
<u>Other metal</u> (4N)	Plastics ( <u>1H1</u> , 1H2)	
Plastics (4H1, 4H2)	Steel ( <u>1A1</u> , 1A2)	
Plywood (4D)		
Reconstituted wood (4F)		
Steel (4A)		

...

### Packing Instruction Y373

Limited quantities  
Passenger and cargo aircraft for UN 1228 (Packing Group III) only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
<u>Other metal</u>	Plastics	
Plastics	Steel	
Plywood		
Reconstituted wood		
Steel		

...

### Packing Instruction 374

Passenger and cargo aircraft for UN 3473 only

...

#### OUTER PACKAGINGS

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B)	Aluminium (1B2)	Steel (3A2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Aluminium (3B2)
<u>Other metal (4N)</u>	Plastics (1H2)	
Plastics (4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

### Packing Instruction Y374

Limited quantities for UN 3473 only

...

#### OUTER PACKAGINGS

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
<u>Other metal</u>	Plastics	
Plastics	Plywood	
Plywood	Steel	
Reconstituted wood		
Steel		

...



**Packing Instruction 377**

Passenger and cargo aircraft for Chlorosilanes

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS**

*Boxes*

Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

*Drums*

Fibre (1G)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A1, 1A2)

...

**Chapter 6**

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

...

**6.2 PACKING INSTRUCTIONS**

**Packing Instructions Y440 – Y443**

Limited quantities  
Passenger and cargo aircraft

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

*Boxes*

Aluminium  
Fibreboard  
Natural wood  
Other metal  
Plastics  
Plywood  
Reconstituted wood  
Steel

*Drums*

Aluminium  
Fibre  
Plastics  
Plywood  
Other metal  
Steel

*Jerricans*

Aluminium  
Plastics  
Steel

## Packing Instructions 445 – 446

Passenger aircraft

...

### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B)	Aluminium ( <u>1B1</u> , 1B2)	Aluminium ( <u>3B1</u> , 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics ( <u>3H1</u> , 3H2)
Natural wood (4C1, 4C2)	Other metal ( <u>1N1</u> , 1N2)	Steel ( <u>3A1</u> , 3A2)
<u>Other metal (4N)</u>	Plastics ( <u>1H1</u> , 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel ( <u>1A1</u> , 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

## Packing Instructions 448 – 449

Cargo aircraft only

...

### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B)	Aluminium ( <u>1B1</u> , 1B2)	Aluminium ( <u>3B1</u> , 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics ( <u>3H1</u> , 3H2)
Natural wood (4C1, 4C2)	Other metal ( <u>1N1</u> , 1N2)	Steel ( <u>3A1</u> , 3A2)
<u>Other metal (4N)</u>	Plastics ( <u>1H1</u> , 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel ( <u>1A1</u> , 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

### ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

#### *Packing Group III*

- Packagings must meet the Packing Group II performance requirements.
- Fibre, wood and plywood single packagings must be fitted with a suitable liner.

### SINGLE PACKAGINGS

<i>Boxes</i>	<i>Composites</i>	<i>Cylinders</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)			Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C2)			Other metal (1N1, 1N2)	Steel (3A1, 3A2)
<u>Other metal (4N)</u>			Plastics (1H1, 1H2)	
Plywood (4D)			Plywood (1D)	
Plastics (4H2)			Steel (1A1, 1A2)	
Reconstituted wood (4F)				
Steel (4A)				

### Packing Instruction 451

Passenger and cargo aircraft — wetted explosives (Packing Group I)

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

*Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

*Drums*

Aluminium (1B2)  
Fibre (1G)  
Other metal (1N2)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A2)

*Jerricans*

Aluminium (3B2)  
Other metal (3N2)  
Plastics (3H1, 3H2)  
Steel (3A2)

### Packing Instruction 452

Passenger aircraft for UN 2555, 2556 and 2557 only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

*Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

*Drums*

Aluminium (1B2)  
Fibre (1G)  
Other metal (1N2)  
Plastics (1H1, 1H2)  
Plywood (1D)

*Jerricans*

Aluminium (3B2)  
Other metal (3N2)  
Plastics (3H1, 3H2)  
Steel (3A2)

### Packing Instruction 453

Cargo aircraft only for UN 2555, 2556 and 2557 only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

*Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

*Drums*

Aluminium (1B2)  
Fibre (1G)  
Other metal (1N2)  
Plastics (1H1, 1H2)  
Plywood (1D)

*Jerricans*

Aluminium (3B2)  
Other metal (3N2)  
Plastics (3H1, 3H2)  
Steel (3A2)

...

### Packing Instruction 454

Passenger and cargo aircraft for UN 1324 only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

##### Boxes

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

##### Drums

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A1, 1A2)

##### Jerricans

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

\* These packagings are permitted only for a maximum of 600 m of film.

### Packing Instruction Y454

Limited quantities  
Passenger and cargo aircraft for UN 1324 only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

##### Boxes

Aluminium  
Fibreboard  
Natural wood  
Other metal  
Plastics  
Plywood  
Reconstituted wood  
Steel

##### Drums

Aluminium  
Fibre  
Other metal  
Plastics  
Steel

##### Jerricans

Aluminium  
Plastics  
Steel

### Packing Instruction 455

Passenger and cargo aircraft for UN 1944 and 1945 only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

##### Boxes

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

##### Drums

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
Steel (1A1, 1A2)

##### Jerricans

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

**Packing Instruction Y455**  
 Limited quantities  
 Passenger and cargo aircraft for UN 1944 and 1945 only

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
<u>Other metal</u>	Plastics	
Plastics	Steel	
Plywood		
Reconstituted wood		
Steel		

...

**Packing Instruction 457**  
 Passenger and cargo aircraft for UN 3241 only

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B)	Aluminium ( <u>1B1</u> , 1B2)	Aluminium ( <u>3B1</u> , 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics ( <u>3H1</u> , 3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel ( <u>3A1</u> , 3A2)
<u>Other metal (4N)</u>	Plastics ( <u>1H1</u> , 1H2)	
Plastics ( <u>4H1</u> , 4H2)	Plywood (1D)	
Plywood (4D)	Steel ( <u>1A1</u> , 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

...

**Packing Instruction Y457**  
 Limited quantities  
 Passenger and cargo aircraft for UN 3241 only

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
<u>Other metal</u>	Plastics	
Plastics	Steel	
Plywood		
Reconstituted wood		
Steel		

### Packing Instruction 458

Passenger and cargo aircraft for UN 3270 only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
<u>Other metal (4N)</u>	Plastics (1H2)	
Plastics (4H1, 4H2)	Steel (1A2)	
Plywood (4D)		
Reconstituted wood (4F)		
Steel (4A)		

### Packing Instruction Y458

Limited quantities  
Passenger and cargo aircraft for UN 3270 only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
<u>Other metal</u>	Plastics	
Plastics	Steel	
Plywood		
Reconstituted wood		
Steel		

### Packing Instruction 459

Passenger and cargo aircraft — self-reactive substances

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Fibreboard (4G)	Fibre (1G)	Plastics ( <u>3H1</u> , 3H2)
Natural wood (4C1, 4C2)	Plastics ( <u>1H1</u> , 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)		
Reconstituted wood (4F)		

### Packing Instruction 462 – 463

Passenger aircraft

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

*Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

*Drums*

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A1, 1A2)

*Jerricans*

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

...

### Packing Instruction 464 – 465

Cargo aircraft only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

*Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

*Drums*

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A1, 1A2)

*Jerricans*

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

...

### Packing Instruction 466 – 469

Passenger aircraft

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

*Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

*Drums*

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A1, 1A2)

*Jerricans*

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

## Packing Instruction 470 – 471

Cargo aircraft only

...

### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

#### *Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

#### *Drums*

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A1, 1A2)

#### *Jerricans*

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

### ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

#### *Packing Group III*

- Packagings must meet the Packing Group II performance requirements.
- Fibre, wood and plywood single packagings must be fitted with a suitable liner.

### SINGLE PACKAGINGS

#### *Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C2)  
Other metal (4N)  
Plastics (4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

#### *Composites*

All (see 6;3.1.18)

#### *Cylinders*

See 4;2.7

#### *Drums*

Aluminium (1B1, 1B2)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
Steel (1A1, 1A2)

#### *Jerricans*

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

## Packing Instruction 472

Passenger and cargo aircraft for UN 1362 only

...

### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

#### *Boxes*

Aluminium (4B)  
Steel (4A)

#### *Drums*

Aluminium (1B1, 1B2)  
Steel (1A1, 1A2)

#### *Jerricans*

Aluminium (3B1, 3B2)  
Steel (3A1, 3A2)



### Packing Instruction 473

Passenger and cargo aircraft — for UN 1378 and UN 2881 only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

*Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

*Drums*

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
Steel (1A1, 1A2)

*Jerricans*

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

...

### Packing Instructions Y474 – Y477

Limited quantities  
Passenger and cargo aircraft

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

*Boxes*

Aluminium  
Fibreboard  
Natural wood  
Other metal  
Plastics  
Plywood  
Reconstituted wood  
Steel

*Drums*

Aluminium  
Fibre  
Other metal  
Plastics  
Steel

*Jerricans*

Aluminium  
Plastics  
Steel

### Packing Instructions 478 – 479

Passenger aircraft

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

*Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

*Drums*

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A1, 1A2)

*Jerricans*

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

...

...

### Packing Instructions 480 – 482

Cargo aircraft only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

##### *Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

##### *Drums*

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A1, 1A2)

##### *Jerricans*

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

...

### Packing Instructions 483 – 486

Passenger aircraft

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

##### *Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

##### *Drums*

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A1, 1A2)

##### *Jerricans*

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

### Packing Instructions 487 – 491

Cargo aircraft only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

##### *Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

##### *Drums*

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A1, 1A2)

##### *Jerricans*

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

...

#### SINGLE PACKAGINGS FOR PACKING GROUP I

##### *Composites*

All (see 6;3.1.18)

##### *Cylinders*

See 4;2.7

##### *Drums*

Aluminium (1B1)  
Other metal (1N1)  
Plastics (1H1)  
Steel (1A1)

##### *Jerricans*

Aluminium (3B1)  
Plastics (3H1)  
Steel (3A1)

**SINGLE PACKAGINGS FOR PACKING GROUPS II AND III ONLY**

<i>Boxes</i>	<i>Composites</i>	<i>Cylinders</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B) Fibreboard (4G) Natural wood (4C2) <u>Other metal (4N)</u> Plastics (4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Other metal (1N1, 1N2) Plastics (1H1, 1H2) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastics (3H1, 3H2) Steel (3A1, 3A2)

**Packing Instruction 492**

Passenger and cargo aircraft for UN 3292 only

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) <u>Other metal (4N)</u> Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium ( <u>1B1</u> , 1B2) Fibre (1G) Other metal ( <u>1N1</u> , 1N2) Plastics ( <u>1H1</u> , 1H2) Steel ( <u>1A1</u> , 1A2)	Aluminium ( <u>3B1</u> , 3B2) Plastics ( <u>3H1</u> , 3H2) Steel ( <u>3A1</u> , 3A2)

**Packing Instruction 493**

Passenger aircraft for UN 3399 only

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) <u>Other metal (4N)</u> Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium ( <u>1B1</u> , 1B2) Fibre (1G) Other metal ( <u>1N1</u> , 1N2) Plastics ( <u>1H1</u> , 1H2) Steel ( <u>1A1</u> , 1A2)	Aluminium ( <u>3B1</u> , 3B2) Plastics ( <u>3H1</u> , 3H2) Steel ( <u>3A1</u> , 3A2)

...

**Packing Instruction 495**  
Passenger and cargo aircraft for UN 3476 only

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium(4B)	Aluminium(1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A2)
<u>Other metal (4N)</u>	Plastics (1H2)	
Plastics (4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

**Packing Instruction Y495**  
Limited quantities for UN 3476 only

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
<u>Other metal</u>	Plastics	
Plastics	Plywood	
Plywood	Steel	
Reconstituted wood		
Steel		

...

## Chapter 7

### CLASS 5 — OXIDIZING SUBSTANCES; ORGANIC PEROXIDES

...

#### 7.2 PACKING INSTRUCTIONS

##### Packing Instructions Y540 – Y541

Limited quantities  
Passenger and cargo aircraft

...

##### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium Fibreboard Natural wood <u>Other metal</u> Plastics Plywood Reconstituted wood Steel	Aluminium Fibre Other metal Plastics Steel	Aluminium Plastics Steel

##### Packing Instructions Y543 – Y546

Limited quantities  
Passenger and cargo aircraft

...

##### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium Fibreboard Natural wood <u>Other metal</u> Plastics Plywood Reconstituted wood Steel	Aluminium Fibre Other metal Plastics Steel	Aluminium Plastics Steel

### Packing Instructions 550 – 551

Passenger aircraft

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

*Boxes*

Aluminium (4B)  
 Fibreboard (4G)  
 Natural wood (4C1, 4C2)  
Other metal (4N)  
 Plastics (4H1, 4H2)  
 Plywood (4D)  
 Reconstituted wood (4F)  
 Steel (4A)

*Drums*

Aluminium (1B1, 1B2)  
 Fibre (1G)  
 Other metal (1N1, 1N2)  
 Plastics (1H1, 1H2)  
 Steel (1A1, 1A2)

### Packing Instructions 553 – 555

Cargo aircraft only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

*Boxes*

Aluminium (4B)  
 Fibreboard (4G)  
 Natural wood (4C1, 4C2)  
Other metal (4N)  
 Plastics (4H1, 4H2)  
 Plywood (4D)  
 Reconstituted wood (4F)  
 Steel (4A)

*Drums*

Aluminium (1B1, 1B2)  
 Fibre (1G)  
 Other metal (1N1, 1N2)  
 Plastics (1H1, 1H2)  
 Steel (1A1, 1A2)

...

### Packing Instructions 557 – 559

Passenger aircraft

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS FOR PACKING GROUP I

*Boxes*

Aluminium (4B)  
 Fibreboard (4G)  
 Natural wood (4C1, 4C2)  
Other metal (4N)  
 Plastics (4H1, 4H2)  
 Plywood (4D)  
 Reconstituted wood (4F)  
 Steel (4A)

*Drums*

Aluminium (1B1, 1B2)  
 Fibre (1G)  
 Other metal (1N1, 1N2)  
 Plastics (1H1, 1H2)  
 Plywood (1D)  
 Steel (1A1, 1A2)

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS FOR PACKING GROUPS II AND III**

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B)	Aluminium ( <u>1B1</u> , 1B2)	Aluminium ( <u>3B1</u> , 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics ( <u>3H1</u> , 3H2)
Natural wood (4C1, 4C2)	Other metal ( <u>1N1</u> , 1N2)	Steel ( <u>3A1</u> , 3A2)
<u>Other metal (4N)</u>	Plastics ( <u>1H1</u> , 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel ( <u>1A1</u> , 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

**Packing Instructions 561 – 563**

Cargo aircraft only

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS FOR PACKING GROUP I**

<i>Boxes</i>	<i>Drums</i>
Aluminium (4B)	Aluminium ( <u>1B1</u> , 1B2)
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Other metal ( <u>1N1</u> , 1N2)
<u>Other metal (4N)</u>	Plastics ( <u>1H1</u> , 1H2)
Plastics (4H1, 4H2)	Plywood (1D)
Plywood (4D)	Steel ( <u>1A1</u> , 1A2)
Reconstituted wood (4F)	
Steel (4A)	

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS FOR PACKING GROUPS II AND III ONLY**

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B)	Aluminium ( <u>1B1</u> , 1B2)	Aluminium ( <u>3B1</u> , 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics ( <u>3H1</u> , 3H2)
Natural wood (4C1, 4C2)	Other metal ( <u>1N1</u> , 1N2)	Steel ( <u>3A1</u> , 3A2)
<u>Other metal (4N)</u>	Plastics ( <u>1H1</u> , 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel ( <u>1A1</u> , 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

**ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS**

Fibre, wood and plywood single packagings must be fitted with a suitable liner.

*Packing Group III*

— Packagings must meet the Packing Group II performance requirements.

**SINGLE PACKAGINGS FOR PACKING GROUP I**

<i>Drums</i>
Aluminium (1B1, 1B2)
Other metal (1N1, 1N2)
Steel (1A1, 1A2)

**SINGLE PACKAGINGS FOR PACKING GROUPS II AND III**

<i>Boxes</i>	<i>Composites</i>	<i>Cylinders</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B) Fibreboard (4G) Natural wood (4C2) <u>Other metal (4N)</u> Plastics (4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Fibre (1G) Other metal (1N1, 1N2) Plastics (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastics (3H1, 3H2) Steel (3A1, 3A2)

...

**Packing Instruction 570**

Passenger and cargo aircraft

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Fibreboard (4G) Natural wood (4C1, 4C2) <u>Other metal (4N)</u> Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F)	Fibre (1G) Plastics ( <u>1H1</u> , 1H2) Plywood (1D)	Plastics ( <u>3H1</u> , 3H2)

**Chapter 8****CLASS 6 — TOXIC AND INFECTIOUS SUBSTANCES**

...

**8.1 PACKING INSTRUCTIONS**

...

**Packing Instructions Y640 – Y642**Limited quantities  
Passenger and cargo aircraft**General requirements**

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.9 c), 1.1.9 e) and 1.1.16 do not apply), including:

**1) Compatibility requirements**

- Substances must be compatible with their packagings as required by 4;1.1.3.
- Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk.



2) **Closure requirements**

- Closures must meet the requirements of 4;1.1.4.

3) **Limited quantity requirements**

- Part 3, Chapter 4 requirements must be met including:
  - the capability of the package to pass a 1.2 m drop test;
  - a 24-hour stacking test; and
  - inner packagings for liquids must be capable of passing a pressure differential test (4;1.1.6).

COMBINATION PACKAGINGS						SINGLE PACKAGINGS		
Packing instruction	Packing group	Inner packaging (see 6;3.2)	Inner packaging quantity (per receptacle)	Total quantity per package	Total gross mass per package			
Y640	II	Glass	0.1 L	0.5 L	30 kg	No		
		Plastics	0.1 L					
		Metal	0.1 L					
Y641	II	Glass	0.1 L	1.0 L		30 kg	No	
		Plastics	0.1 L					
		Metal	0.1 L					
Y642	III	Glass	0.5 L	2.0 L			30 kg	No
		Plastics	0.5 L					
		Metal	0.5 L					

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

*Boxes*

Aluminium  
Fibreboard  
Natural wood  
Other metal  
Plastics  
Plywood  
Reconstituted wood  
Steel

*Drums*

Aluminium  
Fibre  
Other metal  
Plastics  
Steel

*Jerricans*

Aluminium  
Plastics  
Steel

...

**Packing Instructions Y644 – Y645**

Limited quantities  
Passenger and cargo aircraft

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

*Boxes*

Aluminium  
Fibreboard  
Natural wood  
Other metal  
Plastics  
Plywood  
Reconstituted wood  
Steel

*Drums*

Aluminium  
Fibre  
Other metal  
Plastics  
Steel

*Jerricans*

Aluminium  
Plastics  
Steel

...

### Packing Instructions 651 – 655

Passenger aircraft

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

##### *Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

##### *Drums*

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A1, 1A2)

##### *Jerricans*

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

...

### Packing Instructions 657 – 663

Cargo aircraft only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

##### *Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

##### *Drums*

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A1, 1A2)

##### *Jerricans*

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

...

### Packing Instructions 665 – 670

Passenger aircraft

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

##### *Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

##### *Drums*

Aluminium (1B1, 1B2)  
Fibre (1G)  
Other metal (1N1, 1N2)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A1, 1A2)

##### *Jerricans*

Aluminium (3B1, 3B2)  
Plastics (3H1, 3H2)  
Steel (3A1, 3A2)

**ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS**

Fibre, wood and plywood single packagings must be fitted with a suitable liner.

**SINGLE PACKAGINGS FOR PACKING GROUP III (PI 670)**

<i>Bags</i>	<i>Boxes</i>	<i>Composites</i>	<i>Cylinders</i>	<i>Drums</i>	<i>Jerricans</i>
Paper (5M2) Plastic film (5H4) Textile (5L3) Woven plastics (5H3)	Aluminium (4B) Fibreboard (4G) Natural wood (4C2) <b>Other metal (4N)</b> Plastics (4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Fibre (1G) Other metal (1N1, 1N2) Plastics (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastics (3H1, 3H2) Steel (3A1, 3A2)

**Packing Instruction 679**

Cargo aircraft only for UN 1700, 2016 and 2017 only

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

<i>Boxes</i>	<i>Drums</i>
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) <b>Other metal (4N)</b> Plastics (4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium ( <b>1B1</b> , 1B2) Fibre (1G) Other metal ( <b>1N1</b> , 1N2) Plastics ( <b>1H1</b> , 1H2) Plywood (1D) Steel ( <b>1A1</b> , 1A2)

**Packing Instruction 680**

Passenger and cargo aircraft for UN 1888 only

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) <b>Other metal (4N)</b> Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium ( <b>1B1</b> , 1B2) Fibre (1G) Other metal ( <b>1N1</b> , 1N2) Plastics ( <b>1H1</b> , 1H2) Steel ( <b>1A1</b> , 1A2)	Aluminium ( <b>3B1</b> , 3B2) Plastics ( <b>3H1</b> , 3H2) Steel ( <b>3A1</b> , 3A2)

...

### Packing Instruction Y680

Limited quantities  
Passenger and cargo aircraft for UN 1888 only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

##### *Boxes*

Aluminium  
Fibreboard  
Natural wood  
Other metal  
Plastics  
Plywood  
Reconstituted wood  
Steel

##### *Drums*

Aluminium  
Fibre  
Other metal  
Plastics  
Steel

##### *Jerricans*

Aluminium  
Plastics  
Steel

### Packing Instruction 681

Passenger and cargo aircraft for Chlorosilanes

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS

##### *Boxes*

Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

##### *Drums*

Fibre (1G)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A1, 1A2)

...

...

## Chapter 10

### CLASS 8 — CORROSIVE SUBSTANCES

+ *Note.— Class 8 packing instructions have been replaced with the reformatted packing instructions which appeared in Attachment 4 of the 2009-2010 Edition. Further modifications to these packing instructions are indicated with the customary margin symbols.*

#### 10.1 PACKING INSTRUCTIONS

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**Packing Instructions 854 – 856**  
Cargo aircraft only

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**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B)	Aluminium ( <u>1B1</u> , 1B2)	Aluminium ( <u>3B1</u> , 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics ( <u>3H1</u> , 3H2)
Natural wood (4C1, 4C2)	Other metal ( <u>1N1</u> , 1N2)	Steel ( <u>3A1</u> , 3A2)
<u>Other metal (4N)</u>	Plastics ( <u>1H1</u> , 1H2)	
Plastics (4H1, 4H2)	Steel ( <u>1A1</u> , 1A2)	
Plywood (4D)		
Reconstituted wood (4F)		
Steel (4A)		

...

**Packing Instructions 858 – 860**  
Passenger aircraft

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B)	Aluminium ( <u>1B1</u> , 1B2)	Aluminium ( <u>3B1</u> , 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics ( <u>3H1</u> , 3H2)
Natural wood (4C1, 4C2)	Other metal ( <u>1N1</u> , 1N2)	Steel ( <u>3A1</u> , 3A2)
<u>Other metal (4N)</u>	Plastics ( <u>1H1</u> , 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel ( <u>1A1</u> , 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

## Packing Instructions 862 – 864

Cargo aircraft only

...

### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B)	Aluminium ( <u>1B1</u> , 1B2)	Aluminium ( <u>3B1</u> , 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics ( <u>3H1</u> , 3H2)
Natural wood (4C1, 4C2)	Other metal ( <u>1N1</u> , 1N2)	Steel ( <u>3A1</u> , 3A2)
<u>Other metal (4N)</u>	Plastics ( <u>1H1</u> , 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel ( <u>1A1</u> , 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

### ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

— Fibre, wood and plywood single packagings must be fitted with a suitable liner.

### SINGLE PACKAGINGS FOR PACKING GROUP I

<i>Composites</i>	<i>Cylinders</i>	<i>Drums</i>	<i>Jerricans</i>
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
		Fibre (1G)	Plastics (3H1, 3H2)
		Plastics (1H1, 1H2)	Steel (3A1, 3A2)
		Plywood (1D)	
		Steel (1A1, 1A2)	

### SINGLE PACKAGINGS FOR PACKING GROUPS II AND III ONLY

<i>Boxes</i>	<i>Composites</i>	<i>Cylinders</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)			Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C2)			Plastics (1H1, 1H2)	Steel (3A1, 3A2)
<u>Other metal (4N)</u>			Plywood (1D)	
Plastics (4H2)			Steel (1A1, 1A2)	
Plywood (4D)				
Reconstituted wood (4F)				
Steel (4A)				

## Packing Instruction 866

Cargo aircraft only for UN 2028 only

...

### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

<i>Boxes</i>	<i>Drums</i>
Aluminium (4B)	Aluminium (1B2)
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Other metal (1N2)
<u>Other metal (4N)</u>	Plastics (1H2)
Plastics (4H1, 4H2)	Steel (1A2)
Plywood (4D)	
Reconstituted wood (4F)	
Steel (4A)	

**Packing Instruction 867**

Passenger and cargo aircraft for UN 2803 only

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

*Boxes*

- Aluminium (4B)
- Fibreboard (4G)
- Natural wood (4C1, 4C2)
- Other metal (4N)
- Plastics (4H1, 4H2)
- Plywood (4D)
- Reconstituted wood (4F)
- Steel (4A)

*Drums*

- Aluminium (1B2)
- Fibre (1G)
- Other metal (1N2)
- Plastics (1H2)
- Steel (1A2)

...

**Packing Instruction 868**

Passenger and cargo aircraft for UN 2809 only

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

*Boxes*

- Aluminium (4B)
- Fibreboard (4G)
- Natural wood (4C1, 4C2)
- Other metal (4N)
- Plastics (4H1, 4H2)
- Plywood (4D)
- Reconstituted wood (4F)
- Steel (4A)

*Drums*

- Aluminium (1B2)
- Fibre (1G)
- Other metal (1N2)
- Plastics (1H2)
- Steel (1A2)

...

**Packing Instruction 869**

Passenger and cargo aircraft for UN ~~2809~~ 3506 contained in manufactured articles only

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...

### Packing Instruction 873

Passenger and cargo aircraft for UN 3477

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#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

*Boxes*

Aluminium(4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

*Drums*

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

*Jerricans*

Aluminium (3B2)  
Plastics (3H2)  
Steel (3A2)

### PACKING INSTRUCTION Y873

Limited quantities for UN 3477 only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

*Boxes*

Aluminium  
Fibreboard  
Natural wood  
Other metal  
Plastics  
Plywood  
Reconstituted wood  
Steel

*Drums*

Aluminium  
Fibre  
Other metal  
Plastics  
Plywood  
Steel

*Jerricans*

Aluminium  
Plastics  
Steel

...

### Packing Instruction 876

Cargo aircraft only for Chlorosilanes

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS

*Boxes*

Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

*Drums*

Fibre (1G)  
Plastics (1H1, 1H2)  
Plywood (1D)  
Steel (1A1, 1A2)

#### SINGLE PACKAGINGS FOR CARGO AIRCRAFT ONLY

*Composites*

Plastic receptacle in steel drum (6HA1)

*Cylinders*

Steel (as permitted by 4;2.7)

*Drums*

Steel (1A1)

*Jerricans*

Steel (3A1)



## Chapter 11

### CLASS 9 — MISCELLANEOUS DANGEROUS GOODS

...

DGP-WG/10-WP/24:

#### Packing Instruction 954

Passenger and cargo aircraft for UN 1845 only

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- c) the dangerous goods transport document requirements of 5;4 are not applicable provided alternative written documentation is provided describing the contents. The information on the document must be shown in the location provided for the description of the goods. Where an agreement exists with the operator, the shipper may provide the information by electronic data processing (EDP) or electronic data interchange (EDI) techniques. The information required is as follows and should be shown in the following order:
  - 1) UN 1845;
  - 2) **Carbon dioxide, solid** or **Dry ice**;
  - 3) the number of packages and the net quantity of dry ice in each package; and
  - d) the net mass of the **Carbon dioxide, solid** or **Dry ice** must be marked on the outside of the package; ~~and~~
  - e) ~~the information must be included with the description of the goods.~~

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...

#### Packing Instruction 956

Passenger and cargo aircraft for UN 1841, UN 1931, UN 3432, UN 2969, UN 3077, UN 3152 and UN 3335 only

...

##### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

###### Boxes

Aluminium (4B)  
 Fibreboard (4G)  
 Natural wood (4C1, 4C2)  
Other metal (4N)  
 Plastics (4H1, 4H2)  
 Plywood (4D)  
 Reconstituted wood (4F)  
 Steel (4A)

###### Drums

Aluminium (1B1, 1B2)  
 Fibre (1G)  
 Other metal (1N1, 1N2)  
 Plastics (1H1, 1H2)  
 Steel (1A1, 1A2)

###### Jerricans

Aluminium (3B1, 3B2)  
 Plastics (3H1, 3H2)  
 Steel (3A1, 3A2)

...

**ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS**

— Fibre, wood and plywood single packagings must be fitted with a suitable liner.

**SINGLE PACKAGINGS**

<i>Bags</i>	<i>Boxes</i>	<i>Composites</i>	<i>Cylinders</i>	<i>Drums</i>	<i>Jerricans</i>
Paper (5M2)	Aluminium (4B)	All (see	See 4;2.7	Aluminium (1B1,	Aluminium (3B1,
Plastic film	Fibreboard (4G)	6;3.1.18)		1B2)	3B2)
(5H4)	Natural wood			Fibre (1G)	Plastics (3H1,
Textile (5L3)	(4C2)			Other metal	3H2)
Woven plastics	<u>Other metal (4N)</u>			(1N1, 1N2)	Steel (3A1, 3A2)
(5H3)	Plastics (4H2)			Plastics (1H1,	
	Plywood (4D)			1H2)	
	Reconstituted			Plywood (1D)	
	wood (4F)			Steel (1A1, 1A2)	
	Steel (4A)				

...

...

**Packing Instruction 957**

Passenger and cargo aircraft for UN 2211 and UN 3314 only

...

**SINGLE PACKAGINGS**

<i>Boxes</i>	<i>Drums</i>
Fibreboard (4G)	Aluminium (1A <sup>B</sup> 1, 1B2)
<u>Other metal (4N)</u>	
Plywood (4D)	Fibre (1G)
Reconstituted wood (4F)	Plywood (1D)
Wooden (4C1, 4C2)	Steel (1A1, 1A2)

**Packing Instruction 958**

Passenger and cargo aircraft for UN 2071 and UN 2590 only

...

**SINGLE PACKAGINGS**

<i>Bags</i>	<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Plastics (5H4)	Fibreboard (4G)	Aluminium (1B2)	Plastics (3H2)
Textile(5L3)	Natural wood (4C2)	Fibre (1G)	Steel (3A2)
	<u>Other metal (4N)</u>	Plastics (1H2)	
Woven plastics (5H3)	Plastics (4H1, 4H2)	Plywood (1D)	
	Plywood (4D)	Steel (1A2)	
	Reconstituted wood (4F)		

**Packing Instruction Y958**  
Limited quantities  
Passenger and cargo aircraft

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium Fibreboard Natural wood <u>Other metal</u> Plastics Plywood Reconstituted wood Steel	Aluminium Fibre Other metal Plastics Steel	Aluminium Plastics Steel

...

**Packing Instruction 960**  
Passenger and cargo aircraft for UN 3316 only

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

*Boxes*

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H1, 4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

**Packing Instruction Y960**  
Limited quantities  
Passenger and cargo aircraft for UN 3316 only

...

**OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)**

*Boxes*

Fibreboard  
Natural wood  
Other metal  
Plastics  
Plywood  
Reconstituted wood

### Packing Instruction 961

Passenger and cargo aircraft for UN 3268 only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	<del>Other metal (3N2)</del>
Natural wood (4C1, 4C2)	Other metal (4N, 1N2)	Plastics (3H2)
<del>Other metal (4N)</del>	Plastics (1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	Steel (3A2)
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

...

### Packing Instruction 964

Passenger and cargo aircraft for UN 1941, UN 1990, UN 2315, UN 3151, UN 3082 and UN 3334 only

...

#### OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Other metal (3N2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Plastics (3H1, 3H2)
<del>Other metal (4N)</del>	Plastics (1H1, 1H2)	Steel (3A1, 3A2)
Plastics (4H1, 4H2)	Steel (1A1, 1A2)	
Plywood (4D)		
Reconstituted wood (4F)		
Steel (4A)		

#### SINGLE PACKAGINGS

<i>Composites</i>	<i>Cylinders</i>	<i>Drums</i>	<i>Jerricans</i>
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
		Other metal (1N1, 1N2)	Plastics (3H1, 3H2)
		Plastics (1H1, 1H2)	Steel (3A1, 3A2)
		Steel (1A1, 1A2)	

...

### Packing Instruction 965

Passenger and cargo aircraft for UN 3480

This entry applies to lithium ion or lithium polymer batteries.

Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Waste lithium batteries and lithium batteries being shipped for recycling or disposal are prohibited from air transport unless approved by the appropriate national authority of the State of Origin and the State of the Operator.

Section I of this packing instruction applies to lithium ion and lithium polymer cells and batteries that are assigned to Class 9. Certain lithium ion and lithium polymer cells and batteries offered for transport and meeting the requirements of Section II of this packing instruction, subject to the paragraphs above, are not subject to other additional requirements of these Instructions.

**SECTION I**

Section I requirements apply to each cell or battery type that has been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

- 1) be of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3; and

*Note.— Batteries are subject to these tests irrespective of whether the cells of which they are composed have been so tested.*

- 2) incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport and be equipped with an effective means of preventing external short circuits.

Each battery containing cells or a series of cells connected in parallel must be equipped with an effective means, as necessary, to prevent dangerous reverse current flow (e.g. diodes, fuses).

Cells and batteries must be manufactured under a quality management programme that includes:

- 1) A description of the organizational structure and responsibilities of personnel with regard to design and product quality;
- 2) The relevant inspection and test, quality control, quality assurance, and process operation instructions that will be used;
- 3) Process controls that should include relevant activities to prevent and detect internal short circuit failure during manufacture of cells;
- 4) Quality records, such as inspection reports, test data, calibration data and certificates. Test data must be kept and made available to the appropriate national authority upon request;
- 5) Management reviews to ensure the effective operation of the quality management programme;
- 6) A process for control of documents and their revision;
- 7) A means for control of cells or batteries that are not conforming to the type tested as mentioned in 1) above;
- 8) Training programmes and qualification procedures for relevant personnel; and
- 9) Procedures to ensure that there is no damage to the final product.

**NOTE:** In-house quality management programmes may be accepted. Third party certification is not required, but the procedures listed in 1) to 9) above must be properly recorded and traceable. A copy of the quality management programme must be made available to the appropriate authority upon request."

**General requirements**

Part 4;1 requirements must be met.

Contents	Package quantity (Section I)	
	Passenger	Cargo
Lithium ion cells and batteries	5 kg G	35 kg G

**ADDITIONAL PACKING REQUIREMENTS**

- Lithium ion cells and batteries must be protected against short circuits.
- Lithium ion cells and batteries must be placed in inner packagings that completely enclose the cell or battery then placed in an outer packaging. The completed package for the cells or batteries must meet the Packing Group II performance requirements.
- Lithium ion batteries with a mass of 12 kg or greater and having a strong, impact-resistant outer casing, or assemblies of such batteries, may be transported when packed in strong outer packagings ~~or~~ (in) protective enclosures (e.g. in fully enclosed or wooden slatted crates) not subject to the requirements of Part 6 of these Instructions, if approved by the appropriate authority of the State of Origin. A copy of the document of approval must accompany the consignment.

— Batteries manufactured after 31 December 2011 must be marked with the Watt-hour rating on the outside case.

#### OUTER PACKAGINGS

##### Boxes

Aluminium (4B)  
Fibreboard (4G)  
Natural wood (4C1, 4C2)  
Other metal (4N)  
Plastics (4H2)  
Plywood (4D)  
Reconstituted wood (4F)  
Steel (4A)

• • •

##### Drums

Aluminium (1B2)  
Fibre (1G)  
Plastics (1H2)  
Plywood (1D)  
Steel (1A2)

##### Jerricans

Aluminium (3B2)  
Plastics (3H2)  
Steel (3A2)

### Packing Instruction 966

Passenger and cargo aircraft for UN 3481 (packed with equipment) only

This entry applies to lithium ion or lithium polymer batteries packed with equipment.

Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Section I of this packing instruction applies to lithium ion and lithium polymer cells and batteries that are assigned to Class 9. Certain lithium ion and lithium polymer cells and batteries offered for transport and meeting the requirements of Section II of this packing instruction, subject to the paragraph above, are not subject to other additional requirements of these Instructions.

#### SECTION I

Section I requirements apply to each cell or battery type that has been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

- 1) be of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3; and

*Note.— Batteries are subject to these tests irrespective of whether the cells of which they are composed have been so tested.*

- 2) incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport and be equipped with an effective means of preventing external short circuits.

Each battery containing cells or a series of cells connected in parallel must be equipped with an effective means, as necessary, to prevent dangerous reverse current flow (e.g. diodes, fuses).

Cells and batteries must be manufactured under a quality management programme that includes:

- 1) A description of the organizational structure and responsibilities of personnel with regard to design and product quality;
- 2) The relevant inspection and test, quality control, quality assurance, and process operation instructions that will be used;
- 3) Process controls that should include relevant activities to prevent and detect internal short circuit failure during manufacture of cells;
- 4) Quality records, such as inspection reports, test data, calibration data and certificates. Test data must be kept and made available to the appropriate national authority upon request;
- 5) Management reviews to ensure the effective operation of the quality management programme;

6) A process for control of documents and their revision;

7) A means for control of cells or batteries that are not conforming to the type tested as mentioned in 1) above;

8) Training programmes and qualification procedures for relevant personnel; and

9) Procedures to ensure that there is no damage to the final product.

**NOTE:** In-house quality management programmes may be accepted. Third party certification is not required, but the procedures listed in 1) to 9) above must be properly recorded and traceable. A copy of the quality management programme must be made available to the appropriate authority upon request."

...

## Packing Instruction 967

Passenger and cargo aircraft for UN 3481 (contained in equipment) only

This entry applies to lithium ion or lithium polymer batteries contained in equipment.

Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Section I of this packing instruction applies to lithium ion and lithium polymer cells and batteries that are assigned to Class 9. Certain lithium ion and lithium polymer cells and batteries offered for transport and meeting the requirements of Section II of this packing instruction, subject to the paragraph above, are not subject to other additional requirements of these Instructions.

### SECTION I

Section I requirements apply to each cell or battery type that has been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

- 1) be of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3; and

*Note.— Batteries are subject to these tests irrespective of whether the cells of which they are composed have been so tested.*

- 2) incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport and be equipped with an effective means of preventing external short circuits.

Each battery containing cells or a series of cells connected in parallel must be equipped with an effective means, as necessary, to prevent dangerous reverse current flow (e.g. diodes, fuses).

Cells and batteries must be manufactured under a quality management programme that includes:

1) A description of the organizational structure and responsibilities of personnel with regard to design and product quality;

2) The relevant inspection and test, quality control, quality assurance, and process operation instructions that will be used;

3) Process controls that should include relevant activities to prevent and detect internal short circuit failure during manufacture of cells;

4) Quality records, such as inspection reports, test data, calibration data and certificates. Test data must be kept and made available to the appropriate national authority upon request;

5) Management reviews to ensure the effective operation of the quality management programme;

6) A process for control of documents and their revision;

7) A means for control of cells or batteries that are not conforming to the type tested as mentioned in 1) above;

8) Training programmes and qualification procedures for relevant personnel; and

9) Procedures to ensure that there is no damage to the final product.

**NOTE:** In-house quality management programmes may be accepted. Third party certification is not required, but the procedures listed in 1) to 9) above must be properly recorded and traceable. A copy of the quality management programme must be made available to the appropriate authority upon request."

...

## Packing Instruction 968

Passenger and cargo aircraft for UN 3090

This entry applies to lithium metal or lithium alloy batteries in Class 9 (Section I) and lithium metal or lithium alloy batteries subject to specific requirements of these Instructions (Section II).

Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Waste lithium batteries and lithium batteries being shipped for recycling or disposal are prohibited from air transport unless approved by the appropriate national authority of the State of Origin and the State of the Operator.

Section I of this packing instruction applies to lithium metal and lithium alloy cells and batteries that are assigned to Class 9. Certain lithium metal and lithium alloy cells and batteries offered for transport and meeting the requirements of Section II of this packing instruction, subject to the paragraphs above, are not subject to other additional requirements of these Instructions.

### SECTION I

Section I requirements apply to each cell or battery type that has been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

- 1) be of the type proven to meet the requirements of each test in the *UN Manual of Tests and Criteria*, Part III, section 38.3; and

*Note.— Batteries are subject to these tests irrespective of whether the cells of which they are composed have been so tested.*

- 2) incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport and be equipped with an effective means of preventing external short circuits.

Each battery containing cells or a series of cells connected in parallel must be equipped with an effective means, as necessary, to prevent dangerous reverse current flow (e.g. diodes, fuses).

Cells and batteries must be manufactured under a quality management programme that includes:

- 1) A description of the organizational structure and responsibilities of personnel with regard to design and product quality;
- 2) The relevant inspection and test, quality control, quality assurance, and process operation instructions that will be used;
- 3) Process controls that should include relevant activities to prevent and detect internal short circuit failure during manufacture of cells;
- 4) Quality records, such as inspection reports, test data, calibration data and certificates. Test data must be kept and made available to the appropriate national authority upon request;
- 5) Management reviews to ensure the effective operation of the quality management programme;



6) A process for control of documents and their revision;

7) A means for control of cells or batteries that are not conforming to the type tested as mentioned in 1) above;

8) Training programmes and qualification procedures for relevant personnel; and

9) Procedures to ensure that there is no damage to the final product.

**NOTE:** In-house quality management programmes may be accepted. Third party certification is not required, but the procedures listed in 1) to 9) above must be properly recorded and traceable. A copy of the quality management programme must be made available to the appropriate authority upon request."

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## Packing Instruction 969

Passenger and cargo aircraft for UN 3091 (packed with equipment) only

This entry applies to lithium metal or lithium alloy batteries packed with equipment.

Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Section I of this packing instruction applies to lithium metal and lithium alloy cells and batteries that are assigned to Class 9. Certain lithium metal and lithium alloy cells and batteries offered for transport and meeting the requirements of Section II of this packing instruction, subject to the paragraph above, are not subject to other additional requirements of these Instructions.

### SECTION I

Section I requirements apply to each cell or battery type that has been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

- 1) be of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3; and

*Note.— Batteries are subject to these tests irrespective of whether the cells of which they are composed have been so tested.*

- 2) incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport and be equipped with an effective means of preventing external short circuits.

Each battery containing cells or a series of cells connected in parallel must be equipped with an effective means, as necessary, to prevent dangerous reverse current flow (e.g. diodes, fuses).

Cells and batteries must be manufactured under a quality management programme that includes:

1) A description of the organizational structure and responsibilities of personnel with regard to design and product quality;

2) The relevant inspection and test, quality control, quality assurance, and process operation instructions that will be used;

3) Process controls that should include relevant activities to prevent and detect internal short circuit failure during manufacture of cells;

4) Quality records, such as inspection reports, test data, calibration data and certificates. Test data must be kept and made available to the appropriate national authority upon request;

5) Management reviews to ensure the effective operation of the quality management programme;

6) A process for control of documents and their revision;

7) A means for control of cells or batteries that are not conforming to the type tested as mentioned in 1) above;

8) Training programmes and qualification procedures for relevant personnel; and

9) Procedures to ensure that there is no damage to the final product.

**NOTE:** In-house quality management programmes may be accepted. Third party certification is not required, but the procedures listed in 1) to 9) above must be properly recorded and traceable. A copy of the quality management programme must be made available to the appropriate authority upon request."

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## Packing Instruction 970

Passenger and cargo aircraft for UN 3091 (contained in equipment) only

This entry applies to lithium metal or lithium alloy batteries contained in equipment.

Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Section I of this packing instruction applies to lithium metal and lithium alloy cells and batteries that are assigned to Class 9. Certain lithium metal and lithium alloy cells and batteries offered for transport and meeting the requirements of Section II of this packing instruction, subject to the paragraph above, are not subject to other additional requirements of these Instructions.

### SECTION I

Section I requirements apply to each cell or battery type that has been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

- 1) be of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3; and

*Note.— Batteries are subject to these tests irrespective of whether the cells of which they are composed have been so tested.*

- 2) incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport and be equipped with an effective means of preventing external short circuits.

Each battery containing cells or a series of cells connected in parallel must be equipped with an effective means, as necessary, to prevent dangerous reverse current flow (e.g. diodes, fuses).

Cells and batteries must be manufactured under a quality management programme that includes:

- 1) A description of the organizational structure and responsibilities of personnel with regard to design and product quality;
- 2) The relevant inspection and test, quality control, quality assurance, and process operation instructions that will be used;
- 3) Process controls that should include relevant activities to prevent and detect internal short circuit failure during manufacture of cells;
- 4) Quality records, such as inspection reports, test data, calibration data and certificates. Test data must be kept and made available to the appropriate national authority upon request;
- 5) Management reviews to ensure the effective operation of the quality management programme;
- 6) A process for control of documents and their revision;
- 7) A means for control of cells or batteries that are not conforming to the type tested as mentioned in 1) above;

8) Training programmes and qualification procedures for relevant personnel; and

9) Procedures to ensure that there is no damage to the final product.

**NOTE:** In-house quality management programmes may be accepted. Third party certification is not required, but the procedures listed in 1) to 9) above must be properly recorded and traceable. A copy of the quality management programme must be made available to the appropriate authority upon request."

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