

Chapter 8

CLASS 6 – TOXIC AND INFECTIOUS SUBSTANCES

8.1 PACKING INSTRUCTIONS

Packing Instruction 603

Passenger and cargo aircraft for UN 3507 only

General requirements

Part 4, Chapter 1 and Part 4;9.1.2, 9.1.4 and 9.1.7 requirements must be met, including:

1) Compatibility requirements

- Substances must be compatible with their packagings as required by 4;1.1.3.
- Metal packagings must be corrosion resistant or be protected against corrosion.

2) Closure requirements

- Closures must meet the requirements of 4;1.1.4.

<i>UN number and name</i>	<i>Quantity per package – passenger</i>	<i>Quantity per package – cargo</i>
UN 3507 Uranium hexafluoride, radioactive material, excepted package, non-fissile or fissile-excepted	Less than 0.1 kg	Less than 0.1 kg

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

- Substances must be packed in a metal or plastics primary receptacle in a leakproof rigid secondary packaging in a rigid outer packaging.
- Primary inner receptacles must be packed in secondary packagings in a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents into the secondary packaging. Secondary packagings must be secured in outer packagings with suitable cushioning material to prevent movement. If multiple primary receptacles are placed in a single secondary packaging, they must be either individually wrapped or separated so as to prevent contact between them.
- The contents must comply with the provisions of 2;7.2.4.5.2.
- The provisions of 6;7.3 must be met.
- In the case of fissile-excepted material, limits specified in 2;7.2.3.5 and 6;7.10.2.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes

Aluminium (4B)
Fibreboard (4G)
Natural wood (4C1, 4C2)
Plastics (4H1, 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 620

This packing instruction applies to UN 2814 and UN 2900.

The following packagings are authorized provided the special packing provisions are met.

Packagings meeting the requirements of 6;6 and approved accordingly consisting of:

- a) inner packagings comprising:
 - 1) leakproof primary receptacle(s);
 - 2) a leakproof secondary packaging;
 - 3) other than for solid infectious substances, an absorbent material in sufficient quantity to absorb the entire contents placed between the primary receptacle(s) and the secondary packaging; if multiple fragile primary receptacles are placed in a single secondary packaging, they must be either individually wrapped or separated so as to prevent contact between them;
- b) a rigid outer packaging. The smallest external dimension must be not less than 100 mm.

Additional requirements:

- c) Inner packagings containing infectious substances must not be consolidated with inner packagings containing unrelated types of goods. Complete packages may be overpacked in accordance with the provisions of 1;3.1 and 5;2.4.10. Such an overpack may contain dry ice.
- d) Other than for exceptional consignments, such as whole organs, which require special packaging, the following additional requirements must apply:
 - 1) Substances consigned at ambient temperatures or at a higher temperature. Primary receptacles must be of glass, metal or plastics. Positive means of ensuring a leakproof seal must be provided, such as a heat seal, a skirted stopper or a metal crimp seal. If screw caps are used, they must be secured by positive means, such as tape, paraffin sealing tape or manufactured locking closure;
 - 2) Substances consigned refrigerated or frozen. Ice, dry ice or other refrigerant must be placed around the secondary packaging(s) or, alternatively, in an overpack with one or more complete packages marked in accordance with 6;6.3. Interior supports must be provided to secure secondary packaging(s) or packages in position after the ice or dry ice has dissipated. If ice is used, the outer packaging or overpack must be leakproof. If dry ice is used, the outer packaging or overpack must permit the release of carbon dioxide gas. The primary receptacle and the secondary packaging must maintain their integrity at the temperature of the refrigerant used;
 - 3) Substances consigned in liquid nitrogen. Plastic primary receptacles capable of withstanding very low temperature must be used. The secondary packaging must also be capable of withstanding very low temperatures and, in most cases, will need to be fitted over the primary receptacle individually. Provisions for the consignment of liquid nitrogen must also be fulfilled. The primary receptacle and the secondary packaging must maintain their integrity at the temperature of the liquid nitrogen;
 - 4) Lyophilized substances may also be transported in primary receptacles that are flame-sealed glass ampoules or rubberstoppered glass vials fitted with metal seals.
- e) Whatever the intended temperature of the consignment, the primary receptacle or the secondary packaging must be capable of withstanding, without leakage, an internal pressure producing a pressure differential of not less than 95 kPa. This primary receptacle or secondary packaging must also be capable of withstanding temperatures in the range -40°C to +55°C.

Packing Instruction 620

Note.— The capability of a packaging to withstand an internal pressure without leakage that produces the specified pressure differential should be determined by testing samples of primary receptacles or secondary packagings. Pressure differential is the difference between the pressure exerted on the inside of the receptacle or packaging and the pressure on the outside. The appropriate test method should be selected based on receptacle or packaging type. Acceptable test methods include any method that produces the required pressure differential between the inside and outside of a primary receptacle or a secondary packaging. The test may be conducted using internal hydraulic or pneumatic pressure (gauge) or external vacuum test methods. Internal hydraulic or pneumatic pressure can be applied in most cases as the required pressure differential can be achieved under most circumstances. An external vacuum test is not acceptable if the specified pressure differential is not achieved and maintained. The external vacuum test is a generally acceptable method for rigid receptacles and packagings but is not normally acceptable for:

- flexible receptacles and flexible packagings;
- receptacles and packagings filled and closed under an absolute atmospheric pressure lower than 95 kPa.

- f) Other dangerous goods must not be packed in the same packaging as Division 6.2 infectious substances unless they are necessary for maintaining the viability, stabilizing or preventing degradation or neutralizing the hazards of the infectious substances. A quantity of 30 ml or less of dangerous goods included in Class 3, 8 or 9 may be packed in each primary receptacle containing infectious substances provided these substances meet the requirements of 3;5. These small quantities of dangerous goods of Class 3, 8 or 9 are not subject to any additional requirements of these Instructions when packed in accordance with this packing instruction.
- g) Alternative packagings for the transport of animal material may be authorized by the competent authority in accordance with the provisions of 4;2.8.

Special packing provisions

- a) Shippers of infectious substances must ensure that packages are prepared in such a manner that they arrive at their destination in good condition and present no hazard to persons or animals during transport.
- b) The definition in 1;3, and the general packing requirements of 4;1, apply to infectious substances packages.
- c) An itemized list of contents must be enclosed between the secondary packaging and the outer packaging. When the infectious substances to be transported are unknown, but suspected of meeting the criteria for inclusion in Category A, the words “suspected Category A infectious substance” must be shown in parentheses following the proper shipping name on the itemized list of contents inside the outer packaging.
- d) Before an empty packaging is returned to the shipper, or sent elsewhere, it must be disinfected or sterilized to nullify any hazard, and any label or mark indicating that it had contained an infectious substance must be removed or obliterated.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

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

Packing Instruction 621

General requirements

Part 4, Chapter 1 requirements (except 1.1.20) must be met.

ADDITIONAL PACKING 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.
- Packagings must meet the Packing Group II performance requirements.

OUTER PACKAGINGS

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 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), 1.1.16, 1.1.18 and 1.1.20 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 hazard.

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).

Packing Instructions Y640 – Y642						
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		No
		Plastics	0.1 L			
		Metal	0.1 L			
Y642	III	Glass	0.5 L	2.0 L		No
		Plastics	0.5 L			
		Metal	0.5 L			

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)		
Boxes	Drums	Jerricans
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Steel	
Plywood		
Reconstituted wood		
Steel		

Packing Instructions Y644 – Y645

Limited quantities
Passenger and cargo aircraft

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.9 c), 1.1.9 e), 1.1.16, 1.1.18 and 1.1.20 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 hazard.

2) Closure requirements

- Closures must meet the requirements of 4;1.1.4.

3) Limited quantity requirements

- Part 3, Chapter 4 requirements must be met including:
 - the capability of the package to pass a 1.2 m drop test; and
 - a 24-hour stacking test.

COMBINATION PACKAGINGS						SINGLE PACKAGINGS
<i>Packing instruction</i>	<i>Packing group</i>	<i>Inner packaging (see 6;3.2)</i>	<i>Inner packaging quantity (per receptacle)</i>	<i>Total quantity per package</i>	<i>Total gross mass per package</i>	
Y644	II	Glass	0.5 kg	1 kg	30 kg	No
		Plastics	0.5 kg			
		Metal	0.5 kg			
		Paper bag	0.5 kg			
		Plastic bag	0.5 kg			
		Fibre	0.5 kg			
Y645	III	Glass	1.0 kg	10 kg		No
		Plastics	1.0 kg			
		Metal	1.0 kg			
		Paper bag	1.0 kg			
		Plastic bag	1.0 kg			
		Fibre	1.0 kg			

Packing Instructions Y644 – Y645

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

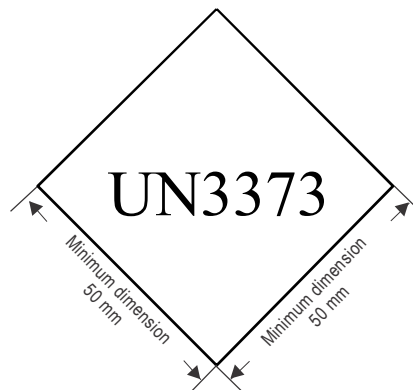
Jerricans

Aluminium
Plastics
Steel

Packing Instruction 650

This packing instruction applies to UN 3373.

- 1) The packaging must be of good quality, strong enough to withstand the shocks and loadings normally encountered during transport, including transshipment between transport units and between transport units and warehouses as well as any removal from a pallet or overpack for subsequent manual or mechanical handling. Packagings must be constructed and closed to prevent any loss of contents that might be caused under normal conditions of transport by vibration or by changes in temperature, humidity or pressure.
- 2) The packaging must consist of three components:
 - a) a primary receptacle;
 - b) a secondary packaging; and
 - c) a rigid outer packaging.
- 3) Primary receptacles must be packed in secondary packagings in such a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents into the secondary packaging. Secondary packagings must be secured in outer packagings with suitable cushioning material. Any leakage of the contents must not compromise the integrity of the cushioning material or of the outer packaging.
- 4) For transport, the mark illustrated below must be displayed on the external surface of the outer packaging on a background of a contrasting colour and must be clearly visible and legible. The mark must be in the form of a square set at an angle of 45° (diamond-shaped) with each side having a length of at least 50 mm, the width of the line must be at least 2 mm, and the letters and numbers must be at least 6 mm high. The entire mark must appear on one side of the package. The proper shipping name “Biological substance, Category B” in letters at least 6 mm high must be marked on the outer packaging adjacent to the diamond-shaped mark.



- 5) At least one surface of the outer packaging must have a minimum dimension of 100 mm × 100 mm.

Packing Instruction 650

- ≠ 6) The completed package must be capable of withstanding a 1.2 m drop in any orientation without leakage from the primary receptacle(s), which must remain protected by absorbent material, when required, in the secondary packaging.
- Note.— Capability may be demonstrated by testing, assessment or experience.*
- 7) For liquid substances:
- a) The primary receptacle(s) must be leakproof and must not contain more than 1 L;
 - b) The secondary packaging must be leakproof;
 - c) If multiple fragile primary receptacles are placed in a single secondary packaging, they must be either individually wrapped or separated to prevent contact between them;
 - d) Absorbent material must be placed between the primary receptacle(s) and the secondary packaging. The absorbent material must be in quantity sufficient to absorb the entire contents of the primary receptacle(s) so that any release of the liquid substance will not compromise the integrity of the cushioning material or of the outer packaging;
 - e) The primary receptacle or the secondary packaging must be capable of withstanding, without leakage, an internal pressure of 95 kPa (0.95 bar); and
- Note.— The capability of a packaging to withstand an internal pressure without leakage that produces the specified pressure differential should be determined by testing samples of primary receptacles or secondary packagings. Pressure differential is the difference between the pressure exerted on the inside of the receptacle or packaging and the pressure on the outside. The appropriate test method should be selected based on receptacle or packaging type. Acceptable test methods include any method that produces the required pressure differential between the inside and outside of a primary receptacle or a secondary packaging. The test may be conducted using internal hydraulic or pneumatic pressure (gauge) or external vacuum test methods. Internal hydraulic or pneumatic pressure can be applied in most cases as the required pressure differential can be achieved under most circumstances. An external vacuum test is not acceptable if the specified pressure differential is not achieved and maintained. The external vacuum test is a generally acceptable method for rigid receptacles and packagings but is not normally acceptable for:*
- flexible receptacles and flexible packagings; and
 - receptacles and packagings filled and closed under an absolute atmospheric pressure lower than 95 kPa.
- f) The outer packaging must not contain more than 4 L. This quantity excludes ice, dry ice or liquid nitrogen when used to keep specimens cold.
- > 8) For solid substances:
- a) The primary receptacle(s) must be siftproof and must not exceed the outer packaging mass limit;
 - b) The secondary packaging must be siftproof;
 - c) If multiple fragile primary receptacles are placed in a single secondary packaging, they must be either individually wrapped or separated to prevent contact between them;
 - d) Except for packages containing body parts, organs or whole bodies, the outer packaging must not contain more than 4 kg. This quantity excludes ice, dry ice or liquid nitrogen when used to keep specimens cold; and
 - e) If there is any doubt as to whether or not residual liquid may be present in the primary receptacle during transport, then a packaging suitable for liquids, including absorbent materials, must be used.
- 9) Refrigerated or frozen specimens: ice, dry ice and liquid nitrogen:
- a) When dry ice or liquid nitrogen is used to keep specimens cold, all applicable requirements of these Instructions must be met. When used, ice or dry ice must be placed outside the secondary packagings or in the outer packaging or an overpack. Interior supports must be provided to secure the secondary packagings in the original position after the ice or dry ice has dissipated. If ice is used, the outside packaging or overpack must be leakproof. If carbon dioxide, solid (dry ice) is used, the packaging must be designed and constructed to permit the release of carbon dioxide gas to prevent a build-up of pressure that could rupture the packagings; and
 - b) The primary receptacle and the secondary packaging must maintain their integrity at the temperature of the refrigerant used as well as the temperatures and the pressures which could result if refrigeration were lost.

Packing Instruction 650

10) When packages are placed in an overpack, the package marks required by this packing instruction must either be clearly visible or the marks must be reproduced on the outside of the overpack and the overpack must be marked with the word "Overpack" in lettering of at least 12 mm high.

11) Infectious substances assigned to UN 3373 which are packed and marked in accordance with this packing instruction are not subject to any other requirement in these Instructions except for the following:

- a) the name and address of the shipper and of the consignee must be provided on each package. The information may be applied through the use of a barcode, QR code or other equivalent means;
- b) the name and telephone number of a person responsible must be provided on a written document (such as an air waybill) or on the package;
- c) classification must be in accordance with 2;6.3.2;
- d) the incident reporting requirements in 7;4.4 and 7;4.5 must be met;
- e) the inspection for damage or leakage requirements in 7;3.1.3 and 7;3.1.4; and
- f) passengers and crew members are prohibited from transporting infectious substances either as, or in, carry-on baggage or checked baggage or on their person.

Note.— When the shipper or consignee is also the "person responsible" as referred to in b), the name and address need be marked only once in order to satisfy the name and marking provisions in both a) and b).

12) Clear instructions on filling and closing such packages must be provided to the shipper or to the person who prepares the package (such as patient) by packaging manufacturers and subsequent distributors to enable the package to be correctly prepared for transport.

13) Other dangerous goods must not be packed in the same packaging as Division 6.2 infectious substances unless they are necessary for maintaining the viability, stabilizing or preventing degradation or neutralizing the hazards of the infectious substances. A quantity of 30 ml or less of dangerous goods included in Class 3, 8 or 9 permitted as excepted quantities under 3;5 may be packed in each primary receptacle containing infectious substances. When these small quantities of dangerous goods are packed with infectious substances in accordance with this packing instruction no other requirements in these Instructions need be met.

Additional requirements:

- 1) Alternative packagings for the transport of animal material may be authorized by the competent authority in accordance with the provisions of 4;2.8.

Packing Instructions 651 – 655

Passenger aircraft

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) Compatibility requirements

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

2) Closure requirements

- Closures must meet the requirements of 4;1.1.4.

Packing Instructions 651 – 655

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
Packing instruction	Packing group	Inner packaging (see 6;3.2)	Inner packaging quantity (per receptacle)	Total quantity per package	
651	I	Glass	0.5 L	0.5 L	No
		Plastics	0.5 L		
		Metal	0.5 L		
652	I	Glass	0.5 L	1 L	No
		Plastics	0.5 L		
		Metal	1.0 L		
653	II	Glass	1.0 L	1 L	No
		Plastics	1.0 L		
		Metal	1.0 L		
654	II	Glass	1.0 L	5 L	No
		Plastics	1.0 L		
		Metal	2.5 L		
655	III	Glass	2.5 L	60 L	60 L
		Plastics	2.5 L		
		Metal	5.0 L		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

- Inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

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 III (PI 655)

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 Instructions 657 – 663

Cargo aircraft only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) Compatibility requirements

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

2) Closure requirements

- Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
<i>Packing instruction</i>	<i>Packing group</i>	<i>Inner packaging (see 6;3.2)</i>	<i>Inner packaging quantity (per receptacle)</i>	<i>Total quantity per package</i>	
657	I	Glass	1.0 L	2.5 L	2.5 L
		Plastics	1.0 L		
		Metal	2.5 L		
658	I	Glass	1.0 L	30 L	30 L
		Plastics	1.0 L		
		Metal	2.5 L		
659	II	Glass	1.0 L	5 L	5 L
		Plastics	1.0 L		
		Metal	2.5 L		
660	II	Glass	1.0 L	30 L	30 L
		Plastics	1.0 L		
		Metal	2.5 L		
661	II	Glass	1.0 L	60 L	60 L
		Plastics	1.0 L		
		Metal	2.5 L		
662	II	Glass	2.5 L	60 L	60 L
		Plastics	2.5 L		
		Metal	5.0 L		
663	III	Glass	5.0 L	220 L	220 L
		Plastics	5.0 L		
		Metal	10.0 L		

Packing Instructions 657 – 663

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

- Inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

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 GROUPS I AND II

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 GROUP III ONLY

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 Instructions 665 – 670

Passenger aircraft

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) Compatibility requirements

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

2) Closure requirements

- Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
<i>Packing instruction</i>	<i>Packing group</i>	<i>Inner packaging (see 6;3.2)</i>	<i>Inner packaging quantity (per receptacle)</i>	<i>Total quantity per package</i>	
665	I	Glass	0.5 kg	1 kg	No
		Plastics	1.0 kg		
		Metal	1.0 kg		
666	I	Glass	0.5 kg	5 kg	No
		Plastics	1.0 kg		
		Metal	1.0 kg		
667	II	Glass	1.0 kg	5 kg	No
		Plastics	2.5 kg		
		Metal	2.5 kg		
		Paper bag	1.0 kg		
		Plastic bag	1.0 kg		
		Fibre	1.0 kg		
668	II	Glass	1.0 kg	15 kg	No
		Plastics	2.5 kg		
		Metal	2.5 kg		
		Paper bag	1.0 kg		
		Plastic bag	1.0 kg		
		Fibre	1.0 kg		
669	II	Glass	1.0 kg	25 kg	No
		Plastics	2.5 kg		
		Metal	2.5 kg		
		Paper bag	1.0 kg		
		Plastic bag	1.0 kg		
		Fibre	1.0 kg		
670	III	Glass	5.0 kg	100 kg	100 kg
		Plastics	10.0 kg		
		Metal	10.0 kg		
		Paper bag	5.0 kg		
		Plastic bag	5.0 kg		
		Fibre	5.0 kg		

Packing Instructions 665 – 670

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

SINGLE PACKAGINGS FOR PACKING GROUP III (PI 670)

Bags

Paper (5M2)
Plastic film (5H4)
Textile (5L3)
Woven plastics
(5H3)

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)
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 672 – 677

Cargo aircraft only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) Compatibility requirements

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

2) Closure requirements

- Closures must meet the requirements of 4;1.1.4.

Packing Instructions 672 – 677					
COMBINATION PACKAGINGS					SINGLE PACKAGINGS
Packing instruction	Packing group	Inner packaging (see 6;3.2)	Inner packaging quantity (per receptacle)	Total quantity per package	
672	I	Glass	1.0 kg	15 kg	15 kg
		Plastics	2.5 kg		
		Metal	2.5 kg		
		Paper bag	1.0 kg		
		Plastic bag	1.0 kg		
		Fibre	1.0 kg		
673	I	Glass	1.0 kg	50 kg	50 kg
		Plastics	2.5 kg		
		Metal	2.5 kg		
		Paper bag	1.0 kg		
		Plastic bag	1.0 kg		
		Fibre	1.0 kg		
674	II	Glass	2.5 kg	25 kg	25 kg
		Plastics	5.0 kg		
		Metal	5.0 kg		
		Paper bag	2.5 kg		
		Plastic bag	2.5 kg		
		Fibre	2.5 kg		
675	II	Glass	2.5 kg	50 kg	50 kg
		Plastics	5.0 kg		
		Metal	5.0 kg		
		Paper bag	2.5 kg		
		Plastic bag	2.5 kg		
		Fibre	2.5 kg		
676	II	Glass	2.5 kg	100 kg	100 kg
		Plastics	5.0 kg		
		Metal	5.0 kg		
		Paper bag	2.5 kg		
		Plastic bag	2.5 kg		
		Fibre	2.5 kg		
677	III	Glass	5.0 kg	200 kg	200 kg
		Plastics	10.0 kg		
		Metal	10.0 kg		
		Paper bag	5.0 kg		
		Plastic bag	5.0 kg		
		Fibre	5.0 kg		

Packing Instructions 672 – 677

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

SINGLE PACKAGINGS FOR PACKING GROUP I

Composites

All (see 6;3.1.18)

Cylinders

See 4;2.7

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 GROUPS II AND III ONLY

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)
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 III (PI 677 only)

Bags

Paper (5M2)
Plastic film
(5H4)
Textile (5L3)
Woven plastics
(5H3)

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)
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 679

Cargo aircraft only for UN 1700, 2016 and 2017 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) Compatibility requirements

- Substances must be compatible with their packagings as required by 4;1.1.3.

2) Closure requirements

- Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS			SINGLE PACKAGINGS
<i>UN number and proper shipping name</i>	<i>Packing conditions</i>	<i>Maximum net quantity per package</i>	
UN 1700 Tear gas candles	Elements must not be assembled in grenades or devices, but must be packed in a separate wooden (4C1, 4C2) box and so cushioned that they cannot come into contact with each other or with the walls of the packaging during transport. Not more than 24 grenades and 24 functioning devices per package are permitted.	50 kg	No
UN 2016 Ammunition, toxic, non-explosive	Without ignition elements, bursting charges, detonating fuses or other explosive components.	75 kg	No
UN 2017 Ammunition, tear-producing, non-explosive	Without ignition elements, bursting charges, detonating fuses or other explosive components.	50 kg	No

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

- Packagings must meet the Packing Group II performance requirements.
- The articles must be individually packaged and separated from each other using partitions, dividers, inner packagings or cushioning material to prevent inadvertent discharge during normal conditions of transport.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes

Aluminium (4B)
Fibreboard (4G)
Natural wood (4C1, 4C2)
Other metal (4N)
Plastics (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)

Packing Instruction 680

Passenger and cargo aircraft for UN 1888 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) Compatibility requirements

- Substances must be compatible with their packagings as required by 4;1.1.3.

2) Closure requirements

- Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS						SINGLE PACKAGINGS	
UN number and proper shipping name	Inner packaging (see 6;3.2)	Inner packaging quantity (per receptacle) – passenger	Inner packaging quantity (per receptacle) – cargo	Total quantity per package – passenger	Total quantity per package – cargo	Passenger	Cargo
UN 1888 Chloroform	Glass	1.0 L	2.5 L	60 L	220 L	No	220 L
	Plastics	1.0 L	2.5 L				
	Metal	2.5 L	5.0 L				

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

- Inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

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)

SINGLE PACKAGINGS FOR CARGO AIRCRAFT ONLY

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 Y680

Limited quantities
Passenger and cargo aircraft for UN 1888 only

General requirements

Part 4, Chapter 1 requirements must be met (except that 4;1.1.2, 1.1.9 c), 1.1.9 e), 1.1.16, 1.1.18 and 1.1.20 do not apply), including:

1) Compatibility requirements

- Substances must be compatible with their packagings as required by 4;1.1.3.

2) Closure requirements

- Closures must meet the requirements of 4;1.1.4.

3) Limited quantity requirements

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

COMBINATION PACKAGINGS						SINGLE PACKAGINGS
UN number and proper shipping name	Packing group	Inner packaging (see 6;3.2)	Inner packaging quantity (per receptacle)	Total quantity per package	Total gross mass per package	
UN 1888 Chloroform	III	Glass	0.1 L	2 L	30 kg	No
		Plastics	0.1 L			
		Metal	0.1 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

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

- Inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Packing Instruction 681

Cargo aircraft only for Chlorosilanes

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) Compatibility requirements

- Substances must be compatible with their packagings as required by 4;1.1.3.
- Metal packagings must be corrosion resistant or be protected against corrosion.

2) Closure requirements

- Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS				SINGLE PACKAGINGS
UN number	Inner packaging (see 6;3.2)	Net quantity per inner packaging	Total quantity per package	
UN 3361, UN 3362	Glass	1.0 L	30.0 L	30.0 L
	Plastics	Forbidden		
	Steel	5.0 L		

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

Composites

Plastic receptacle in steel drum (6HA1)

Cylinders

Steel (as permitted by 4;2.7)

Drums

Steel (1A1)

Jerricans

Steel (3A1)

Packing Instruction 699

Passenger and cargo aircraft for UN 3123 and UN 3125 only

Only packagings which are approved by the appropriate national authority for these substances may be used (see 4;2.8). A copy of this approval must accompany each consignment or an annotation that it has been granted must be included with the transport document.