Annex 1
Reformatted
Packing Instructions for
Classes 3, 4, 5 and 9

Class 3
Reformatted Packing Instructions

301 PACKING INSTRUCTION 301 301

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

Aircraft hydraulic power unit fuel tanks containing a mixture of anhydrous hydrazine and methyl hydrazine (M86 fuel) and designed for installation as complete units in aircraft are acceptable, subject to either of the following conditions:

a) the unit must consist of an aluminium pressure vessel made from tubing and having welded heads. Primary containment of the fuel within this vessel must consist of a welded aluminium bladder having a maximum internal volume of 46 L. The outer vessel must have a minimum design gauge pressure of 1 275 kPa and a minimum burst gauge pressure of 2 755 kPa. Each vessel must be leak-checked during manufacture and before shipment and must be found leakproof. The complete inner unit must be securely packed in non-combustible cushioning material, such as vermiculite, in a strong outer tightly closed metal packaging which will adequately protect all fittings. Maximum quantity of fuel per unit and package is 42 L; or

b) the unit must consist of an aluminium pressure vessel. Primary containment of the fuel within this vessel must consist of a welded hermetically sealed fuel compartment with an elastomeric bladder having a maximum internal volume of 46 L. The pressure vessel must have a minimum design gauge pressure of 2 860 kPa and a minimum burst gauge pressure of 5 170 kPa. Each vessel must be leak-checked during manufacture and before shipment and must be found leakproof. The complete inner unit must be securely packed in non-combustible cushioning material, such as vermiculite, in a strong outer tightly closed metal packaging which will adequately protect all fittings. Maximum quantity of fuel per unit and package is 42 L.

Notes: Unchanged from current PI 301.

311 PACKING INSTRUCTION 311 311

Nitroglycerin solution in alcohol may be shipped as UN 3064 only if packed in IP.3 metal cans (other than aluminium) of not more than 1 L capacity each, overpacked in a wooden box (4C1, 4C2, 4D or 4F) containing not more than 5 L. Metal cans must be completely surrounded with absorbent cushioning material. Wooden boxes must be completely lined with a suitable material impervious to water and nitroglycerin. The general packing requirements of Part 4, Chapter 1 must be met.

Notes: Added to authorized outer package, wooden box 4D and 4F to be consistent with the UN Model Regulation P300.

312 PACKING INSTRUCTION 312 312

A polyester resin kit and a fibreglass repair kit consist of two components: a base material in Class 3, Packing Group II or III, and an activator (organic peroxide).

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

Single packagings are not permitted.

COMBINATION PACKAGINGS:

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

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

The components may be placed in the same outer packaging provided they will not interact dangerously in the event of leakage. The inner packagings must be packed in an outer:

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

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

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

Single packagings are not permitted.

COMBINATION PACKAGINGS:

The activator (organic peroxide) must be in IP.2 plastic packagings or metal or plastic tubes and the quantity must not exceed 30 mL or 100 g. The net quantity of activator per package must not exceed 125 mL or 500 g.
The flammable liquid must be in IP.1 glass or earthenware, IP.2 plastic, IP.3 metal packagings.
The components may be placed in the same outer packaging provided they will not interact dangerously in the event of leakage. The inner packagings must be packed in an outer:

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

Notes on 312:
- Harmonized with UN Model Regulation P302.
- Deleted reference to IP.9. Provide one quantity limit for inner packagings
- Deleted quantity limit for flammable liquid. Request the working group consider adding a gross limit to the Dangerous Goods List.
- Added additional authorized outer packagings to standarize with the new generalized Class 3 instruction.
- Request the working group consider modifying Special Provision A66 to harmonize with UN Model Regulation Special Provision 236 and determine quantity limitation for the base material.

3X1 PACKING INSTRUCTION 3X1 3X1

The general packing requirements of Part 4, Chapter 1 must be met. Substances must be compatible with their packaging as required by 4;1.1.3.

Combination packagings with inner plastic packagings and single outer plastic packagings are not permitted for PG I liquid.

COMBINATION PACKAGINGS:

The following inner packagings are authorized for the indicated volumes of liquid for passenger or cargo aircraft.

	Passenger Aircraft			*Cargo Aircraft*		
	PG I	*PG II*	*PG III*	*PG I*	*PG II*	*PG III*
Glass or earthenware (IP.1)	0.5	1 L	2.5 L	1 L	2.5 L	5 L
Plastic (IP.2)	1	5 L	10 L	5 L	5 L	10 L
Metal (IP.3, IP.3A)	1	5 L	10 L	5 L	10 L	25 L

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

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

SINGLE PACKAGINGS:

The following single packagings are permitted on cargo aircraft for all packing groups and on passenger aircraft for PG III liquids only.

Composites (plastic)
plastics receptacle in steel or aluminium drum (6HA1, 6HB1)
plastics receptacle in fibre, plastics, or plywood drum (6HG1, 6HH1, 6HD1)
plastics receptacle in steel or aluminium crate or box or plastic receptacle in wood, plywood, fibreboard, or solid plastics box (6H2, 6HB2, 6HC, 6HD2, 6HG2, or 6HH2)
Cylinders, as permitted in Packing Instruction 200
Drums
aluminium (1B1, 1B2), plastic (1H1, 1H2), steel (1A1, 1A2), other metal (1N1, 1N2)
Jerricans
plastic (3H1, 3H2), steel (3A1, 3A2), aluminium (3B1, 3B2)

Additional Requirement:

1. Open-head drums (1B2, 1H2, 1A2, 1N2) and jerricans (3H2, 3A2, 3B2) are permitted for packing group III substances only.

2. For PG III substances, if the substance has a subsidiary corrosive risk, packagings must meet PG II performance requirements.

Notes on 3X1:

- This instruction consolidates PI 302/303/305/307/309/310.
- Inner package quantity limits were not changed.
- Removed restrictions on inner packaging type based on material compatibility.
- Positive: Realize considerable consolidation.
- Allows for new material technologies within the outlined requirement of material compatibility in 4;1.1.3.
- Negative: Eliminates easy reference for shippers.
- Inner packaging IP8 removed, now included in IP1 definition.
- Added outer packagings to harmonize with UN Model Regulations: Boxes, Expanded Plastic (4H1), Drums Other Metal (1N2), Drums Plastic (1H2), Jerricans Plastic (3H2).
- Added specification codes for composite plastic single packagings.

3X2 PACKING INSTRUCTION 3X2 3X2

The general packing requirements of Part 4, Chapter 1 must be met. Substances must be compatible with their packaging as required by 4;1.1.3.

Combination packagings with inner plastic packagings and single outer plastic packagings are not permitted for PG I liquid.

COMBINATION PACKAGINGS:

The following inner packagings are authorized for passenger or cargo aircraft. A dash indicates the packaging is not authorized.

	Passenger Aircraft			*Cargo Aircraft*		
	PG I	*PG II*	*PG III*	*PG I*	*PG II*	*PG III*
Glass or earthenware (IP.1)	0.5	1 L	1 L	1 L	2.5 L	2.5 L
Plastic (IP.2)	-	1 L	1 L	-	2.5 L	2.5 L
Metal (IP.3, IP.3A)	1	1 L	1 L	2.5 L	2.5 L	2.5 L

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

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

SINGLE PACKAGINGS:

The following single packagings are permitted on cargo aircraft for all packing groups and on passenger aircraft for PG III liquids only:

Composites (plastic)
plastics receptacle in steel or aluminium drum (6HA1, 6HB1)
plastics receptacle in fibre, plastics, or plywood drum (6HG1, 6HH1, 6HD1)
plastics receptacle in steel or aluminium crate or box or plastic receptacle in wood, plywood, fibreboard, or solid plastics box (6H2, 6HB2, 6HC, 6HD2, 6HG2, or 6HH2)
Cylinders, as permitted in Packing Instruction 200
Drums
aluminium (1B1, 1B2), plastic (1H1, 1H2), steel (1A1, 1A2), other metal (1N1, 1N2)
Jerricans
plastic (3H1, 3H2), steel (3A1, 3A2), aluminium (3B1, 3B2)

Additional Requirements:

1. Open-head drums (1B2, 1H2, 1A2, 1N2) and jerricans (3H2, 3A2, 3B2) are permitted for packing group III substances only. Plastic single packagings are not permitted for packing group I substances.
2. Plastic or glass inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings. Inner packagings must be packed with absorbent material as required by 4;1.1.10.1.

Notes on 3X2:

- This instruction consolidates parts of PI 304/306/308.
- Removed restrictions on inner packaging type based on material compatibility.
  Positive: Realize considerable consolidation. Allows for new material technologies within the outlined requirement of material compatibility in 4;1.1.3.
  Negative: Eliminates easy reference for shippers.
- Removed inner packaging IP8, now included in IP1 definition.
- Deleted PPR 3 - compatibility issue more appropriately addressed in Part 4, Chapter 1.
- Deleted PPR 5 – compatibility issue more appropriately addressed in Part 4, Chapter 1.
- Deleted PPR 6 - glass ampoules are covered under the combined PPR 2 and 13.
- Deleted PPR 8 – applies only to UN2883 and UN1302. The working group is requested to consider how this requirement should be addressed for these two UN numbers.
- Combined PPR 2 and 13. The working group is requested to consider how to assign this PPR requirement to the affected UN numbers.
- Added outer packagings to harmonize with UN Model Regulations: Boxes, Expanded Plastic (4H1), Drums Other Metal (1N2), Drums Plastic (1H2), Jerricans Plastic (3H2).
- Added specification codes for composite plastic single packagings.
- Changed some inner quantities limits based on a rationalized approach of comparison with similar materials:

UN #	PG	Inner packaging	Change in quantity	Amount	Passenger (P) or CAO
UN1154	II	IP2 IP3	reduce	5L to 2.5L	CAO
UN1184	II	IP2 IP3	reduce	5L to 2.5L 10L to 2.5L	CAO
UN1277	II	IP3	reduce	5L to 2.5L	CAO
UN1278	II	IP3	reduce	5L to 2.5L	CAO
UN1279	II	IP2 IP3 IP2 IP3	reduce reduce	5L to 1L 5L to 1L 5L to 2.5L 10L to 2.5L	P P CAO CAO
UN1280	I	IP3	increase	1L to 2.5L	CAO
UN1305	I	IP3	increase	1L to 2.5L	CAO
UN2363	II	IP3	increase	1L to 2.5L	CAO
UN2486	II	IP2	increase	1L to 2.5L	CAO

3X3 PACKING INSTRUCTION 3X3 3X3

The general packing requirements of Part 4, Chapter 1 must be met. Substances must be compatible with their packaging as required by 4;1.1.3.

Combination packagings with inner plastic packagings and single outer plastic packagings are not permitted for PG I liquids.

COMBINATION PACKAGINGS:

The following inner packagings are authorized for PG I liquids at the indicated volumes for passenger or cargo aircraft. A dash indicates the packaging is not authorized.

	Glass or Earthenware (IP1)		*Plastic (IP2)*		*Metal (IP3)*	
UN No.	*Passenger*	*Cargo*	*Passenger*	*Cargo*	*Passenger*	*Cargo*
1089	-	.5 L	-	-	-	2.5 L
1250	-	.5 L	-	-	-	1.0 L
1921	.5 L	.5 L	-	-	.5 L	1.0 L
2356	.5 L	.5 L	-	-	1.0 L	2.5 L
2456	.5 L	.5 L	-	-	1.0 L	2.5 L

The following inner packagings are authorized for PG II and PG III liquids at the indicated volumes for passenger or cargo aircraft. A dash indicates the packaging is not authorized.

	Glass or Earthenware (IP1)		*Plastic (IP2)*		*Metal (IP3)*	
Un No.	*Passenger*	*Cargo*	*Passenger*	*Cargo*	*Passenger*	Cargo
1196	.5 L	1.0 L	.5 L	1.0 L	.5 L	1.0 L
1204	.5 L	1.0 L	.5 L	1.0 L	.5 L	1.0 L
1298	.5 L	1.0 L	.5 L	1.0 L	.5 L	1.0 L
1723	.5 L	1.0 L	.5 L	1.0 L	-	-
2270	.5 L	1.0 L	-	-	.5 L	2.5 L
2478	.5 L	1.0 L	.5 L	1.0 L	.5 L	2.5 L

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

Boxes

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

Drums

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

Jerricans

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

SINGLE PACKAGINGS:

The following single packagings are permitted on cargo aircraft for all packing groups and on passenger aircraft for PG III liquids only:

Composites (plastic)
plastics receptacle in steel or aluminium drum (6HA1, 6HB1)
plastics receptacle in fibre, plastics, or plywood drum (6HG1, 6HH1, 6HD1)
plastics receptacle in steel or aluminium crate or box or plastic receptacle in wood, plywood, fibreboard, or solid plastics box (6H2, 6HB2, 6HC, 6HD2, 6HG2, or 6HH2)
Cylinders, as permitted in Packing Instruction 200
Drums
aluminium (1B1, 1B2), plastic (1H1, 1H2), steel (1A1, 1A2), other metal (1N1, 1N2)
Jerricans
plastic (3H1, 3H2), steel (3A1, 3A2), aluminium (3B1, 3B2)

Additional Requirements:

1. Open-head drums (1B2, 1H2, 1A2, 1N2) and jerricans (3H2, 3A2, 3B2) are permitted for packing group III substances only. Plastic single packagings are not permitted for packing group I substances or UN 2270.
2. Plastic or glass inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings. Inner packagings must be packed with absorbent material as required by 4;1.1.10.1.

Notes on 3X3:

- This instruction consolidates parts of PI 304/306/308.
- Inner package quantity limits were not changed.
- Removed restrictions on inner packaging type based on material compatibility.
  Positive: Realize considerable consolidation. Allows for new material technologies within the outlined requirement of material compatibility in 4;1.1.3.
  Negative: Eliminates easy reference for shippers.
- Removed inner packaging IP8, now included in IP1 definition.
- Deleted PPR 3 - compatibility issue more appropriately addressed in Part 4, Chapter 1.
- Deleted PPR 5 – compatibility issue more appropriately addressed in Part 4, Chapter 1.
- Deleted PPR 6 - glass ampoules are covered under the combined PPR 2 and 13.
- Deleted PPR 8 – applies only to UN2883 and UN1302. The working group is requested to consider how this requirement should be addressed for these two UN numbers.
- Combined PPR 2 and 13. The working group is requested to consider how to assign this PPR requirement to the affected UN numbers.
- Added outer packagings to harmonize with UN Model Regulations: Boxes, Expanded Plastic (4H1), Drums Other Metal (1N2), Drums Plastic (1H2), Jerricans Plastic (3H2).
- Added specification codes for composite plastic single packagings.
- These materials were separated into a separate instruction due to the significant differences in inner quantity limits from those materials assigned to PI 3X2. However, further review could lead to additional consolidation through rationalizing the limits based on similar hazards.

3X4	PACKING INSTRUCTION 3X4	3X4

The requirements of Part 3, Chapter 4 must be met. Substances must be compatible with their packaging as required by 4;1.1.3.

Single packagings are not permitted.

COMBINATION PACKAGINGS:

The following inner packagings are authorized for passenger or cargo aircraft:

	PG II	PG III
Glass or earthenware (IP.1)[1]	0.5 L	2.5 L
Plastic (IP.2) [2]	0.5 L	5 L
Metal (IP.3, IP.3A)	0.5 L	5 L

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

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

Particular Packing Requirements:

PPXX: For UN 1111, UN 1228,UN 2347, UN 2402, UN 2478, UN 2486, or any substance containing a Class 8 subsidiary risk, glass or earthenware inner packagings must be packed with absorbent material in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

PPXY: For UN 1111,UN 1220, UN 1717, UN 1723, UN 2347, and UN 2402, plastic inner packagings must be packed in tightly closed metal or rigid plastic receptacles before packing in outer packagings.

Notes on 3X4:

- This instruction consolidates PI Y305/Y306/Y309.
- Inner package quantity limits were not changed.
- Removed restrictions on inner packaging type based on material compatibility.
  Positive: Realize considerable consolidation. Allows for new material technologies within the outlined requirement of material compatibility in 4;1.1.3.
  Negative: Eliminates easy reference for shippers.
- Removed inner packaging IP8, now included in IP1 definition.
- Deleted PPR 3 - compatibility issue more appropriately addressed in Part 4, Chapter 1.
- Deleted PPR 5 – compatibility issue more appropriately addressed in Part 4, Chapter 1.
- Deleted PPR 6 - glass ampoules are covered under the combined PPR 2 and 13.
- Combined PPR 2 and 13. The working group is requested to consider how to assign this PPR requirement to the affected UN numbers.
- Added outer packagings to harmonize with UN Model Regulations: Boxes, Expanded Plastic, Drums Other Metal, Drums Plastic, Jerricans Plastic.
- If the sample reformatted DG List is adopted, PPRs would simply be listed in Table 3-1 in a PPR column (see sample table layout) and the PPR itself would be identified in the PI but the UN numbers would not need to be indicated in the PI.