

Chapter 11

CLASS 9 – MISCELLANEOUS DANGEROUS GOODS

11.1 PACKING INSTRUCTIONS

Packing Instruction 950

Passenger and cargo aircraft for UN 3166 only
(See Packing Instruction 220 for flammable gas-powered engines and machinery, Packing Instruction 378 for flammable liquid-powered engines and machinery, Packing Instruction 951 for flammable gas-powered vehicles, Packing Instruction 952 for battery-powered equipment and vehicles or Packing Instruction 972 for engines or machinery containing only environmentally hazardous fuels)

General requirements

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

Compatibility requirements

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

UN number and proper shipping name		Quantity – passenger	Quantity – cargo
UN 3166	Vehicle, flammable liquid powered or Vehicle, fuel cell, flammable liquid powered	No limit	No limit

ADDITIONAL PACKING REQUIREMENTS

Flammable liquid fuel tanks

Except as otherwise provided for in this packing instruction, fuel tanks must be drained of fuel and tank caps fitted securely. Special precautions are necessary to ensure complete drainage of the fuel system of vehicles incorporating internal combustion engines, such as lawn mowers, where such vehicles could possibly be handled in other than an upright position. When it is not possible to handle in other than an upright position, vehicles, except those with diesel engines, must be drained of fuel as far as practicable, and if any fuel remains, it must not exceed one-quarter of the tank capacity.

Diesel engines

Vehicles equipped with diesel engines are excepted from the requirement to drain the fuel tanks, provided that a sufficient ullage space has been left inside the tank to allow fuel expansion without leakage, and the tank caps are tightly closed. A careful check must be made to ensure there are no fuel leakages.

Batteries

All batteries must be installed and securely fastened in the battery holder of the vehicle and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- ≠
- 1) If spillable batteries are installed, and it is possible for the vehicle to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 870.

2) If lithium batteries are installed:

i) lithium batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport; and

ii) lithium batteries must meet the provisions of Part 2;9.3, except that pre-production prototypes of lithium batteries or cells, when these prototypes are transported for testing, or low production runs of lithium batteries or cells that have not been tested to the requirements in Part III, subsection 38.3 of the UN Manual of Tests and Criteria may be transported aboard cargo aircraft if approved by the appropriate authority of the State of Origin and the State of the Operator. A copy of the document of approval must accompany the consignment.
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- 3) If metallic sodium or sodium alloy batteries are installed, they must conform to the requirements of Special Provision A94.

Packing Instruction 950

Other operational equipment

- 1) Dangerous goods required for the operation or safety of the vehicle, such as fire extinguishers, tire inflation canisters or safety devices, must be securely mounted in the vehicle. Aircraft may also contain other articles and substances which would otherwise be classified as dangerous goods but which are installed in that aircraft in accordance with the pertinent airworthiness requirements and operating regulations. If fitted, life-rafts, emergency escape slides and other inflation devices must be protected such that they cannot be activated accidentally. Vehicles containing dangerous goods identified in Table 3-1 as forbidden on passenger aircraft may only be transported on cargo aircraft. Replacements for the dangerous goods permitted must not be carried under this packing instruction.
- 2) Vehicles equipped with theft-protection devices, installed radio communications equipment or navigational systems must have such devices, equipment or systems disabled.

Packing Instruction 951

Cargo aircraft only for UN 3166 only

(See Packing Instruction 220 for flammable gas-powered engines and machinery, Packing Instruction 378 for flammable liquid-powered engines and machinery, Packing Instruction 950 for flammable liquid-powered vehicles, Packing Instruction 952 for battery-powered equipment and vehicles or Packing Instruction 972 for engines or machinery containing only environmentally hazardous fuels)

General requirements

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

Compatibility requirements

- Substances must be compatible with their packagings as required by 4.1.1.3.

<i>UN number and proper shipping name</i>	<i>Quantity – passenger</i>	<i>Quantity – cargo</i>
UN 3166 Vehicle, flammable gas powered or Vehicle, fuel cell, flammable gas powered	Forbidden	No limit

ADDITIONAL PACKING REQUIREMENTS

Flammable gas vessels

- 1) for flammable gas-powered vehicles, pressurized vessels containing the flammable gas must be completely emptied of flammable gas. Lines from vessels to gas regulators, and gas regulators themselves, must also be drained of all trace of flammable gas. To ensure that these conditions are met, gas shut-off valves must be left open and connections of lines to gas regulators must be left disconnected upon delivery of the vehicle to the operator. Shut-off valves must be closed and lines reconnected at gas regulators before loading the vehicle aboard the aircraft;
or alternatively,
- 2) flammable gas-powered vehicles that have pressure receptacles (fuel tanks) equipped with electrically operated valves that close automatically in case the power is disconnected, or with manual shut-off valves, may be transported under the following conditions:
 - i) the tank shut-off valves must be in the closed position and in the case of electrically operated valves, power to those valves must be disconnected;
 - ii) after closing the tank shut-off valves, the vehicle must be operated until it stops from lack of fuel before being loaded aboard the aircraft;
 - iii) in no part of the closed system must the remaining pressure of compressed gases exceed 5 per cent of the maximum allowable working pressure of the pressure receptacle (fuel tank) system, or more than 2 000 kPa (20 bar), whichever is the lower.

Packing Instruction 951

Flammable liquid fuel tanks

If a vehicle is powered by a flammable liquid and a flammable gas internal combustion engine, the requirements set out in Packing Instruction 950 for flammable liquid fuel tanks must also be met.

Batteries

All batteries must be installed and securely fastened in the battery holder of the vehicle and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) If spillable batteries are installed, and it is possible for the vehicle to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 870.
- 2) If lithium batteries are installed:
 - i) lithium batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport; and
 - ii) lithium batteries must meet the provisions of Part 2;9.3, except that pre-production prototypes of lithium batteries or cells, when these prototypes are transported for testing, or low production runs of lithium batteries or cells that have not been tested to the requirements in Part III, subsection 38.3 of the *UN Manual of Tests and Criteria* may be transported aboard cargo aircraft if approved by the appropriate authority of the State of Origin and the State of the Operator. A copy of the document of approval must accompany the consignment.
- 3) If metallic sodium or sodium alloy batteries are installed, they must conform to the requirements of Special Provision A94.

Other operational equipment

- 1) Dangerous goods required for the operation or safety of the vehicle, such as fire extinguishers, tire inflation canisters or safety devices, must be securely mounted in the vehicle, machine or equipment. Aircraft may also contain other articles and substances which would otherwise be classified as dangerous goods but which are installed in that aircraft in accordance with the pertinent airworthiness requirements and operating regulations. If fitted, life-rafts, emergency escape slides and other inflation devices must be protected such that they cannot be activated accidentally. Vehicles containing dangerous goods identified in Table 3-1 as forbidden on passenger aircraft may only be transported on cargo aircraft. Replacements for the dangerous goods permitted must not be carried under this packing instruction.
- 2) Vehicles equipped with theft-protection devices, installed radio communications equipment or navigational systems must have such devices, equipment or systems disabled.

Packing Instruction 952

Passenger and cargo aircraft for UN Nos. 3171, 3556, 3557 and 3558 only

(See Packing Instruction 220 for flammable gas-powered engines and machinery, Packing Instruction 378 for flammable liquid-powered engines and machinery, Packing Instruction 950 for flammable liquid-powered vehicles, Packing Instruction 951 for flammable gas-powered vehicles or Packing Instruction 972 for engines or machinery containing only environmentally hazardous fuels)

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.

UN number and proper shipping name		Quantity – passenger	Quantity – cargo
UN 3171	Battery-powered equipment or Battery-powered vehicle	No limit	No limit
UN 3556	Vehicle, lithium ion battery powered		
UN 3557	Vehicle, lithium metal battery powered		
UN 3558	Vehicle, sodium ion battery powered		

ADDITIONAL PACKING REQUIREMENTS

This entry applies to vehicles and equipment, including machinery, which are powered by wet batteries, metallic sodium or sodium alloy batteries and to vehicles powered by lithium batteries or sodium ion batteries and which are transported with these batteries installed. Examples of such vehicles and equipment are electrically-powered cars, lawn mowers, wheelchairs and other mobility aids. Vehicles that also contain an internal combustion engine must be consigned under the entry UN 3166 Vehicle (flammable gas powered) (See Packing Instruction 951) or Vehicle (flammable liquid powered) (See Packing Instruction 950), as appropriate.

Where vehicles or equipment could possibly be handled in other than an upright position, the vehicle or equipment must be secured in a strong, rigid outer packaging of the type below. The vehicle or equipment must be secured and restrained in the outer packaging to prevent any movement during transport which could change the orientation or cause the vehicle or equipment to be damaged.

Vehicles and equipment must be equipped with an effective means of preventing accidental activation.

Battery-powered vehicles or equipment must meet the following requirements:

Batteries

All batteries must be installed and securely fastened in the battery holder of the vehicle or equipment and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) If spillable batteries are installed, and it is possible for the vehicle or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 870.
- 2) If lithium batteries or sodium ion batteries are installed:
 - i) batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport;
 - ii) lithium batteries must meet the provisions of Part 2;9.3 and sodium ion batteries must meet the provisions of Part 2;9.4, except that pre-production prototypes of lithium batteries or sodium ion batteries, when these prototypes are transported for testing, or low production runs of lithium batteries or sodium ion batteries that have not been tested to the requirements in Part III, subsection 38.3 of the UN *Manual of Tests and Criteria* may be transported aboard cargo aircraft if approved by the appropriate authority of the State of Origin and the State of the Operator. A copy of the document of approval must accompany the consignment;

- ≠ iii) where the battery is removed from the vehicle and is packed separate from the vehicle in the same outer packaging, the package must be consigned as UN 3481 – **Lithium ion batteries packed with equipment**, UN 3552 – **Sodium ion batteries packed with equipment** or UN 3091 – **Lithium metal batteries packed with equipment** and packed according to Packing Instruction 966, 969 or 977, as applicable; and
- + iv) for UN 3556 – **Vehicle, lithium ion battery powered**, UN 3557 – **Vehicle, lithium metal battery powered** when the battery is rechargeable, and UN 3558 – **Vehicle, sodium ion battery powered**:
- + 1) **Until 31 December 2025**
- Vehicles should be offered for transport with:
- the battery(ies) at a state of charge not exceeding 30 per cent of their rated capacity; or
 - an indicated battery capacity not exceeding 25 per cent.
- + 2) **From 1 January 2026**
- a) Vehicles powered by batteries with a Watt-hour rating in excess of 100 Wh must be offered for transport with:
- the battery(ies) at a state of charge not exceeding 30 per cent of their rated capacity; or
 - an indicated battery capacity not exceeding 25 per cent.
- b) Vehicles powered by batteries with a Watt-hour rating not in excess of 100 Wh should be offered for transport with:
- the battery(ies) at a state of charge not exceeding 30 per cent of their rated capacity; or
 - an indicated battery capacity not exceeding 25 per cent.
- c) Vehicles powered by batteries with a Watt-hour rating in excess of 100 Wh and at a state of charge exceeding 30 per cent of their rated capacity or with an indicated battery capacity exceeding 25 per cent may only be offered for transport with the approval of the appropriate national authorities of the State of Origin and the State of the Operator under the written conditions established by those authorities.
- Note.— Guidance and methodology for determining the rated capacity can be found in sub-section 38.3.2.3 of the UN Manual of Tests and Criteria. Cells and batteries shipped at a reduced state of charge are less prone to thermal runaway.*
- ≠ 3) If metallic sodium or sodium alloy batteries are installed, they must conform to the requirements of Special Provision A94.

Other operational equipment

- ≠ 1) Dangerous goods required for the operation or safety of the vehicle or equipment, such as fire extinguishers, tire inflation canisters or safety devices, must be securely mounted in the vehicle or equipment. Aircraft may also contain other articles and substances which would otherwise be classified as dangerous goods but which are installed in that aircraft in accordance with the pertinent airworthiness requirements and operating regulations. If fitted, life-rafts, emergency escape slides and other inflation devices must be protected such that they cannot be activated accidentally. Vehicles or equipment containing dangerous goods identified in Table 3-1 as forbidden on passenger aircraft may only be transported on cargo aircraft. Replacements for the dangerous goods permitted must not be carried under this packing instruction.
- 2) Vehicles equipped with theft-protection devices, installed radio communications equipment or navigational systems must have such devices, equipment or systems disabled.

Strong outer packagings – vehicles and equipment

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 953		
Passenger and cargo aircraft for UN 2807 only		
UN number and proper shipping name	Quantity – passenger	Quantity – cargo
UN 2807 Magnetized material	No limit	No limit
<p>Magnetized materials with field strengths causing a compass deflection of more than 2 degrees at a distance of 2.1 m but not more than 2 degrees at a distance of 4.6 m (equivalent to 0.418 A/m or 0.00525 Gauss measured at a distance of 4.6 m) are not subject to any other requirements in these Instructions when carried as cargo except for the following:</p> <ul style="list-style-type: none">a) the shipper must make prior arrangements with the operator identifying the magnetized material. The dangerous goods transport document requirements of Part 5;4 are not applicable provided alternative written or electronic documentation includes the words “magnetized material” in association with the description of the goods;b) the package must bear the magnetized material handling label;c) the operator must stow the packaged magnetized material in accordance with 7;2.10; andd) the incident reporting requirements of 7;4.4 must be met. <p>Magnetized material with a field strength sufficient to cause a compass deflection of more than 2 degrees at a distance of 4.6 m may only be transported with the prior approval of the appropriate authority of the State of Origin and the State of the Operator.</p>		

Packing Instruction 954

Passenger and cargo aircraft for UN 1845 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.

<i>UN number and proper shipping name</i>	<i>Quantity – passenger</i>	<i>Quantity – cargo</i>
UN 1845 Carbon dioxide, solid or Dry ice	200 kg	200 kg

ADDITIONAL PACKING REQUIREMENTS

In packages:

- a) must be packed in accordance with the general packing requirements of 4;1 and be in packaging designed and constructed to permit the release of carbon dioxide gas to prevent a build-up of pressure that could rupture the packaging;
- b) the shipper must make arrangements with the operator(s) for each shipment, to ensure that ventilation safety procedures are followed;
- 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.

Dry ice may be shipped in a unit load device prepared by a single shipper provided that:

- a) the shipper has made prior arrangements with the operator;
- b) the unit load device does not contain dangerous goods other than UN 3373, **Biological substance, Category B** or ID 8000, **Consumer commodity**. Where the unit load device contains UN 3373 or ID 8000, the provisions of these Instructions that apply to those substances must be met in addition to the provisions set out in this packing instruction;
- c) the unit load device must allow the venting of the carbon dioxide gas to prevent a dangerous build-up of pressure (the marking requirements of 5;2 and the labelling requirements of 5;3 do not apply to the unit load device); and
- d) the shipper must provide the operator with written documentation or, where agreed with the operator, information by EDP or EDI techniques, stating the total quantity of the dry ice contained in the unit load device.

Packing Instruction 955

Passenger and cargo aircraft for UN 2990 and UN 3072 only

The term “life-saving appliances” applies to articles such as life rafts, life vests, aircraft survival kits or aircraft evacuation slides.

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

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.

<i>UN number and proper shipping name</i>	<i>Quantity – passenger</i>	<i>Quantity – cargo</i>
UN 2990 Life-saving appliances, self-inflating UN 3072 Life-saving appliances, not self-inflating containing dangerous goods as equipment	No limit	No limit

ADDITIONAL PACKING REQUIREMENTS

Life-saving appliances may only contain the dangerous goods listed below:

- a) Division 2.2 gases, must be contained in cylinders which conform to the requirements of the appropriate national authority of the country in which they are approved and filled. Such cylinders may be connected to the life-saving appliance. These cylinders may include installed actuating cartridges (cartridges, power device of Division 1.4C and 1.4S) provided the aggregate quantity of deflagrating (propellant) explosives does not exceed 3.2 grams per unit. When the cylinders are shipped separately, they must be classified as appropriate for the Division 2.2 gas contained and need not be marked, labelled or described as explosive articles;
- b) signal devices (Class 1), which may include smoke and illumination signal flares; signal devices must be packed in plastic or fibreboard inner packagings;
- c) small quantities of flammable substances, corrosive solids and organic peroxides (Class 3, Class 8, Division 4.1 and 5.2), which may include a repair kit and not more than 30 strike-anywhere matches. The organic peroxide may only be a component of a repair kit and the kit must be packed in strong inner packaging. The strike-anywhere matches must be packed in a cylindrical metal or composition packaging with a screw-type closure and be cushioned to prevent movement;
- d) electric storage batteries (Class 8), which must be disconnected or electrically isolated and protected against short circuits;
- e) lithium batteries and sodium ion batteries:
 - 1) identified as damaged or defective in accordance with Special Provision A154 are forbidden for transport;
 - 2) must meet the applicable requirements of 2;9.3 or 2;9.4, as applicable;
 - 3) must be disconnected or electrically isolated and protected against short circuits; and
 - 4) must be secured against movement within the appliance.
- f) first aid kits which may include flammable, corrosive and toxic articles or substances.

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

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

Packing Instruction 956

Passenger and cargo aircraft for UN 1841, UN 1931, UN 2216, UN 3432, UN 2969, UN 3077, UN 3152 and UN 3335 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)	Total quantity per package – passenger	Total quantity per package – cargo	Quantity – passenger	Quantity – cargo
UN 1841 Acetaldehyde ammonia	Glass	10.0 kg	200 kg	200 kg	200 kg	200 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastics	50.0 kg				
	Plastic bag	50.0 kg				
UN 1931 Zinc dithionite or Zinc hydrosulphite	Glass	10.0 kg	100 kg	200 kg	100 kg	200 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastics	50.0 kg				
	Plastic bag	50.0 kg				
UN 2216 Fish meal, stabilized	Glass	10.0 kg	100 kg	200 kg	100 kg	200 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastics	50.0 kg				
	Plastic bag	50.0 kg				
UN 2969 Castor beans or Castor flake or Castor meal or Castor pomace	Glass	10.0 kg	No limit	No limit	No Limit	No Limit
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastics	50.0 kg				
	Plastic bag	50.0 kg				
UN 3077 Environmentally hazardous substance, solid, n.o.s.	Glass	10.0 kg	400 kg	400 kg	400 kg	400 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastics	50.0 kg				
	Plastic bag	50.0 kg				
UN 3152 Polyhalogenated biphenyls, solid or Polyhalogenated terphenyls, solid or Halogenated monomethyl-diphenylmethanes, solid	Glass	10.0 kg	100 kg	200 kg	100 kg	200 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastics	50.0 kg				
	Plastic bag	50.0 kg				
UN 3335 Aviation regulated solid, n.o.s.	Glass	10.0 kg	400 kg	400 kg	400 kg	400 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastics	50.0 kg				
	Plastic bag	50.0 kg				

Packing Instruction 956						
COMBINATION PACKAGINGS					SINGLE PACKAGINGS	
UN number and proper shipping name	Inner packaging (see 6;3.2)	Inner packaging quantity (per receptacle)	Total quantity per package – passenger	Total quantity per package – cargo	Quantity – passenger	Quantity – cargo
UN 3432 Polychlorinated biphenyls, solid	Glass	10.0 kg	100 kg	200 kg	100 kg	200 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastics	50.0 kg				
	Plastic bag	50.0 kg				
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)		Steel (1A1, 1A2)				
Plywood (4D)						
Reconstituted wood (4F)						
Steel (4A)						
ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS						
— Fibre, fibreboard, wood and plywood single packagings must be fitted with a suitable liner.						
SINGLE PACKAGINGS						
Bags	Boxes	Composites	Cylinders	Drums	Jerricans	
Paper (5M2)	Aluminium (4B)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)	
Plastic film (5H4)	Fibreboard (4G)			Fibre (1G)	Plastics (3H1, 3H2)	
Textile (5L3)	Natural wood (4C2)			Other metal (1N1, 1N2)	Steel (3A1, 3A2)	
Woven plastics (5H3)	Other metal (4N)			Plastics (1H1, 1H2)		
	Plastics (4H2)			Plywood (1D)		
	Plywood (4D)			Steel (1A1, 1A2)		
	Reconstituted wood (4F)					
	Steel (4A)					

Packing Instruction 956

INTERMEDIATE BULK CONTAINERS FOR UN 3077 ONLY

For UN 3077, irrespective of the maximum net quantities specified in the columns 11 and 13 of the Dangerous Goods List (Table 3-1) and as provided above for single packagings, intermediate bulk containers (IBCs) with a maximum net quantity not exceeding 1 000 kg are permitted as shown below. Each IBC must be in accordance with Chapter 6.5 of the United Nations Model Regulations and must bear the required UN mark.

<i>Metal</i>	<i>Rigid plastic</i>	<i>Composite with plastic inner receptacle</i>	<i>Fibreboard</i>	<i>Wooden</i>	<i>Flexible</i>
Steel (11A), (21A) Aluminium (11B), (21B) Other than steel or aluminium (11N), (21N)	For solids, filled or discharged by gravity, fitted with structural equipment (11H1) For solids, filled or discharged by gravity, free-standing (11H2) For solids, filled or discharged under pressure, fitted with structural equipment (21H1) For solids, filled or discharged under pressure, free-standing (21H2)	For solids, filled or discharged by gravity, with rigid plastic inner receptacle (11HZ1) For solids, filled or discharged by gravity, with flexible plastic inner receptacle (11HZ2) For solids, filled or discharged under pressure, with rigid plastic inner receptacle (21HZ1) For solids, filled or discharged under pressure, with flexible plastic inner receptacle (21HZ2) (The IBC Code must be completed by replacing the letter Z with a capital letter indicating the nature of the material used for the outer casing (A for steel; B for aluminium; C for natural wood; D for plywood; F for reconstituted wood; G for fibreboard; H for plastic material; L for textile; M for paper, multi-walled; and N for metal other than steel or aluminium).)	For solids, filled or discharged by gravity (11G)	Natural wood for solids, filled or discharged by gravity with inner liner (11C) Plywood for solids, filled or discharged by gravity, with inner liner (11D) Reconstituted wood for solids, filled or discharged by gravity, with inner liner (11F)	Woven plastic, coated (13H2) Woven plastic with liner (13H3) Woven plastic, coated and with liner (13H4) Plastic film (13H5) Textile coated (13L2) Textile with liner (13L3) Textile coated and with liner (13L4) Paper multi-wall (13M1) Paper multi-wall, water-resistant (13M2)

ADDITIONAL PACKING REQUIREMENTS FOR INTERMEDIATE BULK CONTAINERS

— Flexible IBCs must be sift-proof and water-resistant or must be fitted with a sift-proof and water-resistant liner.

Packing Instruction Y956

Limited quantities
Passenger and cargo aircraft for UN 3077 and UN 3335 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; and
 - a 24-hour stacking test.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS
UN number and proper shipping name	Packing group	Inner packaging (see 6;3.2)	Inner packaging quantity (per receptacle)	Total gross mass per package	
UN 3077 Environmentally hazardous substance, solid, n.o.s. UN 3335 Aviation regulated solid, n.o.s.*	III	Glass	5.0 kg	30 kg	No
		Plastics	5.0 kg		
		Metal	5.0 kg		
		Paper bag	5.0 kg		
		Plastic bag	5.0 kg		
		Fibre	5.0 kg		

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 957

Passenger and cargo aircraft for UN 2211 and UN 3314 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					
UN number and proper shipping name	Inner packaging (see 6;3.2)	Inner packaging quantity (per receptacle)	Quantity – passenger	Quantity – cargo	SINGLE PACKAGINGS
UN 2211 Polymeric beads, expandable , evolving flammable vapour UN 3314 Plastics moulding compound in dough, sheet or extruded rope form evolving flammable vapour	Glass	10 kg	100 kg	200 kg	Yes
	Fibre	50 kg			
	Metal	50 kg			
	Paper bag	50 kg			
	Plastics	50 kg			
	Plastic bag	50 kg			

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

For other than metal and plastics packagings, a sealed plastic liner must be used.

SINGLE PACKAGINGS

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)

Jerricans

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

Packing Instruction 958

Passenger and cargo aircraft for UN 2071 and UN 2590 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)	Total quantity per package	
UN 2071 Ammonium nitrate based fertilizers UN 2590 Asbestos, chrysotile	Glass	10 kg	200 kg	200 kg
	Fibre	50 kg		
	Metal	50 kg		
	Paper bag	50 kg		
	Plastics	50 kg		
	Plastic bag	50 kg		

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Plastic, paper and fibre inner packagings must be siftproof.

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.
- For UN 2590, bags must be placed in closed rigid overpacks.

SINGLE PACKAGINGS

Bags

Paper (5M2)
Plastics (5H4)
Textile (5L3)
Woven plastics (5H3)

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 (1A2)

Jerricans

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

Packing Instruction Y958

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.

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
UN number and proper shipping name	Packing group	Inner packaging (see 6;3.2)	Inner packaging quantity (per receptacle)	Total gross mass per package	
UN 2071 Ammonium nitrate based fertilizer	III	Glass	5.0 kg	30 kg	No
		Plastics	5.0 kg		
		Metal	5.0 kg		
		Paper bag	5.0 kg		
		Plastic bag	5.0 kg		
		Fibre	5.0 kg		

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 959

Passenger and cargo aircraft for UN 3245 only

General requirements

Part 4, Chapters 1 and 2 requirements must be met, including:

1) Compatibility requirements

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

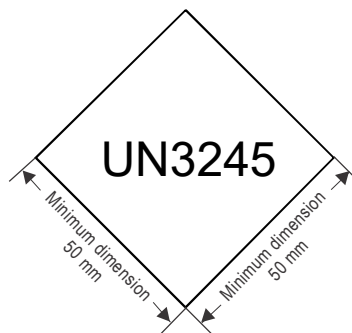
2) Closure requirements

- Closures must meet the requirements of 4;1.1.4.

The following packagings are authorized:

- 1) Packagings meeting the provisions of 4;1.1.1, 4;1.1.3.1, 4;1.1.5 and 4;2 and so designed that they meet the construction requirements of 6;3. Outer packagings constructed of suitable material of adequate strength and designed in relation to the packaging capacity and its intended use must be used. Where this packing instruction is used for the transport of inner packagings of combination packagings, the packaging must be designed and constructed to prevent inadvertent discharge during normal conditions of transport.
- 2) Packagings, which need not conform to the packaging test requirements of Part 6, but conforming to the following:
 - a) an inner packaging comprising:
 - 1) primary receptacle(s) and a secondary packaging, the primary receptacle(s) or the secondary packaging must be leakproof for liquids or siftproof for solids;
 - 2) for liquids, absorbent material placed between the primary receptacle(s) and the secondary packaging. The absorbent material must be in a quantity sufficient to absorb the entire contents of the primary receptacle(s) so that any release of the liquid substance will not compromise the integrity of the cushioning material or of the outer packaging;
 - 3) if multiple fragile primary receptacles are placed in a single secondary packaging they must be individually wrapped or separated to prevent contact between them;
 - b) an outer packaging must be strong enough for its capacity, mass and intended use, and with a smallest external dimension of at least 100 mm.

For transport, the mark illustrated below must be displayed on the external surface of the outer packaging on a background of a contrasting colour and must be clearly visible and legible. The mark must be in the form of a square set at an angle of 45° (diamond-shaped) with each side having a length of at least 50 mm; the width of the line must be at least 2 mm and the letters and numbers must be at least 6 mm high. The entire mark must appear on one side of the package.



When packages are placed in an overpack, the package marks required by this packing instruction must either clearly be 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.

Packing Instruction 959

GMOs or GMMOs assigned to UN 3245 which are packed and marked in accordance with this packing instruction are not subject to any other requirement in these Instructions except for the following:

- 1) the name and address of the shipper and of the consignee must be provided on each package;
- 2) classification must be in accordance with 2;9.2 c);
- 3) the incident reporting requirements in 7;4.4 and 7;4.5 must be met;
- 4) the inspection for damage or leakage requirements in 7;3.1.3 and 7;3.1.4;
- 5) passengers and crew members are prohibited from transporting UN 3245 either as, or in, carry-on baggage or checked baggage or on their person.

ADDITIONAL PACKING REQUIREMENTS

- When dry ice or liquid nitrogen is used, 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 dry ice is used, the requirements in Packing Instruction 954 must be met.
- The primary receptacle and the secondary packaging must maintain their integrity at the temperature of the refrigerant used as well as the temperatures and the pressures which could result if refrigeration were lost.

Packing Instruction 960

Passenger and cargo aircraft for UN 3316 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.

<i>UN number and proper shipping name</i>	<i>State</i>	<i>Inner packaging* (see 6;3.2)</i>	<i>Maximum quantity of dangerous goods per kit**</i>	<i>Package quantity – passenger</i>	<i>Package quantity – cargo</i>	SINGLE PACKAGINGS
UN 3316 Chemical kit or First aid kit	Liquid	250 mL	1 L	10 kg	10 kg	No
	Solid	250 g	1 kg			

* Containing dangerous goods.

** The total quantity of dangerous goods in any one kit must not exceed 1 L or 1 kg.

ADDITIONAL PACKING REQUIREMENTS

- Kits may contain dangerous goods which require segregation according to Table 7-1.
- Packagings must meet the performance standards of the most stringent packing group assigned to any individual substance contained in the kit. Where the kit contains only dangerous goods to which no packing group is assigned, packagings must meet Packing Group II performance standards.
- Kits must not be packed with other dangerous goods in the same outer packaging, with the exception of dry ice. If dry ice is used, the requirements in Packing Instruction 954 must be met.

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

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 except 3;4.3.3, including:
 - the capability of the package to pass a 1.2 m drop test; and
 - a 24-hour stacking test.

<i>UN number and proper shipping name</i>	<i>State</i>	<i>Inner packaging* (see 6;3.2)</i>	<i>Maximum quantity of dangerous goods per kit</i>	<i>Maximum quantity of dangerous goods per package</i>	<i>Total gross mass per package</i>	SINGLE PACKAGINGS
UN 3316 Chemical kit or First aid kit	Liquid	30 mL	1 kg	1 kg	30 kg	No
	Solid	100 g				

*Containing dangerous goods.

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

- Kits may contain dangerous goods which require segregation according to Table 7-1. The packing group assigned to the kit as a whole must be the most stringent packing group assigned to any individual substance contained in the kit.
- Kits must not be packed with other dangerous goods in the same outer packaging, with the exception of dry ice. If dry ice is used, the requirements in Packing Instruction 954 must be met.
- The total quantity of dangerous goods in any one kit and in any one package must not exceed 1 kg.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes

Aluminium
Fibreboard
Natural wood
Other metal
Plastics
Plywood
Reconstituted wood
Steel

Packing Instruction 961

Passenger and cargo aircraft for UN Nos. 3268 and 3559 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.

UN number and proper shipping name	Quantity – passenger	Quantity – cargo	SINGLE PACKAGINGS
UN 3268 Safety devices , electrically initiated	25 kg	100 kg	No
UN 3559 Fire suppressant dispersing devices			

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

- Packagings must meet the Packing Group III performance requirements.
- The packagings must be designed and constructed to prevent movement of the articles and inadvertent operation during normal conditions of transport.
- Any pressure receptacle must be in accordance with the requirements of the appropriate national authority for the substance(s) contained therein.

Cargo aircraft only

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

- air bag inflators, air bag modules or seat-belt pretensioners as fitted in the handling device must be capable of meeting the test criteria prescribed in Special Provision A115;
- the handling device must be completely enclosed;
- each air bag inflator, air bag module or seat-belt pretensioner unit must be secured within the handling device to prevent movement in transport; and
- irrespective of the limit specified in column 13 of Table 3-1, a handling device meeting these requirements may have a gross mass not exceeding 1 000 kg.

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)
Plywood (1D)
Steel (1A2)

Jerricans

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

Packing Instruction 962

Passenger and cargo aircraft for UN 3363 only

General requirements

Part 4, Chapter 1 requirements must be met (except that the requirements of 4;1.1.2, 1.1.9, 1.1.13 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.

2) Closure requirements

- Closures must meet the requirements of 4;1.1.4.

This entry only applies to articles, such as machinery, apparatus or devices containing dangerous goods as a residue or as an integral element of the article. It must not be used for an article for which a proper shipping name exists in Table 3-1. For other than fuel system components, articles may only contain one or more of the following: dangerous goods permitted under 3;4.1.2 or UN 2807 or gases of Division 2.2 without subsidiary hazard but excluding refrigerated liquefied gases.

<i>UN number and proper shipping name</i>		<i>State</i>	<i>Total net quantity of dangerous goods in one package (excluding magnetic material)</i>
UN 3363	Dangerous goods in apparatus or Dangerous goods in machinery or Dangerous goods in articles	Liquid	0.5 L
		Solid	1 kg
		Gas (Division 2.2 only)	0.5 kg

ADDITIONAL PACKING REQUIREMENTS

- If the article contains more than one item of dangerous goods, the individual dangerous goods must be enclosed to prevent them reacting dangerously with one another during transport (see 4;1.1.3).
- Receptacles containing dangerous goods must be so secured or cushioned so as to prevent their breakage or leakage and so as to control their movement within the article during normal conditions of transport. Cushioning material must not react dangerously with the contents of the receptacles. Any leakage of the contents must not substantially impair the protective properties of the cushioning material.
- "Package orientation" labels (Figure 5-29), or preprinted orientation labels meeting the same specification as either Figure 5-29 or ISO Standard 780-1997 must be affixed on at least two opposite vertical sides with the arrows pointing in the correct direction only when required to ensure liquid dangerous goods remain in their intended orientation.
- Irrespective of 5;3.2.10, articles containing magnetized material meeting the requirements of Packing Instruction 953 must also bear the "Magnetized material" label (Figure 5-27).
- For Division 2.2 gases, cylinders for gases, their contents and filling ratios must conform to the requirements of Packing Instruction 200.
- Dangerous goods in articles must be packed in strong outer packagings unless the receptacles containing the dangerous goods are afforded adequate protection by the construction of the articles.

Fuel system components

- Fuel system components must be emptied of fuel as far as practicable and all openings must be sealed securely. They must be packed:
 - 1) in sufficient absorbent material to absorb the maximum amount of liquid which may possibly remain after emptying. Where the outer packaging is not liquid tight, a means of containing the liquid in the event of leakage must be provided in the form of a leakproof liner, plastic bag or other equally efficient means of containment; and
 - 2) in strong outer packagings.

Packing Instruction Y963

Limited quantities
Passenger and cargo aircraft for ID 8000 only

Consumer commodities are materials that are packaged and distributed in a form intended or suitable for retail sale for the purposes of personal care or household use. These include items administered or sold to patients by doctors or medical administrations. Except as otherwise provided below, dangerous goods packed in accordance with this packing instruction do not need to comply with 4;1 or Part 6 of these Instructions; they must, however, comply with all other applicable requirements. Other dangerous goods not classified as ID 8000 must not be packed in the same outer packaging with ID 8000.

- a) Each packaging must be designed and constructed to prevent leakage that may be caused by changes in altitude and temperature during air transport.
- b) Inner packagings that are breakable (such as earthenware, glass or brittle plastic) must be packed to prevent breakage and leakage under conditions normally incident to transport. Each package offered for transport must be capable of withstanding a 1.2 m drop on solid concrete in the position most likely to cause damage. The criteria for passing the test is that the outer packaging must not exhibit any damage liable to affect safety during transport and there must be no leakage from the inner packaging(s). Each package offered for transport must be capable of withstanding, without breakage or leakage of any inner packaging and without significant reduction of effectiveness, a force applied to the top surface for a duration of 24 hours equivalent to the total weight of identical packages if stacked to a height of 3 m (including the test sample).
- c) When filling receptacles for liquids, sufficient ullage (outage) must be left to ensure that neither leakage nor permanent distortion of the receptacle will occur as a result of an expansion of the liquid caused by temperatures likely to prevail during transport. Unless specific requirements are prescribed in national rules or international agreements, liquids must not completely fill a receptacle at a temperature of 55°C. At this temperature a minimum ullage of 2 per cent should be left. The primary packaging (which may include composite packaging), for which retention of the liquid is a basic function, must be capable of withstanding, without leakage, an internal pressure which produces a pressure differential of not less than 75 kPa or a pressure related to the vapour pressure of the liquid to be conveyed, whichever is the greater. The pressure related to the vapour pressure must be determined by the method shown in 4;1.1.6. Tests on sample receptacles must be carried out to demonstrate the capability of the primary packaging to withstand the above pressure.
- d) Stoppers, corks or other such friction-type closures must be held securely, tightly and effectively in place by positive means. The closure device must be so designed that it is extremely improbable that it can be incorrectly or incompletely closed and must be such that it may be easily checked to determine that it is completely closed.
- e) Inner packagings must be tightly packed in strong outer packagings and must be so packed, secured or cushioned so as to prevent any breakage, puncture or leakage of contents into the outer packaging(s) during normal conditions of transport. Absorbent material must be provided for glass or earthenware inner packaging(s) containing consumer commodities in Class 3 or liquids of Division 6.1, in sufficient quantity to absorb the liquid contents of the largest of such inner packagings contained in the outer packaging. Absorbent and cushioning material must not react dangerously with the contents of the inner packagings. Notwithstanding the above, absorbent material may not be required if the inner packagings are so protected that breakage of the inner packagings and leakage of their contents from the outer packaging will not occur during normal conditions of transport.
- f) Inner packagings containing liquids must be packed with their closures upward and the upright position of the package must be indicated by "Package orientation" labels (Figure 5-29). These labels, or pre-printed package orientation labels meeting the same specification as either Figure 5-29 or ISO Standard 780-1997, must be affixed to, or printed on, at least two opposite vertical sides of the package with the arrows pointing in the correct direction. The requirements of this sub-paragraph do not apply to:
 - 1) dangerous goods in inner packagings each containing not more than 120 mL with sufficient absorbent material between the inner and outer packagings to completely absorb the liquid contents; or
 - 2) dangerous goods in gas tight inner packagings such as tubes, bags or vials which are opened by breaking or puncturing.
- g) Each completed package as prepared for shipment must not exceed a gross mass of 30 kg G.

Packing Instruction Y963

- h) Class 2 substances must be further limited to aerosol products containing non-toxic compressed or liquefied gas(es). Aerosols must meet the requirements of Part 6;5.4. The valves must be protected by a cap or other suitable means during transport.
- i) Except for aerosols, inner packagings must not exceed:
 - 1) 500 mL for liquids; and
 - 2) 500 g for solids.
- j) Consumer commodities shipped according to these provisions may be shipped in a unit load device prepared by a single shipper provided they contain no other dangerous goods other than UN 1845 – **Carbon dioxide, solid** (dry ice) used as a refrigerant. When the unit load device contains dry ice, the provisions of these Instructions applicable to dry ice must be met in addition to the provisions set out in this packing instruction. The shipper must provide the operator with written documentation stating the number of packages of consumer commodities contained in each unit load device.
- k) The gross mass on the dangerous goods transport document must be shown as:
 - 1) for one package, the actual gross mass of the package;
 - 2) for more than one package, either the actual gross mass of each package or as the average mass of the packages. (For example, if there are 10 packages and the total gross mass of them is 100 kg, the dangerous goods transport document may show this as “average gross mass per package 10 kg”.)
- l) Packages prepared in accordance with these provisions must be durably and legibly marked with the mark shown in Figure 3-1.

Packing Instruction 964

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

General requirements

Part 4, Chapter 1 requirements must be met (with the exception that for UN 3082 packed in combination packagings, the requirements of 4;1.1.6 do not apply).

These requirements include:

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)	Total quantity per package – passenger	Total quantity per package – cargo	Passenger	Cargo
UN 1941 Dibromodifluoromethane	Glass	10.0 L	100 L	220 L	100 L	220 L
	Plastics	30.0 L				
	Metal	40.0 L				
UN 1990 Benzaldehyde	Glass	10.0 L	100 L	220 L	100 L	220 L
	Plastics	30.0 L				
	Metal	40.0 L				
UN 2315 Polychlorinated biphenyls, liquid	Glass	10.0 L	100 L	220 L	100 L	220 L
	Plastics	30.0 L				
	Metal	40.0 L				
UN 3082 Environmentally hazardous substance, liquid, n.o.s.	Glass	10.0 L	450 L	450 L	450 L	450 L
	Plastics	30.0 L				
	Metal	40.0 L				
UN 3151 Polyhalogenated biphenyls, liquid or Polyhalogenated terphenyls, liquid or Halogenated monomethyldiphenyl-methanes, liquid	Glass	10.0 L	100 L	220 L	100 L	220 L
	Plastics	30.0 L				
	Metal	40.0 L				
UN 3334 Aviation regulated liquid, n.o.s.	Glass	10.0 L	450 L	450 L	450 L	450 L
	Plastics	30.0 L				
	Metal	40.0 L				

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

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 Y964

Limited quantities
Passenger and cargo aircraft for UN 1941, UN 1990, UN 3082 and UN 3334 only

General requirements

Part 4, Chapter 1 requirements must be met (with the exception that the requirements of 4;1.1.2, 1.1.9 c), 1.1.9 e), 1.1.16, 1.1.18, 1.1.20 and in addition for UN 3082 the requirements of 4.1.1.6 do not apply). These requirements include:

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
<i>UN number and proper shipping name</i>	<i>Inner packaging (see 6;3.2)</i>	<i>Inner packaging quantity (per receptacle)</i>	<i>Total gross mass per package</i>	
UN 1941 Dibromodifluoromethane	Glass	5.0 L	30 kg	No
UN 1990 Benzaldehyde	Plastics	5.0 L		
UN 3082 Environmentally hazardous substance, liquid, n.o.s.	Metal	5.0 L		
UN 3334 Aviation regulated liquid, n.o.s.*				

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 965

Cargo aircraft only for UN 3480

1. Introduction

This entry applies to lithium ion or lithium polymer batteries. This packing instruction is structured as follows:

- Section IA applies to lithium ion cells with a Watt-hour rating in excess of 20 Wh and lithium ion batteries with a Watt-hour rating in excess of 100 Wh, which must be assigned to Class 9 and are subject to all of the applicable requirements of these Instructions; and
- Section IB applies to lithium ion cells with a Watt-hour rating not exceeding 20 Wh and lithium ion batteries with a Watt-hour rating not exceeding 100 Wh.

A single cell battery as defined in Part III, sub-section 38.3.2.3 of the UN *Manual of Tests and Criteria* is considered a "cell" and must be transported according to the requirements for "cells" for the purpose of this packing instruction.

2. Batteries forbidden from transport

The following applies to all cells and batteries in this packing instruction:

Cells or batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden from transport.

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

IA. SECTION IA

Each cell or battery must meet the provisions of 2;9.3.

IA.1 General requirements

- Part 4;1 requirements must be met.
- Cells and batteries must be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity. Cells and/or batteries at a state of charge greater than 30 per cent of their rated capacity may only be shipped with the approval of the State of Origin and the State of the Operator under the written conditions established by those authorities.

Note.— Guidance and methodology for determining the rated capacity can be found in sub-section 38.3.2.3 of the UN Manual of Tests and Criteria. Cells and batteries shipped at a reduced state of charge are less prone to thermal runaway.

Table 965-IA

UN number and proper shipping name	Net quantity per package	
	Passenger	Cargo
UN 3480 Lithium ion batteries	Forbidden	35 kg

Packing Instruction 965

IA.2 Additional requirements

- Cells and batteries must be protected against short circuits.
- 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.
- Cells and batteries must not be packed in the same outer packaging with substances and articles of Class 1 (explosives) other than Division 1.4S, Division 2.1 (flammable gases), Class 3 (flammable liquids), Division 4.1 (flammable solids) or Division 5.1 (oxidizers).
- A cell or battery with a mass of 12 kg or greater and having a strong, impact-resistant outer casing may be transported when packed in strong outer packagings or protective enclosures (such as 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.

IA.3 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 (1B2)
Fibre (1G)
Other metal (1N2)
Plastics (1H2)
Plywood (1D)
Steel (1A2)

Jerricans

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

IB. SECTION IB

Cells or batteries prepared in accordance with this section are subject to all of the applicable provisions of these Instructions (including the requirements in paragraph 2 of this packing instruction and of this section) except for the provisions of Part 6.

Cells or batteries shipped in accordance with the provisions of Section IB must be described on a dangerous goods transport document as set in Part 5;4. The packing instruction number "965" required by 5;4.1.5.8.1 a) must be supplemented with "IB". All other applicable provisions of Part 5;4 apply.

Cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3 a), e) and g) and the following:

- 1) for cells, the Watt-hour rating (see the Glossary of Terms in Attachment 2) is not more than 20 Wh;
- 2) for batteries, the Watt-hour rating is not more than 100 Wh;
 - the Watt-hour rating must be marked on the outside of the battery case except for batteries manufactured before 1 January 2009;

IB.1 General requirements

- Cells and batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).
- Cells and batteries must be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity. Cells and/or batteries at a state of charge greater than 30 per cent of their rated capacity may only be shipped with the approval of the State of Origin and the State of the Operator under the written conditions established by those authorities.

Note.— Guidance and methodology for determining the rated capacity can be found in sub-section 38.3.2.3 of the UN Manual of Tests and Criteria. Cells and batteries shipped at a reduced state of charge are less prone to thermal runaway.

Table 965-IB

Contents	Net quantity per package	
	Passenger	Cargo
Lithium ion cells and batteries	Forbidden	10 kg

Packing Instruction 965

IB.2

Additional requirements

- Cells and batteries must be packed in inner packagings that completely enclose the cell or battery then placed in a strong rigid outer packaging.
- Cells and batteries must not be packed in the same outer packaging with substances and articles of Class 1 (explosives) other than Division 1.4S, Division 2.1 (flammable gases), Class 3 (flammable liquids), Division 4.1 (flammable solids) or Division 5.1 (oxidizers).
- Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with electrically conductive material within the same packaging that could lead to a short circuit.
- Each package must be capable of withstanding a 1.2 m drop test in any orientation without:
 - damage to cells or batteries contained therein;
 - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
 - release of contents.
- Each package must be capable of withstanding, without damage to the cells or batteries contained therein and without any reduction of effectiveness, a force applied to the top surface equivalent to the total weight of identical packages stacked to a height of 3 m (including the test sample) for a duration of 24 hours.

Note.— Capability may be demonstrated by testing, assessment or experience.

- Each package must be marked with the battery mark (Figure 5-3) in addition to the appropriate Class 9 hazard label (Figure 5-26) and the cargo aircraft only label (Figure 5-28).

IB.3

Outer packagings

Boxes	Drums	Jerricans
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Plywood	
Plywood	Steel	
Reconstituted wood		
Steel		

Packing Instruction 966

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

1. Introduction

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

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 paragraph 2 below, are not subject to other additional requirements of these Instructions.

A single cell battery as defined in Part III, sub-section 38.3.2.3 of the UN *Manual of Tests and Criteria* is considered a “cell” and must be transported according to the requirements for “cells” for the purpose of this packing instruction.

For the purpose of this packing instruction, “equipment” means apparatus for which the cells or batteries will provide electrical power for its operation.

2. Batteries forbidden from transport

The following applies to all cells and batteries in this packing instruction:

Cells or batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport.

I. SECTION I

Each cell or battery must meet the provisions of 2;9.3.

I.1 General requirements

— Part 4;1 requirements must be met.

— Until 31 December 2025

Lithium ion cells and batteries should be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity.

— From 1 January 2026

— Lithium ion cells and batteries must be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity.

— Lithium ion cells and/or batteries at a state of charge exceeding 30 per cent of their rated capacity may only be offered for transport with the approval of the appropriate national authorities of the State of Origin and the State of the Operator under the written conditions established by those authorities

Note.— Guidance and methodology for determining the rated capacity can be found in sub-section 38.3.2.3 of the UN Manual of Tests and Criteria. Cells and batteries shipped at a reduced state of charge are less prone to thermal runaway.

Table 966-I

UN number and proper shipping name	Package quantity (Section I)	
	Passenger	Cargo
UN 3481 Lithium ion batteries packed with equipment	5 kg of cells or batteries	35 kg of cells or batteries

Packing Instruction 966

≠

I.2 Additional requirements

- Cells and batteries must be protected against short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
- Cells and batteries must:
 - be placed in inner packagings that completely enclose the cell or battery, then placed in a packaging of a type shown below that meets the Packing Group II performance requirements, then placed with the equipment in a strong, rigid outer packaging; or
 - be placed in inner packagings that completely enclose the cell or battery, then placed with the equipment in a packaging of a type shown below that meets the Packing Group II performance requirements.
- The equipment must be secured against movement within the outer packaging.
- The number of cells or batteries in each package must not exceed the number required for the equipment's operation, plus two spare sets. A "set" of cells or batteries is the number of individual cells or batteries that are required to power each piece of equipment.
- Batteries manufactured after 31 December 2011 must be marked with the Watt-hour rating on the outside case.

I.3 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 (1B2)
Fibre (1G)
Other metal (1N2)
Plastics (1H2)
Plywood (1D)
Steel (1A2)

Jerricans

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

≠

II. SECTION II

Cells and batteries packed with equipment, when complying with Section II of this packing instruction, are only subject to the following additional provisions of these Instructions:

- Part 1;2.3 (General – Transport of dangerous goods by post);
- Part 5;2.4.16 (Shipper's responsibilities – Special marking requirements for lithium batteries or sodium ion batteries);
- Part 7;4.4 (Operator's responsibilities – Reporting of dangerous goods accidents and incidents);
- Part 7;4.5 (Operator's responsibilities – Reporting of undeclared and misdeclared dangerous goods);
- Part 8;1.1 (Provisions concerning passengers and crew – Dangerous goods carried by passengers or crew); and
- Paragraphs 1 and 2 of this packing instruction.

Cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3 a), e) and g) and the following:

- 1) for cells, the Watt-hour rating (see the Glossary of Terms in Attachment 2) is not more than 20 Wh;
- 2) for batteries, the Watt-hour rating is not more than 100 Wh;
 - the Watt-hour rating must be marked on the outside case except for batteries manufactured before 1 January 2009.

Packing Instruction 966

II.1 General requirements

— Until 31 December 2025

Lithium ion cells and batteries should be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity.

— From 1 January 2026

— Lithium ion cells and batteries with a Watt-hour rating in excess of 2.7 Wh must be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity.

— Lithium ion cells and/or batteries with a Watt-hour rating in excess of 2.7 Wh and at a state of charge exceeding 30 per cent of their rated capacity may only be offered for transport with the approval of the appropriate national authorities of the State of Origin and the State of the Operator under the written conditions established by those authorities. Such cells and/or batteries must be assigned to Class 9 and are subject to all applicable parts of these Instructions.

— Lithium ion cells and batteries with a Watt-hour rating not in excess of 2.7 Wh should be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity.

Note.— Guidance and methodology for determining the rated capacity can be found in sub-section 38.3.2.3 of the UN Manual of Tests and Criteria. Cells and batteries shipped at a reduced state of charge are less prone to thermal runaway.

Table 966-II

Contents	Package quantity (Section II)	
	Passenger	Cargo
Net quantity of cells or batteries per package	5 kg	5 kg

II.2 Additional requirements

- Cells and batteries must:
 - be placed in inner packagings that completely enclose the cell or battery, then placed in a strong rigid outer packaging that conforms to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1); or
 - be placed in inner packagings that completely enclose the cell or battery, then placed with the equipment in a strong rigid outer packaging that conforms to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).
- Cells and batteries must be protected against short circuits. This includes protection against contact with electrically conductive material within the same packaging that could lead to a short circuit.
- The equipment must be secured against movement within the outer packaging.
- The number of cells or batteries in each package must not exceed the number required for the equipment's operation, plus two spare sets. A "set" of cells or batteries is the number of individual cells or batteries that are required to power each piece of equipment.
- Each package of cells or batteries, or the completed package, must be capable of withstanding a 1.2 m drop test in any orientation without:
 - damage to cells or batteries contained therein;
 - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
 - release of contents.
- Each package of cells or batteries or the completed package must be capable of withstanding, without damage to the cells or batteries contained therein and without any reduction of effectiveness, a force applied to the top surface equivalent to the total weight of identical packages stacked to a height of 3 m (including the test sample) for a duration of 24 hours.

Note.— Capability may be demonstrated by testing, assessment or experience.

Packing Instruction 966

- Each package must be marked with the battery mark (Figure 5-3).
 - the package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.
- The words “lithium ion batteries, in compliance with Section II of PI966” must be placed on the air waybill, when an air waybill is used. Where packages of Section II batteries from multiple packing instructions are included on one air waybill, the compliance statement for the different battery types and/or packing instructions may be combined into a single statement provided that the statement identifies the applicable battery type(s) and packing instruction numbers.
- Where a package contains a combination of batteries contained in equipment and batteries packed with equipment that meet the limits for cells or batteries of Section II, the following additional requirements apply:
 - the shipper must ensure that all applicable parts of both packing instructions are met. The total mass of batteries contained in any package must not exceed 5 kg;
 - the words “lithium ion batteries, in compliance with Section II of PI966” must be placed on the air waybill, when an air waybill is used.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with the functions for which they are responsible.

II.3 Outer packagings

Boxes

Aluminium
Fibreboard
Natural wood
Other metal
Plastics
Plywood
Reconstituted wood
Steel

Drums

Aluminium
Fibre
Other metal
Plastics
Plywood
Steel

Jerricans

Aluminium
Plastics
Steel

II.4 Overpacks

When packages are placed in an overpack:

- a) the packages must be secured within the overpack;
- b) the intended function of each package must not be impaired by the overpack; and
- c) the battery mark (Figure 5-3) required by this packing instruction must either be clearly visible or the mark 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.

Packing Instruction 967

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

1. Introduction

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

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 paragraph 2 below, are not subject to other additional requirements of these Instructions.

A single cell battery as defined in Part III, sub-section 38.3.2.3 of the UN *Manual of Tests and Criteria* is considered a "cell" and must be transported according to the requirements for "cells" for the purpose of this packing instruction.

≠ For the purpose of this packing instruction, "equipment" means apparatus for which the cells or batteries will provide electrical power for its operation.

≠ 2. Batteries forbidden from transport

The following applies to all cells and batteries in this packing instruction:

Cells or batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport.

I. SECTION I

Each cell or battery must meet the provisions of 2;9.3.

I.1 General requirements

- + — Equipment should be offered for transport with:
- the cells and batteries at a state of charge not exceeding 30 per cent of their rated capacity; or
 - an indicated battery capacity not exceeding 25 per cent.

Note.— Guidance and methodology for determining the rated capacity can be found in sub-section 38.3.2.3 of the UN Manual of Tests and Criteria. Cells and batteries shipped at a reduced state of charge are less prone to thermal runaway.

- Equipment must be packed in strong rigid outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1). Large equipment can be offered for transport unpackaged or on pallets when the cells or batteries are afforded equivalent protection by the equipment in which they are contained.

Table 967-I

UN number and proper shipping name	Package quantity (Section I)	
	Passenger	Cargo
UN 3481 Lithium ion batteries contained in equipment	5 kg of cells or batteries	35 kg of cells or batteries

≠

I.2 Additional requirements

- + — The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- Where multiple pieces of equipment are packed in the same outer packaging, each piece of equipment must be packed to prevent contact with other equipment.
- + — Each package must be capable of withstanding, without damage to the equipment contained therein and without any reduction of effectiveness, a force applied to the top surface equivalent to the total weight of identical packages stacked to a height of 3 m (including the test sample) for a duration of 24 hours. Large equipment that is offered for transport unpackaged or on pallets is not subject to the requirements for the 3 m stack test capability.

Note.— Capability may be demonstrated by testing, assessment or experience.

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

Packing Instruction 967

I.3 Outer packagings

Boxes

Aluminium
Fibreboard
Natural wood
Other metal
Plastics
Plywood
Reconstituted wood
Steel

Drums

Aluminium
Fibre
Other metal
Plastics
Plywood
Steel

Jerricans

Aluminium
Plastics
Steel

II. SECTION II

Cells and batteries contained in equipment, when complying with Section II of this packing instruction, are only subject to the following additional provisions of these Instructions:

- Part 1;2.3 (General – Transport of dangerous goods by post);
- Part 5;2.4.16 (Shipper's responsibilities – Special marking requirements for lithium batteries or sodium ion batteries);
- Part 7;4.4 (Operator's responsibilities – Reporting of dangerous goods accidents and incidents);
- Part 7;4.5 (Operator's responsibilities – Reporting of undeclared and misdeclared dangerous goods);
- Part 8;1.1 (Provisions concerning passengers and crew – Dangerous goods carried by passengers or crew); and
- Paragraphs 1 and 2 of this packing instruction.

Cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3 a), e) and g) and the following:

- 1) for cells, the Watt-hour rating (see the Glossary of Terms in Attachment 2) is not more than 20 Wh;
- 2) for batteries, the Watt-hour rating is not more than 100 Wh;
 - the Watt-hour rating must be marked on the outside of the battery case except for batteries manufactured before 1 January 2009.

Devices such as radio frequency identification (RFID) tags, watches and temperature loggers, which are not capable of generating a dangerous evolution of heat, may be transported when intentionally active. When active, these devices must meet defined standards for electromagnetic radiation to ensure that the operation of the device does not interfere with aircraft systems. The devices must not be capable of emitting disturbing signals (such as buzzing alarms, strobe lights, etc.) during transport.

II.1 General requirements

- Equipment should be offered for transport with:
 - the cells and batteries at a state of charge not exceeding 30 per cent of their rated capacity; or
 - an indicated battery capacity not exceeding 25 per cent.

Note.— Guidance and methodology for determining the rated capacity can be found in sub-section 38.3.2.3 of the UN Manual of Tests and Criteria. Cells and batteries shipped at a reduced state of charge are less prone to thermal runaway.

- Equipment must be packed in strong rigid outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1). Large equipment can be offered for transport unpackaged or on pallets when the cells or batteries are afforded equivalent protection by the equipment in which they are contained.

Table 967-II

Contents	Package quantity (Section II)	
	Passenger	Cargo
Net quantity of cells or batteries per package	5 kg	5 kg

Packing Instruction 967

II.2 Additional requirements

- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- Cells and batteries must be protected so as to prevent short circuits.
- Where multiple pieces of equipment are packed in the same outer packaging, each piece of equipment must be packed to prevent contact with other equipment.
- Each package must be capable of withstanding, without damage to the equipment contained therein and without any reduction of effectiveness, a force applied to the top surface equivalent to the total weight of identical packages stacked to a height of 3 m (including the test sample) for a duration of 24 hours. Large equipment that is offered for transport unpackaged or on pallets is not subject to the requirements for the 3 m stack test capability.

Note.— Capability may be demonstrated by testing, assessment or experience.

- Each package must be marked with the battery mark (Figure 5-3). The package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.
 - This requirement does not apply to:
 - packages containing only button cell batteries installed in equipment (including circuit boards); and
 - packages containing no more than four cells or two batteries installed in equipment, where there are not more than two packages in the consignment.
- Where a consignment includes packages bearing the battery mark (Figure 5-3), the words “lithium ion batteries, in compliance with Section II of PI967” must be placed on the air waybill, when an air waybill is used. Where packages of Section II batteries from multiple packing instructions are included on one air waybill, the compliance statement for the different battery types and/or packing instructions may be combined into a single statement provided that the statement identifies the applicable battery type(s) and packing instruction numbers.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with the functions for which they are responsible.

II.3 Outer packagings

Boxes

Aluminium
Fibreboard
Natural wood
Other metal
Plastics
Plywood
Reconstituted wood
Steel

Drums

Aluminium
Fibre
Other metal
Plastics
Plywood
Steel

Jerricans

Aluminium
Plastics
Steel

II.4 Overpacks

When packages are placed in an overpack:

- a) the packages must be secured within the overpack;
- b) the intended function of each package must not be impaired by the overpack; and
- c) the battery mark (Figure 5-3) required by this packing instruction must either be clearly visible or the mark 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.

Packing Instruction 968

Cargo aircraft only for UN 3090

1. Introduction

This entry applies to lithium metal or lithium alloy batteries. This packing instruction is structured as follows:

- Section IA applies to lithium metal cells with a lithium metal content in excess of 1 g and lithium metal batteries with a lithium metal content in excess of 2 g, which must be assigned to Class 9 and are subject to all of the applicable requirements of these Instructions; and
- Section IB applies to lithium metal cells with a lithium metal content not exceeding 1 g and lithium metal batteries with a lithium metal content not exceeding 2 g.

A single cell battery as defined in Part III, sub-section 38.3.2.3 of the UN *Manual of Tests and Criteria* is considered a “cell” and must be transported according to the requirements for “cells” for the purpose of this packing instruction.

2. Batteries forbidden from transport

The following applies to all cells and batteries in this packing instruction:

Cells or batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport.

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

IA. SECTION IA

Each cell or battery must meet the provisions of 2;9.3.

IA.1 General requirements

Part 4;1 requirements must be met.

Table 968-IA

UN number and proper shipping name	Net quantity per package	
	Passenger	Cargo
UN 3090 Lithium metal batteries	Forbidden	35 kg

IA.2 Additional requirements

- Cells and batteries must be protected against short circuits.
- 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.
- Cells and batteries must not be packed in the same outer packaging with substances and articles of Class 1 (explosives) other than Division 1.4S, Division 2.1 (flammable gases), Class 3 (flammable liquids), Division 4.1 (flammable solids) or Division 5.1 (oxidizers).
- A cell or battery with a mass of 12 kg or greater and having a strong, impact-resistant outer casing may be transported when packed in strong outer packagings or protective enclosures (such as 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.

Packing Instruction 968

IA.3 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 (1B2)
Fibre (1G)
Other metal (1N2)
Plastics (1H2)
Plywood (1D)
Steel (1A2)

Jerricans

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

IB. SECTION IB

Cells or batteries prepared in accordance with this section are subject to all of the applicable provisions of these Instructions (including the requirements in paragraph 2 of this packing instruction and of this section) except for the provisions of Part 6.

Cells or batteries shipped in accordance with the provisions of Section IB must be described on a dangerous goods transport document as set in Part 5;4. The packing instruction number "968" required by 5;4.1.5.8.1 a) must be supplemented with "IB". All other applicable provisions of Part 5;4 apply.

Cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3 a), e), f) (if applicable) and g) and the following:

- 1) for cells, the lithium content is not more than 1 g;
- 2) for batteries, the aggregate lithium content is not more than 2 g.

IB.1 General requirements

Cells and batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).

Table 968-IB

Contents	Net quantity per package	
	Passenger	Cargo
Lithium metal cells and batteries	Forbidden	2.5 kg

IB.2 Additional requirements

- Cells and batteries must be packed in inner packagings that completely enclose the cell or battery then placed in a strong rigid outer packaging.
- Cells and batteries must not be packed in the same outer packaging with substances and articles of Class 1 (explosives) other than Division 1.4S, Division 2.1 (flammable gases), Class 3 (flammable liquids), Division 4.1 (flammable solids) or Division 5.1 (oxidizers).
- Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with electrically conductive material within the same packaging that could lead to a short circuit.
- Each package must be capable of withstanding a 1.2 m drop test in any orientation without:
 - damage to cells or batteries contained therein;
 - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
 - release of contents.
- Each package must be capable of withstanding, without damage to the cells or batteries contained therein and without any reduction of effectiveness, a force applied to the top surface equivalent to the total weight of identical packages stacked to a height of 3 m (including the test sample) for a duration of 24 hours.

Note.— Capability may be demonstrated by testing, assessment or experience.

- Each package must be marked with the battery mark (Figure 5-3) in addition to the appropriate Class 9 hazard label (Figure 5-26) and the cargo aircraft only label (Figure 5-28).

Packing Instruction 968		
IB.3 Outer packagings		
<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Plywood	
Plywood	Steel	
Reconstituted wood		
Steel		

Packing Instruction 969

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

1. Introduction

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

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 paragraph 2 below, are not subject to other additional requirements of these Instructions.

A single cell battery as defined in Part III, sub-section 38.3.2.3 of the UN *Manual of Tests and Criteria* is considered a “cell” and must be transported according to the requirements for “cells” for the purpose of this packing instruction.

For the purpose of this packing instruction, “equipment” means apparatus for which the cells or batteries will provide electrical power for its operation.

2. Lithium batteries forbidden from transport

The following applies to all cells and batteries in this packing instruction:

Cells or batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport.

I. SECTION I

Each cell or battery must meet the provisions of 2;9.3.

I.1 General requirements

Part 4;1 requirements must be met.

Table 969-I

UN number and proper shipping name	Package quantity (Section I)	
	Passenger	Cargo
UN 3091 Lithium metal batteries packed with equipment	5 kg of cells or batteries	35 kg of cells or batteries

Packing Instruction 969

I.2 Additional requirements

- Cells and batteries must be protected against short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
- Cells and batteries must:
 - be placed in inner packagings that completely enclose the cell or battery, then placed in a packaging of a type shown below that meets the Packing Group II performance requirements, then placed with the equipment in a strong, rigid outer packaging; or
 - be placed in inner packagings that completely enclose the cell or battery, then placed with the equipment in a packaging of a type shown below that meets the Packing Group II performance requirements.
- The equipment must be secured against movement within the outer packaging.
- The number of cells or batteries in each package must not exceed the number required for the equipment's operation, plus two spare sets. A "set" of cells or batteries is the number of individual cells or batteries that are required to power each piece of equipment.
- For lithium metal cells and batteries prepared for transport on passenger aircraft as Class 9:
 - cells and batteries offered for transport on passenger aircraft must be packed in intermediate or outer rigid metal packaging surrounded by cushioning material that is non-combustible and non-conductive and placed inside an outer packaging.

I.3 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 (1B2)
Fibre (1G)
Other metal (1N2)
Plastics (1H2)
Plywood (1D)
Steel (1A2)

Jerricans

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

II. SECTION II

Cells and batteries packed with equipment, when complying with Section II of this packing instruction, are only subject to the following additional provisions of these Instructions:

- Part 1:2.3 (General – Transport of dangerous goods by post);
- Part 5;2.4.16 (Shipper's responsibilities – Special marking requirements for lithium batteries or sodium ion batteries);
- Part 7;4.4 (Operator's responsibilities – Reporting of dangerous goods accidents and incidents);
- Part 7;4.5 (Operator's responsibilities – Reporting of undeclared and misdeclared dangerous goods);
- Part 8;1.1 (Provisions concerning passengers and crew – Dangerous goods carried by passengers or crew); and
- Paragraphs 1 and 2 of this packing instruction.

Lithium metal cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3 a),e), f) (if applicable) and g) and the following:

- 1) for cells, the lithium content is not more than 1 g;
- 2) for batteries, the aggregate lithium content is not more than 2 g.

II.1 General requirements

Table 969-II

Contents	Package quantity (Section II)	
	Passenger	Cargo
Net quantity of cells or batteries per package	5 kg	5 kg

Packing Instruction 969

II.2 Additional requirements

- Cells and batteries must:
 - be placed in inner packagings that completely enclose the cell or battery, then placed in a strong rigid outer packaging that conforms to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1); or
 - be placed in inner packagings that completely enclose the cell or battery, then placed with the equipment in a strong rigid outer packaging that conforms to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).
- Cells and batteries must be protected against short circuits. This includes protection against contact with electrically conductive material within the same packaging that could lead to a short circuit.
- The equipment must be secured against movement within the outer packaging.
- The number of cells or batteries in each package must not exceed the number required for the equipment's operation, plus two spare sets. A "set" of cells or batteries is the number of individual cells or batteries that are required to power each piece of equipment.
- Each package of cells or batteries, or the completed package, must be capable of withstanding a 1.2 m drop test in any orientation without:
 - damage to cells or batteries contained therein;
 - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
 - release of contents.
- Each package of cells or batteries or the completed package must be capable of withstanding, without damage to the cells or batteries contained therein and without any reduction of effectiveness, a force applied to the top surface equivalent to the total weight of identical packages stacked to a height of 3 m (including the test sample) for a duration of 24 hours.

Note.— Capability may be demonstrated by testing, assessment or experience.

- Each package must be marked with the battery mark (Figure 5-3).
 - the package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.
- The words "lithium metal batteries, in compliance with Section II of PI969" must be placed on the air waybill, when an air waybill is used. Where packages of Section II batteries from multiple packing instructions are included on one air waybill, the compliance statement for the different battery types and/or packing instructions may be combined into a single statement provided that the statement identifies the applicable battery type(s) and packing instruction numbers.
- Where a package contains a combination of batteries contained in equipment and batteries packed with equipment that meet the limits for cells or batteries of Section II, the following additional requirements apply:
 - the shipper must ensure that all applicable parts of both packing instructions are met. The total mass of batteries contained in any package must not exceed 5 kg;
 - the words "lithium metal batteries, in compliance with Section II of PI969" must be placed on the air waybill, when an air waybill is used.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with the functions for which they are responsible.

II.3 Outer packagings

Boxes

Aluminium
Fibreboard
Natural wood
Other metal
Plastics
Plywood
Reconstituted wood
Steel

Drums

Aluminium
Fibre
Other metal
Plastics
Plywood
Steel

Jerricans

Aluminium
Plastics
Steel

II.4 Overpacks

When packages are placed in an overpack:

- a) the packages must be secured within the overpack;
- b) the intended function of each package must not be impaired by the overpack; and
- c) the battery mark (Figure 5-3) required by this packing instruction must either be clearly visible or the mark 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.

Packing Instruction 970

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

1. Introduction

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

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 paragraph 2 below, are not subject to other additional requirements of these Instructions.

A single cell battery as defined in Part III, sub-section 38.3.2.3 of the UN *Manual of Tests and Criteria* is considered a "cell" and must be transported according to the requirements for "cells" for the purpose of this packing instruction.

For the purpose of this packing instruction, "equipment" means apparatus for which the cells or batteries will provide electrical power for its operation.

2. Batteries forbidden from transport

The following applies to all cells and batteries in this packing instruction:

Cells or batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport.

I. SECTION I

Each cell or battery must meet the provisions of 2;9.3.

I.1 General requirements

Equipment must be packed in strong rigid outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1). Large equipment can be offered for transport unpackaged or on pallets when the cells or batteries are afforded equivalent protection by the equipment in which they are contained.

Table 970-I

UN number and proper shipping name	Package quantity (Section I)	
	Passenger	Cargo
UN 3091 Lithium metal batteries contained in equipment	5 kg of cells or batteries	35 kg of cells or batteries

I.2 Additional requirements

- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- Where multiple pieces of equipment are packed in the same outer packaging, each piece of equipment must be packed to prevent contact with other equipment.
- Each package must be capable of withstanding, without damage to the equipment contained therein and without any reduction of effectiveness, a force applied to the top surface equivalent to the total weight of identical packages stacked to a height of 3 m (including the test sample) for a duration of 24 hours. Large equipment that is offered for transport unpackaged or on pallets is not subject to the requirements for the 3 m stack test capability.

Note.— Capability may be demonstrated by testing, assessment or experience.

- The quantity of lithium metal contained in any piece of equipment must not exceed 12 g per cell and 500 g per battery.

Packing Instruction 970

I.3 Outer packagings

Boxes

Aluminium
Fibreboard
Natural wood
Other metal
Plastics
Plywood
Reconstituted wood
Steel

Drums

Aluminium
Fibre
Other metal
Plastics
Plywood
Steel

Jerricans

Aluminium
Plastics
Steel

II. SECTION II

Cells and batteries contained in equipment, when complying with Section II of this packing instruction, are only subject to the following additional provisions of these Instructions:

- Part 1;2.3 (General – Transport of dangerous goods by post);
- Part 5;2.4.16 (Shipper's responsibilities – Special marking requirements for lithium batteries or sodium ion batteries);
- Part 7;4.4 (Operator's responsibilities – Reporting of dangerous goods accidents and incidents);
- Part 7;4.5 (Operator's responsibilities – Reporting of undeclared and misdeclared dangerous goods);
- Part 8;1.1 (Provisions concerning passengers and crew – Dangerous goods carried by passengers or crew); and
- Paragraphs 1 and 2 of this packing instruction.

Cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3 a), e), f) (if applicable) and g) and the following:

- 1) for cells, the lithium content is not more than 1 g;
- 2) for batteries, the aggregate lithium content is not more than 2 g.

Devices such as radio frequency identification (RFID) tags, watches and temperature loggers, which are not capable of generating a dangerous evolution of heat, may be transported when intentionally active. When active, these devices must meet defined standards for electromagnetic radiation to ensure that the operation of the device does not interfere with aircraft systems. The devices must not be capable of emitting disturbing signals (such as buzzing alarms, strobe lights, etc.) during transport.

II.1 General requirements

Equipment must be packed in strong rigid outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1). Large equipment can be offered for transport unpackaged or on pallets when the cells or batteries are afforded equivalent protection by the equipment in which they are contained.

Table 970-II

<i>Contents</i>	<i>Package quantity (Section II)</i>	
	<i>Passenger</i>	<i>Cargo</i>
Net quantity of cells or batteries per package	5 kg	5 kg

Packing Instruction 970

II.2 Additional requirements

- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- Cells and batteries must be protected so as to prevent short circuits.
- Where multiple pieces of equipment are packed in the same outer packaging, each piece of equipment must be packed to prevent contact with other equipment.
- Each package must be capable of withstanding, without damage to the equipment contained therein and without any reduction of effectiveness, a force applied to the top surface equivalent to the total weight of identical packages stacked to a height of 3 m (including the test sample) for a duration of 24 hours. Large equipment that is offered for transport unpackaged or on pallets is not subject to the requirements for the 3 m stack test capability.

Note.— Capability may be demonstrated by testing, assessment or experience.

- Each package must be marked with the battery mark (Figure 5-3). The package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.
 - This requirement does not apply to:
 - packages containing only button cell batteries installed in equipment (including circuit boards); and
 - packages containing no more than four cells or two batteries installed in equipment, where there are not more than two packages in the consignment.
- Where a consignment includes packages bearing the battery mark (Figure 5-3), the words "lithium metal batteries, in compliance with Section II of PI970" must be placed on the air waybill, when an air waybill is used. Where packages of Section II batteries from multiple packing instructions are included on one air waybill, the compliance statement for the different battery types and/or packing instructions may be combined into a single statement provided that the statement identifies the applicable battery type(s) and packing instruction numbers.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with the functions for which they are responsible.

II.3 Outer packagings

Boxes

Aluminium
Fibreboard
Natural wood
Other metal
Plastics
Plywood
Reconstituted wood
Steel

Drums

Aluminium
Fibre
Other metal
Plastics
Plywood
Steel

Jerricans

Aluminium
Plastics
Steel

II.4 Overpacks

When packages are placed in an overpack:

- a) the packages must be secured within the overpack;
- b) the intended function of each package must not be impaired by the overpack; and
- c) the battery mark (Figure 5-3) required by this packing instruction must either be clearly visible or the mark 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.

Packing Instruction 971

Passenger and cargo aircraft for UN 3499 only (see also Special Provision A186) and
UN 3508 (Special Provision A196) only

General requirements

Part 4;1.1.1 and 1.1.8 requirements must be met.

For the purpose of this packing instruction, a capacitor is considered an inner packaging.

<i>UN number and proper shipping name</i>		<i>Quantity – passenger</i>	<i>Quantity – cargo</i>
UN 3499	Capacitor , electric double layer	No limit	No limit
UN 3508	Capacitor, asymmetric (with an energy storage capacity greater than 0.3 Wh)	No limit	No limit

ADDITIONAL PACKING REQUIREMENTS

For UN 3499

- Each capacitor must be transported in an uncharged state. The capacitor or, when fitted in a module, the module must be fitted with a metal strap connecting the terminals.
- Capacitors must be securely cushioned in the outer packagings.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes

Drums

Jerricans

Strong outer packagings

Packing Instruction 972

Passenger or cargo aircraft for UN 3530 only

(See Packing Instruction 220 for flammable gas-powered engines and machinery, Packing Instruction 378 for flammable liquid-powered engines and machinery, Packing Instruction 950 for flammable liquid-powered vehicles, Packing Instruction 951 for flammable gas-powered vehicles or Packing Instruction 952 for battery-powered equipment and vehicles)

General requirements

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

Compatibility requirements

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

UN number and proper shipping name		Quantity – passenger	Quantity – cargo
UN 3530	Engine, internal combustion or Machinery, internal combustion	No limit	No limit

General

- 1) The engine or machinery, including the means of containment containing dangerous goods, must be in compliance with the construction requirements specified by the appropriate national authority;
- 2) Any valves or openings (such as venting devices) must be closed during transport;
- 3) The engines or machinery must be oriented to prevent inadvertent leakage of dangerous goods and secured by means capable of restraining the engines or machinery to prevent any movement during transport which would change the orientation or cause them to be damaged.

ADDITIONAL PACKING REQUIREMENTS

If the engine or machinery is constructed and designed so that the means of containment containing the dangerous goods affords adequate protection, an outer packaging is not required. Dangerous goods in engines or machinery must otherwise be packed in outer packagings constructed of suitable material, and of adequate strength and design in relation to the packaging capacity and its intended use, and meeting the applicable requirements of 4;1.1.1, or they must be fixed in such a way that they will not become loose during normal conditions of transport, such as in cradles or crates or other handling devices.

Liquid fuel tanks

Except as otherwise provided for in this packing instruction, fuel tanks must be drained of fuel and tank caps fitted securely. Special precautions are necessary to ensure complete drainage of the fuel system of machines or equipment incorporating internal combustion engines, such as lawn mowers and outboard motors, where such machines or equipment could possibly be handled in other than an upright position. When it is not possible to handle in other than an upright position, machinery must be drained of fuel as far as practicable, and if any fuel remains, it must not exceed one-quarter of the tank capacity.

Batteries

All batteries must be installed and securely fastened in the battery holder of the machine or equipment and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) If spillable batteries are installed, and it is possible for the machine or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 870.
- 2) If lithium batteries are installed:
 - i) lithium batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport; and
 - ii) they must meet the provisions of Part 2;9.3, except that pre-production prototypes of lithium batteries or cells, when these prototypes are transported for testing, or low production runs of lithium batteries or cells that have not been tested to the requirements in Part III, subsection 38.3 of the UN *Manual of Tests and Criteria* may be transported aboard cargo aircraft if approved by the appropriate authority of the State of Origin and the State of the Operator. A copy of the document of approval must accompany the consignment.
- 3) If metallic sodium or sodium alloy batteries are installed, they must conform to the requirements of Special Provision A94.

Packing Instruction 972
<p>Other operational equipment</p> <p>Dangerous goods required for the operation or safety of the machine or equipment, such as fire extinguishers, tire inflation canisters or safety devices, must be securely mounted in the machine or equipment.</p>

Packing Instruction 975

Passenger and cargo aircraft for UN 3548 only

Introduction

This packing instruction is only permitted for articles which do not have an existing proper shipping name and which contain only environmentally hazardous substances where the quantity of the environmentally hazardous substance in the article exceeds 5 L or 5 kg. In addition to the environmentally hazardous substances, the article may also contain lithium cells or batteries that comply with Section II of Packing Instruction 967 or Section II of Packing Instruction 970, as applicable.

General requirements

Part 4;1.1.1, 4;1.1.3, 4;1.1.12 and 4;2 requirements must be met.

<i>UN number and proper shipping name</i>	<i>Quantity – passenger</i>	<i>Quantity – cargo</i>
UN 3548 Articles containing miscellaneous dangerous goods, n.o.s.*	No limit	No limit

ADDITIONAL PACKING REQUIREMENTS

- Packagings must meet the Packing Group II performance requirements.
- Receptacles containing liquids or solids within articles must be constructed of suitable materials and secured in the article in such a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents into the article itself or the outer packaging.
- Receptacles containing liquids with closures must be packed with their closures correctly oriented. The receptacles must in addition conform to the internal pressure test provisions of 6;4.5.
- Receptacles that are liable to break or be punctured easily, such as those made of glass or of certain plastics materials must be properly secured, and any leakage of the contents must not substantially impair the protective properties of the article or of the outer packaging.
- Where there is no receptacle within the article, the article must fully enclose the dangerous goods and prevent their release under normal conditions of transport.
- Articles must be packed to prevent movement and inadvertent operation during normal conditions of transport.

ROBUST ARTICLES

Robust articles may alternatively be transported in strong outer packagings constructed of suitable material and of adequate strength and design in relation to the packaging capacity and its intended use. The packagings must achieve a level of protection that is at least equivalent to that provided by 6;1. Articles may be transported unpackaged or on pallets when the dangerous goods are afforded equivalent protection by the article in which they are contained. In such cases, the additional requirement related to Packing Group II performance requirements and the requirement for UN specification packagings do not apply.

OUTER 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)
Plywood (1D)
Steel (1A2)

Jerricans

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

+

Packing Instruction 976

Cargo aircraft only for UN 3551

1. Introduction

This entry applies to sodium ion batteries.

A single cell battery as defined in Part III, sub-section 38.3.2.3 of the UN *Manual of Tests and Criteria* is considered a “cell” and must be transported according to the requirements for “cells” for the purpose of this packing instruction.

2. Batteries forbidden from transport

The following applies to all cells and batteries in this packing instruction:

Cells or batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport.

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

3. General requirements

- Each cell or battery must meet the provisions of 2;9.4.
- Part 4;1 requirements must be met.
- Cells and batteries must be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity. Cells and/or batteries at a state of charge greater than 30 per cent of their rated capacity may only be shipped with the approval of the State of Origin and the State of the Operator under the written conditions established by those authorities.

Note.— Guidance and methodology for determining the rated capacity can be found in sub-section 38.3.2.3 of the UN Manual of Tests and Criteria. Cells and batteries shipped at a reduced state of charge are less prone to thermal runaway.

- Batteries manufactured after 31 December 2025 must be marked with the Watt-hour rating on the outside case.

4. Additional requirements

- Cells and batteries must be protected against short circuits.
- 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.
- Cells and batteries must not be packed in the same outer packaging with substances and articles of Class 1 (explosives) other than Division 1.4S, Division 2.1 (flammable gases), Class 3 (flammable liquids), Division 4.1 (flammable solids) or Division 5.1 (oxidizers).
- A cell or battery with a mass of 12 kg or greater and having a strong, impact-resistant outer casing may be transported when packed in strong outer packagings or protective enclosures (such as 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.

Table 976

UN number and proper shipping name	Net quantity per package	
	Passenger	Cargo
UN 3551 Sodium ion batteries	Forbidden	35 kg

Packing Instruction 976

5. 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 (1B2)
Fibre (1G)
Other metal (1N2)
Plastics (1H2)
Plywood (1D)
Steel (1A2)

Jerricans

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

Packing Instruction 977

Passenger and cargo aircraft only for UN 3552 (packed with equipment) only

1. Introduction

This entry applies to sodium ion batteries packed with equipment.

Section I of this packing instruction applies to sodium ion cells and batteries that are assigned to Class 9. Certain sodium ion cells and batteries offered for transport and meeting the requirements of Section II of this packing instruction, subject to paragraph 2 below, are not subject to other additional requirements of these Instructions.

A single cell battery as defined in Part III, sub-section 38.3.2.3 of the UN *Manual of Tests and Criteria* is considered a "cell" and must be transported according to the requirements for "cells" for the purpose of this packing instruction.

For the purpose of this packing instruction, "equipment" means apparatus for which the cells or batteries will provide electrical power for its operation.

2. Batteries forbidden from transport

The following applies to all cells and batteries in this packing instruction:

Cells or batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport.

I. SECTION I

Each cell or battery must meet the provisions of 2;9.4.

I.1 General requirements

— Part 4;1 requirements must be met.

Table 977-I

UN number and proper shipping name	Net quantity per package	
	Passenger	Cargo
UN 3552 Sodium ion batteries packed with equipment	5 kg of sodium ion cells or batteries	35 kg of sodium ion cells or batteries

Packing Instruction 977

I.2 Additional requirements

- Cells and batteries must be protected against short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
- Cells or batteries must:
 - be placed in inner packagings that completely enclose the cell or battery, then placed in a packaging of a type shown below that meets the Packing Group II performance requirements, then placed with the equipment in a strong, rigid outer packaging; or
 - be placed in inner packagings that completely enclose the cell or battery, then placed with the equipment in a packaging of a type shown below that meets the Packing Group II performance requirements.
- The equipment must be secured against movement within the outer packaging.
- The number of cells or batteries in each package must not exceed the number required for the equipment's operation, plus two spare sets. A "set" of cells or batteries is the number of individual cells or batteries that are required to power each piece of equipment.
- Batteries manufactured after 31 December 2025 must be marked with the Watt-hour rating on the outside case.

I.3 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 (1B2)
Fibre (1G)
Other metal (1N2)
Plastics (1H2)
Plywood (1D)
Steel (1A2)

Jerricans

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

II. SECTION II

Cells and batteries packed with equipment, when complying with Section II of this packing instruction, are only subject to the following additional provisions of these Instructions:

- Part 1;2.3 (General – Transport of dangerous goods by post);
- Part 5;2.4.16 (Shipper's responsibilities – Special marking requirements for lithium batteries or sodium ion batteries);
- Part 7;4.4 (Operator's responsibilities – Reporting of dangerous goods accidents and incidents);
- Part 7;4.5 (Operator's responsibilities – Reporting of undeclared and misdeclared dangerous goods); and
- Paragraphs 1 and 2 of this packing instruction.

Cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.4 a), e) and f) and the following:

- 1) for cells, the Watt-hour rating (see the Glossary of terms in Attachment 2) is not more than 20 Wh;
- 2) for batteries, the Watt-hour rating is not more than 100 Wh.
 - the Watt-hour rating must be marked on the outside of the battery case except for those batteries manufactured before 1 January 2026.

II.1 General requirements

Table 977-II

Contents	Package quantity (Section II)	
	Passenger	Cargo
Net quantity of cells or batteries per package	5 kg	5 kg

Packing Instruction 977

II.2 Additional requirements

- Cells and batteries must:
 - be placed in inner packagings that completely enclose the cell or battery, then placed in a strong rigid outer packaging that conforms to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1); or
 - be placed in inner packagings that completely enclose the cell or battery, then placed with the equipment in a strong rigid outer packaging that conforms to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).
- Cells and batteries must be protected against short circuits. This includes protection against contact with electrically conductive material within the same packaging that could lead to a short circuit.
- The equipment must be secured against movement within the outer packaging.
- The number of cells or batteries in each package must not exceed the number required for the equipment's operation, plus two spare sets. A "set" of cells or batteries is the number of individual cells or batteries that are required to power each piece of equipment.
- Each package of cells or batteries, or the completed package, must be capable of withstanding a 1.2 m drop test in any orientation without:
 - damage to cells or batteries contained therein;
 - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
 - release of contents.
- Each package must be marked with the battery mark (Figure 5-3).
 - the package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.
- The words "sodium ion batteries, in compliance with Section II of PI977" must be placed on the air waybill, when an air waybill is used. Where packages of Section II batteries from multiple packing instructions are included on one air waybill, the compliance statement for the different battery types and/or packing instructions may be combined into a single statement provided that the statement identifies the applicable battery type(s) and packing instruction numbers.
- Where a package contains a combination of batteries contained in equipment and batteries packed with equipment that meet the limits for cells or batteries of Section II, the following additional requirements apply:
 - the shipper must ensure that all applicable parts of both packing instructions are met. The total mass of batteries contained in any package must not exceed 5 kg;
 - the words "sodium ion batteries, in compliance with Section II of PI977" must be placed on the air waybill, when an air waybill is used.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

II.3 Outer packagings

Boxes

Aluminium
Fibreboard
Natural wood
Other metal
Plastics
Plywood
Reconstituted wood
Steel

Drums

Aluminium
Fibre
Other metal
Plastics
Plywood
Steel

Jerricans

Aluminium
Plastics
Steel

II.4 Overpacks

When packages are placed in an overpack:

- a) the packages must be secured within the overpack;
- b) the intended function of each package must not be impaired by the overpack; and
- c) the battery mark (Figure 5-3) required by this packing instruction must either be clearly visible or the mark 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.

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Packing Instruction 978

Passenger and cargo aircraft only for UN 3552 (contained in equipment) only

1. Introduction

This entry applies to sodium ion batteries contained in equipment.

Section I of this packing instruction applies to sodium ion cells and batteries that are assigned to Class 9. Certain sodium ion cells and batteries offered for transport and meeting the requirements of Section II of this packing instruction, subject to paragraph 2 below, are not subject to other additional requirements of these Instructions.

A single cell battery as defined in Part III, sub-section 38.3.2.3 of the UN *Manual of Tests and Criteria* is considered a “cell” and must be transported according to the requirements for “cells” for the purpose of this packing instruction.

For the purpose of this packing instruction, “equipment” means apparatus for which the cells or batteries will provide electrical power for its operation.

2. Batteries forbidden from transport

The following applies to all cells and batteries in this packing instruction:

Cells or batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport.

I. SECTION I

Each cell or battery must meet the provisions of 2;9.4.

I.1 General requirements

Equipment must be packed in strong rigid outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1). Large equipment can be offered for transport unpackaged or on pallets when the cells or batteries are afforded equivalent protection by the equipment in which they are contained.

Table 978-I

UN number and proper shipping name	Net quantity per package	
	Passenger	Cargo
UN 3552 Sodium ion batteries contained in equipment	5 kg of sodium ion cells or batteries	35 kg of sodium ion cells or batteries

I.2 Additional requirements

- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- Where multiple pieces of equipment are packed in the same outer packaging, each piece of equipment must be packed to prevent contact with other equipment.
- Batteries manufactured after 31 December 2025 must be marked with the Watt-hour rating on the outside case.

I.3 Outer packagings

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 978

II. SECTION II

Cells and batteries contained in equipment, when complying with Section II of this packing instruction, are only subject to the following additional provisions of these Instructions:

- Part 1;2.3 (General – Transport of dangerous goods by post);
- Part 5;2.4.16 (Shipper's responsibilities – Special marking requirements for lithium batteries or sodium ion batteries);
- Part 7;4.4 (Operator's responsibilities – Reporting of dangerous goods accidents and incidents);
- Part 7;4.5 (Operator's responsibilities – Reporting of undeclared and misdeclared dangerous goods); and
- Paragraphs 1 and 2 of this packing instruction.

Cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.4 a), e) and f) and the following:

- 1) for cells, the Watt-hour rating (see the Glossary of Terms in Attachment 2) is not more than 20 Wh;
- 2) for batteries, the Watt-hour rating is not more than 100 Wh;
 - the Watt-hour rating must be marked on the outside of the battery case except for those batteries manufactured before 1 January 2026.

Devices such as radio frequency identification (RFID) tags, watches and temperature loggers, which are not capable of generating a dangerous evolution of heat, may be transported when intentionally active. When active, these devices must meet defined standards for electromagnetic radiation to ensure that the operation of the device does not interfere with aircraft systems. The devices must not be capable of emitting disturbing signals (such as buzzing alarms, strobe lights, etc.) during transport.

II.1 General requirements

Equipment must be packed in strong rigid outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1). Large equipment can be offered for transport unpackaged or on pallets when the cells or batteries are afforded equivalent protection by the equipment in which they are contained.

Table 978-II

Contents	Package quantity (Section II)	
	Passenger	Cargo
Net quantity of cells or batteries per package	5 kg	5 kg

II.2 Additional requirements

- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- Cells and batteries must be protected so as to prevent short circuits.
- Where multiple pieces of equipment are packed in the same outer packaging, each piece of equipment must be packed to prevent contact with other equipment.
- Each package must be marked with the battery mark (Figure 5-3). The package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.
 - This requirement does not apply to:
 - packages containing only button cell batteries installed in equipment (including circuit boards); and
 - packages containing no more than four cells or two batteries installed in equipment, where there are not more than two packages in the consignment.
- Where a consignment includes packages bearing the battery mark (Figure 5-3), the words "sodium ion batteries, in compliance with Section II of PI978" must be placed on the air waybill, when an air waybill is used. Where packages of Section II batteries from multiple packing instructions are included on one air waybill, the compliance statement for the different battery types and/or packing instructions may be combined into a single statement provided that the statement identifies the applicable battery type(s) and packing instruction numbers.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with the functions for which they are responsible.

Packing Instruction 978		
II.3 Outer packagings		
<i>Boxes</i>	<i>Drums</i>	<i>Jerricans</i>
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Plywood	
Plywood	Steel	
Reconstituted wood		
Steel		
II.4 Overpacks		
When packages are placed in an overpack:		
a) the packages must be secured within the overpack;		
b) the intended function of each package must not be impaired by the overpack; and		
c) the battery mark (Figure 5-3) required by this packing instruction must either be clearly visible or the mark 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.		