

**PACKING INSTRUCTION 965**

△ OPERATOR VARIATIONS: 3V-02, 5X-01/02/03/04/07, AA-07, AF-05, AM-09, BA-01, BI-03, BR-18, BZ-10, CA-13, CI-01/09, CV-03, CX-01, D0-03, D5-03, DE-10, EI-04, EK-02, ES-03, EY-06, FX-04/05, G3-07, GK-06, GS-03, HQ-10, HX-07, I2-01, IB-01, JJ-08, JQ-06, KA-01, KC-13, KE-04, KQ-09, KZ-04, L7-08, LA-09/16, LD-01, LH-08, LP-08, LU-08, LX-06, M3-08, M7-08, MP-07, MT-10, NH-07/08/09/10, OZ-10, P3-03/04, QF-06, QR-07, QY-03/05, PZ-08, RH-07, RO-04, RS-06, RU-03, SQ-07, SV-14, TG-09, TK-01, TR-07, UC-08, VN-10, WN-01, XG-08, XL-08, XQ-08

**Introduction**

This instruction applies to lithium ion or lithium polymer cells and batteries (UN 3480) on Cargo Aircraft Only.

The general requirements apply to all lithium ion cells and batteries prepared for transport according to this packing instruction:

- 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, or to quantities of lithium ion cells or batteries in excess of those permitted in Section IB of this packing instruction which must be assigned to Class 9 and are subject to all of the applicable requirements of these Regulations;
- 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 packed in quantities that exceed the allowance permitted in Section II, Table 965-II; and
- Section II 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 packed in quantities not exceeding the allowance permitted in Section II, Table 965-II.

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.

**General Requirements**

The following requirements apply to all lithium ion or lithium polymer cells and batteries:

- (a) cells and batteries identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons);
- (b) waste batteries and 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;
- (c) cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.

**Section IA**

These requirements apply 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 that have been determined to meet the criteria for assignment to Class 9.

The General Packing Requirements of 5.0.2 must be met.

Each cell or battery must:

- △ (a) meet the provisions of 3.9.2.6.1;
- (b) meet the General Requirements, above; and
- (c) lithium ion cells and batteries must be offered for transport at a state of charge (SoC) not exceeding 30% of their rated capacity. Cells and/or batteries at a SoC of greater than 30% 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 (see **Special Provision A331**).

**Note:**

*Guidance and methodology for determining the rated capacity can be found in Section 38.3.2.3 of the UN Manual of Tests and Criteria, 6th revised edition.*

**Additional Requirements—Section IA**

- 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 standards;
- ☐• cells and batteries must not be packed in the same outer packaging with dangerous goods classified in 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);

**PACKING INSTRUCTION 965 (continued)**

- batteries with a weight of 12 kg or greater and having a strong, impact-resistant outer casing, or assemblies of such batteries, may be transported when packed in strong outer packagings or protective enclosures (e.g. in fully enclosed or wooden slatted crates) not subject to the requirements of Section 6 of these Regulations, 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;
- ☐• packages containing cells or batteries must not be placed in an overpack with packages containing dangerous goods classified in Class 1 other than Division 1.4S, Division 2.1, Class 3, Division 4.1 or Division 5.1.

**TABLE 965-IA**

UN number	Net quantity per package Passenger aircraft	Net quantity per package Cargo Aircraft Only
UN 3480 Lithium ion batteries	Forbidden	35 kg

**OUTER PACKAGINGS**

Type	Drums						Jerricans			Boxes							
	Steel	Alu- minium	Ply- wood	Fibre	Plastic	Other metal	Steel	Alu- minium	Plastic	Steel	Alu- minium	Wood	Ply- wood	Recon- stituted wood	Fibre- board	Plastic	Other metal
Spec.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N

**Section IB**

△ Lithium ion cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 3.9.2.6.1(a) and (e) and they meet all of the following:

- (a) for lithium ion cells, the Watt-hour rating is not more than 20 Wh;
- (b) for lithium ion 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 2009; and
- (c) lithium ion cells and batteries must be offered for transport at a state of charge (SoC) not exceeding 30% of their rated capacity. Cells and/or batteries at a SoC of greater than 30% 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, (see **Special Provision A331**).

**Note:**

*Guidance and methodology for determining the rated capacity can be found in Section 38.3.2.3 of the UN Manual of Tests and Criteria, 6th revised edition.*

Section IB requirements apply to cells and batteries packed in quantities that exceed the allowance permitted in Section II, Table 965-II.

Quantities of lithium ion cells or batteries prepared in accordance with this section are subject to all of the applicable provisions of these Regulations (including the General Requirements of this packing instruction), except for the provisions of Section 6.

Cells or batteries shipped under the provisions of Section IB must be described on a Shipper's Declaration as set out in Section 8 and the air waybill, when used, must contain the applicable information required by 8.2.1 and 8.2.2.

Cells and batteries must be packed in strong outer packagings that conform to 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1.

**Additional Requirements—Section IB**

Cells and batteries must be packed in inner packagings that completely enclose the cell or battery. To provide protection from damage or compression to the batteries, the inner packagings must be placed in a strong rigid outer packaging of one of the packaging types shown below.

- ☐• Cells and batteries must not be packed in the same outer packaging with dangerous goods classified in 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).

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.

**PACKING INSTRUCTION 965** (continued)

☐ Packages containing cells or batteries must not be placed in an overpack with packages containing dangerous goods classified in Class 1 other than Division 1.4S, Division 2.1, Class 3, Division 4.1 or Division 5.1.

Each package must be marked in accordance with the requirements of 7.1.4.1(a) and (b) and in addition the net weight when required by 7.1.4.1(c) must be marked on the package.

Each package must be durably and legibly marked with the mark shown in Figure 7.1.C in addition to the Class 9—Lithium Battery hazard label (Figure 7.3.X) and the Cargo Aircraft Only label (Figure 7.4.B).

**Note:**

The provisions for the lithium battery handling label, Figure 7.4.H and 7.2.4.7 may continue to be used until 31 December 2018. In addition, the Class 9 label shown in Figure 7.3.W may continue to be used on packages containing lithium batteries prepared in accordance with Section IB until 31 December 2018.

**TABLE 965-IB**

	Net quantity per package Passenger aircraft	Net quantity per package Cargo Aircraft Only
Lithium ion cells and batteries	Forbidden	10 kg

**OUTER PACKAGINGS**

Type	Drums						Jerricans			Boxes							
	Desc.	Steel	Alu- minium	Ply- wood	Fibre	Plastic	Other metal	Steel	Alu- minium	Plastic	Steel	Alu- minium	Wood	Ply- wood	Recon- stituted wood	Fibre- board	Plastic

**Section II**

Lithium ion cells and batteries meeting the requirements in this section are not subject to other additional requirements of these Regulations except for:

- (a) restrictions on dangerous goods in consolidations (1.3.3.2.3 and 1.3.3.2.6);
- (b) provision of adequate instruction (1.6);
- (c) dangerous goods in passenger and crew baggage (Subsection 2.3). Only those lithium ion batteries as specifically permitted may be carried in carry-on baggage;
- (d) dangerous goods in air mail (Subsection 2.4);
- (e) use of unit load devices (5.0.1.3);
- ☐ (f) marking of packages (7.1.5.5);
- (g) loading of cargo aircraft (9.3.4);
- (h) reporting of dangerous goods accidents, incidents and other occurrences (9.6.1 and 9.6.2).

Cells and batteries offered for transport must meet the provisions of 3.9.2.6.1(a) and (e), the General Requirements of this packing instruction and:

- (a) for cells, the Watt-hour rating is not more than 20 Wh; and
- (b) for batteries, Watt-hour rating is not more than 100 Wh. The Watt-hour rating must be marked on the outside of the battery case except those manufactured before 1 January 2009;
- △ (c) lithium ion cells and batteries must be offered for transport at a state of charge (SoC) not exceeding 30% of their rated capacity.

**Note:**

Guidance and methodology for determining the rated capacity can be found in Section 38.3.2.3 of the UN Manual of Tests and Criteria, 6th revised edition.

Cells and batteries must be packed in strong outer packagings that conform to 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1.

**Additional Requirements—Section II**

Cells and batteries must be packed in inner packagings that completely enclose the cell or battery. To provide protection from damage or compression to the batteries, the inner packagings must be placed in a strong rigid outer packaging of one of the packaging types shown below.

☐ Cells and batteries must not be packed in the same outer packaging with other dangerous goods.

**PACKING INSTRUCTION 965** (continued)

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.

A Shipper's Declaration for Dangerous Goods is not required.

Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities. Information on adequate instruction can be found in subsection 1.6.

A shipper is not permitted to offer for transport more than one (1) package prepared according to this section in any single consignment.

△ Each package must be durably and legibly marked with the lithium battery mark, Figure 7.1.C, as required by 7.1.5.5 and the Cargo Aircraft Only label (Figure 7.4.B). The package must be of such a size that there is adequate space to affix the mark on one side of the package without the mark being folded. When the package dimensions are adequate, the Cargo Aircraft Only label must be located on the same surface of the package near the lithium battery mark.

**Note:**

The provisions for the lithium battery handling label, Figure 7.4.H and 7.2.4.7 may continue to be used until 31 December 2018.

The words "Lithium ion batteries in compliance with Section II of PI 965" and "Cargo Aircraft Only" or "CAO" must be included on the air waybill, when an air waybill is used. The information should be shown in the "Nature and Quantity of Goods" box of the air waybill.

Packages and overpacks of lithium ion batteries prepared in accordance with the provisions of Section II must be offered to the operator separately from cargo which is not subject to these Regulations and must not be loaded into a unit load device before being offered to the operator.

**Overpacks—Section II**

△ No more than one (1) package complying with the requirements of Section II may be placed in an overpack. The overpack may also contain packages of dangerous goods, other than dangerous goods classified in Class 1 other than Division 1.4S, Division 2.1, Class 3, Division 4.1 and Division 5.1, or goods not subject to these Regulations provided that the packages do not contain substances which might react dangerously with each other. An overpack must be marked with the word "Overpack" and durably and legibly marked with the mark shown in Figure 7.1.C and the Cargo Aircraft Only label (Figure 7.4.B), unless the marks and label representative of those on the package inside the overpack are visible.

**Note:**

For the purpose of Section II, an overpack is an enclosure used by a single shipper that contains no more than one package prepared in accordance with this section. For shipments prepared in accordance with Section IA and/or IB, this limit of one package of Section II batteries per overpack still applies.

**TABLE 965-II**

Contents	Lithium ion cells and/or batteries with a Watt-hour rating of 2.7 Wh or less	Lithium ion cells with a Watt-hour rating of more than 2.7 Wh but not more than 20 Wh	Lithium ion batteries with a Watt-hour rating of more than 2.7 Wh but not more than 100 Wh
1	2	3	4
Maximum number of cells/batteries per package	No limit	8 cells	2 Batteries
Maximum net quantity (weight) per package	2.5 kg	N/A	N/A

Cells and/or batteries specified in columns 2, 3 and 4 of Table 965-II must not be combined in the same package.

**OUTER PACKAGINGS**

Type	Drums						Jerricans			Boxes							
	Desc.	Steel	Alu- minium	Ply- wood	Fibre	Plastic	Other metal	Steel	Alu- minium	Plastic	Steel	Alu- minium	Wood	Ply- wood	Recon- stituted wood	Fibre- board	Plastic

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△ OPERATOR VARIATIONS: 2K-02, 3K-06, 4C-09, 4M-09, 5X-07, AC-06, AF-05, AM-09, AR-11, AU-11, BM-01, BR-18, BZ-10, CI-01, D0-03, D5-03, ES-03, FX-05, GS-03, HA-06, JJ-09, KQ-09, L7-09, LA-09, LH-08, LP-09, LU-09, LX-06, M3-09, M7-09, MK-16, OM-19, OS-08, OZ-10, P3-03/04, PZ-09, QK-06, QY-03/05, RS-06, RU-03, RV-06, SS-03, TG-09, UC-09, UX-11, VN-12, WN-01, X5-11, XG-08, XL-09, XQ-08

**Introduction**

This instruction applies to lithium ion or lithium polymer cells and batteries packed with equipment (UN 3481) on passenger and Cargo Aircraft Only.

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

The general requirements apply to all lithium ion cells and batteries packed with equipment prepared for transport according to this packing instruction:

- Section I applies where the equipment is packed with lithium ion cells with a Watt-hour rating in excess of 20 Wh or 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 Regulations; and
- Section II applies where the equipment is packed with lithium ion cells with a Watt-hour rating not exceeding 20 Wh or 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.

**General Requirements**

The following requirements apply to all lithium ion or lithium polymer cells and batteries:

- (a) cells and batteries identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons);
- (b) cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.

**Section I**

These requirements apply 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 that have been determined to meet the criteria for assignment to Class 9.

The General Packing Requirements of 5.0.2 must be met.

Each cell or battery must:

- △ (a) meet the provisions of 3.9.2.6.1; and
- (b) meet the General Requirements, above.

**Additional Requirements—Section I**

The number of cells or batteries in each package must not exceed the appropriate number for the equipment's operation, plus two spares.

- cells and/or batteries must:
  - be completely enclosed in inner packagings then placed in an outer packaging. The completed package for the cells or batteries must meet the Packing Group II performance standards; or
  - be completely enclosed in inner packagings then placed with equipment in a package that meets the Packing Group II performance standards.
- the equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation;
- batteries manufactured after 31 December 2011 must be marked with the Watt-hour rating on the outside case.

**TABLE 966-I**

UN number	Net quantity per package Passenger aircraft	Net quantity per package Cargo Aircraft Only
UN 3481 Lithium ion batteries packed with equipment	5 kg	35 kg

**PACKING INSTRUCTION 966 (continued)**

**OUTER PACKAGINGS**

Type	Drums						Jerricans			Boxes							
	Steel	Alu- minium	Ply- wood	Fibre	Plastic	Other metal	Steel	Alu- minium	Plastic	Steel	Alu- minium	Wood	Ply- wood	Recon- stituted wood	Fibre- board	Plastic	Other metal
Spec.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N

**Section II**

Lithium ion cells and batteries meeting the requirements in this section are not subject to other additional requirements of these Regulations except for:

- (a) provision of adequate instruction (1.6);
- (b) dangerous goods in passenger and crew baggage (Subsection 2.3). Only those lithium ion batteries as specifically permitted may be carried in carry-on baggage;
- (c) dangerous goods in air mail (Subsection 2.4);
- (d) marking of packages (7.1.5.5);
- (e) reporting of dangerous goods accidents, incidents and other occurrences (9.6.1 and 9.6.2).

△ Cells and batteries offered for transport must meet the provisions of 3.9.2.6.1(a) and (e), the General Requirements of this packing instruction and:

- (a) for cells, the Watt-hour rating is not more than 20 Wh; and
- (b) for batteries, Watt-hour rating is not more than 100 Wh. The Watt-hour rating must be marked on the outside case except those manufactured before 1 January 2009.

Cells and batteries must be packed in strong outer packagings that conform to 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1.

**Additional Requirements—Section II**

Cells and/or batteries must:

- be completely enclosed in inner packagings then placed in a strong rigid outer packaging; or
- be completely enclosed in inner packagings then placed with equipment in a strong rigid outer packaging.

The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.

The number of cells or batteries in each package must not exceed the appropriate number for the equipment's operations, plus two spares.

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 durably and legibly marked with the lithium battery mark, Figure 7.1.C, as required by 7.1.5.5. The package must be of such size that there is adequate space to affix the mark on one side of the package without the mark being folded.

**Note:**

*The provisions for the lithium battery handling label, Figure 7.4.H and 7.2.4.7 may continue to be used until 31 December 2018.*

A Shipper's Declaration for Dangerous Goods is not required.

The words "Lithium ion batteries in compliance with Section II of PI 966" must be included on the air waybill, when an air waybill is used. The information should be shown in the "Nature and Quantity of Goods" box of the air waybill.

Where a package contains a combination of lithium batteries contained in equipment and lithium batteries packed with equipment that meet the limits for lithium 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 weight of lithium batteries contained in any package must not exceed 5 kg;
- the words "lithium ion batteries, in compliance with Section II of PI 966" must be placed on the air waybill, when an air waybill is used.

**PACKING INSTRUCTION 966** (continued)

Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities. Information on adequate instruction can be found in subsection 1.6.

**Overpacks—Section II**

Individual packages each complying with the requirements of Section II may be placed in an overpack. The overpack may also contain packages of dangerous goods or goods not subject to these Regulations provided that the packages do not contain substances which might react dangerously with each other. An overpack must be marked with the word "Overpack" and durably and legibly marked with the mark shown in Figure 7.1.C, unless the marks representative of those on the package(s) inside the overpack are visible.

**TABLE 966-II**

	Passenger aircraft	Cargo Aircraft Only
Net quantity of lithium ion cells or batteries per package	5 kg	5 kg

**OUTER PACKAGINGS**

Type	Drums						Jerricans			Boxes							
	Steel	Alu- minium	Ply- wood	Fibre	Plastic	Other metal	Steel	Alu- minium	Plastic	Steel	Alu- minium	Wood	Ply- wood	Recon- stituted wood	Fibre- board	Plastic	Other metal
Desc.																	

**PACKING INSTRUCTION 967**

△ OPERATOR VARIATIONS: 2K-02, 3K-06, 4C-09, 4M-09, 5X-07, AC-06, AF-05, AM-09, AR-11, AU-11, BM-01, BR-18, BZ-10, D0-03, D5-03, ES-03, FX-05, GS-03, HA-06, JJ-09, KK-11, KQ-09, L7-09, LA-09, LH-08, LP-09, LU-09, LX-06, MK-16, OM-19, OS-08, OZ-10, P3-03/04, PZ-09, QK-06, QY-03/05, RS-06, RU-04, RV-06, SS-03, TG-09, UA-05, UC-09, UH-11, UX-11, VN-12, VO-01, WN-01, X5-11, XG-08, XL-09, XQ-08

**Introduction**

This instruction applies to lithium ion or lithium polymer cells and batteries contained in equipment (UN 3481) on passenger and Cargo Aircraft Only.

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

The general requirements apply to all lithium ion cells and batteries contained in equipment prepared for transport according to this packing instruction:

- Section I applies where the equipment contains lithium ion cells with a Watt-hour rating in excess of 20 Wh or 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 Regulations; and
- Section II applies where the equipment contains lithium ion cells with a Watt-hour rating not exceeding 20 Wh or 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.

**General Requirements**

The following requirements apply to all lithium ion or lithium polymer cells and batteries:

- (a) cells and batteries identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons);
- (b) cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit;
- (c) equipment must be equipped with an effective means of preventing accidental activation;
- (d) equipment containing batteries must be packed in strong outer packagings that conform to 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1;
- (e) the equipment containing the cells or batteries must be secured against movement within the outer packaging and be packed so as to prevent accidental operation during air transport.

**PACKING INSTRUCTION 967** (continued)

**Section I**

These requirements apply 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 that have been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

- △ (a) meet the provisions of 3.9.2.6.1; and
- (b) meet the General Requirements, above.

**Additional Requirements—Section I**

- the equipment must be packed in strong rigid outer packagings constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the battery is afforded equivalent protection by the equipment in which it is contained;
- batteries manufactured after 31 December 2011 must be marked with the Watt-hour rating on the outside case.

**TABLE 967-I**

UN number	Net quantity per package Passenger aircraft	Net quantity per package Cargo Aircraft Only
UN 3481 Lithium ion batteries contained in equipment	5 kg	35 kg

**OUTER PACKAGINGS—Strong outer packagings, such as:**

Type	Drums						Jerricans			Boxes							
	Steel	Alu- minium	Ply- wood	Fibre	Plastic	Other metal	Steel	Alu- minium	Plastic	Steel	Alu- minium	Wood	Ply- wood	Recon- stituted wood	Fibre- board	Plastic	Other metal
Desc.																	

**Section II**

Lithium ion cells and batteries meeting the requirements in this section are not subject to other additional requirements of these Regulations except for:

- (a) provision of adequate instruction (1.6);
- (b) dangerous goods in passenger and crew baggage (Subsection 2.3). Only those lithium ion batteries as specifically permitted may be carried in carry-on and checked baggage;
- (c) dangerous goods in air mail (Subsection 2.4);
- (d) marking of packages (7.1.5.5);
- (e) reporting of dangerous goods accidents, incidents and other occurrences (9.6.1 and 9.6.2).
- △ Cells and batteries offered for transport must meet the provisions of 3.9.2.6.1(a) and (e), the General Requirements of this packing instruction and:
  - (a) for cells, the Watt-hour rating is not more than 20 Wh; and
  - (b) for batteries, Watt-hour rating is not more than 100 Wh. The Watt-hour rating must be marked on the outside case except those 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.

**Additional Requirements—Section II**

The equipment must be packed in strong rigid outer packagings constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the cell or battery is afforded equivalent protection by the equipment in which it is contained.

- △ Each package must be durably and legibly marked with the lithium battery mark, Figure 7.1.C, as required by 7.1.5.5. The package must be of such size that there is adequate space to affix the mark on one side of the package without the mark being folded. The application of the lithium battery mark does not apply to:
  - packages containing only button cell batteries installed in equipment (including circuit boards); or
  - consignments of two packages or less where each package contains no more than four cells or two batteries installed in equipment.

**PACKING INSTRUCTION 967** (continued)

**Note:**

The provisions for the lithium battery handling label, Figure 7.4.H and 7.2.4.7 may continue to be used until 31 December 2018.

A Shipper's Declaration for Dangerous Goods is not required.

Where a consignment includes packages bearing the lithium battery mark, the words "Lithium ion batteries in compliance with Section II of PI 967" must be included on the air waybill, when an air waybill is used. The information should be shown in the "Nature and Quantity of Goods" box of the air waybill.

Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities. Information on adequate instruction can be found in subsection 1.6.

**Overpacks—Section II**

Individual packages each complying with the requirements of Section II may be placed in an overpack. The overpack may also contain packages of dangerous goods or goods not subject to these Regulations provided that the packages do not contain substances which might react dangerously with each other. An overpack must be marked with the word "Overpack" and durably and legibly marked with the mark shown in Figure 7.1.C, unless the marks representative of those on the package(s) inside the overpack are visible, or the packages are not required to bear the lithium battery mark.

**TABLE 967-II**

	Passenger aircraft	Cargo Aircraft Only
Net quantity of lithium ion cells or batteries per package	5 kg	5 kg

**OUTER PACKAGINGS**

Type	Drums						Jerricans			Boxes							
	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Desc.																	

**PACKING INSTRUCTION 968**

STATE VARIATION: USG-03

△ OPERATOR VARIATIONS: 3V-02, 4C-08, 4M-08, 5X-01/02/03/04/07/08, AF-05, AM-09, BI-03, BR-18, BZ-10, CA-13, CI-09, CV-04, CX-07, CZ-08, D0-03, D5-03, DE-10, EK-02, ES-03, EY-04, FX-04/05, G3-07, GK-05, GS-03, HQ-10, HX-06, JJ-08, KA-07, KK-10, KQ-09, KZ-04, L7-08, LA-16, LD-07, LH-08, LP-08, LU-08, LX-06, M3-08, M7-08, MP-07, MT-10, NH-07/08/09, OZ-10, P3-02/04, PZ-08, QF-05, QR-07, QY-03/05, RH-06, RS-06, RU-02/04, SQ-07, SV-14, TK-01, UC-08, UH-10, VN-10, WY-07, XG-08, XL-08, XQ-08

**Introduction**

This instruction applies to lithium metal or lithium alloy cells and batteries (UN 3090) on Cargo Aircraft Only.

The general requirements apply to all lithium metal batteries prepared for transport according to this packing instruction:

- 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, or to quantities of lithium metal cells or batteries in excess of those permitted in Section IB of this packing instruction which must be assigned to Class 9 and are subject to all of the applicable requirements of these Regulations;
- 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 packed in quantities that exceed the allowance permitted in Section II, Table 968-II; and
- Section II 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 packed in quantities not exceeding the allowance permitted in Section II, Table 968-II.

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.

**PACKING INSTRUCTION 968** (continued)

**General Requirements**

The following requirements apply to all lithium metal or lithium alloy cells and batteries:

- cells and batteries identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons);
- waste batteries and batteries being shipped for recycling or disposal are prohibited from air transport unless approved by the appropriate national authority of the State of origin and the State of the operator;
- cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.

**Section IA**

These requirements apply 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 that have been determined to meet the criteria for assignment to Class 9.

The General Packing Requirements of 5.0.2 must be met.

Each cell or battery must:

- meet the provisions of 3.9.2.6.1; and
- meet the General Requirements, above.

**Additional Requirements—Section IA**

- 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 standards;
- cells and batteries must not be packed in the same outer packaging with dangerous goods classified in 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);
- batteries with a weight of 12 kg or greater and having a strong, impact-resistant outer casing, or assemblies of such batteries, may be transported when packed in strong outer packagings or protective enclosures (e.g. in fully enclosed or wooden slatted crates) not subject to the requirements of Section 6 of these Regulations, if approved by the appropriate national authority of the State of origin. A copy of the document of approval must accompany the consignment.
- packages containing cells or batteries must not be placed in an overpack with packages containing dangerous goods classified in Class 1 other than Division 1.4S, Division 2.1, Class 3, Division 4.1 or Division 5.1.

**TABLE 968-IA**

UN number	Net quantity per package Passenger aircraft	Net quantity per package Cargo Aircraft Only
UN 3090 Lithium metal batteries	Forbidden	35 kg

**OUTER PACKAGINGS**

Type	Drums						Jerricans			Boxes							
	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Desc.																	
Spec.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N

**Section IB**

△ Lithium metal or lithium alloy cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 3.9.2.6.1(a) and (e) and they meet all of the following:

- for a lithium metal cell, the lithium content is not more than 1 g; and
- for a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2 g.

Section IB requirements apply to cells and batteries packed in quantities that exceed the allowance permitted in Section II, Table 968-II.

Quantities of lithium metal cells or batteries prepared in accordance with this section are subject to all of the applicable provisions of these Regulations (including the General Requirements of this packing instruction), except for the provisions of Section 6.

**PACKING INSTRUCTION 968** (continued)

Cells or batteries shipped under the provisions of Section IB must be described on a Shipper's Declaration as set out in Section 8 and the air waybill, when used, must contain the applicable information required by 8.2.1 and 8.2.2.

Cells and batteries must be packed in strong outer packagings that conform to 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1.

**Additional Requirements—Section IB**

Cells and batteries must be packed in inner packagings that completely enclose the cell or battery. To provide protection from damage or compression to the batteries, the inner packagings must be placed in a strong rigid outer packaging of one of the packaging types shown below.

- Cells and batteries must not be packed in the same outer packaging with dangerous goods classified in 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).

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.

- Packages containing cells or batteries must not be placed in an overpack with packages containing dangerous goods classified in Class 1 other than Division 1.4S, Division 2.1, Class 3, Division 4.1 or Division 5.1.

Each package must be durably and legibly marked with the mark shown in Figure 7.1.C in addition to the Class 9—Lithium Battery hazard label (Figure 7.3.X) and the Cargo Aircraft Only label (Figure 7.4.B).

**Note:**

The provisions for the lithium battery handling label, Figure 7.4.H and 7.2.4.7 may continue to be used until 31 December 2018. In addition, the Class 9 label shown in Figure 7.3.W may continue to be used on packages containing lithium batteries prepared in accordance with Section IB until 31 December 2018.

Each package must be marked in accordance with the requirements of 7.1.4.1(a) and (b) and in addition the net weight when required by 7.1.4.1(c) must be marked on the package.

**TABLE 968-IB**

	Net quantity per package Passenger aircraft	Net quantity per package Cargo Aircraft Only
Lithium metal cells and batteries	Forbidden	2.5 kg

**OUTER PACKAGINGS**

Type	Drums						Jerricans			Boxes							
	Steel	Alu- minium	Ply- wood	Fibre	Plastic	Other metal	Steel	Alu- minium	Plastic	Steel	Alu- minium	Wood	Ply- wood	Recon- stituted wood	Fibre- board	Plastic	Other metal
Desc.																	

**Section II**

Lithium metal or lithium alloy cells and batteries meeting the requirements in this section are not subject to other additional requirements of these Regulations except for:

- (a) restrictions on dangerous goods in consolidations (1.3.3.2.3 and 1.3.3.2.6);
  - (b) provision of adequate instruction (1.6);
  - (c) dangerous goods in passenger and crew baggage (Subsection 2.3). Only those lithium metal batteries as specifically permitted may be carried in carry-on baggage;
  - (d) dangerous goods in air mail (Subsection 2.4);
  - (e) use of unit load devices (5.0.1.3);
  - (f) marking of packages (7.1.5.5);
  - (g) loading of cargo aircraft (9.3.4);
  - (h) reporting of dangerous goods accidents, incidents and other occurrences (9.6.1 and 9.6.2).
- Cells and batteries offered for transport must meet the provisions of 3.9.2.6.1(a) and (e), the General Requirements of this packing instruction and:
- (a) for cells, the lithium content is not more than 1 g; and
  - (b) for batteries, the aggregate lithium content is not more than 2 g.

**PACKING INSTRUCTION 968** (continued)

Cells and batteries must be packed in strong outer packagings that conform to 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1.

**Additional Requirements—Section II**

Cells and batteries must be packed in inner packagings that completely enclose the cell or battery. To provide protection from damage or compression to the batteries, the inner packagings must be placed in a strong rigid outer packaging of one of the packaging types shown below.

- Cells and batteries must not be packed in the same outer packaging with other dangerous goods.

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 durably and legibly marked with the lithium battery mark, Figure 7.1.C, as required by 7.1.5.5 and the Cargo Aircraft Only label (Figure 7.4.B). The package must be of such size that there is adequate space to affix the mark on one side of the package without the mark being folded. When the package dimensions are adequate, the Cargo Aircraft Only label must be located on the same surface of the package near the lithium battery mark.

**Note:**

The provisions for the lithium battery handling label, Figure 7.4.H and 7.2.4.7, may continue to be used until 31 December 2018.

A Shipper's Declaration for Dangerous Goods is not required.

A shipper is not permitted to offer for transport more than one (1) package prepared according to this section in any single consignment.

The words "Lithium metal batteries in compliance with Section II of PI 968" and "Cargo Aircraft Only" or "CAO" must be included on the air waybill, when an air waybill is used. The information should be shown in the "Nature and Quantity of Goods" box of the air waybill.

Packages and overpacks containing lithium batteries prepared in accordance with this section must be offered to the operator separately from the goods in the consolidation that are not subject to these Regulations. Packages and overpacks in consolidations must not be loaded into a unit load device before being offered to the operator.

Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities. Information on adequate instruction can be found in subsection 1.6.

**Overpacks—Section II**

- Not more than one (1) package complying with the requirements of Section II may be placed in an overpack. The overpack may also contain packages of dangerous goods, other than dangerous goods classified in Class 1 other than Division 1.4S, Division 2.1, Class 3, Division 4.1 and Division 5.1, or goods not subject to these Regulations provided that the packages do not contain substances which might react dangerously with each other. An overpack must be marked with the word "Overpack" and durably and legibly marked with the mark shown in Figure 7.1.C and the Cargo Aircraft Only label (Figure 7.4.B), unless the mark and label representative of those on the package inside the overpack are visible.

**Note:**

For the purpose of Section II, an overpack is an enclosure used by a single shipper that contains no more than one package prepared in accordance with this section. For shipments prepared in accordance with Section IA and/or IB, this limit of one package of Section II batteries per overpack still applies.

**TABLE 968-II**

Contents	Lithium metal cells and/or batteries with a lithium content of 0.3 g or less	Lithium metal cells with a lithium content of more than 0.3 g but not more than 1 g	Lithium metal batteries with a lithium content of more than 0.3 g but not more than 2 g
1	2	3	4
Maximum number of cells/batteries per package	No limit	8 cells	2 Batteries
Maximum net quantity (weight) per package	2.5 kg	N/A	N/A

**PACKING INSTRUCTION 968** (continued)

Cells and/or batteries specified in columns 2, 3 and 4 of Table 968-II must not be combined in the same package.

**OUTER PACKAGINGS**

Type	Drums						Jerricans			Boxes							
	Steel	Alu- minium	Ply- wood	Fibre	Plastic	Other metal	Steel	Alu- minium	Plastic	Steel	Alu- minium	Wood	Ply- wood	Recon- stituted wood	Fibre- board	Plastic	Other metal
Desc.																	

**PACKING INSTRUCTION 969**

STATE VARIATION: USG-03

△ OPERATOR VARIATIONS: 2K-02, 3K-06, 4C-08, 4M-08, 5X-07, AC-06, AF-05, AM-09, AR-11, AU-11, BM-01, BR-18, BT-01, BZ-10, CV-04, CZ-08, D0-03, D5-03, ES-03, EY-04, FX-05, G3-01, GF-14, GS-03, HA-06, HX-06, JJ-08, JU-13, KQ-09, L7-08, LA-09/16, LH-08, LP-08, LU-08, LX-06, M3-08, M7-08, MK-16, OM-15, OS-08, OZ-10, P3-02/04, PZ-08, QK-06, QR-04, QY-03/05, RS-06, RU-02/04, RV-06, SQ-07, SS-03, TG-08, TR-06, UC-08, UX-11, VN-12, WN-01, WY-07, X5-11, XG-08, XL-08, XQ-08

**Introduction**

This instruction applies to lithium metal or lithium alloy cells and batteries packed with equipment (UN 3091) on passenger and Cargo Aircraft Only.

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

The general requirements apply to all lithium metal batteries packed with equipment prepared for transport according to this packing instruction:

- Section I applies where equipment is packed with lithium metal cells with a lithium metal content in excess of 1 g or 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 Regulations; and
- Section II applies where equipment is packed with lithium metal cells with a lithium metal content not exceeding 1 g or 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.

**General Requirements**

The following requirements apply to all lithium metal or lithium alloy cells and batteries:

- (a) cells and batteries identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons);
- (b) cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.

**Section I**

△ These requirements apply 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 that have been determined to meet the criteria for assignment to Class 9.

The General Packing Requirements of 5.0.2 must be met.

Each cell or battery must:

- △ (a) meet the provisions of 3.9.2.6.1; and
- (b) meet the General Requirements, above.

**Additional Requirements—Section I**

The number of cells or batteries in each package must not exceed the appropriate number for the equipment's operation, plus two spares:

- cells and/or batteries must:
  - be completely enclosed in inner packagings then placed in an outer packaging. The completed package for the cells or batteries must meet the Packing Group II performance standards; or

**PACKING INSTRUCTION 969** (continued)

- be completely enclosed in inner packagings then placed with equipment in a package that meets the Packing Group II performance standards.
- the equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.

**Lithium metal and lithium alloy cells and batteries prepared for transport on Passenger Aircraft as Class 9:**

- must be packed in either a rigid metal intermediate or a metal outer packaging;
- cells and batteries must be surrounded by cushioning material that is non-combustible and non-conductive and being placed in either the metal intermediate or metal outer packaging;
- when the package does not meet the above requirements, the package(s) must bear the "Cargo Aircraft Only" label and the Shipper's Declaration must indicate "Cargo Aircraft Only".

**TABLE 969-I**

UN number	Net quantity per package Passenger aircraft	Net quantity per package Cargo Aircraft Only
UN 3091 Lithium metal batteries packed with equipment	5 kg	35 kg

**OUTER PACKAGINGS**

Type	Drums						Jerricans			Boxes							
	Steel	Alu- minium	Ply- wood	Fibre	Plastic	Other metal	Steel	Alu- minium	Plastic	Steel	Alu- minium	Wood	Ply- wood	Recon- stituted wood	Fibre- board	Plastic	Other metal
Desc.																	
Spec.	1A2	1B2	1D	1G	1H2	1N2	3A2	3B2	3H2	4A	4B	4C1 4C2	4D	4F	4G	4H2	4N

**Section II**

Lithium metal or lithium alloy cells and batteries meeting the requirements in this section are not subject to other additional requirements of these Regulations except for:

- (a) provision of adequate instruction (1.6);
- (b) dangerous goods in passenger and crew baggage (Subsection 2.3). Only those lithium metal batteries as specifically permitted may be carried in carry-on baggage;
- (c) dangerous goods in air mail (Subsection 2.4);
- (d) marking of packages (7.1.5.5);
- (e) reporting of dangerous goods accidents, incidents and other occurrences (9.6.1 and 9.6.2).
- △ Cells and batteries offered for transport must meet the provisions of 3.9.2.6.1(a) and (e), the General Requirements of this packing instruction; and
  - (a) for cells, the lithium content is not more than 1 g; and
  - (b) for batteries, the aggregate lithium content is not more than 2 g.

Cells and batteries must be packed in strong outer packagings that conform to 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1.

**Additional Requirements—Section II**

Cells and/or batteries must:

- be completely enclosed in inner packagings then placed in a strong rigid outer packaging; or
  - be completely enclosed in inner packagings then placed with equipment in a strong rigid outer packaging.
- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- The number of cells or batteries in each package must not exceed the appropriate number for the equipment's operation plus two spares.
- 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.

**PACKING INSTRUCTION 969** (continued)

△ Each package must be durably and legibly marked with the lithium battery mark, Figure 7.1.C, as required by 7.1.5.5. The package must be of such size that there is adequate space to affix the mark on one side of the package without the mark being folded.

**Note:**

The provisions for the lithium battery handling label, Figure 7.4.H and 7.2.4.7 may continue to be used until 31 December 2018.

A Shipper's Declaration for Dangerous Goods is not required.

The words "Lithium metal batteries in compliance with Section II of PI 969" must be included on the air waybill, when an air waybill is used. The information should be shown in the "Nature and Quantity of Goods" box of the air waybill.

Where a package contains a combination of lithium batteries contained in equipment and lithium batteries packed with equipment that meet the limits for lithium 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 weight of lithium batteries contained in any package must not exceed 5 kg;
- the words "lithium metal batteries, in compliance with Section II of PI 969" 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. Information on adequate instruction can be found in subsection 1.6.

**Overpacks—Section II**

Individual packages each complying with the requirements of Section II may be placed in an overpack. The overpack may also contain packages of dangerous goods or goods not subject to these Regulations provided that the packages do not contain substances which might react dangerously with each other. An overpack must be marked with the word "Overpack" and durably and legibly marked with the mark shown in Figure 7.1.C, unless the marks representative of those on the package(s) inside the overpack are visible.

**TABLE 969-II**

	Passenger aircraft	Cargo Aircraft Only
Net quantity of lithium metal cells or batteries per package	5 kg	5 kg

**OUTER PACKAGINGS**

Type	Drums						Jerricans			Boxes							
	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Desc.																	

**PACKING INSTRUCTION 970**

STATE VARIATION: USG-03

△ OPERATOR VARIATIONS: 2K-02, 3K-06, 4C-08, 4M-08, 5X-07, AC-06, AF-05, AM-09, AR-11, AU-11, BM-01, BR-18, BT-01, BZ-10, CV-04, CZ-08, D0-03, D5-03, ES-03, EY-04, FX-05, G3-01, GF-14, GS-03, HA-06, HX-06, JJ-08, JU-13, KK-11, KQ-09, L7-08, LA-09/16, LH-08, LP-08, LU-08, LX-06, M3-08, M7-08, MK-16, OM-15, OS-08, OZ-10, P3-04, PZ-08, QK-06, QR-04, QY-03/05, RS-06, RU-02/04, RV-06, SQ-07, SS-03, TG-08, TR-06, UC-08, UH-11, UX-11, VN-12, WN-01, X5-11, WY-07, XG-08, XL-08, XQ-08

**Introduction**

This instruction applies to lithium metal or lithium alloy cells and batteries contained in equipment (UN 3091) on passenger and Cargo Aircraft Only.

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

**PACKING INSTRUCTION 970** (continued)

The general requirements apply to all lithium metal and lithium alloy cells and batteries contained in equipment prepared for transport according to this packing instruction:

- Section I applies where equipment contains lithium metal cells with a lithium metal content in excess of 1 g or 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 Regulations; and
- Section II applies where equipment contains lithium metal cells with a lithium metal content not exceeding 1 g or 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.

**General Requirements**

The following requirements apply to all lithium metal or lithium alloy cells and batteries:

- (a) cells and batteries identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons);
- (b) cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit;
- (c) equipment must be equipped with an effective means of preventing accidental activation;
- (d) equipment containing cells or batteries must be packed in strong outer packagings that conform to 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1;
- (e) the equipment containing the cells or batteries must be secured against movement within the outer packaging and be packed so as to prevent accidental operation during air transport.

**Section I**

These requirements apply 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 that have been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

- △ (a) meet the provisions of 3.9.2.6.1; and
- (b) meet the General Requirements, above.

**Additional Requirements—Section I**

- the equipment must be packed in strong outer packagings constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the battery is afforded equivalent protection by the equipment in which it is contained;
- the quantity of lithium metal contained in any piece of equipment must not exceed 12 g per cell and 500 g per battery.

**TABLE 970-I**

UN number	Net quantity per package Passenger aircraft	Net quantity per package Cargo Aircraft Only
UN 3091 Lithium metal batteries contained in equipment	5 kg	35 kg

**OUTER PACKAGINGS—Strong outer packagings, such as:**

Type	Drums						Jerricans			Boxes							
	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Desc.																	

**Section II**

Lithium metal or lithium alloy cells and batteries meeting the requirements in this section are not subject to other additional requirements of these Regulations except for:

- (a) provision of adequate instruction (1.6);
- (b) dangerous goods in passenger and crew baggage (Subsection 2.3). Only those lithium metal batteries as specifically permitted may be carried in carry-on and checked baggage;
- (c) dangerous goods in air mail (Subsection 2.4);



## PACKING INSTRUCTION 970 *(continued)*

- (d) marking of packages (7.1.5.5);
- (e) reporting of dangerous goods accidents, incidents and other occurrences (9.6.1 and 9.6.2).
- △ Cells and batteries offered for transport must meet the provisions of 3.9.2.6.1(a) and (e), the General Requirements of this packing instruction and:
  - (a) for cells, the lithium content is not more than 1 g; and
  - (b) 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.

### Additional Requirements—Section II

The equipment must be packed in strong rigid outer packagings constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the cell or battery is afforded equivalent protection by the equipment in which it is contained.

- △ Each package must be durably and legibly marked with the lithium battery mark, Figure 7.1.C, as required by 7.1.5.5. The package must be of such size that there is adequate space to affix the mark on one side of the package without the mark being folded. The application of the lithium battery mark does not apply to:
  - packages containing only button cell batteries installed in equipment (including circuit boards); or
  - consignments of two packages or less where each package contains no more than four cells or two batteries installed in equipment.

**Note:**

The provisions for the lithium battery handling label, Figure 7.4.H and 7.2.4.7 may continue to be used until 31 December 2018.

A Shipper's Declaration for Dangerous Goods is not required.

Where a consignment includes packages bearing the lithium battery mark, the words "Lithium metal batteries in compliance with Section II of PI 970" must be included on the air waybill, when an air waybill is used. The information should be shown in the "Nature and Quantity of Goods" box of the air waybill.

Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities. Information on adequate instruction can be found in subsection 1.6.

### Overpacks—Section II

Individual packages each complying with the requirements of Section II may be placed in an overpack. The overpack may also contain packages of dangerous goods or goods not subject to these Regulations provided that the packages do not contain substances which might react dangerously with each other. An overpack must be marked with the word "Overpack" and durably and legibly marked with the mark shown in Figure 7.1.C, unless the marks representative of those on the package(s) inside the overpack are visible, or the packages are not required to bear the lithium battery mark.

**TABLE 970-II**

Net quantity of lithium metal cells or batteries per package	Passenger aircraft	Cargo Aircraft Only
	5 kg	5 kg

### OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
	Steel	Alu-minium	Ply-wood	Fibre	Plastic	Other metal	Steel	Alu-minium	Plastic	Steel	Alu-minium	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plastic	Other metal
Desc.																	