Distributions Class 1 General

Technical Notice

Transport Regulations Aircraft - IATA DGR 2026 - Overview

UN 3090	LITHIUM METAL BATTERIES						
UN 3091	LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or						
	LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT						
							see Chapter
Class		9	Miscellaneous dangerous goods		x	x	x	3.9
Sub risk		-						
Classification			Lithium batteries		x	x	x	3.9.2.6
Packing Group			See packing instructions					3.0.3
Packing instructions		968	Lithium batteries				x	5.9
		970	Lithium batteries contained in equipment			x		5.9
		969	Lithium batteries packed with equipment		x			5.9
Hazard label		9	Lithium batteries		x	x	x	7.3.18.2
Exempted Quantity		E0	No		x	x	x	2.6
Limited Quantity		-	Forbidden		x	x	x	2.7
Max. Net mass		5 kg	See packing instructions		3)	3)	3)	
Cargo aircraft	Max. Net mass	35 kg	See packing instructions			3)	3)	
	Handling label	Yes	Cargo Aircraft Only		3)x	3)x	x	7.4.2
–Special Provisions		A48	Packaging tests		x	x	x	4.4
		A88	Prototypes		x	x	x	
		A99	Over 35 kg		x	x	x	
		A154	Defective batteries		x	x	x	
		A181	Various combinations		x	x		
		A182	Equipment only lithium batteries		4)	4)		
		A183	No waste batteries				x	
		A185	Battery powered vehicles		x	x		
		A201	Special Exemptions				x	
		A213	Hybrid batteries		x	x	x	
		A220	Pharmaceuticals w. data loggers			x		
		A334	Transport with permission				x	
		A802	Packaging group		x		x	
ERG[1] Code		12FZ			x	x	x	ICAO[2]

3.9.2.6 Lithium Batteries / 3.9.2.6.0 Assigned entries:

- UN 3090 Lithium metal batteries
- UN 3091 Lithium metal batteries contained in equipment or Lithium metal batteries packed with equipment
- UN 3480 Lithium ion batteries

1) Emergency Response Drill Code
2) Doc 9481-AN/928 3) see applicable packing instruction
3) see applicable packing instruction
4) must be classified as either UN 3091 or UN 3481

- UN 3481 Lithium ion batteries contained in equipment or Lithium ion batteries packed with equipment
- UN 3536 Lithium batteries installed in cargo transport unit

3.9.2.6.1 Cells and batteries, cells and batteries contained in equipment, or cells and batteries packed with equipment, containing lithium in any form must be assigned to UN 3090, UN 3091, UN 3480 or UN 3481, as appropriate. They may be transported under these entries if they meet the following provisions:

(a) each cell or battery is of the type proved to meet the requirements of each test of the UN *Manual of Tests and Criteria*, Part III, subsection 38.3. Cells and batteries manufactured according to a type meeting the requirements of subsection 38.3 of the UN *Manual of Tests and Criteria*, Revision 3, Amendment 1 or any subsequent revision and amendment applicable at the date of the type testing may continue to be transported, unless otherwise provided in these Regulations. Cell and battery types only meeting the requirements of the UN *Manual of Tests and Criteria*, Revision 3, are no longer valid. However, cells and batteries manufactured in conformity with such types before 1 July 2003 may continue to be transported if all other applicable requirements are fulfilled.

Note: *Batteries, including those which have been refurbished or otherwise altered, must be of a type proved to meet the testing requirements of the Manual of Tests and Criteria, Part III, subsection 38.3, irrespective of whether the cells of which they are composed are of a tested type.*

(b) each cell and battery incorporates a safety venting device or is designed to preclude a violent rupture under conditions normally incident to transport;

(c) each cell and battery is equipped with an effective means of preventing external short circuits;

(d) each battery containing cells or series of cells connected in parallel is equipped with effective means as necessary to prevent dangerous reverse current flow (e.g., diodes, fuses, etc.);

(e) cells and batteries are manufactured under a quality management program that includes:

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

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

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

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

5. management reviews to ensure the effective operation of the quality management program;

6. a process for control of documents and their revision;

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

8. training programs and qualification procedures for relevant personnel; and

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

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

(f) lithium batteries, containing both primary lithium metal cells and rechargeable lithium ion cells, that are not designed to be externally charged (see Special Provision A213) meet the following conditions:

1. the rechargeable lithium ion cells can only be charged from the primary lithium metal cells;

2. overcharge of the rechargeable lithium ion cells is precluded by design;

3. the battery has been tested as a lithium primary battery;

4. component cells of the battery must be of a type proved to meet the respective testing requirements of the UN Manual of Tests and Criteria, Part III, sub-section 38.3.

(g) **except for button cells installed in equipment (including circuit boards),** manufacturers and subsequent distributors of cells or batteries manufactured after 30 June 2003 make available the test summary as specified in the UN Manual of Tests and Criteria , Part III, sub-section 38.3, paragraph 38.3.5.

IATA Special Provision A48
Packaging tests are not considered necessary.

IATA Special Provision A88

Pre-production prototypes of lithium cells or batteries or sodium ion cells or batteries, when these prototypes are transported for testing, or low production runs, (i.e. annual production runs consisting of no more than 100 lithium cells or batteries or sodium ion cells or batteries) or lithium cells or batteries or sodium ion cells or batteries that have not been tested to the requirements in 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 and the requirements in Packing Instruction 910 of the ICAO Supplement to the Technical Instructions are met.

When lithium batteries are shipped under an approval in accordance with this special provision, the packing instruction number shown on the Shipper´s Declaration must be “910”. This also applies to prototype lithium batteries shipped when packed with equipment or contained in equipment.

A copy of the document of approval must accompany the consignment. Transport in accordance with this special provision must be noted on the Shipper’s Declaration.

Irrespective of the limit specified in Column L of Table 4.2, the cell or battery as prepared for transport may have a mass exceeding 35 kg.

IATA Special Provision A99

Irrespective of the per package quantity limit for cargo aircraft specified in Column L of the List of Dangerous Goods (Subsection 4.2) and in Section I of Packing Instructions 965, 966, 967, 968, 969, 970, 976, 977 and 978 a lithium cell or battery or sodium ion cell or battery (UN 3090, UN 3480 or UN 3551), including when packed with, or contained in equipment (UN 3091, UN 3481 or UN 3552) that meets the other requirements of Section I of the applicable packing instruction may have a mass exceeding 35 kg, if approved by the appropriate authority of the State of origin and the State of the operator and the requirements in Packing Instruction 974 of the ICAO Supplement to the Technical Instructions are met.

- When lithium batteries or sodium ion batteries are shipped under an approval in accordance with this special provision, the packing instruction number shown on the Shipper’s Declaration must be “974”.
- A copy of the document of approval must accompany the consignment. Transport in accordance with this special provision must be noted on the Shipper’s Declaration.

IATA Special Provision A154

(~376) Lithium ion cells or batteries, lithium metal cells or batteries and sodium ion cells or batteries identified as being defective for safety reasons, 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 or cells or batteries that cannot be diagnosed as defective prior to transport).

Lithium ion cells or batteries, lithium metal cells or batteries and sodium ion cells or batteries identified as being damaged such that they do not conform to the type tested according to the applicable provisions of the UN Manual of Test and Criteria are forbidden for transport. For the purposes of this special provision, these may include, but are not limited to:

(a) cells or batteries that have leaked or vented;
(b) cells or batteries that cannot be diagnosed prior to transport; or
(c) cells or batteries that have sustained physical or mechanical damage.

In assessing a cell or battery as defective or damaged, an assessment or evaluation must be performed based on safety criteria from the cell, battery or product manufacturer or by a technical expert with knowledge of the cell´s or battery´s safety features. An assessment or evaluation may include, but is not limited to, the following criteria:

(a) acute hazard, such as gas, fire, or electrolyte leaking;
(b) the use or misuse of the cell or battery;
(c) signs of physical damage, such as deformation to cell or battery casing, or colours on the casing;
(d) external and internal short circuit protection, such as voltage or isolation measures;
(e) the condition of the cell or battery safety features; or
(f) damage to any internal safety components, such as the battery management system.

IATA Special Provision A181

When a package contains a combination of lithium batteries contained in equipment and lithium batteries packed with equipment, the following requirements apply:

(a) 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 the limits for passenger aircraft or cargo aircraft, as applicable;

(b) the package must be marked UN 3091 **Lithium metal batteries packed with equipment**, or UN 3481 **Lithium ion batteries packed with equipment** as appropriate. If a package contains both lithium ion batteries and lithium metal batteries packed with and contained in equipment, the package must be marked as required for both battery types. However, button cell batteries installed in equipment (including circuit boards) need not be considered.

(c) the Shipper's Declaration must indicate UN 3091 **Lithium metal batteries packed with equipment** or UN 3481 **Lithium ion batteries packed with equipment**, as appropriate. If a package contains both lithium metal batteries and lithium ion batteries packed with and contained in equipment, then the dangerous goods transport document must indicate both UN 3091 **Lithium metal batteries packed with equipment** and UN 3481 **Lithium ion batteries packed with equipment**.

IATA Special Provision A182

Equipment containing only lithium batteries must be classified as either UN 3091 or UN 3481.

IATA Special Provision A183

Waste cells and batteries and cells 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.

IATA Special Provision A185

(360) Vehicles only powered by lithium metal, lithium ion or sodium ion batteries must be assigned to UN 3556 **Vehicle, lithium ion battery powered** or UN 3557 **Vehicle, lithium metal battery powered** or UN 3558 **Vehicle, sodium ion battery powered**, as applicable.
Lithium batteries installed in cargo transport units, designed only to provide power external to the transport unit must be assigned to UN 3536, **Lithium batteries installed in cargo transport unit.**

IATA Special Provision A201

In instances where other forms of transport (including cargo aircraft) are impracticable, lithium and sodium ion cells or batteries may be transported as Class 9 (UN 3480, UN 3090 or UN 3551) on passenger aircraft with the prior approval of the authority of the State of origin, the State of the operator and the State of destination under the written conditions established by those authorities, provided that the quantities per package do not exceed:

(a) for lithium metal cells or batteries:
- **1.** up to 2 batteries with a lithium content more than 0.3 g but not more than 2 g per battery; or
- **2.** up to 8 cells with a lithium content more than 0.3 g but not more than 1 g per cell; or
- **3.** up to 2.5 kg of cells and/or batteries with a lithium content not more than 0.3 g per cell or battery; or

(b) for lithium ion cells or batteries:
- **1.** up to 2 batteries with a Watt-hour (Wh) rating more than 2.7 Wh but not more than 100 Wh per battery; or
- **2.** up to 8 cells with a Watt-hour rating more than 2.7 Wh but not more than 20 Wh per cell; or
- **3.** up to 2.5 kg of cells and/or batteries with a Watt-hour rating not more than 2.7 Wh per cell or battery.

(c) for sodium ion cells or batteries:
N/A for Tadiran Products

In instances where other forms of transport (including cargo aircraft) are impracticable and in the case of urgent medical need, one consignment of lithium batteries may be transported as Class 9 (UN 3480 or UN 3090) on passenger aircraft with the prior approval of the authority of the State of origin and with the approval of the operator under the following conditions:

(a) the shipper must provide a copy of the test summary as specified in 3.9.2.6.1(g);

(b) the consignment must not contain more than 4 batteries;

(c) for lithium ion batteries:
- **1.** the Watt-hour (Wh) rating of each battery must not exceed 100 Wh; and
- **2.** the batteries must be prepared in accordance with Packing Instruction 965, Section IA.

(d) for lithium metal batteries:
- **1.** the aggregate lithium content of each battery must not exceed 2 g; and
- **2.** the batteries must be prepared in accordance with Packing Instruction 968, Section IA.

When States, other than the State of origin, the State of the operator or State of destination have lodged a variation advising that they require prior approval of shipments made under this special provision, approval must also be obtained from these States, as appropriate. The marking and labelling requirements of Section 7 for Class 9 (UN 3090 or UN 3480) lithium metal and lithium ion batteries apply. A copy of the document of approval including the quantity limitations must accompany the consignment. Transport in accordance with this special provision must be noted on the Shipper's Declaration.

If transport in accordance with this special provision is not possible, States concerned may grant an exemption from the prohibition to transport lithium metal or lithium ion batteries on passenger aircraft in accordance with 1.2.6.
Authorities issuing approvals or exemptions in accordance with this special provision must provide a copy to the Chief of the Cargo Safety Section within three months of issuance via email at: CSS@icao.int, via facsimile at +1 514-954-6077 or via post to the following address:

Chief, Cargo Safety Section
International Civil Aviation Organization
999 Robert Bourassa Boulevard
Montreal, Quebec
CANADA H3C 5H7

Note: *Guidance for the processing of approvals or exemptions from the prohibition to transport lithium batteries may be found in Part S-1;4 of the ICAO Supplement to the Technical Instructions, see also special provision A334.*

IATA Special Provision A213
(387) Lithium batteries in conformity with 3.9.2.6.1(f) containing both primary lithium metal cells and rechargeable lithium ion cells must be assigned to UN 3090 or UN 3091, as appropriate. When such batteries are transported in accordance with Section IB of Packing Instruction 968 or in accordance with Section II of 969 or 970, the total lithium content of all lithium metal cells contained in the battery must not exceed 1.5 g and the total capacity of all lithium ion cells contained in the battery must not exceed 10 Wh.

IATA Special Provision A220
Packages containing COVID-19 pharmaceuticals accompanied by data loggers and/or cargo tracking devices containing lithium batteries are not subject to the marking and documentation requirements of Section II of Packing Instructions 967 or 970, as applicable. This same package configuration, when consigned without the COVID-19 pharmaceutical for the purposes of use or reuse, is also not subject to the marking and documentation requirements of Section II of Packing Instructions 967 or 970, provided prior arrangements have been made with the operator.

IATA Special Provision A334
In instances where other forms of transport (including cargo aircraft) is impracticable, lithium cells or sodium ion cells or batteries may be transported on passenger aircraft with the prior approval of the authority of the State of Origin, the State of the Operator and the State of Destination under the written conditions established by those authorities, provided that the following types and quantities are met:

(a) quantities of lithium metal cells or batteries (UN 3090) are limited to
1. up to 2 batteries with a lithium content more than 0.3g but not more than 2g per battery; or
2. Up to 8 cells with a lithium content more than 0.3g but not more than 1g per cell; or
3. Up to 2.5kg of cells and/ or batteries with a lithium content not more than 0.3g per cell or battery; and

(b) quantities of lithium ion cells or batteries (UN 3480) are limited to:
1. up to 2 batteries with a Watt-hour (Wh) rating more than 2.7 Wh but not more than 100 Wh per battery; or
2. up to 8 cells with a Watt-hour rating more than 2.7 Wh but not more than 20 Wh per cell; or
3. up to 2.5kg of cells and/ or batteries with a Watt-hour rating not more than 2.7Wh per cell or battery.

When considering an approval, at a minimum, authorities should consider the following criteria to mitigate risks posed by a lithium cell or battery or sodium ion cell or battery heat, smoke or fire event inside a package at the cell, battery or package level:
(a) no amount of flame is allowed outside the package;
(b) the external surface temperature of the package cannot exceed the amount that would ignite adjacent packing material or cause batteries or cells in adjacent packages to go into thermal runaway;
(c) no fragments can exit the package and the package must maintain structural integrity;
(d) the quantity of flammable vapour emitted must be less than the amount of gas that when mixed with air and ignited could cause a pressure pulse that could dislodge the overpressure panels of the aircraft cargo compartment or damage the aircraft cargo compartment liners; and
(e) when the package or overpack is exposed to an external fire (e.g. five-minute oil burner flame penetration resistance test) or elevated temperature environment (e.g. oven thermal resistance test), any hazardous effects caused by thermal runaway of the lithium cell or battery must be contained within the package.

Adequate information and documentation on the above criteria (a) through (e) must be provided to the appropriate authority of the State issuing the approval upon request.

IATA Special Provision 802

Notwithstanding the absence of a packing group in column E, substances and articles assigned to these entries must be packed in UN Specification packagings that meet packing group II performance standards. This does not apply when aerosols are prepared for transport in accordance with the limited quantity provisions or for lithium batteries prepared in accordance with Section IB of Packing Instructions 965 or 968.

Note: *For the purposes of identification and documentation the packing group as shown in table 4.2 applies and is to be used in the completion of the Shipper`s Declaration, regardless of a packaging required to meet higher packing group performance standard as indicated above.*

PACKING INSTRUCTION 968

STATE VARIATIONS and OPERATOR VARIATIONS have to be considered

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 an aggregate lithium 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; and
- Section IB applies to lithium metal cells with a lithium metal content not exceeding 1 g and lithium metal batteries with an aggregate lithium 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.

Note:
A lithium battery guidance document is available at the following link: https://www.iata.org/lithiumbatteries

General Requirements

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

(a) cells or batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport;

(b) 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;

(c) cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with electrically 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 an aggregate lithium 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 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);
- a cell or battery with a weight 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 (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							
Desc.	Steel	Alu-mini-um	Ply-wood	Fibre	Plas-tic	Other metal	Steel	Alu-mini-um	Plas-tic	Steel	Alu-mini-um	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plas-tic	Other metal
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), (e), (f) if applicable and (g) and they meet all of the following:

(a) for a lithium metal cell, the lithium content is not more than 1 g; and

(b) for a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2 g.

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.

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.

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 if identical packages stacked to a height of 3m (including the test sample) for a duration of 24 hours.

Note:

Capability may be demonstrated by testing, assessment or experience.

Packaging 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 battery mark shown in Figure 7.1C in addition to the Class 9 – Lithium Battery or Sodium Ion Battery hazard label (Figure 7.3.X) and the Cargo Aircraft Only label (Figure 7.4.B).

Each package must 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							
Desc.	Steel	Alu-mini-um	Ply-wood	Fibre	Plas-tic	Other metal	Steel	Alu-mini-um	Plas-tic	Steel	Alu-mini-um	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plas-tic	Other metal

PACKING INSTRUCTION 969

STATE VARIATIONS and OPERATOR VARIATIONS have to be considered

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 an aggregate lithium 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 an aggregate lithium content not exceeding 2 g.

A single cell battery as defined in Part III, of 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.

Note:
A lithium battery guidance document is available at the following link: https://www.iata.org/lithiumbatteries

General Requirements

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

(a) cells or batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport;

(b) cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with electrically conductive materials within the same packaging that could lead to a short circuit.

Section I

These requirements apply to litihum metal cells with a lithium metal content in excess of 1 g and lithium metal batteries with an aggregate lithium 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 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:

- cells and/or batteries must:
  - be completely enclosed in inner packagings then placed in an packaging of the type shown below that meets the Packing Group II performance standards, then placed with the equipment in a strong, rigid outer packaging; or
  - be completely enclosed in inner packagings then placed with equipment in a packaging of a type shown below that meets the Packing Group II performance standards.
- the equipment must be secured against movement within the outer packaging

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 quanitity 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							
Desc.	Steel	Alu-min-ium	Ply-wood	Fibre	Plas-tic	Other metal	Steel	Alu-mini-um	Plas-tic	Steel	Alu-mini-um	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plas-tic	Other metal
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) loading of packages (9.3.5, 9.3.6 and 9.3.7);

(f) inspection of packages (9.4.1 and 9.4.4);

(g) 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), (e), (f) if applicable and (g), the General Requirements of this packing instruction; and:

(a) for cells, the lithium content is not more than 1g; and

(b) for batteries, the aggregate lithium content is not more than 2 g.

Additional Requirements – Section II

Cells and/or batteries must:

- be completely enclosed in packagings that conforms 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1 then placed with equipment in a strong rigid outer packaging; or
- be completely enclosed in inner packagings then placed with equipment in a strong rigid outer packaging that conforms to 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1.

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 samples) for a duration of 24 hours.

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

Each package must be durably and legibly marked with the 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.

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. Where packages of Section II lithium batteries from multiple packing instructions are included on one air waybill, the compliance statement for the different lithium battery types and/or packing instructions may be combined into a single statement provided that the statement identifies the applicable lithium battery type(s) and packing instruction numbers. 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 the functions for which they are responsible. 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.
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 overpack must be marked with the word "Overpack" in lettering at least 12 mm high and durably and legibly marked with the battery 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
Net quantity of lithium metal cells or batteries per package	5 kg	5 kg

OUTER PACKAGINGS

Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-mini-um	Ply-wood	Fibre	Plas-tic	Other metal	Steel	Alu-mini-um	Plas-tic	Steel	Alu-mini-um	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plas-tic	Other metal

PACKING INSTRUCTION 970

STATE VARIATIONS and OPERATOR VARIATIONS have to be considered

Introduction

This instruction applies to lithium metal or lithium alloy cells and batteries contained in equipment (UN 3091) on passenger and cargo aircraft 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 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 an aggregate lithium 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 an aggregate lithium content not exceeding 2 g.

A single cell battery as defined in Part III, of 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.

Note:
A lithium battery guidance document is available at the following link: https://www.iata.org/lithiumbatteries

General requirements

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

(a) cells or batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport;

(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 an aggregate lithium 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 rigid outer packagings that conform to 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1. Large equipment can be offered for transport unpackaged or on palletts when the cells or batteries are afforded equivalent protection by the equipment in which they are contained;
- the equipment containing the cells or batteries must be secured against movement within the outer packaging and be packed so as to prevent 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 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 samples) for a duration of 24 hours.

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.

TABLE 970-I

UN number	Net quanitity 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							
Desc.	Steel	Alu-mini-um	Ply-wood	Fibre	Plas-tic	Other metal	Steel	Alu-mini-um	Plas-tic	Steel	Alu-mini-um	Wood	Ply-wood	Recon-stitute d wood	Fibre-board	Plas-tic	Other metal

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);

(d) marking of packages (7.1.5.5);

(e) loading of packages (9.3.5, 9.3.6 and 9.3.7);

(f) inspection of packages (9.4.1 and 9.4.4);

(g) 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), (e), (f) if applicable and (g), 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 that conform to 5.0.2.4, 5.0.2.6.1 and 5.0.2.12.1. 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.

The equipment containing the cells or batteries 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 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 samples) for a duration of 24 hours.

Note:

Capability may be demonstrated by testing, assessment or experience.

Each package must be durably and legibly marked with the 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.

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. Where packages of Section II lithium batteries from multiple packing instructions are included on one air waybill, the compliance statement for the different lithium battery types and/or packing instructions may be combined into a single statement provided that the statement identifies the applicable lithium battery type(s) and packing instruction numbers. 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 the functions for which they are responsible. 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.

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 overpack must be marked with the word "Overpack" in lettering at least 12 mm high and durably and legibly marked with the battery mark shown in Figure 7.1.C, unless the marks representative of those on the package(s) inside the overpack are visible.

TABLE 970-II

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

OUTER PACKAGINGS																	
Type	Drums						Jerricans			Boxes							
Desc.	Steel	Alu-mini-um	Ply-wood	Fibre	Plas-tic	Other metal	Steel	Alu-mini-um	Plas-tic	Steel	Alu-mini-um	Wood	Ply-wood	Recon-stituted wood	Fibre-board	Plas-tic	Other metal

Figure 7.3.X:

Class 9 – Lithium Batteries or Sodium Ion Batteries

Name: Lithium Battery or Sodium Ion Batteries

Cargo IMP Code: RBI, RBM, RLI, RLM and RBV
Minimum dimensions: 100 x 100 mm

Symbol (seven vertical black stripes in upper half; battery group, one broken and emitting flame in lower half); black
Background: White

Figure 7.4.B:

Cargo Aircraft Only

Name: Cargo Aircraft Only

Cargo IMP Code: CAO
Minimum dimensions: 120 x 110 mm

For small packages of infectious substances (Class 6, Div. 6.2) dimensions may be halved.

Colour: Black on Orange (Pantone Colour No. 151U)

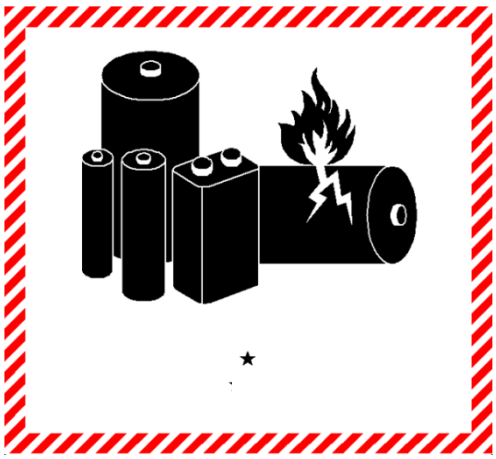

Figure 7.1.C:

Battery Mark (7.1.5.5)

reduced size, black on white, red boarder with diagonal hatchings

* Place for UN number(s)

Minimum dimensions: 100 x 100 mm

Note: *The mark illustrated in Figure 7.1.C of the 63rd edition of these Regulations may continue to be used until 31 December 2026.*