Cargo aircraft only for UN 3480

1. Introduction

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

- Section IA applies to lithium ion cells with a Watt-hour rating in excess of 20 Wh and lithium ion batteries with a Watt-hour rating in excess of 100 Wh, which must be assigned to Class 9 and are subject to all of the applicable requirements of these Instructions;
- 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.

2. Lithium batteries forbidden from transport

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

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

IA. SECTION IA

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

IA.1 General requirements

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

Note.— Guidance and methodology for determining the rated capacity can be found in sub-section 38.3.2.3 *of the UN* Manual of Tests and Criteria.

Table 965-IA

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

IA.2 Additional requirements

- Lithium ion cells and batteries must be protected against short circuits.
- Lithium ion cells and batteries must be placed in inner packagings that completely enclose the cell or battery then placed in an outer packaging. The completed package for the cells or batteries must meet the Packing Group II performance requirements.
- Lithium ion batteries with a mass 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 Part 6 of these Instructions, if approved by the appropriate authority of the State of Origin. A copy of the document of approval must accompany the consignment.
- Batteries manufactured after 31 December 2011 must be marked with the Watt-hour rating on the outside case.

IA.3 Outer packagings

Boxes

Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) Other metal (4N) Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A) Drums

Aluminium (1B2) Fibre (1G) Other metal (1N2) Plastics (1H2) Plywood (1D) Steel (1A2) Jerricans

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

IB. SECTION IB

Quantities of lithium ion cells or batteries that exceed the allowance permitted in Section II, Table 965-II are subject to all of the applicable provisions of these Instructions (including the requirements in paragraph 2 of this packing instruction and of this section) except for the provisions of Part 6.

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

Lithium ion cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3.1 a) and e) and the following:

- 1) for lithium ion cells, the Watt-hour rating (see the Glossary of Terms in Attachment 2) is not more than 20 Wh;
- 2) 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;

IB.1 General requirements

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

Note.— *Guidance and methodology for determining the rated capacity can be found in sub-section* 38.3.2.3 *of the UN* Manual of Tests and Criteria.

Table	965-IB
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	Net quantity µ	per package
Contents	Passenger	Cargo
Lithium ion cells and batteries	Forbidden	10 kg

	Packing Instruction 965	
IB.2 Additional requirements	2 Additional requirements	
 placed in a strong rigid outer packa Cells and batteries must be prot contact with conductive materials w Each package must be capable of	ected so as to prevent short circuit within the same packaging that could I withstanding a 1.2 m drop test in any s contained therein; as to allow battery to battery (or cell to with the appropriate lithium battery r Figure 5-26) and the cargo aircraft on lithium battery handling label as con d Figure 5-32 of the 2015-2016 Editio	ts. This includes protection against ead to a short circuit. orientation without: o cell) contact; mark (Figure 5-3) in addition to the y label (Figure 5-28). ntained in the 2015-2016 Edition of
IB.3 Outer packagings		
Boxes	Drums	Jerricans
Aluminium Fibreboard Natural wood Other metal Plastics Plywood Reconstituted wood Steel	Aluminium Fibre Other metal Plastics Plywood Steel	Aluminium Plastics Steel
II. SECTION II		
✓ Lithium ion cells and batteries, when c following additional provisions of these		ng instruction, are only subject to the
 Part 1;2.3 (General — Transport of Part 5;1.1 g) and j) (Shipper's resp Part 7;2.1 (Operator's responsibiliti Part 7;2.4.1 (Operator's responsibiliti Part 7;4.4 (Operator's responsibiliti Part 8;1.1 (Provisions concerning crew); and Paragraphs 1 and 2 of this packing 	onsibilities — General requirements); ies — Loading restrictions on the fligh lities — Loading of cargo aircraft); ies — Reporting of dangerous goods passengers and crew — Dangerou	t deck and for passenger aircraft); accidents and incidents);
Lithium ion cells and batteries may I provisions of 2;9.3.1 a) and e) and the		at each cell and battery meets the
 for lithium ion cells, the Watt-hou 20 Wh; for lithium ion batteries, the Watt-hou rating must be manufactured before 1 Januar 	our rating is not more than 100 Wh; marked on the outside of the batte	

II.1 General requirements

- Cells and batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).
- Lithium ion cells and batteries must be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity.

Note.— Guidance and methodology for determining the rated capacity can be found in sub-section 38.3.2.3 of the UN Manual of Tests and Criteria.

Contents	Lithium ion cells and/or batteries with a Watt-hour rating not more than 2.7 Wh	Lithium ion cells with a Watt-hour rating more than 2.7 Wh, but not more than 20 Wh	Lithium ion batteries with a Watt-hour rating 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 (mass) per package	2.5 kg	n/a	n/a

Table 965-II

The limits specified in columns 2, 3 and 4 of Table 965-II must not be combined in the same package.

II.2 Additional requirements

- Cells and batteries must be packed in inner packagings that completely enclose the cell or battery then placed in a strong rigid outer packaging.
- Cells and batteries must 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.
- 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 marked with the appropriate lithium battery mark (Figure 5-3) and the cargo aircraft only label (Figure 5-28).
 - the package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.
 - the cargo aircraft only label must be located on the same surface of the package near the lithium battery mark, if the package dimensions are adequate.

Note.— The provisions for a lithium battery handling label as contained in the 2015-2016 Edition of these Instructions (Part 5;3.5.2 and Figure 5-32 of the 2015-2016 Edition) may continue to be used in lieu of the lithium battery mark until 31 December 2018.

- A shipper is not permitted to offer for transport more than one package prepared according to this section in any single consignment.
- The words "lithium ion batteries, in compliance with Section II of PI965" cargo aircraft only" or "lithium ion batteries, in compliance with Section II of PI965 — CAO" must be placed on the air waybill, when an air waybill is used.
- 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 Instructions and 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.

		Packing Instruction	965		
	II.3 Outer packagings				
	Boxes	Drums	Jerricans		
	Aluminium Fibreboard Natural wood Other metal Plastics Plywood Reconstituted wood Steel	Aluminium Fibre Other metal Plastics Plywood Steel	Aluminium Plastics Steel		
	II.4 Overpacks				
	Not more than one package prepa	red in accordance with this sectio	n may be placed into an overpack.		
¢		king instruction must either be clea	ark (Figure 5-3) and the cargo aircraft only label arly visible or the mark and label must be affixed ith the word "Overpack".		
		d in accordance with this sectio	osure used by a single shipper that contains no n. For shipments prepared in accordance with per overpack still applies.		

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

1. Introduction

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

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

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

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

2. Lithium batteries forbidden from transport

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

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).

I. SECTION I

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

1.1 General requirements

Part 4;1 requirements must be met.

		Package (Sect	
UN number and proper shipping name		Passenger	Cargo
UN 3481	Lithium ion batteries packed with equipment	5 kg of lithium ion cells or batteries	35 kg of lithium ion cells or batteries

I.2 Additional requirements

- Lithium ion cells and batteries must be protected against short circuits.
- Lithium ion cells or batteries must:
 - be placed in inner packagings that completely enclose the cell or battery then placed in an outer packaging. The completed package for the cells or batteries must meet the Packing Group II performance requirements; or
 - be placed in inner packagings that completely enclose the cell or battery, then placed with equipment in a packaging that meets the Packing Group II performance requirements.
- 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.
- Batteries manufactured after 31 December 2011 must be marked with the Watt-hour rating on the outside case.

1.3 Outer packagings

Boxes

Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) Other metal (4N) Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A) Drums

Aluminium (1B2) Fibre (1G) Other metal (1N2) Plastics (1H2) Plywood (1D) Steel (1A2) Jerricans

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

II. SECTION II

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

- Part 1;2.3 (General Transport of dangerous goods by post);
- Part 7,4.4 (Operator's responsibilities Reporting of dangerous goods accidents and incidents);
- Part 8;1.1 (Provisions concerning passengers and crew Dangerous goods carried by passengers or crew); and
- Paragraphs 1 and 2 of this packing instruction.

Lithium ion cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3.1 a) and e) and the following:

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

II.1 General requirements

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

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

Part 4

	Packing Instruction	966
II.2 Additional requirements		
 Lithium ion cells and batte 	ries must	
		the cell or battery, then placed in a strong rigid
	packagings that completely enclo rigid outer packaging.	se the cell or battery, then placed with the
 Cells and batteries must b with conductive materials 	e protected so as to prevent short within the same packaging that cou	circuits. This includes protection against contact Ild lead to a short circuit.
 The equipment must be see an effective means of prev 	ecured against movement within th renting accidental activation.	e outer packaging and must be equipped with
	teries in each package must not ex	cceed the appropriate number for the
 Each package of cells or b test in any orientation with 	patteries, or the completed package out:	e, must be capable of withstanding a 1.2 m drop
	teries contained therein; s so as to allow battery to battery (o	or cell to cell) contact;
 release of contents. Each package must be machine must be on the package must be on the	arked with the appropriate lithium b	attery mark (Figure 5-3). space to affix the mark on one side without the
mark being folded.		abel as contained in the 2015-2016 Edition of
	3.5.2 and Figure 5-32 of the 2015-	2016 Edition) may continue to be used in lieu of
 The words "lithium ion ba when an air waybill is used 		II of PI966" must be placed on the air waybill,
 Where a package contain 	s a combination of lithium batterie	es contained in equipment and lithium batteries or batteries of Section II, the following additional
 the shipper must ensure lithium batteries contain 	ined in any package must not exce	packing instructions are met. The total mass of ed 5 kg;
when an air waybill is	used.	on II of PI966" must be placed on the air waybill,
 Any person preparing or or requirements commensuration 	offering cells or batteries for transp ate with their responsibilities.	port must receive adequate instruction on these
II.3 Outer packagings		
Boxes	Drums	Jerricans
Aluminium	Aluminium	Aluminium
Fibreboard Natural wood	Fibre Other metal	Plastics Steel
Other metal	Plastics	Oleen
Plastics	Plywood	
Plywood	Steel	
Reconstituted wood Steel		
II.4 Overpacks		
When packages are placed		ry mark (Figure 5-3) required by this packing
instruction must either be cle		

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

1. Introduction

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

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

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

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

2. Lithium batteries forbidden from transport

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

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).

I. SECTION I

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

1.1 General requirements

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

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

I.2 Additional requirements

- The equipment must be secured against movement within the outer packaging and be packed so as to
 prevent accidental operation during air transport.
- 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.
- Batteries manufactured after 31 December 2011 must be marked with the Watt-hour rating on the outside case.

1.3 Outer packagings

Boxes

Drums

Jerricans

Strong outer packagings

II. SECTION II

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

- Part 1;2.3 (General Transport of dangerous goods by post);
- Part 7;4.4 (Operator's responsibilities Reporting of dangerous goods accidents and incidents);
- Part 8;1.1 (Provisions concerning passengers and crew Dangerous goods carried by passengers or crew); and
- Paragraphs 1 and 2 of this packing instruction.

Lithium ion cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3.1 a) and e) and the following:

- 1) for lithium ion cells, the Watt-hour rating (see the Glossary of Terms in Attachment 2) is not more than 20 Wh;
- 2) 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.

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

II.1 General requirements

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

	Package (Sectio	
Contents	Passenger	Cargo
Net quantity of lithium ion cells or batteries per package	5 kg	5 kg

II.2 Additional requirements

- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- Cells and batteries must be protected so as to prevent short circuits.
- 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.
 - Each package must be marked with the appropriate lithium battery mark (Figure 5-3). The package must be
 of such size that there is adequate space to affix the mark on one side without the mark being folded.
 - This requirement does not apply to:
 - packages containing only button cell batteries installed in equipment (including circuit boards); and
 - packages containing no more than four cells or two batteries installed in equipment, where there are not more than two packages in the consignment.
 - Note.— The provisions for a lithium battery handling label as contained in the 2015-2016 Edition of these Instructions (Part 5;3.5.2 and Figure 5-32 of the 2015-2016 Edition) may continue to be used in lieu of the lithium battery mark until 31 December 2018.
- Where a consignment includes packages bearing the lithium battery mark, the words "lithium ion batteries, in compliance with Section II of PI967" must be placed on the air waybill, when an air waybill is used.
 - Any person preparing or offering cells or batteries for transport must receive adequate instruction on these
 requirements commensurate with their responsibilities.

	Packing Instruction	967		
II.3 Outer packagings				
Boxes	Drums	Jerricans		
Aluminium Fibreboard Natural wood Other metal Plastics Plywood Reconstituted wood Steel	Aluminium Fibre Other metal Plastics Plywood Steel	Aluminium Plastics Steel		
II.4 Overpacks				
instruction must either be	ced in an overpack, the lithium batte e clearly visible or the mark must be with the word "Overpack".	ry mark (Figure 5-3) required by this packing affixed on the outside of the overpack and the		

Cargo aircraft only for UN 3090

1. Introduction

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

- Section IA applies to lithium metal cells with a lithium metal content in excess of 1 g and lithium metal batteries with a lithium metal content in excess of 2 g, which must be assigned to Class 9 and are subject to all of the applicable requirements of these Instructions;
- 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.

2. Lithium batteries forbidden from transport

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

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

IA. SECTION IA

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

IA.1 General requirements

Part 4;1 requirements must be met.

Table 968-IA

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

IA.2 Additional requirements

- Lithium metal cells and batteries must be protected against short circuits.
- Lithium metal cells and batteries must be placed in inner packagings that completely enclose the cell or battery, then placed in an outer packaging. The completed package for the cells or batteries must meet the Packing Group II performance requirements.
- Lithium metal batteries with a mass 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 Part 6 of these Instructions, if approved by the appropriate authority of the State of Origin. A copy of the document of approval must accompany the consignment.

		Packing Instr			
IA.3	Outer packagings	6			
	Boxes	Drums		Jerrican	S
	Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4 Other metal (4N) Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4 Steel (4A)	Plastics (1H2) Plywood (1D) Steel (1A2)	IN2)	Aluminiu Plastics Steel (3	
IB. S	ECTION IB				
s	ubject to all of the app	etal cells or batteries that exceed plicable provisions of these Instru d of this section) except for the pro	ctions (including f		
d	angerous goods tran	batteries shipped in accordance v isport document as set in Part s supplemented with "IB". All other	5;4. The packing	instruction numb	per "968" required by
5	,		~	ort provided that	each cell and batter
L	ithium metal or lithium	n alloy cells and batteries may be f 2;9.3.1 a) and e) and the following			
L	ithium metal or lithium neets the provisions of 1) for lithium meta	f 2;9.3.1 a) and e) and the followin al cells, the lithium content is not r	ng: nore than 1 g;	·	
L	ithium metal or lithium neets the provisions of 1) for lithium meta	f 2;9.3.1 a) and e) and the followin	ng: nore than 1 g;	·	
L	ithium metal or lithium neets the provisions of 1) for lithium meta	f 2;9.3.1 a) and e) and the followin al cells, the lithium content is not r al or lithium alloy batteries, the ag	ng: nore than 1 g;	·	
L m	ithium metal or lithium neets the provisions of 1) for lithium meta 2) for lithium meta General requireme	f 2;9.3.1 a) and e) and the followin al cells, the lithium content is not r al or lithium alloy batteries, the ag ents s must be packed in strong oute	ng: nore than 1 g; gregate lithium co	ntent is not more	than 2 g.
L m	ithium metal or lithium neets the provisions of 1) for lithium meta 2) for lithium meta General requirem Cells and batteries	f 2;9.3.1 a) and e) and the followin al cells, the lithium content is not r al or lithium alloy batteries, the ag ents s must be packed in strong oute	ng: nore than 1 g; gregate lithium co er packagings tha	ntent is not more	than 2 g.
L m	ithium metal or lithium neets the provisions of 1) for lithium meta 2) for lithium meta General requirem Cells and batteries	f 2;9.3.1 a) and e) and the followin al cells, the lithium content is not r al or lithium alloy batteries, the ag ents s must be packed in strong oute 10.1).	ng: nore than 1 g; gregate lithium co er packagings tha	ntent is not more t conform to Par	than 2 g.
L m	ithium metal or lithium neets the provisions of 1) for lithium meta 2) for lithium meta General requirem Cells and batteries	f 2;9.3.1 a) and e) and the followin al cells, the lithium content is not r al or lithium alloy batteries, the ag ents s must be packed in strong oute 10.1).	ng: nore than 1 g; gregate lithium co er packagings tha 58-IB	ntent is not more t conform to Par	than 2 g.
L m	ithium metal or lithium neets the provisions of 1) for lithium meta 2) for lithium meta General requireme Cells and batteries 1.1.10 (except 1.1.	f 2;9.3.1 a) and e) and the followin al cells, the lithium content is not r al or lithium alloy batteries, the ag ents s must be packed in strong oute 10.1). Table 96	ng: nore than 1 g; gregate lithium co er packagings tha 58-IB Net quantity p	ntent is not more t conform to Par	than 2 g.
L m	ithium metal or lithium neets the provisions of 1) for lithium meta 2) for lithium meta General requireme Cells and batteries 1.1.10 (except 1.1.	f 2;9.3.1 a) and e) and the followin al cells, the lithium content is not r al or lithium alloy batteries, the ag ents s must be packed in strong oute 10.1). Table 96 <i>Contents</i>	ng: nore than 1 g; gregate lithium co er packagings tha 58-IB Net quantity p Passenger	ntent is not more t conform to Par <u>per package</u> Cargo	than 2 g.
L m	ithium metal or lithium neets the provisions of 1) for lithium meta 2) for lithium meta General requireme Cells and batteries 1.1.10 (except 1.1.	f 2;9.3.1 a) and e) and the followin al cells, the lithium content is not r al or lithium alloy batteries, the ag ents s must be packed in strong oute 10.1). Table 96 Contents thium metal cells and batteries	ng: nore than 1 g; gregate lithium co er packagings tha 58-IB Net quantity p Passenger	ntent is not more t conform to Par <u>per package</u> Cargo	than 2 g.

		Packing	Instruction 968		
IB.3	Outer packagings				
	Boxes	Drums		Jerricans	
	Aluminium Fibreboard Natural wood Other metal Plastics Plywood Reconstituted wood Steel	Aluminium Fibre Other meta Plastics Plywood Steel		Aluminium Plastics Steel	
II.	SECTION II				
	Lithium metal or lithium alloy cells and only subject to the following additional			Section II of this pack	king instruction, are
•	 Part 1;2.3 (General — Transport o Part 5;1.1 g) and j) (Shipper's resp Part 7;2.1 (Operator's responsibilit Part 7;2.4.1 (Operator's responsibilit Part 7;4.4 (Operator's responsibilit Part 8;1.1 (Provisions concerning crew); and Paragraphs 1 and 2 of this packing 	oonsibilities - ies — Loadi lities — Loa ies — Repo passenger	General requirement ng restrictions on the f ding of cargo aircraft); rting of dangerous goo rs and crew — Dang	ight deck and for par	idents);
	Lithium metal or lithium alloy cells and meets the provisions of 2;9.3.1 a) and			sport provided that ea	ach cell and battery
	 for a lithium metal cell, the lithi for a lithium metal or lithium all 			content is not more th	an 2 g.
	General requirements Cells and batteries must be packed in (except 1.1.10.1).		er packagings that cor able 968-II	form to Part 4;1.1.1,	1.1.3.1 and 1.1.10
	Contents		Lithium metal cells and/or batteries with a lithium content not more than 0.3 g	Lithium metal cells with a lithium content more than 0.3 g but not more than 1 g	Lithium metal batteries with a lithium content more than 0.3 g bu not more than 2 g
			2	3	4
	1				
/laxir	<i>1</i> mum number of cells / batteries per pa	ckage	No limit	8 cells	2 batteries

	Packing Instruction	968
II.2 Additional requirements		
 Cells and batteries must placed in a strong rigid or 		completely enclose the cell or battery, then
 Cells and batteries must with conductive materials 	be protected so as to prevent short within the same packaging that cou apable of withstanding a 1.2 m drop	
 damage to cells or ba shifting of the conten 	atteries contained therein; ts so as to allow battery to battery (o	
	narked with the appropriate lithium	battery mark (Figure 5-3) and the cargo aircraf
only label (Figure 5-28). — the package must be mark being folded.	of such size that there is adequate	space to affix the mark on one side without the
 the cargo aircraft only 	y label must be located on the same dimensions are adequate.	e surface of the package near the lithium battery
Note.— The provision	ns for a lithium battery handling l ;3.5.2 and Figure 5-32 of the 2015	abel as contained in the 2015-2016 Edition o 2016 Edition) may continue to be used in lieu o
 A shipper is not permittee 	d to offer for transport more than on	e package prepared according to this section ir
 any single consignment. The words "lithium metal metal batteries, in compl air waybill is used. 	batteries, in compliance with Section II of PI968 — Ca	on II of PI968 — cargo aircraft only" or "lithium AO" must be placed on the air waybill, when ar
 Packages and overpacks 	of lithium metal batteries prepared	I in accordance with the provisions of Section I
be loaded into a unit load — Any person preparing or	erator separately from cargo which device before being offered to the offering cells or batteries for transp	is not subject to these Instructions and must no operator. port must receive adequate instruction on these
be loaded into a unit load — Any person preparing or	erator separately from cargo which device before being offered to the	operator.
be loaded into a unit load — Any person preparing or requirements commensu	erator separately from cargo which device before being offered to the offering cells or batteries for transp	operator.
be loaded into a unit load — Any person preparing or requirements commensu II.3 Outer packagings Boxes Aluminium	erator separately from cargo which device before being offered to the offering cells or batteries for transp rate with their responsibilities. <i>Drums</i> Aluminium	operator. ´ bort must receive adequate instruction on these <i>Jerricans</i> Aluminium
be loaded into a unit load — Any person preparing or requirements commensu II.3 Outer packagings Boxes Aluminium Fibreboard Natural wood	erator separately from cargo which device before being offered to the offering cells or batteries for transp rate with their responsibilities. <i>Drums</i> Aluminium Fibre Other metal	operator. bort must receive adequate instruction on these <i>Jerricans</i>
be loaded into a unit load — Any person preparing or requirements commensu II.3 Outer packagings Boxes Aluminium Fibreboard Natural wood Other metal	erator separately from cargo which device before being offered to the offering cells or batteries for transp rate with their responsibilities. <i>Drums</i> Aluminium Fibre Other metal Plastics	operator. bort must receive adequate instruction on these <i>Jerricans</i> Aluminium Plastics
be loaded into a unit load — Any person preparing or requirements commensu II.3 Outer packagings Boxes Aluminium Fibreboard Natural wood	erator separately from cargo which device before being offered to the offering cells or batteries for transp rate with their responsibilities. <i>Drums</i> Aluminium Fibre Other metal	operator. bort must receive adequate instruction on these <i>Jerricans</i> Aluminium Plastics
be loaded into a unit load — Any person preparing or requirements commensu II.3 Outer packagings Boxes Aluminium Fibreboard Natural wood Other metal Plastics Plywood Reconstituted wood	erator separately from cargo which device before being offered to the offering cells or batteries for transp rate with their responsibilities. <i>Drums</i> Aluminium Fibre Other metal Plastics Plywood	operator. bort must receive adequate instruction on these <i>Jerricans</i> Aluminium Plastics
be loaded into a unit load — Any person preparing or requirements commensu II.3 Outer packagings Boxes Aluminium Fibreboard Natural wood Other metal Plastics Plywood Reconstituted wood Steel II.4 Overpacks	erator separately from cargo which device before being offered to the offering cells or batteries for transp rate with their responsibilities. <i>Drums</i> Aluminium Fibre Other metal Plastics Plywood Steel	operator. bort must receive adequate instruction on these <i>Jerricans</i> Aluminium Plastics
be loaded into a unit load — Any person preparing or requirements commensu II.3 Outer packagings Boxes Aluminium Fibreboard Natural wood Other metal Plastics Plywood Reconstituted wood Steel II.4 Overpacks Not more than one package p When the package is placed label (Figure 5-28) required b	erator separately from cargo which device before being offered to the offering cells or batteries for transp rate with their responsibilities. <i>Drums</i> Aluminium Fibre Other metal Plastics Plywood Steel orepared in accordance with this see I in an overpack, the lithium batter by this packing instruction must eith	operator. bort must receive adequate instruction on these <i>Jerricans</i> Aluminium Plastics Steel

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

1. Introduction

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

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

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

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

2. Lithium batteries forbidden from transport

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

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).

I. SECTION I

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

1.1 General requirements

Part 4;1 requirements must be met.

UN num	UN number and proper shipping name		quantity ion I)
			Cargo
UN 3091	Lithium metal batteries packed with equipment	5 kg of lithium metal cells or batteries	35 kg of lithium metal cells or batteries

I.2 Additional requirements

- Lithium metal cells and batteries must be protected against short circuits.
- Lithium metal cells or batteries must:
 - be placed in inner packagings that completely enclose the cell or battery, then placed in an outer packaging. The completed package for the cells or batteries must meet the Packing Group II performance requirements; or
 - be placed in inner packagings that completely enclose the cell or battery, then placed with equipment in a packaging that meets the Packing Group II performance requirements.
- 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.
- For lithium metal cells and batteries prepared for transport on passenger aircraft as Class 9:
 - cells and batteries offered for transport on passenger aircraft must be packed in intermediate or outer rigid metal packaging surrounded by cushioning material that is non-combustible and non-conductive and placed inside an outer packaging.

1.3 Outer packagings

Boxes

Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) Other metal (4N) Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A) Drums

Aluminium (1B2) Fibre (1G) Other metal (1N2) Plastics (1H2) Plywood (1D) Steel (1A2) Jerricans

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

II. SECTION II

Lithium metal or lithium alloy cells and batteries packed with equipment, when complying with Section II of this packing instruction, are only subject to the following additional provisions of these Instructions:

- Part 1;2.3 (General Transport of dangerous goods by post);
- Part 7;4.4 (Operator's responsibilities Reporting of dangerous goods accidents and incidents);
- Part 8;1.1 (Provisions concerning passengers and crew Dangerous goods carried by passengers or
- crew); and — Paragraphs 1 and 2 of this packing instruction.

Lithium metal cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3.1 a) and e) and the following:

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

II.1 General requirements

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

	Package (Secti	
Contents	Passenger	Cargo
Net quantity of lithium metal cells or batteries per package	5 kg	5 kg

	Packing Instruction	969
II.2 Additional requirements		
 Lithium metal cells or batte 		
	kagings that completely enclose	the cell or battery, then placed in a strong rigid
outer packaging; or	akagings that completely and	ose the cell or battery, then placed with the
equipment in a strong r	igid outer packaging.	se the cell of battery, then placed with the
 Cells and batteries must be 	protected so as to prevent short	circuits. This includes protection against contact
with conductive materials w	ithin the same packaging that cou	uld lead to a short circuit.
 The equipment must be seen an effective means of prove 	cured against movement within t enting accidental activation.	he outer packaging and must be equipped with
		xceed the appropriate number for the
equipment's operation, plus	two spares.	
 Each package of cells or backage 	atteries, or the completed package	e, must be capable of withstanding a 1.2 m drop
test in any orientation witho — damage to cells or batt		
	so as to allow battery to battery (o	or cell to cell) contact:
 release of contents. 		•
 Each package must be man 	ked with the appropriate lithium b	pattery mark (Figure 5-3).
 the package must be o mark being folded. 	f such size that there is adequate	e space to affix the mark on one side without the
	s for a lithium battery handling l	abel as contained in the 2015-2016 Edition o
these Instructions (Part 5;3	.5.2 and Figure 5-32 of the 2015-	2016 Edition) may continue to be used in lieu of
the lithium battery mark uni		, <u>-</u>
The words "lithium metal h	atteries in compliance with Section	on II of PI969" must be placed on the air waybill
when an air waybill is used		
 Where a package contain 	s a combination of lithium batteri	es contained in equipment and lithium batteries
	at meet the limits for lithium cells	or batteries of Section II, the following additional
requirements apply:	e that all applicable parts of both	packing instructions are met. The total mass of
lithium batteries contair	ied in any package must not exce	eed 5 ka:
 the words "lithium met 	al batteries, in compliance with	Section II of PI969" must be placed on the air
waybill, when an air wa		ant must reactive adaptivate instruction on these
 Any person preparing or of requirements commensura 	tering cells or batteries for transpice with their responsibilities.	port must receive adequate instruction on these
II.3 Outer packagings		
Boxes	Drums	Jerricans
	A lumain in the	
Aluminium Fibreboard	Aluminium Fibre	Aluminium Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Plywood	
Plywood Reconstituted wood	Steel	
Steel		
II.4 Overpacks		
-		
When packages are placed in an o	verpack, the lithium battery mark	(Figure 5-3) required by this packing instruct tside of the overpack and the overpack must

must either be clearly visible or the marked with the word "Overpack".

2017-2018 EDITION

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

1. Introduction

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

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

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

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

2. Lithium batteries forbidden from transport

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

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).

I. SECTION I

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

I.1 General requirements

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

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

1.2 Additional requirements

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

	Packing Instruction 970				
I	.3 Outer packagings				
	Boxes	Drums	Jerricans		
	Aluminium Fibreboard Natural wood Other metal Plastics Plywood Reconstituted wood Steel	Aluminium Fibre Other metal Plastics Plywood Steel	Aluminium Plastics Steel		
I	I. SECTION II				
¥		d batteries contained with equipment, w t to the following additional provisions of			
		es — Reporting of dangerous goods acc passengers and crew — Dangerous (
	Lithium metal cells and batteries may provisions of 2;9.3.1 a) and e) and the t	be offered for transport provided that following:	each cell and battery meets the		
	 for a lithium metal cell, the lithiu for a lithium metal or lithium allocation 	um content is not more than 1 g; by battery, the aggregate lithium content	is not more than 2 g.		
	capable of generating a dangerous evo these devices must meet defined star	tification (RFID) tags, watches and ten lution of heat, may be transported when ndards for electromagnetic radiation to systems. The devices must not be capa	intentionally active. When active, ensure that the operation of the		

device does not interfere with aircraft systems. The devices must not be capable of emitting disturbing signals (such as buzzing alarms, strobe lights, etc.) during transport.

II.1 General requirements

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

	Package (Sectio	
Contents	Passenger	Cargo
Net quantity of lithium metal cells or batteries per package	5 kg	5 kg

¥

	Packing Instruction	970 ו
II.2 Additional requirements		
 an effective means of preve Cells and batteries must be The equipment must be parstrength and design in reafforded equivalent protection Each package must be main of such size that there is ad This requirement does packages containin not more than two protections Note.— The provisions these Instructions (Part 5;3 the lithium battery mark unt Where a consignment indicatories, in compliance win used. 	enting accidental activation. protected so as to prevent shor- cked in strong rigid outer packag- lation to the packaging's capa on by the equipment in which it rked with the appropriate lithium lequate space to affix the mark of not apply to: g only button cell batteries insta g no more than four cells or two backages in the consignment. s for a lithium battery handling .5.2 and Figure 5-32 of the 2018 il 31 December 2018. cludes packages bearing the th Section II of PI970" must be fering cells or batteries for trans-	gings constructed of suitable material of adequate city and its intended use unless the battery is
Boxes	Drums	Jerricans
Aluminium Fibreboard Natural wood Other metal Plastics Plywood Reconstituted wood Steel	Aluminium Fibre Other metal Plastics Plywood Steel	Aluminium Plastics Steel
II.4 Overpacks		
When packages are placed ir instruction must either be clearly vis must be marked with the word "Ove	sible or the mark must be affixed	tery mark (Figure 5-3) required by this packing d on the outside of the overpack and the overpack