

LITHIUM METAL BATTERIES TRANSPORTED BY AIR

IATA Packing Instruction 968, Part 1, Special provision A88, A99, A154, A164

(GUIDE LINE AND REFERENCE ONLY, "HM" TRAINING CERTIFICATION REQUIRED)

STATE VARIATIONS: USG-02/03

OPERATOR VARIATIONS: AM-09, BA-02, CO-10, CS-08, FX-10, MX-09, NW-06, SK-01, UX-07, VS-01

LIMITATION: See 2.3.5.9 IATA, table 2.3A

I-PART 1: (IATA Packing Instruction 968)

Lithium metal or lithium alloy cells and batteries offered for transport are not subject to other additional requirements of these Regulations if they meet the requirements in Part 1.

Lithium 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).

Lithium metal or lithium alloy cells and batteries may be offered for transport if they meet the following:

1. a lithium metal cell, the lithium content is not more than 1g;
2. a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2 g;
3. each cell or battery is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part III, subsection 38.3.

General requirements

Cells and batteries must be packed in strong outer packagings that conform to 5.0.2.4, 5.0.2.6.1 and 5.2.12.1.

Additional requirements

Cells and batteries must be packed in inner packagings that completely enclose the cell or battery.

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:

- damaged 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 consignment must be accompanied with a document such as an air waybill with an indication that:

- the package contains lithium metal cells or batteries;
- the package must be handled with care and that a flammability hazard exists if the package is damaged;
- special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary: and
- a telephone number for the additional information.

Each package must be labeled with a lithium battery handling label (Figure 7.4.1)

Overpacks

Individual packages each complying with the requirements of part 1 may be placed in an overpack. The overpack may also contain packages of dangerous goods or goods not subject to these Regulations provided that there are no packages enclosing different substances which might react dangerously with each other. An overpack must be marked with the word "Overpack" and labeled with the lithium battery label (Figure 7.4.1), unless the label(s) on the package(s) inside the overpack are visible.

Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

LITHIUM METAL BATTERIES TRANSPORTED BY AIR (Packaging & Labeling)

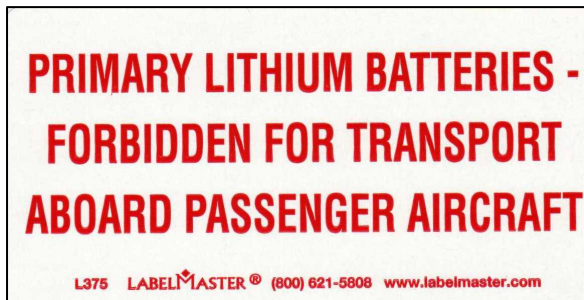
SMALL SIZE

(GUIDE LINE AND REFERENCE ONLY, "HM" TRAINING CERTIFICATION REQUIRED)

IATA Packing Instruction 968, part 1, special provision A88, A99, A154, A164
(49CFR/173.185-172.102 special provision 188)

- Cell is not more than 1g of lithium.
- Battery is not more than 2g of lithium.
- Cells or batteries must be a type of proven to meet the requirements of each test in the UN Manual of Test and Criteria.
- Packaging: 1.2 m drop test package required.
- Cargo aircraft only, max. weight = 2.5 kg. gross (5.5lbs)
- Prevent short circuit.
- Label as shown.

FROM:
TO:



LITHIUM METAL BATTERIES TRANSPORTED BY AIR
IATA Packing Instruction 968, Part 2
(GUIDE LINE AND REFERENCE ONLY, "HM" TRAINING CERTIFICATION REQUIRED)
Special provision A88, A99, A154, A164

STATE VARIATIONS: USG-02/03

OPERATOR VARIATIONS: AM-09, BA-02, CO-10, CS-08, FX-10, MX-09, NW-06, SK-01, UX-07, VS-01

LIMITATION: See 2.3.5.9 IATA, table 2.3A

II-PART 2: (IATA Packing Instruction 968)

Part 2 requirements apply to each cell or battery type that has been determined to meet the criteria for assignment to Class 9.

Each cell or battery must:

1. Be a type of proven to meet the requirements of each test in the Manual of Test and Criteria, Part III, subsection 38.3.
2. Incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport and be equipped with an effective means of preventing external short circuits.

Each battery containing cells or series of cells connected in parallel must be equipped with an effective means, as necessary, to prevent dangerous reverse current flow (e.g. diodes, fuses).

Cells with a liquid cathode containing sulphur dioxide, sulphuryl chloride or thionyl chloride which have been discharged to the extent that the open circuit voltage is less than the lower of:

- 2 volts; or
- two-third of the voltage of the undischarged cell;

and batteries containing one or more such cells are forbidden for transport.

General requirements

The General Packaging Requirements of 5.0.2 must be met.

Additional requirements

- all lithium metal cells and batteries prepared for transport as Class 9 must be protected against short circuit;
- packaging must meet Packing Group II performance standards;
- lithium 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 package in strong outer packaging and protective enclosures not subject to the requirements of Section 6 of these Regulations, if approved by the appropriate authority of the State of origin. A copy of the document of approval must accompany the consignment.

LITHIUM METAL BATTERIES TRANSPORTED BY AIR
(Packaging & Labeling)
SHIP AS CLASS 9, CARGO AIRCRAFT ONLY

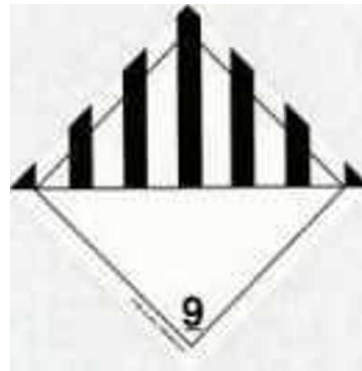
IATA Packing Instruction 968, part 2
Special provision A88, A99, A154, A164
49CFR 173.185/172.102 (A54/A55/A100)

(GUIDE LINE AND REFERENCE ONLY, “HM” TRAINING CERTIFICATION REQUIRED)

- Ship as class 9 (follow requirement under IATA, Packing Instruction 968, Part 2)
- Cell is more than 1g of lithium content. Battery is more than 2g of lithium content.
- Cell/battery must be passed “UN” test.
- Must be packaged in “UN” approved packaging “packing group II”.
- Basic description : UN 3090, Lithium Metal Batteries, 9, PG II
- Ship via “Cargo Air Craft only”. Maximum gross weight per package is: 35kg.
- Label as shown

FROM:	
TO:	

**Lithium metal
batteries
UN 3090**



If more than 1 package together inside an overpack, use all labels above plus “overpack” label below on top of the overpack, unless the label(s) on the package(s) inside the overpack are visible.

(When “overpack” used, each package inside the overpack must have all labels above, except “From-To” label)



AIR TRANSPORT

IATA SPECIAL PROVISIONS

A88 Prototype lithium batteries and cells to be tested that are packed with not more than 24 cells or 12 batteries per packaging that have not been tested to the requirements in sub-section 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 following requirements are met:

- (a) the cells and batteries must be transported in an outer packaging that is metal, plastic or plywood drum or a metal, plastic or wooden box and that meets the criteria for Packing Group I packagings; and
- (b) each cell and battery must be individually packed in an inner packaging inside an outer packaging and surrounded by cushioning material that is non-combustible, and non-conductive. Cells and batteries must be protected against short-circuiting.

A99 Irrespective of the limit specified in Column L of the List of Dangerous Goods (Subsection 4.2), a lithium battery or battery assembly that has successfully passed the test specified in the UN Manual of Tests and Criteria, Part III, sub-section 38.3 and that meets the requirements of Packing Instruction 965 for lithium ion batteries, and Packing Instruction 968 for lithium metal batteries as prepared for transport may have a mass exceeding 35kg G, if approved by the appropriate authority of the State of origin. A copy of the document of approval must accompany the consignment.

A154 Lithium 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 reason).

A164 Any electrical battery or battery power device, equipment of vehicle having the potential of a dangerous evolution of heat must be prepared for transport so as to prevent:

- (a) a short circuit (e.g. in the case of batteries by the effective insulation of exposed terminal; or in the case of equipment, by disconnection of the battery and protection of exposed terminals); and
- (b) unintentional activation.