

NEMA Fact Sheet on International Civil Aviation Organization Requirements for Air Shipments of Lithium Metal Batteries (UN 3090), Including Lithium Alloy Batteries
v.1, August 2008

Each cell or battery is required to be of the type proven to meet the requirements of each test in the UN Manual of Tests of Criteria, Part III.

Please see Notes on pages 5 and 6 of this document.

Currently*

2009-2010 ICAO Technical Instructions

	Passenger Aircraft*		Cargo Aircraft		Passenger Aircraft*		Cargo Aircraft	
	Exceptions [£]	Class 9	Exceptions [£]	Class 9	Exceptions	Class 9	Exceptions	Class 9
Lithium content per cell	No more than 1 gram	no more than 5 grams	no more than 5 grams	no more than 5 grams	No more than 1 gram	No limit	No more than 1 gram	No limit
Aggregate lithium content per battery	No more than 2 grams	no more than 25 grams	no more than 25 grams	no more than 25 grams	No more than 2 grams	No limit	No more than 2 grams	No limit
Gross quantity limit per package	30 kilograms	5 kilograms	30 kilograms	35 kilograms	2.5 kilograms	2.5 kilograms	2.5 kilograms	35 kilograms
Inner packaging	Cells and batteries are <ul style="list-style-type: none"> • separated so as to prevent short circuits and • packed in strong packaging, except when installed in equipment 	Cells and batteries are equipped with an effective means of preventing external short circuits		Cells and batteries must be <ul style="list-style-type: none"> • packed in inner packagings that completely enclose the cell or battery • must be protected so as to prevent short circuits, including protection against contact with conductive materials within the same packaging that could lead to a short circuit. 	Batteries must <ul style="list-style-type: none"> • be packed in either a rigid metal intermediate or a metal outer packaging. • be surrounded by cushioning material that is non-combustible and non-conductive before being placed in either the metal intermediate or metal outer packaging. 	Cells and batteries must be <ul style="list-style-type: none"> • packed in inner packagings that completely enclose the cell or battery • must be protected so as to prevent short circuits, including protection against contact with conductive materials within the same packaging that could lead to a short circuit. 		

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	Exceptions [£]	Class 9	Exceptions [£]	Class 9	Exceptions	Class 9	Exceptions	Class 9
Labeling [▷]	Each package must be marked indicating it contains lithium batteries and that special procedures should be followed in the event the package is damaged [▷]				New lithium battery handling label [#]	Per Class 9	New lithium battery handling label [#]	Per Class 9
Additional technical requirements	Each package must be capable of withstanding a 1.2m drop test in any orientation without damage to cells or batteries contained therein, without shifting of contents to allow battery-to-battery (or cell-to-cell) contact and without the release of contents	Each cell and battery must incorporate a safety venting device or be designed in a manner that will preclude violent rupture under normal conditions. Batteries containing cells or series of cells connected in parallel must be equipped with effective means as necessary to prevent dangerous reverse current flow. Each package must be capable of withstanding a 1.2m drop test in any orientation without damage to cells or batteries	Each package must be capable of withstanding a 1.2m drop test in any orientation without damage to cells or batteries contained therein, without shifting of contents to allow battery-to-battery (or cell-to-cell) contact and without the release of contents	Each cell and battery must incorporate a safety venting device or be designed in a manner that will preclude violent rupture under normal conditions. Batteries containing cells or series of cells connected in parallel must be equipped with effective means as necessary to prevent dangerous reverse current flow. Each package must be capable of withstanding a 1.2m drop test in any orientation without damage to cells or batteries	Each package must be capable of withstanding a 1.2m drop test in any orientation without damage to cells or batteries contained therein, without shifting of contents to allow battery-to-battery (or cell-to-cell) contact and without the release of contents	Each cell or battery must incorporate a safety venting device or be designed to preclude a violent rupture under normal conditions and be equipped with an effective means of preventing short circuits	Each package must be capable of withstanding a 1.2m drop test in any orientation without damage to cells or batteries contained therein, without shifting of contents to allow battery-to-battery (or cell-to-cell) contact and without the release of contents	Each cell or battery must incorporate a safety venting device or be designed to preclude a violent rupture under normal conditions and be equipped with an effective means of preventing short circuits. Batteries containing cells or series of cells connected in parallel must be equipped with effective means as necessary to prevent dangerous reverse current flow.

	Currently*				2009-2010 ICAO Technical Instructions			
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	Exceptions [£]	Class 9	Exceptions [£]	Class 9	Exceptions	Class 9	Exceptions	Class 9
Additional technical requirements (continued from previous page)		contained therein, without shifting of contents to allow battery-to-battery (or cell-to-cell) contact and without the release of contents		continued therein, without shifting of contents to allow battery-to-battery (or cell-to-cell) contact and without the release of contents				
Documentation	none	Each shipment must be accompanied by a document indicating that packages contain lithium batteries and that special procedures should be followed in the event a package is damaged.	none	Each shipment must be accompanied by a document indicating that packages contain lithium batteries and that special procedures should be followed in the event a package is damaged.	Must be accompanied by document, such as an air waybill, indicating package contains lithium metal cells and batteries, must be handled with care and that a flammability hazard exists if package is damaged, special procedures are required if package is damaged, and including a telephone number for additional info	Class 9 documents	Must be accompanied by document, such as an air waybill, indicating package contains lithium metal cells and batteries, must be handled with care and that a flammability hazard exists if package is damaged, special procedures are required if package is damaged, and including a telephone number for additional info	Class 9 documents

	Currently*				2009-2010 ICAO Technical Instructions			
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	Exceptions [£]	Class 9	Exceptions [£]	Class 9	Exceptions	Class 9	Exceptions	Class 9
Training	none	Hazmat shipper training	none	Hazmat shipper training	Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities	Hazmat shipper training	Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities	Hazmat shipper training
Outer packaging	none	Packing Group II	none	Packing Group II	Strong outer packaging, such as drums, jerricans or boxes	Packing Group II	Strong outer packaging, such as drums, jerricans or boxes	Packing Group II

Notes

* Currently and for the foreseeable future, the U.S. bans transportation of all lithium metal batteries as cargo on passenger aircraft, so these do not apply to shipments originating in, transiting, or arriving in the U.S. See page 7 of this document for the ICAO cargo aircraft only labels.

> U.S. regulations require each package containing a primary lithium battery or cell to be marked "PRIMARY LITHIUM BATTERIES - FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" on a background of contrasting color, letters at least 12 mm in height on packages of gross mass more than 30 kilograms or at least 6 mm in height on packages of gross mass of 30 kilograms or less. See example below.

**PRIMARY LITHIUM BATTERIES
FORBIDDEN FOR TRANSPORT
ABOARD PASSENGER AIRCRAFT**

£ Packages containing 24 or fewer cells or 12 or fewer batteries can be shipped as excepted quantities per Special Provision A45.

New Lithium Battery Handling Label



On this label, the * is to be replaced by the proper UN number for the batteries.
In the case of lithium metal batteries, this number is UN 3090.

**Current CARGO AIRCRAFT ONLY LABEL
(49 CFR 172.448)**



**New CARGO AIRCRAFT ONLY LABEL Per ICAO as of
January 1, 2009**



- A CARGO AIRCRAFT ONLY label must be black on an orange background.
- The current CARGO AIRCRAFT ONLY label conforming to the specifications in 49 CFR 172.448 as of December 31, 2008, may be used until January 1, 2013.