LITHIUM BATTERY REGULATIONS

The regulations applicable to air shipments of lithium batteries have changed. Compliance with the new regulations becomes mandatory January 1, 2013.

Note: Readers of this information are urged to monitor the work of the U.S. Department of Transportation’s Pipeline and Hazardous Materials Safety Administration (PHMSA) for up to date information. See PHMSA’s website at the following address: http://hazmat.dot.gov

Shipping Lithium Batteries by Air Service

Please use the following information as a general guide only, all shippers are required to understand and comply with the applicable regulations pertaining to their domestic and international shipments. Full air regulation information is published by the International Air Transport Association (IATA) and can be found at: http://www.iata.org/lithiumbatteries

When lithium batteries of relatively small electrical capacity are shipped in small quantities in accordance with the regulations, packages are not fully regulated as Dangerous Goods and do not require a UPS Dangerous Goods contract.

This guide is for illustrative purposes only. Please reference IATA regulations when shipping lithium metal or lithium ion batteries or cells: http://www.iata.org/lithiumbatteries

Lithium Battery Types

There are two major kinds of lithium batteries, both of which contain very high levels of energy:

• Lithium ion batteries are rechargeable.
  — Sometimes called “secondary lithium batteries”
  — These batteries are often found in common electronic devices such as cell phones and laptops

• Lithium metal batteries are generally non-rechargeable.
  — Sometimes called “primary lithium batteries"
LITHIUM ION BATTERY SHIPMENTS

Figure 1
Is my Lithium Ion Battery shipment* fully regulated so that it requires UPS Dangerous Goods service?

Are any lithium ion batteries in your shipment > 100Wh or lithium-ion cells > 20Wh?

A UPS Dangerous Goods contract will be required.**

Are you shipping lithium batteries contained in equipment or packed with equipment?

Is the combined net weight of all lithium batteries in your package > 5Kg?

A UPS Dangerous Goods contract will be required.**

Are the batteries > 2.7Wh?

Does your package of lithium batteries contain > 8 cells or > 2 batteries?

A UPS Dangerous Goods contract will be required.**

Does your package contain > 2.5Kg of batteries?

Your package does not need to be shipped as UPS Dangerous Goods. Required:

Lithium battery handling label & lithium battery safety document.

* Packaging for all shipments of lithium batteries must be able to withstand a 1.2 meter drop test and all batteries must be packed to eliminate the possibility of a short-circuit or activation. Do not use envelopes or any other soft-sided packs.

** Contracts are required for UPS Small Package and UPS Air Cargo services but not UPS Air Freight hazmat shipments; please contact your customer representative for details.
LITHIUM METAL BATTERY SHIPMENTS

Figure 2
Is my Lithium Metal Battery shipment* fully regulated so that it requires UPS Dangerous Goods service?

Are any lithium metal batteries in your shipment > 2g or lithium metal cells > 1g?

YES
NO

A UPS Dangerous Goods contract will be required.*

UN spec packaging, class 9 label, hazmat shipping papers and package markings are required. Please see IATA regulations for further details:
http://www.iata.org/lithiumbatteries

Are you shipping lithium batteries contained in equipment or packed with equipment?

YES
NO

Is the net weight of lithium batteries in your package > 5Kg?

YES
NO

A UPS Dangerous Goods contract will be required.* Please see IATA regulations for further details on UN3091 Section II requirements:
http://www.iata.org/lithiumbatteries

Lithium battery handling label & lithium battery safety document is required for:
(a) all lithium batteries packed with equipment & (b), all equipment containing > 4 cells or > 2 batteries. However, equipment containing button batteries do not require the handling label or safety document.

Are any of the batteries > 0.3g?

YES
NO

Does your package1 of lithium batteries contain > 8 cells or > 2 batteries?

YES
NO

Does your package contain > 2.5Kg of batteries?

Your package does not need to be shipped as UPS Dangerous Goods. Required:
Lithium battery handling label & lithium battery safety document.

Yes
NO

Your package does not need to be shipped as UPS Dangerous Goods. Required:
Lithium battery handling label & lithium battery safety document.

A UPS Dangerous Goods contract will be required.* Please see IATA requirements for UN3090 Section 1B (< 10Kg G of batteries) or Section 1A (> 10Kg G):
http://www.iata.org/lithiumbatteries

A UPS Dangerous Goods contract will be required.* Please see IATA requirements for UN3091 Section I shipping requirements:
http://www.iata.org/lithiumbatteries

Is the net weight of lithium batteries in your package > 5Kg?

YES
NO

A UPS Dangerous Goods contract will be required.*

Please see IATA regulations for further details on UN3091 Section II requirements:
http://www.iata.org/lithiumbatteries

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FAQs

What are some ways I can help prevent a short-circuit or activation of lithium batteries in my shipment while in transport?

One of the major risks of shipping lithium batteries is short-circuit of a battery or inadvertent activation while in transport. All batteries should be packed to eliminate the possibility of a short-circuit or activation. Ensure no batteries can come in contact with other batteries, conductive surfaces or metal objects while in transport. IATA recommends packing each battery in fully enclosed inner packaging made of non-conductive material (e.g., plastic bags) and ensuring that exposed terminals or connectors are protected with non-conductive caps or tape or by other similar means. They also recommend securely cushioning and packing batteries to prevent shifting during transport or loosening of terminal caps. Do not use envelopes or any other soft-sided packs. Please see the IATA site for additional tips and guidance: http://www.iata.org/whatwedo/cargo/dgr/Documents/Lithium-Battery-Guidance-2013-V1.1.pdf

Do the quantity limits on cells and batteries apply to the overpacks?

No, the limits apply only to the package(s) within the overpack provided they comply with the necessary packaging requirements (such as the ability to withstand a 1.2 meter drop test). The overpack may exceed the specified limits but must be marked with the word “overpack” and labelled with the appropriate lithium battery handling label.

For the purposes of the regulation, what is considered the “package”?

The shipping limits do not apply to the overpack, only the packages within. See Figure 3 below. The packages must be marked and labelled as required by packing instructions.

What does the abbreviation “Wh” mean?

“Wh” stands for “watt-hour”. It is a measure used to indicate the energy capacity of a cell or battery.

What does the abbreviation “IATA” mean?

IATA is the International Air Transport Association. It is a global trade organization that develops commercial standards and publishes the Dangerous Goods Regulations, containing standards for the transport of dangerous goods by air.

What is a “button battery”?

A button battery is a small round battery where the height is less than the diameter also commonly referred to as ‘coin batteries’. Examples can be found in watches, calculators, electronic clocks, toys and other applications.

What is a “cell” versus a “battery” under this regulation?

• A battery is one or more cells electrically connected together by permanent means, including case, terminals, and markings.

Note: “battery packs”, “modules” or “battery assemblies” are treated as batteries under this regulation.

• A cell is a single encased electrochemical unit. It has one positive and one negative electrode that exhibit a voltage differential across its two terminals.$^1$

Note: Many cells can be termed “battery” or “single cell battery” in common conversation, but under this regulation a single cell must use the requirements related to “cells” only. Examples of a “cell” would be a CR123 primary lithium cell used for cameras and flashlights.


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