

# Lithium-Ion Batteries

For additional information about shipping or traveling with lithium-ion batteries, consult these resources.

## Shipping Guidelines

<https://www.iata.org>

<http://www.iata.org/whatwedo/cargo/dgr/Pages/lithium-batteries.aspx>

## Traveling with Lithium-Ion Batteries

[https://www.faa.gov/about/office\\_org/headquarters\\_offices/ash/ash\\_programs/hazmat/passenger\\_info/media/faa\\_airline\\_passengers\\_and\\_batteries.pdf](https://www.faa.gov/about/office_org/headquarters_offices/ash/ash_programs/hazmat/passenger_info/media/faa_airline_passengers_and_batteries.pdf)

<http://phmsa.dot.gov/safetravel/batteries>

The flow chart on p. 82 shows acceptable means of transport for lithium-ion batteries. The footnotes in the chart indicate the applicable packing requirements, which may include having the applicable labels (Figure F.1).

Note: the following lithium-ion batteries are required to be shipped as Class 9 hazardous goods by a trained and certified person.

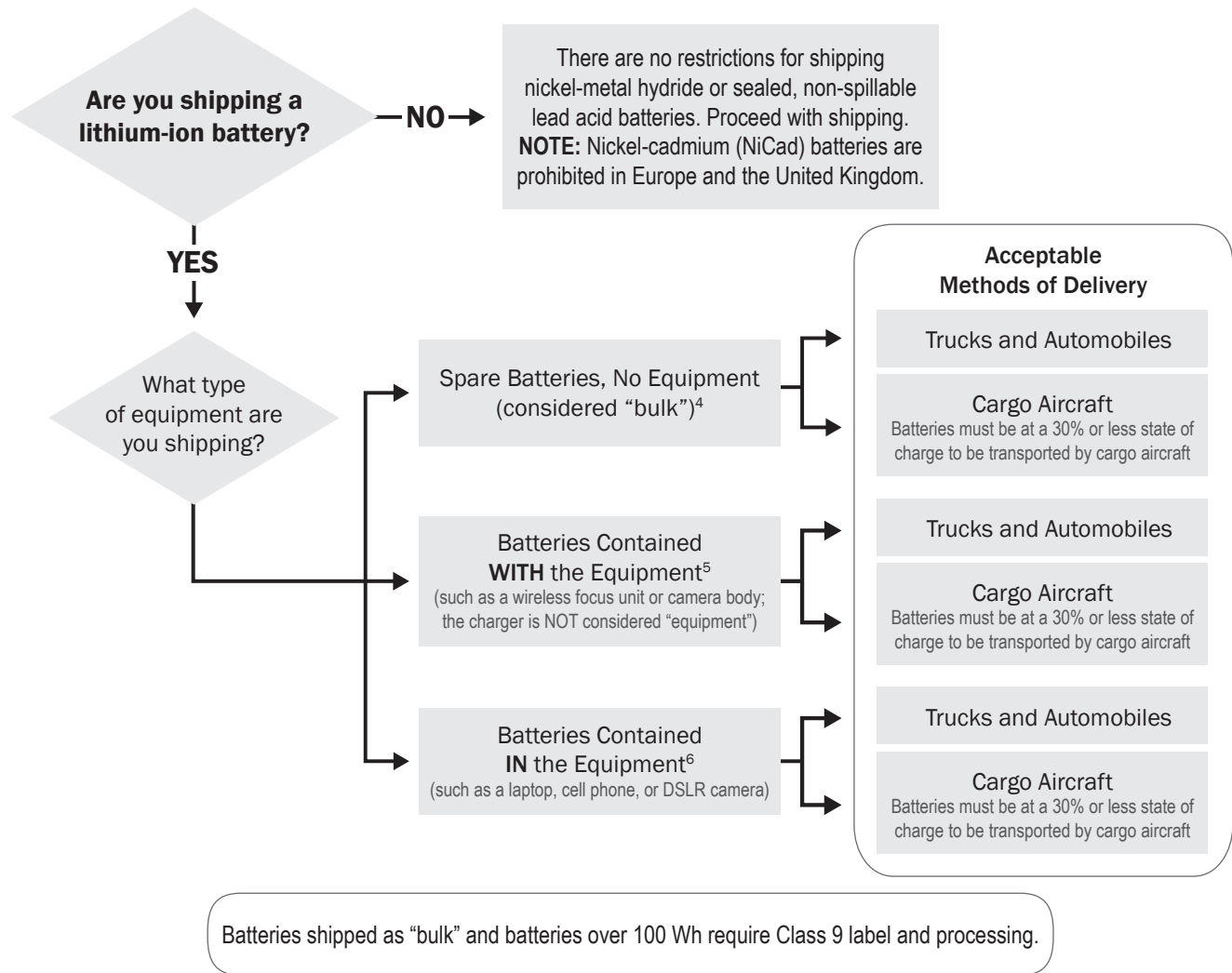
- Spare batteries—ones not shipped in equipment or with equipment. (Spare batteries are considered “bulk”).
- Any lithium-ion battery > 100 Wh



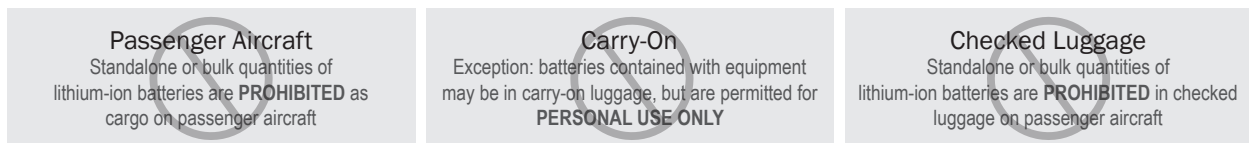
Figure F.1. Required labels for shipping: lithium-ion battery handling label (left), Class 9 Miscellaneous Dangerous Goods label (middle), and cargo aircraft only label (right).

## Guidelines for Safely Transporting Lithium-Ion Batteries

Reflects regulations implemented April 1, 2016



### Traveling with Equipment by Aircraft



Each individual airline has its own requirements for shipping lithium batteries.  
Contact the airline directly with any questions.

4. IATA Shipping Regulation for bulk shipments of lithium-ion batteries: UN 3480, Packing Instruction 965, Section 1B  
5. IATA Shipping Regulation for lithium-ion batteries contained WITH equipment: UN 3481, Packing Instruction 966, Section II  
6. IATA Shipping Regulation for lithium-ion batteries contained IN equipment: UN 3481, Packing Instruction 967, Section II

## Information for Individuals who may be Traveling with Equipment on Passenger Aircrafts

Please be aware that as of April 1, 2016, lithium-ion batteries must now be shipped as Class 9 Dangerous Goods, and a restriction has been implemented on the bulk (three or more) shipment of UN 3480 lithium-ion batteries as cargo, including checked luggage, on passenger aircraft.

### Passenger Aircraft Carry-On

Batteries in carry-on luggage are permitted for  
**PERSONAL USE ONLY.**

#### Permitted:

- Battery installed in a device (such as a laptop or cell phone) up to 100 watt-hours.
- Battery installed in a device between 100 and 160 watt-hours may be permitted; operator approval required in advance of travelling.
- Spare battery, not installed in a device, up to 100 watt-hours.
- Up to two spare batteries, not installed in a device, between 100 and 160 watt-hours may be permitted; operator approval required in advance of travelling.

#### Forbidden:

- Batteries over 160 watt-hours are forbidden on passenger aircraft.

Do not put any unprotected spare lithium-ion or lithium-metal batteries in any package/case.

- Equipment must be securely packed.
- Batteries must not be free to move within the case.
- Batteries must be individually protected to prevent short circuits or unintentional activation (such as taping over exposed terminals or placing each battery in a separate pouch).
- Batteries must be equal to or less than 100 Wh.
- The batteries must be certified under UN testing requirements (after-market knock-offs commonly do not meet this requirement).

### Passenger Aircraft Checked Luggage or As Cargo

#### Permitted:

- Battery installed in a device (such as a laptop or cell phone) up to 100 watt-hours.
- Battery installed in a device between 100 and 160 watt-hours may be permitted; operator approval required in advance of travelling.

#### Forbidden:

- Spare batteries, not installed in a device, up to 160 watt-hours, are forbidden.
- Batteries over 160 watt-hours are forbidden on passenger aircraft.









Do not put any unprotected spare lithium-ion or lithium-metal batteries in any package/case.

- Battery must be integral to the equipment (i.e., laptop or cell phone).
- Equipment must be securely packed.
- Batteries must not be free to move within the case.
- Batteries must be individually protected to prevent short circuits or unintentional activation (such as taping over exposed terminals or placing each battery in a separate pouch).
- Battery must be equal to or less than 100 Wh.
- Battery must be certified under UN testing requirements (no after-market knock-offs).
- Lithium ion warning label must be affixed to the outside package.

For more information: visit <http://phmsa.dot.gov/safetravel/batteries>

## Batteries Allowed in Airline Passenger Baggage in the US

Based on US DOT regulations (49 CFR, Sec. 175.10). TSA security, individual airline, and international rules may, at times, be more restrictive.

Type of Battery <small>There is no limit to the number of batteries or devices carried for personal use unless specified below.</small>	Allowed in <u>carry-on</u> baggage? 		Allowed in <u>checked</u> baggage? 	
	In equipment <sup>1</sup>	Spares	In equipment	Spares
<b>Dry alkaline batteries</b> 	YES	<b>YES</b> When protected from damage and short circuit	YES	<b>YES</b> When protected from damage and short circuit
<b>Dry rechargeable</b> — Nickel Metal Hydride (NiMH), Nickel Cadmium (NiCad), etc.  For lithium ion, see below.	YES	<b>YES</b> When protected from damage and short circuit	YES	<b>YES</b> When protected from damage and short circuit
<b>Lithium ion</b> (rechargeable lithium, lithium polymer, LIPO) as used in small consumer electronics, such as cell phones, tablets, tools, cameras, PDAs, and laptops. Limited to 100 watt hours <sup>2</sup> or less per battery. 	YES	<b>YES</b> When protected from damage and short circuit	YES	<b>NO</b>
<b>Larger lithium ion</b> , 100-160 watt hours <sup>2</sup> per battery—with airline approval. <b>Limits:</b> Two spare batteries per passenger. 	YES	<b>YES</b> When protected from damage and short circuit	YES	<b>NO</b>
<b>Lithium metal</b> (non-rechargeable) as used in small consumer electronics such as cameras, LED flashlights, watches, etc. (2 grams or less lithium per battery). 	YES	<b>YES</b> When protected from damage and short circuit	YES	<b>NO</b>
<b>Nonspillable wet batteries</b> (absorbed electrolyte) for portable electronic devices, 12 volts and 100 watt hours <sup>2</sup> per battery. <b>Limits:</b> Two spare batteries per passenger. 	YES	<b>YES</b> When protected from damage and short circuit and in strong packaging. Battery and outer packaging must be marked "nonspillable."	YES	<b>YES</b> When protected from damage and short circuit and in strong packaging. Battery and outer packaging must be marked "nonspillable."

<sup>1</sup>Note: TSA security rules prohibit some power tools in carry-on baggage.

<sup>2</sup>Note: Watt hours (Wh) = Volts (V) x Amp hours (Ah) or V x mAh ÷ 1000

For more information and for rules on battery-powered wheelchairs or assistive devices, please go to <http://www.faa.gov/Go/PackSafe> or call the DOT Hazardous Materials Information Center at 1-800-467-4922. For TSA security restrictions please go to <http://www.tsa.gov>