



## Federal Aviation Administration

# Pack Safe Batteries, lithium

Rechargeable and non-rechargeable lithium batteries, cell phone batteries, laptop batteries, power banks, external batteries, portable rechargers

Spare (uninstalled) lithium ion and lithium metal batteries must be carried in **carry-on baggage only**. When a carry-on bag is checked at the gate or at planeside, all spare lithium batteries must be removed from the bag and kept with the passenger in the aircraft cabin. The battery terminals must be protected from short circuit.

This covers spare lithium metal and spare rechargeable lithium ion batteries for personal electronics such as cameras, cell phones, laptop computers, tablets, watches, calculators, etc. This also includes external battery chargers (portable rechargers) containing a lithium ion battery. *For lithium batteries that are installed in a device (laptop, cell phone, camera, etc.), see the entry for "portable electronic devices, containing batteries" in [this chart](#) ([www.faa.gov/hazmat/packsafe/](http://www.faa.gov/hazmat/packsafe/)).*

**Size limits:** Lithium metal (non-rechargeable) batteries are limited to 2 grams of lithium per battery. Lithium ion (rechargeable) batteries are limited to a rating of 100 watt hours (Wh) per battery. These limits allow for nearly all types of lithium batteries used by the average person in their electronic devices. With airline approval, passengers may also carry up to two spare larger lithium ion batteries (101-160 watt hours). This size covers the larger after-market extended-life laptop computer batteries and some larger batteries used in professional audio/visual equipment.

**Quantity limits:** None for most batteries – but batteries must be for use by the passenger. Batteries carried for further sale or distribution (vendor samples, etc.) are prohibited. There is a limit of two spare batteries per person for the larger lithium ion batteries described above (101-160 watt hours per battery).

Batteries must be protected from damage.

Battery terminals (usually the ends) must be protected from short circuit (i.e., the terminals must not come in contact with other metal). Methods include: leaving the batteries in their retail packaging, covering battery terminals with tape, using a battery case, using a battery sleeve in a camera bag, or putting them snugly in a plastic bag or protective pouch.

See the regulation: 49 CFR 175.10(a)(18). (<http://www.ecfr.gov/cgi-bin/retrieveECFR?gp=1&SID=bba5ad06518b529c94e1d67a3270196b&ty=HTML&h=L&r=SECTION&n=49y2.1.1.3.12.1.25.5>)

RECALLED BATTERIES AND DEVICES: Lithium batteries recalled by the manufacturer/vendor must not be carried aboard aircraft or packed in baggage. Battery-powered devices recalled because of lithium battery safety concerns also should not be carried aboard aircraft or packed in baggage unless the device or its battery has been replaced, repaired or otherwise made safe per manufacturer/vendor instructions. The FAA and your airline may offer further public guidance on individual recalled products. In the US, product recall information is available at:

<http://www.cpsc.gov/en/Recalls/> (<http://www.cpsc.gov/en/Recalls/>)

*Tip: Newer lithium ion batteries have the watt hour (Wh) rating marked on them. To calculate watt hours, multiply the battery voltage by the Amp hours (Ah). To learn more about lithium batteries, their restrictions, and how to tell what size they are, go to <http://SafeTravel.dot.gov> (<http://SafeTravel.dot.gov>).*

View our illustrated guide on [Airline Passengers and Batteries](http://www.faa.gov/hazmat/packsafe/resources/media/Airline_passengers_and_batteries.pdf) ([www.faa.gov/hazmat/packsafe/resources/media/Airline\\_passengers\\_and\\_batteries.pdf](http://www.faa.gov/hazmat/packsafe/resources/media/Airline_passengers_and_batteries.pdf))(PDF).

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