

Batteries Carried by Airline Passengers

Frequently Asked Questions

Q1. What kinds of batteries does the FAA allow in carry-on baggage (in the aircraft cabin)?

A1. Passengers can carry most consumer-type batteries and portable battery-powered electronic devices for their own personal use. Spare batteries must be protected from damage and short circuit. Battery-powered devices must be protected from accidental activation and heat generation. Batteries allowed in carry-on baggage include:

- **Dry cell alkaline batteries:** typical AA, AAA, C, D, 9-volt, button-sized cells, etc.
- **Dry cell rechargeable batteries** such as Nickel Metal Hydride (NiMH) and Nickel Cadmium (NiCad). For rechargeable lithium-ion batteries; see next paragraph.
- **Lithium-ion batteries** (a.k.a.: rechargeable lithium, lithium polymer, LIPO, secondary lithium). Passengers may carry all consumer-sized lithium-ion batteries (no more than 8 grams of equivalent lithium content or 100 watt hours per battery). This size covers AA, AAA, cell phone, PDA, camera, camcorder, handheld game, tablet, and standard laptop computer batteries. The watt hours (Wh) rating is marked on newer lithium ion batteries and is explained in #3 below.

Passengers can also bring two (2) larger lithium-ion batteries (more than 8 less than 25 grams of equivalent lithium content per battery or about 100-300 watt hours per battery) in their carry-on. This size covers the largest aftermarket extended-life laptop batteries and most lithium-ion batteries for professional-grade audio/visual equipment. Most lithium-ion batteries are below this size.

- **Lithium metal batteries** (a.k.a.: non-rechargeable lithium, primary lithium). These batteries are often used with cameras and other small personal electronics. Consumer-sized batteries (up to 2 grams of lithium per battery) may be carried. This includes all the typical non-rechargeable lithium batteries used in cameras (AA, AAA, 123, CR123A, CR1, CR2, CRV3, CR22, 2CR5, etc.) as well as the flat round lithium button cells.
- **Nonspillable wet batteries (absorbed electrolyte)**, limited to 12 volts and 100 watt hours per battery. These batteries must be the absorbed electrolyte type (gel cells, AGM, etc.) that meet the requirements of 49 CFR 173.159a(d); i.e., no electrolyte will flow from a cracked battery case. Batteries must be in strong outer packagings or installed in equipment. Passengers are limited to two (2) spare (uninstalled) batteries. Spare batteries' terminals must be protected (non-conductive caps, tape, etc.) within the outer packaging. Batteries and outer packaging must be marked "nonspillable" or "nonspillable battery." *Note: This exception is for portable electronic devices, not for vehicle batteries. There are separate exceptions for powered wheelchairs.*

Q2. What kinds of batteries does the FAA allow in checked baggage?

A2. Except for spare (uninstalled) lithium metal and lithium-ion batteries, all the batteries allowed in carry-on baggage are also allowed in checked baggage. The batteries must be protected from damage and short circuit or installed in a device. Battery-powered devices—particularly those with moving parts or those that could heat up—must be protected from accidental activation. **Spare lithium metal and lithium ion/polymer batteries are prohibited in checked baggage.**

Q3. How do I determine the watt hours (Wh) rating of a battery?

A3. To determine watt hours (Wh), multiply the volts (V) by the ampere hours (Ah). Example: A 12-volt battery rated to 8 Amp hours is rated at 96 watt hours ($12 \times 8 = 96$). For milliamp hours (mAh), multiply by the volts and divide by 1000.

Q4. Is there a limit to the number of batteries I can carry?

A4. There is no limit on the number of most consumer-size batteries or battery-powered devices that a passenger can carry for personal use. The larger lithium ion batteries are limited to two (2) batteries per passenger; see "Lithium-ion batteries" explanation above. Only two (2) spare/uninstalled nonspillable wet (absorbed electrolyte) batteries may be carried.

Q5. What does "protected from short circuit" mean?

A5. When metal such as keys, coins, tools or other batteries comes in contact with both terminals of a battery it can create a "circuit" or path for electricity to flow through. Electrical current flowing through this unprotected short circuit can cause extreme heat and sparks and even start a fire. To prevent short circuits, keep spare batteries in their original packaging, a battery case, or a separate pouch or pocket. Make sure loose batteries can't move around. Placing tape over the terminals of unpackaged batteries also helps to insulate them from short circuit.

For a quick reference guide, see illustrated table on next page...

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 There is no limit to the number of batteries or devices carried for personal use unless specified below. | Allowed in <u>carry-on</u> baggage? | | Allowed in <u>checked</u> baggage? | |
|---|--|--|---|--|
| | In equipment¹ | Spares | In equipment | Spares |
| Dry alkaline batteries  | YES | YES When protected from damage and short circuit | YES | YES When protected from damage and short circuit |
| Dry rechargeable – Nickel Metal Hydride (NiMH), Nickel Cadmium (NiCad), etc.  For lithium ion, see below. | YES | YES When protected from damage and short circuit | YES | YES When protected from damage and short circuit |
| Lithium ion (rechargeable lithium, lithium polymer, LIPO) as used in small consumer electronics, such as cell phones, tablets, cameras, PDAs, and laptops. Limited to 8 grams or less equivalent lithium content (100 watt hours ² or less) per battery.  | YES | YES When protected from damage and short circuit | YES | NO |
| Larger lithium ion, more than 8 grams but not more than 25 grams equivalent lithium content per battery, or 100-300 watt hours ² per battery. Outside the US the limit is 160 watt hours. Limit: Two (2) batteries per passenger  | YES | YES When protected from damage and short circuit | YES | NO |
| Lithium metal (non-rechargeable) as used in small consumer electronics such as cameras, LED flashlights, watches, etc. (2 grams or less lithium per battery).  | YES | YES When protected from damage and short circuit | YES | NO |
| Nonspillable wet batteries (absorbed electrolyte) for portable electronic devices. Limited to 12 volts and 100 watt hours ² per battery. Limit: Two (2) spare batteries per passenger.  | YES | YES When protected from damage and short circuit and in strong packaging. Battery and outer packaging must be marked "nonspillable." | YES | YES When protected from damage and short circuit and in strong packaging. Battery and outer packaging must be marked "nonspillable." |

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

²Note: Watt hours (Wh) = Volts (V) x Amp hours (Ah) or $V \times mAh \div 1000$

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>