Federal Aviation Administration

Hazardous Materials

Carried by Airline Passengers and Crewmembers

Prepared by the FAA Office of Hazardous Materials Safety (www.faa.gov/go/hazmatsafety)

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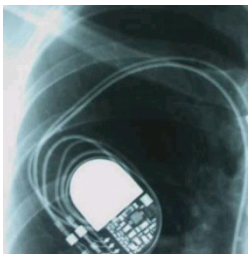
49 CFR §175.10 Illustrated

In general, U.S. Department of Transportation (DOT) regulations prohibit passengers and crewmembers from carrying hazardous materials (dangerous goods) aboard commercial aircraft. The table inside lists the exceptions that allow passengers and crewmembers to carry a limited amount of hazardous materials in carry-on and/or checked baggage. Though allowable by DOT regulations (see 49 CFR, section 175.10), some of the items listed here may, at times, be prohibited/limited in the aircraft cabin by Transportation Security Administration (TSA) security rules (see www.tsa.gov). Individual airlines and other nations may also have more restrictive rules on what passengers can carry aboard the aircraft. See www.faa.gov/go/packsafe for additional guidance on hazmat in baggage.

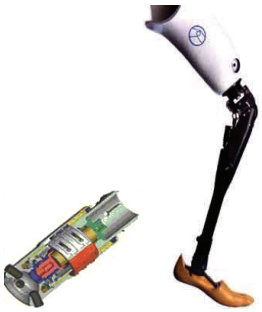
Refer to CFR 49 Parts 100-185 for requirements.
In addition, exemptions issued by the U.S. Department of Transportation may apply in certain situations.

Passenger Hazmat Exception	Allowed	Not Allowed
Toiletry and medicinal articles *including flammable and nonflammable aerosols when nozzles are protected*	☑ Toiletry or medicinal articles that are hazardous materials such as rubbing alcohol, flammable perfume and colognes, nail polish and remover, and aerosols (hairspray, shaving cream, sunscreen, insect repellent, etc.) —in carry-on* or checked baggage. 	☒ Flammable aerosols that are not toiletry or medicinal articles or described in the other exceptions, such as aerosol laundry starch, insecticides, spray paint, cooking sprays, etc.
Additional nonflammable aerosols *that are not medicinal or toilet articles* *Note: Nonflammable aerosols are rare.*	☑ Non-toiletry aerosols that contain nonflammable & non-toxic gas—in checked baggage only. 	☒ Compressed oxygen, liquid oxygen, oxygen canisters. Medical oxygen may be used in the gate area but passengers may not bring/use their own oxygen onboard and may not carry it in checked baggage. FAA-approved personal oxygen concentrators are allowed.

Passenger Hazmat Exception	Allowed	Not Allowed
Matches and Lighters	☑ One packet of safety matches (regular matches) may be carried on one's person (e.g., in your pocket) or in carry-on baggage.* ☑ One lighter (gas/butane or absorbed liquid/Zippo-style) may be carried on one's person or in carry-on baggage.* **When carryon bags are checked at the gate or at planeside, any matches and lighters in the bag being checked must be removed and kept with the passenger in the aircraft cabin.* ☑ Only lighters (including torch lighters) in a DOT-approved container may be in checked baggage. 	☒ Strike anywhere matches. ☒ Lighter refills, lighter fluid. ☒ The TSA forbids torch lighters in the aircraft cabin (carry-on).
Implanted medical devices **Radioactive medicines injected or ingested**	☑ Pacemakers or similar devices and radio-pharmaceuticals contained in the body. 	

Passenger Hazmat Exception	Allowed	Not Allowed
Alcoholic beverages	☑ Up to 5 liters of alcoholic beverages with an alcohol content of more than 24% but not more than 70% in unopened retail packages in carry-on* or checked baggage. *Note: Alcoholic beverages containing 24% or less alcohol by volume (beer, wine, etc.,) are not subject to the DOT hazardous materials regulations.** 	☒ Alcoholic beverages with more than 70% alcohol by volume (more than 140 Proof) including 95% grain alcohol and 151-proof rum.
Duty free perfume and cologne	☑ Flammable perfumes and colognes from the airport / airline duty free shops carried on one's person or in carry-on baggage. 	

Passenger Hazmat Exception	Allowed	Not Allowed
Curling iron (cordless)	☑ A curling iron with a flammable gas cartridge installed and safety cover in place. 	☒ Extra flammable gas cartridges.
Small mercury medical thermometer	☑ Small personal mercury thermometer in a protective case. 	
Small arms ammunition *Note: For rules on carrying unloaded firearms in checked baggage, visit the TSA website: http://www.tsa.gov* *Also check your airline's policy on guns and ammunition.*	☑ Small arms ammunition (up to 19.1 mm (.75 caliber) for rifle and pistol cartridges, any size shotgun shells) for personal use, when securely boxed and carried in checked baggage only. 	☒ Loose ammunition ☒ Loaded firearms ☒ Black powder ☒ Primers ☒ Percussion caps
Self-defense spray **Pepper spray**	☑ One small (4-ounces or less) self-defense spray, protected from accidental activation, and carried in checked baggage only.* 	☒ Defense sprays containing more than 2% tear gas (CS, CN, etc.). ☒ Defense sprays larger than 4 ounces.

Passenger Hazmat Exception	Allowed	Not Allowed
Dry ice	☑ Up to 2.5 kg (5.5 lbs.) of dry ice per person in carry-on or checked baggage in a package that allows venting of carbon dioxide gas. 	☒ Dry ice in air-tight packages. ☒ Dry ice in checked baggage that is not properly marked.
Self-inflating lifejacket **Self-inflating safety vest**	☑ A life jacket, motorcycle safety vest, or similar vest containing up to two small nonflammable gas *cartridges* plus two spare cartridges in carry-on or checked baggage. 	☒ Avalanche backpacks* containing compressed gas cylinders or pyrotechnics. **International regulations allow avalanche backpacks in baggage but the U.S. does not.* *Avalanche backpacks with empty cylinders (and no pyrotechnic materials) are allowed in baggage in the U.S.; but the empty cylinders may still be restricted by the TSA if security officers can't see inside the cylinder.*
Gas cylinders for mechanical limbs	☑ Nonflammable gas cylinders/cartridges in mechanical limbs plus spares in checked or carry-on baggage. 	

Passenger Hazmat Exception	Allowed	Not Allowed
Mercury barometer or thermometer	☑ Larger mercury thermometers and barometers carried by government weather personnel in carry-on baggage only. Must be in leak-proof, mercury-proof packaging.	
Heat-producing equipment (battery operated)	☑ Diving lamps and other battery-operated extreme heat producing equipment in carry-on or checked baggage. Energy source or a heat producing component must be disconnected or removed.	☒ Heat-producing devices containing batteries without protection from accidental activation. ☒ Unprotected spare batteries. *Removed or spare batteries must be protected from short circuit—don't allow the battery terminals to touch other metal.* *Removed or spare lithium batteries must be carried in carry-on baggage.*
Wheelchairs and mobility devices with nonspillable or dry sealed batteries *See separate entry for lithium ion batteries.* *"Nonspillable" is intended to describe "wet" batteries where the electrolyte won't leak from a cracked battery case. This includes gel-cell and AGM batteries.*	☑ Wheelchair or other battery powered mobility device equipped with a nonspillable battery when carried as checked baggage.	

Passenger Hazmat Exception	Allowed	Not Allowed
Wheelchairs and mobility devices with wet spillable batteries	☑ Wheelchair or other battery powered mobility device equipped with a spillable battery when carried as checked baggage. Device must be stowed so the battery is upright or the battery must be disconnected and packaged separately. 	
Wheelchairs and mobility devices with lithium ion batteries ***"Watt Hours" Explained*** *Battery rules sometimes specify Watt Hours (Wh).* *Volts x Amp Hours (Ah) = Watt Hours (Wh)* *or* *Volts x mAh ÷ 1000 = Watt Hours* *Example: a battery rated at 12 volts and 3000 mAh (or 3 Ah) = 36 Wh*	☑ Wheelchair or other battery powered mobility device equipped with a lithium ion battery (rechargeable lithium battery) carried as checked baggage. ☑ If a collapsible mobility device has an unprotected removable lithium ion battery, the battery must be removed, terminals protected, and carried in carry-on baggage—with airline approval. The battery (and one spare) cannot exceed 300 watt hours (Wh) each. If two spare batteries are carried they are limited to 160 Wh each.	☒ Lithium ion batteries exceeding a rating of 300 watt hours (Wh).

Passenger Hazmat Exception	Allowed	Not Allowed
Batteries in portable electronic devices for personal use **Spare batteries for these devices** *See next page for electronic cigarettes and vaporizers* ***"Watt Hours" Explained*** *Battery rules sometimes specify Watt Hours (Wh).* *Volts x Amp Hours (Ah) = Watt Hours (Wh)* *or* *Volts x mAh ÷ 1000 = Watt Hours* *Example: a battery rated at 12 volts and 3000 mAh (or 3 Ah) = 36 Wh*	☑ Batteries installed in portable electronic devices may be in carry-on* and checked baggage. ☑ All spare batteries must be protected from damage and short circuit (in original packaging or otherwise securely packed with battery terminals protected from contacting other metal). ☑ Spare lithium metal and lithium ion batteries must be placed in carry-on baggage only *—and removed from carry-on if the bag is checked at the gate or at planeside.* ☑ Spare non-lithium dry batteries (alkaline, NiMH, etc.) may be in carry-on or checked baggage if protected from damage and short circuit. ☑ Nonspillable gel-cell batteries for portable electronics are limited to 12 volts and100 watt hours. There's a limit of two (2) spare gel-cell batteries. Spares may be in carry-on or checked baggage when protected *from damage and short circuit.* 	☒ Spare lithium metal and lithium ion batteries in checked baggage—*including bags checked at the gate or at planeside.* ☒ Loose batteries not protected from short circuit. ☒ Batteries being carried for resale/distribution (not personal use). ☒ Wet batteries. ☒ Car and motorcycle batteries. *See separate entry for battery-powered wheelchairs and mobility devices.* ☒ Devices with batteries installed but no protection from accidental activation—if they can cause significant heat when accidentally turned on. This may include toys, wheeled devices, and battery-powered drills without a drill case or other switch protection. Removed batteries must be placed in carry-on and protected from short circuit. ** TSA security rules prohibit many power tools (drills, saws, etc.) in carry-on baggage.*

Passenger Hazmat Exception	Allowed	Not Allowed
Electronic cigarettes (e-cigarettes) **Vaporizers (vaping devices, vape pens, etc.)**	☑ E-cigarettes and vaporizer devices carried on one's person (pocket) or in carry-on baggage. *Devices and spare batteries must be removed from carry-on bags that are checked at the gate or planeside.* ☑ Spare batteries in carry-on baggage –when batteries are protected from damage and short circuit.	☒ E-cigarettes, vaping devices, and similar devices in checked baggage – *including carry-on bags that are checked at the gate or planeside.* ☒ Spare lithium batteries in checked baggage – *including carry-on bags that are checked at the gate or planeside.* ☒ Recharging the devices or batteries while on board the aircraft. ☒ Devices that are not protected from accidental activation or overheating, including the use of incompatible batteries. ☒ Unprotected spare batteries.
Fuel cells for portable electronic devices	☑ Fuel cells for portable electronics allowed in carry-on baggage only. ☑ Two spare fuel cell cartridges allowed in carry-on baggage only, except that cartridges containing only flammable liquid or corrosives may also be carried in checked baggage. The fuel cells must be marked *"Approved for carriage in aircraft cabin."* The fuel cell *cartridges* must be marked with the quantity and type of fuel. 	☒ Refilling a fuel cell (other than installing a cartridge) is not allowed on the aircraft.

Passenger Hazmat Exception	Allowed	Not Allowed
Permeation devices for calibrating air quality monitoring equipment	☑ Small permeation devices containing hazardous materials in checked baggage only. Devices must be in double layers of hermetically sealed inner packaging and then a strong outer packaging.	
Internal combustion or fuel cell engines	☑ Engines and engine-powered equipment carried as checked baggage if all fuel (including residue and vapors) is completely removed. Engine must not have a battery or other hazardous materials.	☒ Equipment that still has fuel in it, including residue or vapors.
Specimens in formaldehyde or alcohol solutions	☑ Non-infectious specimens in formaldehyde* or alcohol solutions in carry-on or checked baggage. Inner containers must contain no more than 30 ml of the formaldehyde or alcohol solution. The aggregate quantity of formaldehyde or alcohol solution must not exceed one liter (1 L) for the entire outer packaging.** *See 49 CFR 173.4b(b) for full packaging requirements.*	

Passenger Hazmat Exception	Allowed	Not Allowed
Liquid nitrogen dry shippers	☑ Liquid nitrogen in a dry shipper (insulated shipping flask that absorbs liquid nitrogen into an inner liner) carried as checked or carry-on baggage. All liquid must be absorbed. Packaging must allow nitrogen gas to vent.	
Small nonflammable gas cartridges **Bicycle tire inflation kits**	☑ Small gas cartridges (50 ml volume or less) in checked baggage, installed in or with a device. Up to four cartridges total. Spare cartridges should be securely packed. Airline approval required.	☒ Cartridges and cylinders with a volume larger than 50 ml (larger than a 28-gram carbon dioxide cartridge).

Not a complete list!

The preceding chart is not a complete listing of all the hazardous materials that may or may not be carried by airline passengers. There are many more prohibited items (car batteries, fuel, fireworks, etc.) and allowed items (nonflammable paints, portable oxygen concentrators, camp stoves purged of fuel, etc.) that the FAA provides guidance on.

When in doubt...
Leave it out!

For more in-depth information, go to:
www.faa.gov/Go/PackSafe

Or scan the QR code with your smart phone

FAA
Pack**Safe**

You may also contact the **U.S. DOT Hazmat Information Center** with your hazmat questions at: phmsa.hm-infocenter@dot.gov or 1-800-467-4922

For questions on weapons, sharp objects, liquids at the screening checkpoint, and other security questions; please go to the **Transportation Security Administration's** web site at: www.tsa.gov/traveler-information