

Lithium-Ion Battery Awareness

Lithium-ion batteries are everywhere and power many items that you use daily. Small electronics like cell phones and power tools and bigger items like electric or hybrid vehicles can be powered by lithium-ion batteries.

What Is a Lithium-Ion Battery?

A lithium-ion battery is a rechargeable power storage device in which lithium ions move through an electrolyte from a negative electrode to a positive electrode during battery discharge. When the battery is charging, the process is reversed.

Lithium-ion batteries need warning labels during shipping, but are not always individually labeled. Owner/operator manuals and chemical inventory lists should identify lithium-ion batteries.

Unique Properties

- Stores a large amount of power in a small, lightweight package
- Fast charge
- Slow discharge

Unique Advantages

- Battery-powered devices are easier to operate, transport and store because they are lighter and less bulky
- Ready to use sooner
- More likely to be ready for use after periods of idleness

Unique Hazards

- Electrolyte is flammable, toxic and corrosive
- Thermal runaway fires are possible and difficult to extinguish
- Fires emit toxic smoke

Hazards

Defect-free lithium-ion batteries are not flammable or toxic during normal use, but can fail and be dangerous if not handled with care.

What Could Happen?

- Fires and explosions
- Chemical exposure
- Electric shock

Incident Prevention

Identify warning signs of battery failure to prevent safety incidents:

- Physical damage
- Hot
- Swollen
- Leaking fluid
- Emitting foul odors or hissing sounds

Safe Work Practices

- Wear safety glasses during battery maintenance or service
- Remove conductive jewelry and items from pockets
- Use non-conductive tools
- Follow manufacturer recommendations
- Do not mix old, new, charged and uncharged batteries
- Replace like-for-like batteries
- Use batteries, chargers and devices bearing the mark of a recognized testing laboratory

Safe Charging

- Use compatible chargers – incompatible chargers can overcharge the battery
- Charge batteries in a safe place
 - Non-combustible surface
 - Uncovered to allow venting of heat
 - Away from direct sunlight and heat
- Unplug the charger after the battery is fully charged

Batteries Outside of Devices

- Store in a cool, dry place
- Cover terminals to prevent short circuiting
 - Use electrical tape to cover each terminal, and/or
 - Enclose each battery in a durable, plastic, zip-top bag

Battery and Device Disposal

- Recycling is preferable over trashing
- Do NOT recycle or trash batteries with uncovered terminals

Incident Response

Fire or Explosion

- Assess the situation
 - Extinguish small fires if trained to do so
 - Leave large fires to a professional
 - Do NOT fight a fire unless you are trained to do so!
- Evacuate the area
- Call for help or extinguish the fire
- Keep extinguished batteries away from combustibles; they could reignite

Other Incidents

- If there isn't a fire or explosion, but a battery shows signs of malfunction, unplug the charger if it is safe to do so
- In case of skin, eye or respiratory contact:
 1. Move to fresh air.
 2. Flush the area with water.
 3. Seek medical attention.