



TAKE CHARGE

OF BATTERY SAFETY

FACT SHEET

What is a lithium-ion battery?

Lithium-ion is the most popular rechargeable battery chemistry used today. It consists of single or multiple lithium-ion cells along with a protective circuit board.

Where can I find lithium-ion battery-powered devices?

Lithium-ion battery-powered devices can be found in the home and workplace in many common products such as — cell phones, laptops, electric power tools, wheelchairs, and lawn mowers, e-bikes, e-scooters, and electric vehicles.

What are the risks associated with lithium-ion batteries?

Despite their many advantages, lithium-ion batteries have the potential to overheat, catch fire, and cause explosions. This most commonly occurs when the batteries are damaged, suffer electro-chemical abuse (e.g., from overcharging or completely draining the battery), are in high- or low-temperature environments, or have an internal short-circuit. The heating from the internal short circuit can cause chemical reactions that lead to thermal runaway.

What is thermal runaway?

Thermal runaway is the primary driver of risks related to lithium-ion batteries. Thermal runaway is what happens when a fault causes self-heating in a battery cell. The process of self-heating generates incredible heat — more than 1,000° F — which decomposes the cell into smoke and flammable and toxic gases. When the heat from thermal runaway spreads to other cells, it can cause them to experience faults and the rest of the battery to go into thermal runaway.

Thermal runaway often immediately ignites a fire, but if the ignition is not immediate, the buildup of flammable gases can cause an explosion that blows out windows and spreads fire throughout a structure (e.g., an apartment, house, or storefront).

Learn how to
Take C.H.A.R.G.E.
of Battery Safety

Learn more at batteryfiresafety.org.

© 2023 Underwriters Laboratories



What can I do about battery safety?

From the first sign of a problem, you could have less than a minute to escape a battery fire. With the speed of these fires, the best way to be safe is to prevent a fire from starting. Prioritizing these safety measures will help you **Take C.H.A.R.G.E. of Battery Safety.**

TAKE

C

Choose certified products

- When purchasing lithium-ion battery-powered devices, be sure to look for products that are listed or safety certified by a nationally recognized testing laboratory to ensure they meet important safety requirements.
- Countless products sold online do not meet these critical safety standards.

H

Handle lithium-ion battery-powered devices with care

- Follow the manufacturer's instructions.
- Only use the charging equipment that comes with the product.
- Store batteries away from extreme temperatures, direct sunlight, exits, and anything flammable.
- Do not modify the battery or the charger in any way.
- Charge larger devices (such as eBikes) outside the home – and never in your exit path.
- Do not charge larger devices overnight.

A

Always stay alert for warning signs

- Check battery-powered devices often for damage or abuse such as swelling or punctures.
- Listen for unusual hissing or popping sounds.
- Watch out for excessive heat or a strange odor.
- If you notice any of these warning signs, stop using the lithium-ion powered devices.
- White or gray wispy smoke indicates immediate danger of thermal runaway.

R

Recycle devices and batteries properly

- Responsibly dispose of old or damaged batteries and devices by taking them to the nearest battery recycling center.
- Never discard batteries, chargers, or battery-powered devices in regular trash bins.

G

Get out quickly if there's a fire

- Know the warning signs to look and listen for and get out if you see – or hear – one.
- Follow your home fire escape plan to leave immediately and **call 9-1-1.**

E

Educate others on battery safety

- Now that you know what actions to take, spread the word. Protect your friends and loved ones by sharing how they can **Take C.H.A.R.G.E. of Battery Safety.**

