

## General Information



Lithium-ion (Li-ion) batteries are used in many products such as electronics, toys, wireless headphones, handheld power tools, small and large appliances, electric vehicles, and electrical energy storage systems. If not properly managed at the end of their useful life, they can cause harm to human health or the environment.

The increased demand for Li-ion batteries in the marketplace can be traced largely to the high “energy density” of this battery chemistry. “Energy density” means the amount of energy that a system stores in an amount of space. Lithium batteries can be smaller and lighter than other types of batteries while holding the same amount of energy. This miniaturization has allowed for a rapid increase in the consumer adoption of smaller portable and cordless products.

There are two types of lithium batteries that U.S. consumers use and need to manage at the end of their useful life: [single-use, non-rechargeable lithium metal batteries](#) and [re-chargeable lithium-polymer cells \(Li-ion, Li-ion cells\)](#).

Li-ion batteries are made of materials such as cobalt, graphite, and lithium, which are considered critical minerals. Critical minerals are raw materials that are economically and strategically important to the U.S., have a high risk of their supply being disrupted, and for which there are no easy substitutes. When these batteries are disposed of in the trash, we lose these critical resources outright. To learn more about critical minerals, go to the [U.S. Geological Survey website](#).

## Importance of Proper Disposal

If the battery, or electronic device that contains the battery, is disposed of in the trash or placed in the municipal recycling bin with household recyclables such as plastic, paper, or glass, it may become damaged or crushed in transport or from processing and sorting equipment, creating a fire hazard.

Li-ion batteries, or those contained in electronic devices, should therefore be recycled at certified [battery electronics recyclers](#) that accept batteries, rather than being discarded in the trash or put in municipal recycling bins.





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# Know the Facts: Lithium-Ion Batteries

[www.epa.gov/recycle/used-lithium-ion-batteries](http://www.epa.gov/recycle/used-lithium-ion-batteries)

## Single-use, Non-Rechargeable Batteries

- Made with lithium metal and are commonly used in products such as cameras, watches, remote controls, handheld games, and smoke detectors.
- These batteries may be difficult to distinguish from common alkaline battery sizes, but can also have specialized shapes (e.g., button cells or coin batteries) for specific equipment, such as some types of cameras. Look for the word “lithium” on the battery to help identify them.



## Rechargeable Lithium-Polymer Cells (Li-ion, Li-ion Cells)



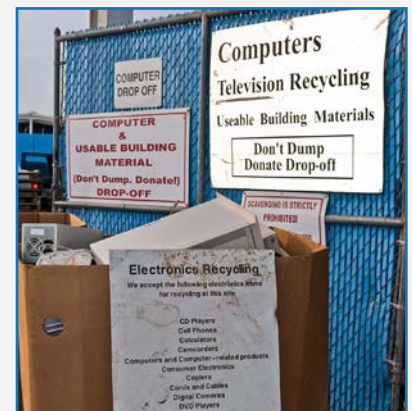
Commonly found in cellphones, power tools, digital cameras, laptops, children’s toys, e-cigarettes, small and large appliances, tablets, and e-readers.

Some Li-ion batteries can be removed easily from the products they power, while others cannot.

## Lithium-Ion Battery Disposal for Consumers

**EPA recommendation: Find a location to recycle Li-ion batteries, and products that contain Li-ion batteries, using one of the suggested locations. Do not put them in the trash or municipal recycling bins.**

- **Li-ion batteries in electronics:** Send electronic devices containing Li-ion batteries to certified electronics recyclers, participating retailers, and recyclers in electronics takeback services or contact your local solid waste or household hazardous waste collection program for more options.
- **Li-ion batteries that are easily separated from the product (e.g., power tools):** Find a recycling location near you to properly dispose of Li-ion batteries. Send individual batteries to specialized battery recyclers or retailers that are participating in takeback services or contact your local solid waste or household hazardous waste program for more options.



- Two resources for finding a recycler are the **Earth 911** database and **Call2Recycle**.
- **Handling precautions:** Place each battery, or device containing a battery, in a separate plastic bag. Place non-conductive tape (e.g., electrical tape) over the battery’s terminals. If the Li-ion battery becomes damaged, contact the battery or device manufacturer for specific handling information. Even used batteries can have enough energy to injure or start fires. Not all batteries are removable or serviceable by the user. Heed battery and product markings regarding safety and use.



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## Medium- and Large-Scale Li-ion Battery Disposal

**EPA recommendation:** Contact the manufacturer, automobile dealer or company that installed the Li-ion battery for management options. Do not put it in the trash or municipal recycling bins.

Because of the size and complexity of these battery systems, medium and large-scale Li-ion batteries may not be able to be removed by the consumer. Refer to the manufacturer's instructions to heed warnings and safety instructions.

**Automobile:** Contact the automobile dealer, shop, or salvage yard where the battery was purchased.

**Energy Storage:** Contact the energy storage equipment manufacturer or company that installed the battery.

For more information: [www.epa.gov/recycle/used-lithium-ion-batteries#consumers](http://www.epa.gov/recycle/used-lithium-ion-batteries#consumers)



## Lithium-Ion Battery Region 7 Contacts

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