



Every year, Americans purchase millions of batteries to charge everyday items, such as phones, computers, watches, video games, remote controls, smoke detectors, and power tools. The increasing prevalence of internet-connected “smart” products, from kitchen appliances to automobiles, has made us more dependent on a wider variety of battery-powered devices. When a battery reaches the end of its useful life, it is important to recycle it whenever possible. This guide will show you how.

# Consumer Guide to Battery Recycling



Batteries are made of various chemical elements, including metals such as mercury, lead, cadmium, nickel, and silver, which can pose a threat to human health and the environment when disposed of improperly. Some batteries may also contain critical minerals (<https://www.usgs.gov/news/national-news-release/interior-releases-2018s-final-list-35-minerals-deemed-critical-us>), such as cobalt, lithium, and graphite, that are scarce and difficult to replace. To preserve these materials for other uses, every effort should be made to recycle batteries of all types, sizes, and chemistries.

It is equally important to handle batteries safely, because some batteries can pose health risks if mishandled at the end of their lives. Batteries that appear to be discharged can still contain enough energy to cause injury or start fires. Remember: not all batteries are removable or serviceable by the user. Pay close attention to safety instructions for any battery-powered product and bear in mind that battery types are identified by their labeling, not by the battery’s shape or color.

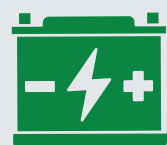
## Battery Types



Single-Use



Rechargeable



Automotive



# Single-Use Batteries

Type	Uses and Description	Disposal
<b>Alkaline and Zinc-Carbon</b>	<p>These batteries are used in products such as alarm clocks, calculators, flashlights, TV remote controls, radios, remote-control products, children's toys, and more. Common alkaline and zinc-carbon batteries include 9 Volt, AA, AAA, C, D and some button cells.</p>	<p>Some reclamation companies recycle these batteries; check with your local solid-waste authority for disposal and recycling options. In most cases, alkaline, and zinc-carbon batteries can be safely discarded in your trash container.</p>
<b>Button-Cell or Coin</b>	<p>These small, round batteries have historically contained silver, cadmium, mercury, or other heavy metals. Today, the majority are made of lithium metal. These batteries are commonly used in products such as watches, hearing aids, keyless vehicle entry remotes, medical devices, and calculators.</p>	<p>Button-cell or coin batteries can be a potential swallowing hazard. Be certain to store them out of the reach of young children. Handling and disposal are based on the battery's chemistry. They can be brought to specialized battery recyclers, retailers that provide battery takeback services, or local hazardous waste collection programs. Contact the manufacturer or local solid-waste authority for additional disposal and recycling options.</p>
<b>Lithium Single-Use</b>	<p>These common batteries are made with lithium (Li) metal and are non-rechargeable.</p> <p>They are used in products such as cameras, watches, remote controls, handheld games, and smoke detectors.</p> <p>These batteries may be difficult to distinguish from common alkaline batteries, but may also have specialized shapes for specific equipment, including certain types of cameras and calculators</p>	<p><b>Handling precautions:</b> Place each battery in separate plastic bags or place non-conductive tape (e.g., electrical tape) over the battery's terminals or around the entire button. Lithium batteries may spark and cause fires if damaged or if their terminal ends touch. If the battery becomes damaged, contact the manufacturer for specific handling information.</p> <p>Check for the word "lithium" marked on the battery. Do not put button-cell, coin, or lithium single-use batteries in the trash or municipal recycling bins. Check with <a href="http://Earth911.com">Earth 911.com</a> to find a recycling location near you.</p>



# Rechargeable Batteries

Type	Uses and Description	Disposal
<b>Nickel Cadmium (Ni-Cd)</b>	These batteries are typically used in cordless power tools, cordless phones, digital and video cameras, two-way radios, bio-medical equipment and video cameras. They may look like single-use AA, AAA, or other alkaline batteries or a battery pack shaped for specific tools.	<p><b>Removable batteries:</b> Removable, rechargeable batteries can be brought to specialized battery recyclers, retailers that provide battery takeback services, or local household hazardous waste collection programs (<a href="https://search.earth911.com/?what=household+hazardous+waste">https://search.earth911.com/?what=household+hazardous+waste</a>). Contact the manufacturer or your local household-waste authority for other disposal or recycling options.</p> <p><b>Non-removable batteries contained in electronic devices:</b> Entire devices can be brought to certified electronics recyclers (<a href="https://www.epa.gov/smm-electronics/certified-electronics-recyclers">https://www.epa.gov/smm-electronics/certified-electronics-recyclers</a>), participating retailers that provide electronics takeback services (<a href="https://www.epa.gov/smm-electronics/sustainable-materials-management-smm-electronics-challenge">https://www.epa.gov/smm-electronics/sustainable-materials-management-smm-electronics-challenge</a>), or local electronics or household hazardous waste collection programs.</p> <p><b>Handling precautions:</b> Place each battery in a separate plastic bag or place non-conductive tape (e.g., electrical tape) (<a href="https://www.phmsa.dot.gov/safe-travel/batteries">https://www.phmsa.dot.gov/safe-travel/batteries</a>) over the battery's terminals. Handle any damaged battery with care and appropriate personal protective equipment. If a lithium-ion battery becomes damaged, contact the battery or device manufacturer for specific handling information.</p> <p>Look for labels identifying battery chemistry. Do not put rechargeable batteries in the trash or municipal recycling bins. Check with Earth911.com to find a recycling location near you.</p>
<b>Lithium-Ion (Li-ion)</b>	Found in older cellphones, power tools, digital cameras, laptops, children's toys, e-cigarettes, small and large appliances, tablets, and e-readers. Some Li-ion batteries are not easily removed from the product and can pose a fire hazard if broken, bent, or crushed.	
<b>Nickel Metal Hydride (Ni-MH)</b>	Typically found in cellphones, cordless power tools, digital cameras and two-way radios, these batteries are not as common as they once were.	
<b>Nickel-Zinc (Ni-Zn)</b>	Found in digital cameras, wireless keyboards, and small electronics.	
<b>Small-Sealed Lead Acid (Pb)</b>	Found in mobility scooters, children's toy cars, emergency lighting, and hospital equipment. Also used for backup power in residential landline phones and uninterruptable power supplies for computers.	



# Automotive Batteries

There are several types of batteries used in vehicles today: automotive starting batteries used with internal combustion engines, large electric-vehicle battery packs that power the vehicle, and small batteries that power accessories, such as remote door locks, or back up computer memory.

Type	Uses and Description	Disposal
<b>Lead-Acid</b>	<p>Lead-acid batteries may contain up to 18 pounds of lead and about one gallon of corrosive, lead-contaminated sulfuric acid.</p> <p>They can be used as either an engine-starting battery or automotive-power battery that moves the vehicle.</p> <p>Found in automobiles, boats, snowmobiles, motorcycles, golf carts, all-terrain vehicles, wheelchairs, and other large transportation vehicles.</p> <p>Also used in non-automotive situations such as backup power in basement sump-pumps or as uninterruptible power supplies for computers or other critical equipment.</p>	<p>Return to the battery retailer or your local solid or local household hazardous waste collection program; do not put lead-acid batteries in the trash or municipal recycling bins.</p> <p><b>Handling precaution:</b> Contains sulfuric acid and lead. When handling the battery, follow all warnings and instructions on the battery.</p> <p>Because of the size and complexity of these battery systems, medium and large-scale Li-ion batteries may not be removable by the consumer. Refer to the manufacturer’s instructions and heed warnings and safety instructions.</p> <ul style="list-style-type: none"> <li>• Automobile: Contact the automobile dealer, shop, or salvage yard where the battery was purchased.</li> <li>• Energy Storage: Contact the energy storage equipment manufacturer or company that installed the battery.</li> <li>• Contact the manufacturer, automobile dealer or company that installed the Li-ion battery for disposal options; do not put in the trash or municipal recycling bins.</li> </ul>
<b>Medium and Large-Scale Li-ion</b>	<p>Most electric vehicles and advanced energy storage systems (on and off-grid) use Li-ion batteries to either store power for the hybrid system or to power the electric motor that moves the vehicle.</p> <p>These batteries are also used for energy storage systems that can be installed in buildings.</p>	