

# Batteries

Name \_\_\_\_\_

Phenomenon: Watch as your teacher makes a battery.

What do you notice?

What questions do you have?

Guiding question: Which substances produce the best batteries?

**Obtain information on a battery type.** (Choose a battery type to research from the list below.)

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Which internet resources did you use? (Use the names of the pages)

**What information did you find? Be ready to share with your class as directed by your teacher.**

**Battery Types:**

Primary Cells or Non-Rechargeable	Secondary Cells or Rechargeable
<ul style="list-style-type: none"> <li>● Alkaline battery (zinc manganese oxide, carbon)</li> <li>● Aluminum-air battery</li> <li>● Atomic battery</li> <li>● Bunsen cell</li> <li>● Chromic acid cell (Poggendorff cell)</li> <li>● Clark cell</li> <li>● Daniell cell</li> <li>● Dry cell</li> <li>● Earth battery</li> <li>● Frog battery</li> <li>● Galvanic cell</li> <li>● Grove cell</li> <li>● Leclanché cell</li> <li>● Lemon/potato battery</li> <li>● Lithium battery</li> <li>● Lithium-air battery</li> <li>● Magnesium battery</li> <li>● Mercury battery</li> <li>● Molten salt battery</li> <li>● Nickel oxyhydroxide battery               <ul style="list-style-type: none"> <li>○ Oxyride battery</li> </ul> </li> <li>● Organic radical battery</li> <li>● Paper battery</li> <li>● Pulvermacher's chain</li> <li>● Silver-oxide battery</li> <li>● Solid-state battery</li> <li>● Sugar battery</li> <li>● Voltaic pile               <ul style="list-style-type: none"> <li>○ Penny battery</li> <li>○ Trough battery</li> </ul> </li> <li>● Water-activated battery</li> <li>● Weston cell</li> <li>● Zinc-air battery</li> <li>● Zinc-carbon battery</li> <li>● Zinc chloride battery</li> </ul>	<ul style="list-style-type: none"> <li>● Aluminum-ion battery</li> <li>● Carbon Battery</li> <li>● Flow battery               <ul style="list-style-type: none"> <li>○ Vanadium redox battery</li> <li>○ Zinc-bromine battery</li> <li>○ Zinc-cerium battery</li> </ul> </li> <li>● Lead-acid battery               <ul style="list-style-type: none"> <li>○ Deep cycle battery</li> <li>○ VRLA battery</li> <li>○ AGM battery</li> <li>○ Gel battery</li> </ul> </li> <li>● Glass battery</li> <li>● Lithium-ion battery               <ul style="list-style-type: none"> <li>○ Lithium-ion lithium cobalt oxide battery (ICR)</li> <li>○ Lithium-ion manganese oxide battery (IMR)</li> <li>○ Lithium-ion polymer battery</li> <li>○ Lithium iron phosphate battery</li> <li>○ Lithium-sulfur battery</li> <li>○ Lithium-titanate battery</li> <li>○ Thin-film lithium-ion battery</li> <li>○ Lithium ceramic battery <sup>[5]</sup> <sup>[6]</sup></li> </ul> </li> <li>● Magnesium-ion battery</li> <li>● Metal-air electrochemical cells               <ul style="list-style-type: none"> <li>○ Lithium-air battery</li> <li>○ Aluminum-air battery</li> <li>○ Germanium air battery</li> <li>○ Calcium air battery</li> <li>○ Iron air battery</li> <li>○ Potassium-ion battery</li> <li>○ Silicon-air battery</li> <li>○ Zinc-air battery</li> <li>○ Tin air battery</li> <li>○ Sodium-air battery</li> <li>○ Beryllium air battery</li> </ul> </li> <li>● Molten salt battery</li> <li>● Nickel-cadmium battery</li> <li>● Nickel hydrogen battery</li> <li>● Nickel-iron battery</li> <li>● Nickel metal hydride battery</li> </ul>

- Low self-discharge NiMH battery
- Nickel–zinc battery
- Organic radical battery
- Polymer-based battery
- Polysulfide bromide battery
- Potassium-ion battery
- Rechargeable alkaline battery
- Rechargeable fuel battery
- Sand battery
- Silicon air battery
- Silver-zinc battery
- Silver calcium battery
- Silver-cadmium battery
- Sodium-ion battery
- Sodium–sulfur battery
- Solid-state battery <sup>[7]</sup>
- Super iron battery
- UltraBattery
- Zinc ion battery