

Saltwater Battery

Introduction

But using safe, readily available materials, you can make a simple battery that you can use to power buzzers and clocks.

Material

- Nonmetallic cup (Styrofoam, paper, or plastic work well)
- Salt, water, vinegar, and bleach
- A variety of metal strips or pieces:
 - Aluminum (aluminum foil)
 - Copper (household electric wire or water pipe)
 - Brass (brads or keys)
 - Iron (uncoated nails)
 - Silver (silverware)
 - Zinc (galvanized nails)
 - Graphite (large mechanical pencil filler, artists graphite)
- Alligator clip leads (available at Radio Shack)
- DC Mini Buzzer (available at Radio Shack)
- LCD clock (like the cheap stick-on clocks or cheap child's watch)
- Homemade [ammeter](#) or commercial ammeter and voltmeter

To Do and Notice

Fill the cup about 3/4 full of water. Add about a teaspoon of salt, about a teaspoon of vinegar, and a few drops of bleach. Into this solution put strips of two different metals. (Copper and aluminum are a good pair to start with.) Make sure the two metals do not touch each other. You can clip the metals to the top of the cup with the alligator clips, but don't let the clips touch the liquid. You now have a simple low-power battery.

You can test your battery using the [homemade ammeter](#) that you built. Connect a wire from one of the metal strips to one end of the coil of wire in your ammeter and connect another wire from the other metal strip to the other end of the coil. When the magnet twists, that indicates your homemade battery is working. You can also use a commercial ammeter.

You can test the relative strength of different metals for attracting electrons by putting various pairs of metals into the solution and watching the direction that the magnet on your homemade ammeter swings. A metal that is positive in one pairing may be negative in another. Try listing the metals in order from the strongest to the weakest. The order is known as the electromotive series. Measure the voltage produced by your battery using a voltmeter, notice how the voltage depends on both of the metals you use as electrodes.

You can also experiment with different proportions of the ingredients in your liquid solution.

With some of the stronger homemade batteries, you can power a small buzzer or an LCD clock. (Take out the battery in the clock and connect your saltwater battery in its place.) If your battery isn't strong enough to power a clock or buzzer, you may need to wire two homemade batteries together in series, connecting the plus of one battery to the minus of the other.

Scientific Explorations with Paul Doherty	©2000	3 August 2000
--	-----------------------	---------------