

★ ICE TRAY BATTERY



GRADES 6-8 ✪ SCIENCE SKILLS: MAKING HYPOTHESES/PROBLEM SOLVING



What you need:

- Distilled white vinegar
- 5 pieces of copper wire
- 5 galvanized nails (available at hardware stores, these are nails with a protective coating)
- Ice cube tray
- An LED light bulb with long wires (available on Stevespangler.com or Amazon.com)
- Adult supervision

What to do:

1. Wrap the nail with a piece of copper wire, leaving a section of wire extending from below the head of the nail.
2. Repeat Step 1 with the remaining 4 nails and 4 pieces of copper wire.
3. Fill 6 wells of an ice tray with distilled white vinegar.
4. Create a circuit by inserting each nail into a well of vinegar while placing the extended wire into the next well.
5. Place one wire of the LED light into the well with only a copper wire inside it and place the other LED wire into the well with only a nail in it. If the bulb lights up, you nailed it! If the bulb doesn't light up, flip the wires around!



How does it work?

Batteries, which convert chemical energy into electricity, are composed of two different metals suspended in an acidic solution. With the Ice Tray Battery, the two metals are zinc and copper. The zinc is in the galvanization of the nail, and the copper is in the wire. The acid comes from the vinegar inside the ice tray. The two metal components are electrodes, the parts of a battery where electrical current enters and leaves the battery. With a zinc and copper set-up, the current will flow out of the wire and into the nail. The electricity also passes through the acidic solution inside the tray wells. Once the Ice Tray Battery is connected to the LED, you create a complete circuit. As the electrical current passes through the LED, it lights the LED, and passes back through all of the components.

From www.stevespanglerscience.com

