

COPPERPLATE A NAIL EXPERIMENT

You can take the copper off of pennies and put it on a nail! If you look at the picture below, you can see that the nail has taken on a copper color after the experiment was finished. What do you notice about the pennies themselves? Why do you think they are like that?



Want to try it yourself? You'll need:

- The juice from 2 lemons or 1/2 cup of vinegar (We used lemon juice.)
 - Plastic cup or ceramic bowl (We used a disposable cup.)
 - 10 to 25 dull pennies (We used about 20.)
 - A pinch or a few shakes of salt, or about 1/4 a teaspoon, if you want to be precise
 - An iron nail (ungalvanized)
1. Put the lemon juice into the cup.
 2. Place your pennies in the bottom of the cup, inside the juice.
 3. Add the salt.
 4. Place the nail inside the cup and leave it for at least 30 minutes. We left our nail in overnight. When you take it out it should be coated with enough copper for you to notice!

Why does it do that? The lemon juice dissolves the copper on the pennies and this produces copper ions. An ion is an atom that either has extra electrons or is missing some electrons. The copper ions are attracted to the iron in the nail and “stick” to it, until there is a visible coat of copper on the nail.

Here's a close-up of the nail, which, after the experiment, is roughly the color of a penny. It was almost completely gray before!



Here's what the experiment did to our pennies, especially the newer pennies!!



🧐 Did you know that pennies after 1982 are actually zinc coated with copper? We could really see this when we took some of the newer pennies out and observed the partially-dissolved, thin copper coating over a darker metal underneath. Copper is so expensive now that it would cost MORE than a penny for each penny to be pure (actually 95%) copper!