

# CLEAN PENNIES WITH VINEGAR!

## YOU WILL NEED:

- A few old (not shiny) pennies
- 1/4 cup white vinegar
- 1 teaspoon salt
- Non-metal bowl
- Paper towels

## WHAT TO DO

1. Pour the vinegar into the bowl and add the salt – stir it up.
2. Put about 5 pennies into the bowl and count to 10 slowly.
3. Take out the pennies and rinse them out in some water. Admire their shininess!



## HOW DOES IT WORK?

There is some pretty fancy chemistry going on in that little bowl of yours. It turns out that vinegar is an acid, and the acid in the vinegar reacts with the salt to remove what chemists call copper oxide which was making your pennies dull. You're not done yet, though, lets try another experiment:

Add more pennies to the bowl for 10 seconds, but this time , don't rinse them off. Place them on a paper towel to dry off. In time the pennies will turn greenish-blue as a chemical called malachite forms on your pennies. But wait, you're still not done yet.

Place one or two nuts and bolts in the vinegar and watch – they may become COPPER in color! The vinegar removed some of the copper from the pennies, if there is enough copper in the vinegar, the copper will become attracted by to the metal in the nuts and bolts and they will take on a new copper color – cool.



## MAKE IT AN EXPERIMENT:

The project above is a DEMONSTRATION. To make it a true experiment, you can try to answer these questions:

1. Will other acids (like lemon juice or orange juice) work as well?
2. Does this cleaning chemistry work on other coins?
3. Do other amounts of salt make a difference in the chemistry of the experiment?