

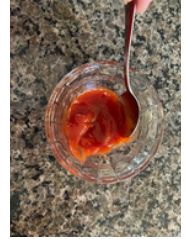
BREWING UP SOME STEAM

SHINY PENNIES

Which substance works the best at making your pennies bright and shiny again?

Materials You Will Need:

- 6-10 pennies
- about 2 T ketchup
- about 1 T salt
- about 2 T vinegar
- about 2T hot sauce
- a small dish for each testing substance not included)



DIRECTIONS

1) Set up 3 test dishes. Put ketchup in one, hot sauce in another, and vinegar in the third. Stir the salt into the vinegar until it dissolves.

2) Put 2 or 3 pennies in each test dish. Stir pennies in and make sure they are completely covered.

PREDICT: Which substance do you think will do the best job at cleaning your pennies?

3) Let your pennies soak in their dishes for about an hour. Remove the pennies from each dish with a spoon and rinse them under clean water rubbing the surface while you rinse. Which test substance cleaned your pennies the best?

Take this further:

Why does this work?

The oxygen in the air and the copper in the pennies form an oxide that coats the pennies and makes them look dirty. The acetic acid in vinegar breaks the copper oxide free from the penny. When we also add salt, the chlorine ions bond with the copper, forming a sort of copper chloride which allows the acid to break more of the copper oxide free from the penny!

Try more:

Test out these ways to clean pennies:

- soak your pennies in coca cola or pepsi (do NOT drink the cola afterwards)
- soak your pennies in lemon, lime, or orange juice (or try each to see which works best!)
- try removing the oxides with a common pencil eraser

