

The Power of Chemicals

Try these activities to demonstrate the power of chemicals and their reactions in nature.

SCIENCE WEEK

9-16 NOVEMBER 2014

THE POWER OF SCIENCE

THE EFFECT OF ACID ON CALCIUM COMPOUNDS

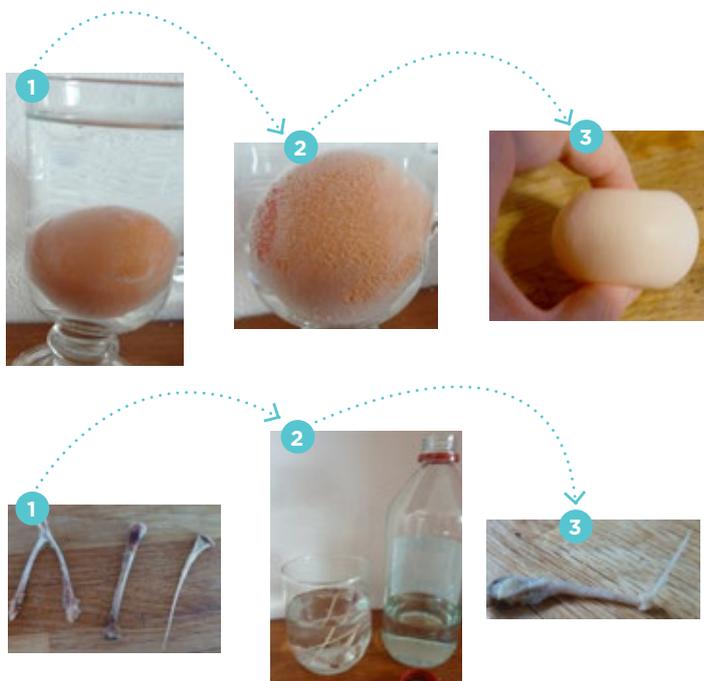
YOU WILL NEED

Clear vinegar, glass containers, chicken's eggs, chicken bones ("left overs"), gloves (optional).

BASIC INSTRUCTIONS

Feel free to experiment!

1. Place each egg in a glass container.
2. Place the chicken bones in a glass container.
3. Cover with clear vinegar.
4. Observe over the next 30 minutes.
5. Leave aside for a day, or up to a week if time allows.
6. Observe and take note of any changes.
7. Remove the egg from the glass and rinse off the vinegar.
8. Test the texture of the egg - press the surface of the egg.
9. VERY carefully bounce the "naked" egg on the worktop surface.
10. Remove the bones and twist them about to test their flexibility.
11. See if you can tie a knot in the needle bone or the wishbone.
12. (Reminder - wash your hands really well after handling cooked chicken bones).



INVESTIGATE

- If you have access to Hydrochloric Acid in the school lab, find out how much faster the process may be.
- Collect some snail shells (empty of course) and find out if acid has an effect on them.
- Does acid have the same effect on the egg shell after an egg has been boiled?

THE EFFECT OF ACID ON CALCIUM COMPOUNDS CONTINUED

WHAT IS HAPPENING?

Eggshell is made from a compound called calcium carbonate (so are chalk, limestone, and marble). Vinegar is the common name for Acetic Acid. The acid removes the calcium, releasing carbon dioxide (that was the bubbles you saw gather on the shell). The shell is completely dissolved into the liquid, leaving the strong elastic membrane of the giant egg cell exposed.

In the case of the bone, it is the strong bone compound called calcium phosphate that is removed by the acid. The flexible protein part of the bone - collagen - is left intact.

EXPLORE MORE...

Find out the chemical formula for the vinegar / eggshell reaction here

http://www.edinformatics.com/math_science/science_of_cooking/naked_egg_experiment.htm

Read about tiny “zombie worms” who live deep in the ocean, whose diet is bones of dead whales, dissolved by acid in the worm’s mouth <http://ocean.si.edu/ocean-news/zombie-worms-crave-bone>

