

The Fate of Calcium Carbonate

Calcium is a chemical that is always grabbing onto other chemicals. One of the most common chemicals connected to calcium is called carbonate. Together, the calcium and the carbonate are called calcium carbonate. Calcium carbonate is in eggshells, seashells, limestone, and many other materials. In this activity, you can use a common liquid to detect calcium carbonate!

Materials:

- Egg shell from hard boiled egg
- Calcium tablet (made from oyster shell)
- White chalk
- Metal tablespoon
- 2 small cups
- Water
- Vinegar
- Two straws or droppers

Procedure:

1. Cover your work surface with newspaper or paper towels. Place some egg shell, about $\frac{1}{4}$ piece of chalk, and a calcium tablet on your work surface.
2. Use paper and pencil to make a chart like the one shown. Use the back of a tablespoon to crush each of your samples into small pieces. Clean the spoon off between samples so the pieces don't get mixed together.



3. Place about $\frac{1}{2}$ of each sample under its name in the water row and the other $\frac{1}{2}$ under its name in the vinegar row.
4. Place a few drops of water on the samples in the water row and watch them very closely. What do you observe?
5. Now place a few drops of vinegar on the samples in the vinegar row and watch them very closely. What do you observe?

Think about this...

If vinegar causes the calcium carbonate to come apart, what do you think would happen to an egg if it were left in vinegar for a few days? How about a bone, which has a lot of calcium phosphate? Let's try it and find out!

Place the egg and a chicken bone in separate jars. Add enough vinegar to cover them completely. Cover the opening of each jar with aluminum foil. Observe the egg and the bone over the next three days. What do you notice? After three days, take each one out of its jar. How are they different from when you put them in? What do you think caused them to look and feel the way they do?

Where's the Chemistry?

Vinegar is an acid called acetic acid. When it combines with the calcium carbonate, the acetic acid and the calcium carbonate come apart and reform in different ways to make new chemicals. One of these chemicals is the gas carbon dioxide. That's why you see the bubbles!



The American Chemical Society develops materials for elementary school age children to spark their interest in science and teach developmentally appropriate chemistry concepts. The *Activities for Children* collection includes hands-on activities, articles, puzzles, and games on topics related to children's everyday experiences.

The collection can be used to supplement the science curriculum, celebrate National Chemistry Week, develop Chemists Celebrate Earth Day events, invite children to give science a try at a large event, or to explore just for fun at home.

Find more activities, articles, puzzles and games at www.acs.org/kids.

Safety Tips

This activity is intended for elementary school children under the direct supervision of an adult. The American Chemical Society cannot be responsible for any accidents or injuries that may result from conducting the activities without proper supervision, from not specifically following directions, or from ignoring the cautions contained in the text.

Always:

- Work with an adult.
- Read and follow all directions for the activity.
- Read all warning labels on all materials being used.
- Wear eye protection.
- Follow safety warnings or precautions, such as wearing gloves or tying back long hair.
- Use all materials carefully, following the directions given.
- Be sure to clean up and dispose of materials properly when you are finished with an activity.
- Wash your hands well after every activity.

Never eat or drink while conducting an experiment, and be careful to keep all of the materials used away from your mouth, nose, and eyes!

Never experiment on your own!

For more detailed information on safety go to www.acs.org/education and click on "Safety Guidelines".

