A Plaster Master or a Plaster Disaster, Page 1 of 2

Plaster of Paris has calcium carbonate in it and also contains another chemical called calcium sulfate. Both these calcium chemicals are used to make cement, Plaster of Paris, and similar building materials that have to start off wet and then harden. These calcium chemicals work well when mixed with water so let's see how well they work when mixed with other liquids.

Materials:

- Plaster of Paris
  (Please follow all warnings on the Plaster of Paris label.)
- 4 small disposable cups
- Water
- Salt
- Vinegar
- 2 Plastic spoons
- Wax paper
- Masking tape
- Pen

Procedures:

1. Label 3 cups water, salt water, and vinegar. Use masking tape and a pen to label a piece of wax paper water, salt water, and vinegar. Place a heaping teaspoon of plaster of Paris into each labeled cup.

2. In another small cup, make a salt water solution by adding about ½ teaspoon of salt to 2 teaspoons of warm water. Stir until as much salt dissolves as possible.
3. Add about 1 teaspoon of water to the plaster of Paris in the water cup. Stir until the plaster and water are thoroughly mixed. Add a little more water or a little more plaster until the mixture is not runny but thick enough that it can be molded.

4. Scrape the mixture out with a spoon and use another spoon to move the glob of plaster into its labeled area on a piece of wax paper.
5. Repeat step 2 and 3 using salt water and vinegar.
6. Wait about 5 minutes and gently press down on each plaster glob with a spoon. What do you notice? Check the globs in the same way again in 5 minutes and then again in 5 more minutes. Which liquid seems to work best with the plaster to make it hard? Which seems to work worst?

Think about this...

Plaster hardens well when it is mixed with water and placed on wax paper. Let's see if the wet plaster hardens if it is placed under water!

Mix plaster and water the way you did in the activity to make a nice glob of plaster. Then, instead of placing the glob of plaster on wax paper, gently place it in a small cup about ½- full of water. Check the plaster for hardness every 5 minutes for about 15 minutes.

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Where's the Chemistry?

When the chemicals that make up plaster are thoroughly mixed with water, the water and the chemicals begin to interact with each other. The water works with the chemicals as part of the hardening process which is called curing. In curing, the water doesn't evaporate but actually becomes part of the hardened plaster.

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".