Crystal Stencil Stars

When a small amount of table salt is added to a glass of water, the table salt "disappears" because it dissolves in the water. We know the table salt is still there because the water will now taste salty. The chemical name for table salt is sodium chloride. In this activity, another kind of salt called Epsom salt will be dissolved in water. The resulting solution will be used to create a work of art.

Materials

Epsom salt
Water
Small bowl
Sponge
Black construction paper
Card stock (approximately 8 cm by 8 cm)
Scissors
Plastic cup (8–10 oz)
Tablespoon measure
Stirrer

SAFETY! *SAFETY: Be sure to follow Milli's Safety Tips and do this activity only with adult supervision! Do not drink any of the liquids used in this activity. Eye protection must be worn by everyone performing this activity.*

Procedure

1. From a piece of heavy card stock, use the scissors to cut out a star. Do not cut into the paper from the edge to the center. Instead, fold the card to start the cut or carefully poke a hole near the center of the card and then begin to cut. The card with the star removed is the stencil.
2. Pour 3 tablespoons of very warm water into the plastic cup.
3. Add 1 tablespoon of Epsom salt to the warm water and stir. Continue adding Epsom salt, one tablespoon at a time, and stir until no more dissolves.
4. Place the stencil flat on the black paper.
5. Pour the Epsom salt solution into a small bowl. Dip the sponge in the solution and dab the solution onto the stencil.
6. Carefully lift the stencil and move it to a different location on the same piece of black paper.
7. Dip the sponge into the solution and dab the stencil again making another star.
8. Repeat Steps 6 and 7 to produce a number of stars.
9. Wait about 15 minutes. Observe the crystal patterns that appear.
10. Pour the excess Epsom salt solution down the drain and rinse the cup and bowl with water.
11. Thoroughly clean the work area and wash your hands.

Where's the Chemistry?

For most substances that dissolve in water, using hotter water means more of the substance will dissolve. When a liquid has as much dissolved substance in it as it can possibly hold, it is called a saturated solution. When the water from the solution evaporates, the crystals of Epsom salt will reform on the paper. The crystals may not look the same as they did before they were dissolved because of the temperature in the room and how quickly the water evaporates. The process of making rock candy is very similar. Sugar is added to very hot water until no more will dissolve. A string or stick is placed into the solution. The solution is allowed to stand for a period of time without being disturbed. As the water from the solution evaporates, sugar crystals grow on the string or stick.

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".