

An important quality of soap is how much suds it makes and how long the suds last. Suds help spread out the soap molecules so more of them can work to clean the greasy dirt. But sometimes other chemicals can keep soap from being its sudsiest. Try this activity to see what can cause trouble when it comes to bubbles.

Materials:

- 3 small cups
- Ivory soap
- Popsicle stick
- 1 sheet of paper
- 2 straws
- Dropper
- Epsom salt
- Water
- Masking tape
- Pen
- Newspapers

Procedures:

1. Cover your work surface with newspaper. Label your three cups soap, soap + Epsom salt, and Epsom salt.
2. Place the bar of Ivory soap on the piece of paper. Scrape the soap once with a Popsicle stick to get a small soap shaving.
3. Place 1 tablespoon of water in the cup labeled soap and add the soap shaving to the water and gently mix.
4. Pour about $\frac{1}{2}$ of the soapy water from the soap cup into the soap + Epsom salt cup.
5. Put 2 teaspoons of water in the Epsom salt cup. Add $\frac{1}{2}$ teaspoon of Epsom salt and stir until as much Epsom salt dissolves as possible.

6. Use a dropper to add 3 or 4 drops of Epsom salt solution to the cup labeled soap + Epsom salt. What do you notice?



7. Place a straw into the soap cup and gently blow into the liquid to produce bubbles. Be sure to blow into the liquid - do not suck the liquid in. Does the solution bubble pretty well?
8. Now place a new straw in the cup marked soap + Epsom salt. Gently blow into the liquid to produce bubbles. Be sure to blow into the liquid- do not suck the liquid in! Does the solution bubble pretty well?



Think about this ...

You probably saw that when soapy water has Epsom salt dissolved in it, the soapy water doesn't make very good bubbles. Let's try a different way to see if dissolving table salt in water changes the amount of bubbles your soap will make!

Materials:

- Cup
- Water
- Soap
- Sink
- Salt
- Measuring spoons

Procedures:

1. Hold a bar of soap in your hands. Ask a partner to slowly pour a cup of warm water over the soap as you move the soap in your hands to make suds.



2. Look at the amount of suds you made and then rinse off your hands. Add a tablespoon of salt to a cup of warm water and stir until most or all of the salt dissolves.

3. Hold the soap again as you did before. Ask your partner to slowly pour the salt water over the soap as you move your hands to make suds. What did you notice?

Where's the Chemistry?

Epsom salt is made of a chemical called magnesium sulfate. When magnesium sulfate is dissolved in water and added to soapy water, the magnesium combines with the soap. This combination is actually a new substance that doesn't dissolve well in water. The common name for this substance is soap scum. Since it can't dissolve in water, the soap in the soap scum can't get back into the water and can't make bubbles.



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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".

