

Rooting for Sink and Float!

You know that some objects sink in water and other objects float. A carrot slice is an example of an object that sinks in water. However, it is possible to get a carrot slice to float. Just add salt.

Materials:

Warm water
Salt
Spoon
Carrot slices

Procedures:

1. Label one cup water and another cup salt water.



2. Pour about cup of warm water into each cup.
3. Dissolve as much salt as possible into the water in the cup labeled salt water.
4. Place a slice of carrot into the water in each cup. What did you observe?



Think about this ...

If the carrot sinks in fresh water, is the carrot more or less dense than the fresh water? If the carrot floats in salt water, is the carrot more or less dense than the salt water? So if the same object (the carrot slice) sinks in fresh water and floats on salt water, does this mean that the salt water is more or less dense than the fresh water?

You can see whether salt water or fresh water is more dense by doing a simple experiment.

1. Make a salt water solution by dissolving 1 teaspoon of salt in 1 tablespoon of water. Add 1 drop of food coloring and swirl to mix.
2. Put fresh water in a separate cup until it is about half filled. Use a straw or dropper to pick up some of the colored salt water solution. While watching from the side of the cup, drip a drop of salt water into the fresh water. What do you observe?
3. Now do the whole thing again but this time, color the fresh water and drip it into the colorless salt water. What do you observe?
4. Does this help you decide whether salt water is more or less dense than fresh water?

Where's the Chemistry?

The carrot slice sinks in plain water because it weighs more than water. Imagine a bit of water that is exactly the same size and shape as the carrot. If you could compare the weight of the carrot slice and this same volume of water, the carrot slice would weigh more.

When you add salt to water, the carrot slice begins to float. This is because you increase the weight of the water. If you could compare the weight of the carrot slice and this same volume of salty water, the carrot slice would weigh less. The carrot slice floats because it weighs less than the salt water.



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".

