

Break the Tension: A Water Experiment

Surface tension is one of water's most important properties. It's the reason that water collects in drops. It's also why water can travel up a plant stem, or get to your cells through the smallest blood vessels. Help your child understand surface tension by showing her how she can create a "skin" on the surface of water with this interesting surface tension experiment.

What You Need:

- Drinking glass
- Water
- Liquid dishwashing detergent
- Ground pepper
- Paper clips
- Piece of paper towel



What You Do:

1. Fill a cup of water. Ask your child: "Do you think a paper clip will float in the water?" Drop one in the cup to find out. Since the paper clip is denser than the water, it will sink to the bottom of the cup.
2. Now find out if you can use surface tension to float the paper clip: Gently lay the paper clip flat on the surface of the water. This can be tricky—it may help to place a piece of paper towel slightly bigger than the paper clip in the water. Then lay the paper clip on top of it. In a minute or so, the paper towel will sink, leaving the paper clip floating on top of the water. Even though the paper clip is still denser than the water, the strong attraction between the water molecules on the surface forms a type of "skin" that supports the clip.
3. Now put a drop of dish soap in the water. This will bind with the water molecules, interfering with the surface tension. The paper clip will sink. The detergent disrupts the molecules and "breaks the tension." You can try floating other things on top of the water if you want; pepper floats well until you add dish soap. Can you find any other lightweight items that will float?

What Happened?

Surface tension happens when hydrogen bonds are formed between water molecules. The bonds, which are formed when hydrogen atoms in one water molecule are attracted to oxygen atoms in another water molecule, create a strong and flexible film on the water's surface.