

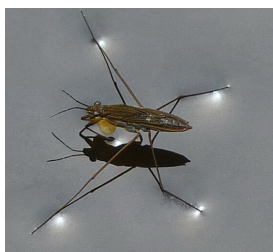


RUNAWAY PEPPER

Soap changes the surface tension of water by weakening it.

Materials

One plastic cup of water
Pepper shaker
Small container of liquid soap



In this picture, a water strider (aquarius remigis) is held up by the surface tension of a pond. In this experiment, you will see how surface tension works and how soap effects it!

Photo credit: Schnobby

Procedure

- Have you ever observed spiders or tiny insects walking across the surface of water in a pond or mud puddle? Are the bugs really “walking on water”?
- When you see this, you are seeing the **surface tension** of water. The weight of the tiny bugs is not great enough to break the surface tension of water.
- Shake pepper into the cup of water. Let’s pretend that these grains of pepper are like the tiny bugs floating on or held up by the surface tension of water.
- There is something that can break the surface tension of water and make these pepper grains sink. Place one drop of liquid soap into the cup of water.

Results

As soon as the soap entered the water, the pepper grains sank to the bottom!

Why?

Have you ever been on dishwashing duty at home after supper?

When you are doing the dishes, what do you put on your scrub brush to clean up the mess? – Dishwashing soap.

A property of soap is that it weakens surface tension. It disrupts the tendency for water molecules to stick together. When you wash the dishes, you are making use of predictable properties of matter to help you do the work. When you put even a tiny amount of liquid soap in your cup, it weakens the surface tension, and the water can no longer hold up the pepper grains.

To learn more about surface tension, check out the Pink Palace Museum's *Fun with Physical Science* program. To learn more about insects, check out the *Small Worlds* gallery in the **Natural History** exhibits at the Pink Palace Museum.