



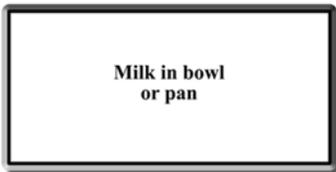
EXPERIMENT: "Speed Boat Soap!"

This activity is very simple but has a big "wow" factor. It is surprising just how fast this little bread bag clip boat can go.

What do you think will happen if you put a drop of dish soap into the hole of a floating bread bag clip? Write your hypothesis (best guess) below.

HYPOTHESIS: _____

Step 1



Pour a thin layer of milk or water into a bowl or pan, just enough so the bread bag clip can float on it. *Note: with milk, the clip will go slower but you can repeat it. With water, the clip will go very fast, but you will have to start all over to do it again.*

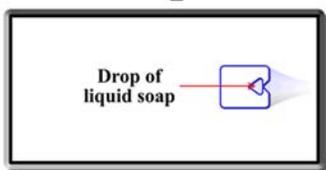
Step 2



Float the bread bag clip at one end as shown. You want the hole in the clip to be at the back of the "boat".

What happened?

Step 3



Now put a drop of liquid soap into the bread clip's hole. You can use a straw or your finger. Try and let the soap fall into the hole.

What happened?

For the accompanying video, additional experiments, and to see our curricula offerings, go to:

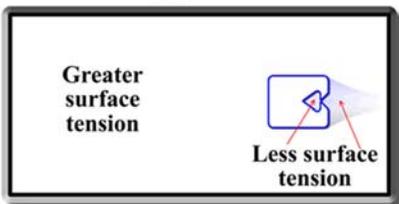
Experiment.EScience.com



Conclusion

Why do you think the bread clip moved when the soap was added? Hint: it has to do with surface tension.

So What Happened?



How does it work?

First, we need to understand that water has a certain amount of tension (type of force) on its surface. It is not too strong, but this is why a water strider (water insect) can run across the surface and not sink. This tension is there because water molecules are attracted to each other. When soap is put on the surface of the water, mixing between the water molecules, the surface tension becomes less because the water molecules can't hold onto each other as well. So when you put a drop of soap into the bread bag clip's hole and it spreads out the back, the surface tension in front of the clip is greater than the surface tension inside (and just behind) the hole. The stronger tension in front of the boat actually pulls it along.

Try this:

Start with a fresh pan of milk or water. Make sure all the soap has been completely rinsed out. Also, **make sure the bread clip has all the soap rinsed off.** This time put a drop of food coloring into the bread bag clip's hole and then put a drop of soap in.

What happened?
