

SCIENCE FROM HOME

BALLOON ON A STICK

Instructions:

Procedure Version 1:

Fill your container about $\frac{1}{2}$ - $\frac{3}{4}$ full of oil

Add water so that there is about 1" (2.5cm) at the bottom of the container

Add food coloring if desired

Add the effervescent tablet and watch what happens!

Questions:

Why doesn't the balloon pop?

What is the purpose of the oil/soap? Try doing the experiment without it.

What happens if you try to put the skewer through a different direction?

Try using a piece of tape on the balloon where you push the skewer through. What does this do?

How it works:

Balloons are made of long strands or chains of molecules called polymers. Polymers have elasticity, allowing them to stretch. When you blow up a balloon these chains don't stretch evenly, as some areas are under more strain than others. In the areas where there is less strain from the air in the balloon, you can gently stretch the polymers around a skewer. Placing oil or dish soap on the skewer reduces the tension on the balloon to allow the skewer to slide between the polymer molecules so the balloon does not pop. The polymer chains close around the skewer, preventing air from escaping.

Going beyond:

Try using a sharpened pencil, metal skewer, or straight pin in place of the wooden skewer.

Does the amount of air in the balloon change how easy it is to pierce the balloon?

Materials:

Balloon

Oil or liquid soap

Wooden skewer

Key terms:

Polymer

Strain / Stress

