

# Poke but Don't Soak

Different kinds of materials are good for different uses. Some materials need to be stiff and some need to be flexible or stretchy. Here's an activity that uses two different stretchy materials that can do some surprising things!

## What you'll need

- Quart-size zip-closing plastic bag
- Sharpened pencils
- Water
- Bucket or other waste container

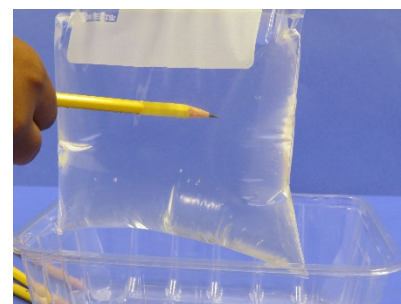


## Be safe

Handle sharp objects, such as pencils or a skewer, with care. Always work with an adult to supervise and guide you. You and your adult partner should both wear properly fitting safety goggles. Do not taste or eat any food items you are testing.

## Here's what to do

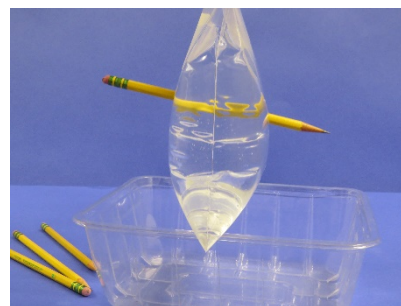
1. Fill the plastic bag about 2/3-full of water. Seal the bag securely. Hold the bag over a sink or bucket or over the ground outside.
2. While you hold the bag, your adult partner should slowly push the point of the pencil through the side of the plastic bag and into the water. **Don't take the pencil out.**



What did you notice? Did any water spill?

3. Ask your partner to slowly push the pencil all the way through the other side of the bag.

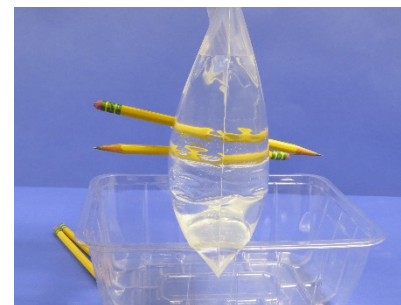
What happened? Look closely at the plastic around the pencil where it goes into and out of the bag. How would you describe the way the plastic fits around the pencil?



4. Leave the pencil in the bag and ask your adult partner to poke another pencil all the way through the bag. Do the same thing with another sharpened pencil. How about another?

## What to expect

The pencils will go through the bag but no water will leak out. Even with two or more pencils poked through the bag, the water should not leak.



## What else could you try?

The rubber material that makes up a balloon is flexible and elastic too. Let's see if your adult partner can poke an inflated balloon without it popping!

### What you'll need

- Medium to large size round balloon
- Wooden skewer
- Vegetable oil



### Be safe

Be sure to review the safety instructions on page 1 before proceeding.

### Here's what to do

1. Ask your adult partner to blow up a round balloon until it is about  $\frac{1}{2}$ -full and to make a knot in the end to tie the balloon closed.
2. Your partner should rub a little vegetable oil along the length of the skewer and carefully poke it through the thick, unexpanded material near the knot of the balloon.  
**Don't take the skewer out.**

What did you notice? Did the balloon pop?

3. Ask your partner to slowly push the skewer all the way through the other side of the balloon so that it comes out of the thicker material at the top.

What happened? Look closely at the rubber around the skewer where it goes into and out of the balloon. How would you describe the way the rubber fits around the skewer?



### What to expect

The skewer will go through the balloon and the balloon will not pop and little air will leak out.

### What's happening in there?

The molecules that make up the plastic bag and the balloon are very flexible. When the pencil or skewer go through the material, the molecules shift and mold themselves around the poking object. This flexibility creates a seal so that the water or air does not leak out.