

# Unpoppable Balloon

## You will need:

- Balloon
- Skewer
- Oil or liquid soap



## THE SCIENCE

Think back to the polymers in the Leakproof Bag activity.

The balloon is made of a similar polymer which contains molecules attached in long, flexible chains. Blowing up the balloon stretches these strands of polymer chains. At either end of the balloon, the rubber molecules are under the least amount of stress or strain so they are flexible enough to push apart by the skewer. The polymer chains at any other part of the balloon are under too much strain to be pushed apart without breaking.

1. Inflate the balloon until it's nearly full size and then let about one-third of the air out.
2. Tie a knot in the end of the balloon.
3. Look at the balloon – there's a thick area of rubber at both ends of it (where you tied the knot and at the opposite end).
4. Coat the wooden skewer with a few drops of vegetable oil or dish soap.
5. Push the skewer through the thicker area of rubber at each end of the balloon – your family and friends will be amazed with your magic!

How full can you blow the balloon and still get the skewer through?