

The Sachet Submarine

Make your very own submarine, that you control, inside a bottle! Let's get started!

What do I need:

- A screw top bottle full of water
- A sachet, tomato ketchup, brown sauce or in this case vinegar
- A glass of water
- Some Blue Tac

How do I do it?

STEP 1 - Before we get going we need to make sure that our sachet floats just perfectly. Put the sachet into your glass of water and if it floats on top then just add a little Blue Tac until it 'just' floats. Just like the one in the image on the next page!

(You can also do this by trying a handful of sachets till you get one that's just right)

STEP 2 - Pop the sachet inside the drinks bottle and screw the lid on tight!

STEP 3 - Dive your sachet submarine into the depths simply by squeezing the side of the bottle.

STEP 4 - Make your sachet submarine rise back up simply by releasing the bottle.

What's going on?

The little pocket of air inside the sachet means that it's lighter (less dense) and so it floats on top of the water. The Blue Tac is heavier (more dense) so adding a little bit means that the sachet barely floats.

When you squeeze the bottle this increases the pressure! This squashes that little pocket of air inside the sachet making it more dense so it starts to sink. When you let go of the bottle, the air inside the sachet spreads back out and the sachet gets bigger (making it less dense) and so your submarine rises back up to the surface!

NOTE: More dense just means heavier for the same size!

More Fun Please - Experiment like a real scientist!

- Try different sachets and see what happens.
- What else could you use to make a submarine?
- Try only half filling the bottle with water, what happens?

