

The collapsing pop bottle

A bottle collapses without being touched – thanks to a little preparation and some air pressure!

In the classroom

What you need

Some very hot water and an empty, screw-topped plastic pop bottle.

What you do

- Choose a quiet time when the children are writing or otherwise occupied.
- Pour a small amount of very hot water into the plastic bottle.
- Swirl it round, pour it out, put it on your desk and screw the lid on tightly.
- If necessary, draw the children's attention to the bottle.
- What happens to the bottle?*

What happens

Once the lid is screwed on tightly, there is a loud creaking and cracking as the bottle collapses.

Background Information

Why it happens

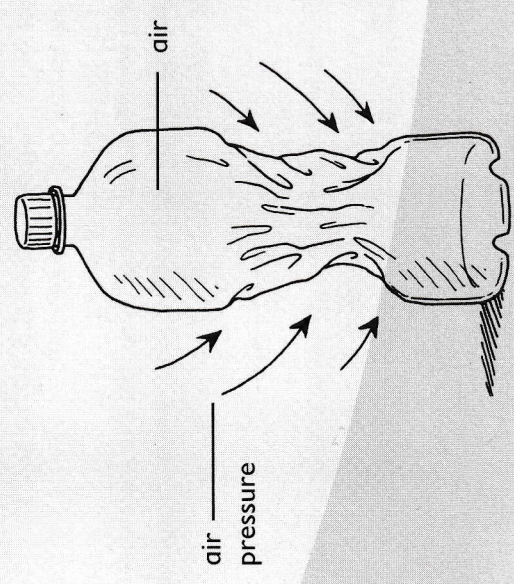
Heating the bottle with hot water expands the air inside and pushes some air out. Closing the lid tightly means that as the hot air cools and contracts, no new air can enter. As a result, the air pressure outside the bottle pushes the sides of the bottle in.

By the way

Have you ever had a shower and the shower curtain has blown inwards even though the window was closed and there was no draught? The differences in air pressure between the hot, expanded air inside the shower and the colder air outside the shower moves the curtain. Changes in air pressure also have an effect in nature. The heat of the Sun varies in intensity across the Earth. In some places it leads to high air pressure, in others it leads to low pressure. Air rushes from the high-pressure areas to the low, resulting in winds and weather.



Take care when pouring the hot water into the bottle.



Curriculum links

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Envvtl Sc/Science/E&S/ME/Level C/Target 1