

Resource 1.3

Make Some Carbon Dioxide

You will require:

- Empty small soft drink bottle
- Vinegar
- Bicarbonate of soda
- Balloon
- Spoon

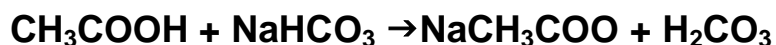
You will need to:

- Measure and place 100ml of vinegar in the bottle.
- Using a spoon half fill the balloon with bicarbonate of soda.
- Carefully stretch the balloon over the mouth of the bottle.
- Hold the balloon upright and shake bicarbonate soda into the bottle – (the balloon should start blowing up).
- Observe what is happening in the bottle – the bubbles of gas filling up the balloon are carbon dioxide.

Think about what's happening.

When vinegar and bicarbonate of soda mix together, there is a fast chemical reaction. There are several products of the reaction, although it is the carbon dioxide gas (CO₂) that inflates the balloon. As more carbon dioxide is produced, the bits of carbon dioxide (called molecules) are squashed together and begin to push, or apply a force, on all the inside surfaces thus inflating the balloon.

As vinegar (dilute acetic acid) is a weak acid and baking soda (sodium bicarbonate) is a weak base, it is an example of an acid-base reaction. The equation is shown below:



Acetic acid plus sodium bicarbonate makes sodium acetate plus carbonic acid

Source: Introduction to CCS, CSIRO/ Global CCS Institute, 2012, page 27.