



national science week

9-17 August 2025



DIY Lava Lamp

Make a lava lamp using an acid -base reaction (neutralization)

Safety:

- Safety glasses/goggles and rubber/vinyl gloves are recommended with all chemical experiments and demonstrations.
- If using a jar or PET bottle do not put the lid on - the gas needs to escape.

What you need

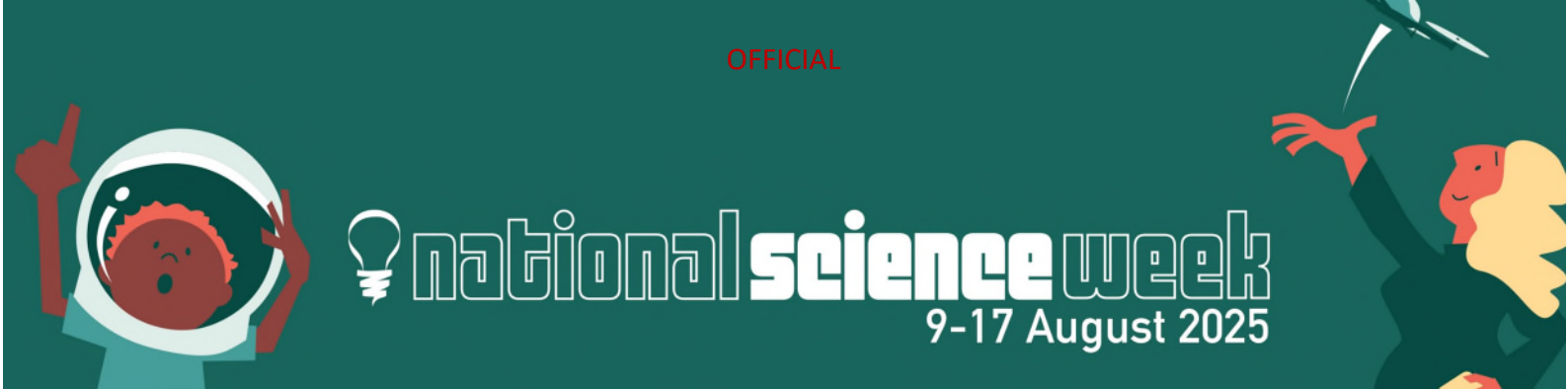
- 3 containers of roughly the same size - clear drinking glasses, jars, or plastic bottles
- Vinegar
- Vegetable oil
- Bicarbonate of Soda (Bicarb)
- Food colouring (any colour except yellow)
- tablespoon
- Cloth to wipe up any spills

What to do

- 1) Pour vinegar into a container so it is one-quarter full. Pour oil into another container so it is half full.
- 2) Add a heaped tablespoon of bicarb into the third container.
- 3) Gently pour the oil into the container with the bicarb., so it rests on top.
- 4) Add a few drops of food colouring to the vinegar.
- 5) Gently pour the coloured vinegar into the container with bicarb and oil.
- 6) Observe how the fluids mix or don't mix.

What's happening?

When you pour the vinegar into the oil, they don't mix but form 2 distinct layers because oil is less dense than vinegar. When the vinegar and bicarb touch each other at the bottom of the container, a chemical reaction occurs, producing water and bubbles of carbon dioxide (CO₂) gas. The water combines with the vinegar, diluting it slightly. The carbon dioxide gas rises through both the vinegar and oil because it is less dense than the liquids. When a gas bubble passes from the vinegar into the oil, it pulls a small amount of vinegar up with it (like a child wearing floaties in a pool). When the bubble reaches the surface of the oil and pops, the coloured vinegar falls back through the oil to the vinegar layer.

**Results**

Coloured bubbles will move up and down in random patterns. This will continue until the reaction finishes when all the bicarb reacts with the vinegar.

Did you know?

Adding vinegar to bicarb is an example of an acid-base reaction. All acid-base reactions create carbon dioxide gas and water. You can substitute the vinegar with lemon juice, and it still works.

Find out more

- You can create a lava lamp using a fizzy tablet

<https://www.scienceweek.net.au/diy-science-lava-lamp/>