

Make your own 'lava lamp'

You will need:

- Small plastic drink bottle
- Vegetable oil
- Food colouring
- Fizzing tablet such as Alka-seltzer or Disprol

What you do:

- Quarter-fill the drinks bottle with water and add a few drops of food colouring. Shake gently to ensure they are well mixed.
- Fill the rest of the bottle with the vegetable oil.
- Add half of one of the fizzing tablets and watch what happens. You can add more tablet when the first one has all dissolved.

What you see:

The fizzing tablet releases carbon dioxide as it dissolves. The bubbles of carbon dioxide attach themselves to some of the water and food colouring mixture and pull it up to the top as they rise. When the bubbles reach the top they pop and the water mixture sinks back through the oil to the bottom.

Why does this happen?

The water is denser than the oil so usually sinks to the bottom of a mixture of the two. Combined with a bubble of carbon dioxide, however, it is less dense and so rises through the oil. Once the bubble bursts and the carbon dioxide is released, the water is again denser and so sinks back through the oil.



Making a model lava lamp



Bubbles of gas at the interface between the oil and water

Is this like a real lava lamp?

The model lamp is similar to a real lava lamp in that it contains two liquids of different densities which do not mix. Real lava lamps are usually powered by heat which sets up convection currents in the mixture. The more dense liquid at the bottom (blue in the lamp shown at the right) is heated, causing it to expand. This expansion reduces the density so that it rises and bubbles up through the other liquid (purple in the lamp shown) to the surface. When it cools, the density increases again and the liquid sinks.

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