

How to Make a Lava Lamp

Lava lamps are a classic science activity that's super cool. Explore the interactions between oil and water and learn how to make a lava lamp with simple kitchen ingredients.

What Is a Lava Lamp?

The original LAVA[®] Lamp is made from coloured wax suspended in a liquid. The base of the lamp is heated by a light bulb. As the coloured wax heats up, it becomes less dense and rises. Once the wax reaches the top, it cools down and sinks.

Lava Lamp Experiment

How to Make a Lava Lamp with Alka-Seltzer

Your typical lava lamp experiment uses Alka-Seltzer because it requires the least amount of ingredients and is easy.

How to Make a Lava Lamp with Alka-Seltzer

Materials Needed:

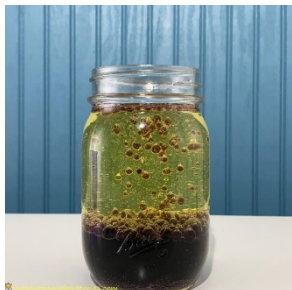
- clear container like a drinking glass or peanut butter jar, juice container, or drink bottle
- water (about 1/2 cup)
- cooking oil (1-2 cups – enough to fill your container at least three quarters full)
- Alka-Seltzer
- food colouring.

Instructions:

1. Fill your clear container about three quarters full with oil.
2. Next fill the container with water. (You want at least a few inches of water.) The water will sink to the bottom of the container because it is more dense than the oil.



3. Add 5-10 drops of food colouring. The food colouring will also sink to the bottom.
4. Break up the Alka-Seltzer into small pieces. Drop one piece into the oil. It will sink into the water layer.



Once the Alka-Seltzer hits the water, it will dissolve. The baking soda (sodium bicarbonate) will react with the citric acid to form water, a salt, and carbon dioxide.

The carbon dioxide will carry some of the coloured water up to the surface and you'll see cool bubbles in the oil layer.

The Science Behind the Lava Lamp Experiment

Instead of using heat and convection to see motion in our lava lamps, we are using chemistry. We are still using differences in density to see movement of the liquids.

Oil is less dense than water. Our lava lamps have an oil layer sitting on top of a water layer. We want our water to bubble up into the oil layer. To do this we are using an acid-base reaction to produce a gas (carbon dioxide).

The gas is less dense than the water and oil. The gas bubbles will rise into the oil layer and take some of the coloured water with them. Once the gas rises all the way to the top of the oil, it will exit the oil layer leaving the coloured water behind. The coloured water is more dense than the oil, so it will sink to the bottom.