

Homemade LAVA LAMP!

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Create your own mesmerizing "lava lamp" using household items and the powers of science! This activity shows the principles of density and polarity at work!

- THE SCIENCE BEHIND IT -

Density is the measurement of how much space an object or substance takes up (volume) in relation to the amount of matter that makes it up (mass). Those objects or substances with a greater density are heavier and more compact. One example of this is water versus oil. Do you remember which one sinks and which one floats?

Polarity is what prevents the oil and water from mixing together. The structure of water molecules (H₂O) consists of two hydrogen atoms that carry a positive charge and an oxygen atom that carries a negative charge. These two are attracted to each other at their poles because of the opposite charges, so they cling together! Think - *opposites attract!*

Oil, however, is considered "non-polar" because it doesn't have positive or negative charges - therefore nothing is attracted to it and the molecules don't mix! This is what makes this DIY Lava Lamp work! The water is more dense than the oil, so it sinks to the bottom. Food coloring is mostly water-based so it mixes with the water rather than the oil. These molecules cling together and hitch a ride on the carbon dioxide (CO₂) bubbles that the Alka-Seltzer gives off, but won't mix with the floating oil because of polarity! Once the bubbles pop at the surface, the colorful blob will sink back down to the bottom because of the water's density, where it will then catch another ride with the bubbles!

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MATERIALS

Empty Bottle or Container

Water

Oil

Food Coloring

Alka-Seltzer Tablets

DIRECTIONS



Step 1: Fill your bottle about halfway or three-quarters full of oil.

Step 2: Add a cup of water and observe what happens. Be sure to leave room for air to escape at the top.

Step 3: Add at least 10 drops of food dye (just one color) and observe.

Step 4: Break up an Alka-Seltzer tablet into smaller pieces and drop them into the bottle. Do not shake.

Step 5: Watch your lava lamp erupt into activity! As the reaction slows down, add more pieces of Alka-Seltzer. Have fun!