

Directions for building a lava lamp

Materials needed:

- Newspaper or plastic table cloth to cover your workspace
- Plastic water bottle – 500 ml or larger (1 cup is ~240 ml)
- Vegetable Oil – 300 to 375 ml
- Water
- Food coloring – several drops of your favorite color.
- 1 Alka Seltzer tablet broken into several pieces (the generic brand tablets will work fine)
- Flashlight
- For added fun: confetti, glitter, little plastic beads

Procedure:

1. Cover your workspace with newspaper or a plastic table cloth.
2. Fill the plastic bottle two-thirds to three-quarters full with vegetable oil.
3. Fill the rest of the bottle with water. Leave some air space at the top.
4. Watch what happens. Can you explain it? Make a hypothesis (an educated guess).
5. Add the food coloring. What happens? Can you explain it? Make a hypothesis.
6. Put the cap on the bottle and shake. What happens? Put the bottle down and let it sit for a while. What happens? Can you explain it?
7. Take off the bottle cap. If you have confetti, glitter or small beads, put them into the bottle now. What happens?
8. Now drop your Alka Seltzer pieces into the bottle, one at a time. Do not recap the bottle. What happens? Can you explain it? Why should you not recap the bottle?
9. Hold your flashlight at the base of the bottle so it is shining into the liquid.
10. Show your friends.

How does it work?

Water is composed of tiny particles called molecules. These molecules have positive and negative charges, and the oil does not have these charges. Thus, the water and oil won't mix. Based on its behavior, do you think the food coloring is more like the water or the oil? Also the water is denser than the oil so it sinks to the bottom. Look up "density" if you don't know this word.

Alka Seltzer creates carbon dioxide gas when you place it in water, and carbon dioxide will rise in water (picture soda pop bubbles in your mind). How does that information fit with what you saw when you dropped the tablets in the bottle?

More information:

<http://www.sciencekids.co.nz/experiments/easylavalamp.html>

<http://www.stevespanglerscience.com/lab/experiments/bubbling-lava-lamp/>

Water is charged or "polar" and oil is not charged, or "non-polar." Watch this one with that in mind: <https://www.youtube.com/watch?v=ASLUY2U1M-8>

Here's a cool demonstration. Watch what the boy is doing and see if you can replicate it: <https://www.youtube.com/watch?v=IIEFDo0fAfo>