Make Your Own Lava Lamp

15 - 20 minutes

Have you ever seen a lava lamp? Lava lamps light up floating blobs of colorful liquid. These cool room decorations don't actually have real lava in them, but the science behind them is as hypnotizing as their waxy shapes. While making a real lava lamp would be a little too complicated, you can make your own DIY lava lamp with household items in this science lab.

Materials

- [ ] Empty plastic water bottles
- [ ] Cooking or baby oil
- [ ] Water
- [ ] Food coloring
- [ ] Alka-Seltzer tablet

⚠ WARNING! Do Not add Alka-Selzer to a sealed container. Leave top off to not build pressure.

Procedure

Step 1:

Gather all of your materials. Cooking oil works great, but if you want to see the colors better, clear baby oil makes it easier.

Step 2:

Fill up an empty plastic water bottle halfway with water.

Step 3:

Fill up the rest of the water bottle with cooking or baby oil. Notice what happens to the water and oil. Do they mix?

Step 4:

Now, choose your favorite colors and add some drops of food coloring to your lava lamp.

Step 5:

Finally, take an Alka-Seltzer tablet, break it into four pieces, and add a piece to your lava lamp. Now, you can sit back and watch your lava lamp spring to action!

TIP:

If you want to make this lab more like an experiment, you can test what happens when you change things around.

- Switch up the amount of water and oil in the bottle and see how it affects your lamp.
- Try changing the temperature of the water and observe what happens.

Diving Deeper!

What did you observe from your lava lamp?

Exploring Density!

The first observation you might have made is how water and oil interacted. When the oil was poured into the water bottle, it didn't mix with the water--instead, the two separated into their own layers, with water on the bottom and oil on top. This is because of their differences in **density**. Density is used to describe how much space something takes up, or its volume, in relation to the amount of matter in that substance, its mass. Heavy and closely packed things have higher density, and lighter and less-packed things have lower density. Because the oil is lighter than the water, the oil sits on top of the water. The two also don't mix because they are not attracted to each other.

Tower of substances with different densities!

When you add the Alka-Seltzer tablet, it sinks down to the water. When the two meet, a chemical reaction takes place, producing carbon dioxide gas bubbles. Now, remember the differences in the density of water and oil? The carbon dioxide bubbles now have a lower density than both water and oil, so it travels up to the top, bringing along some water too. At the surface, the bubbles pop, and the gas escapes. The leftover water from the bubbles is now denser than the oil, so it sinks back down.

Clean Up

If you want to dispose of the oil, don't pour it down the drain! This can cause your sink to clog. Ask a parent for help, or screw the bottle tightly and throw it in the trash.