

# DIY Lava Lamp

## Materials:

There are a few different options for making your lava lamp so you can pick the option that works best with your readily available supplies, but let's start with a complete supply list for all the different options. Then you can try them all and see what works best for you!

Jars or Bottles – clear (washed, large juice bottles worked well, but so do mason jars)

Water

Tonic Water

Vegetable oil (or baby oil)

Alka Seltzer (or similar)

Liquid Food Colouring

Photoluminescent pigment

{ Baking Soda (Sodium Bicarbonate) }  
{ Citric Acid } Substitute for Alka Seltzer  
Vinegar

## Basic DIY Lava Lamp Directions

- Fill the bottom of the jar with water to about 1/4 full.
- Next add vegetable oil. Fill the bottle leaving about an inch at the top. In a mason jar I fill to the lip.
- Next add a few drops of food colouring. This is a fascinating step watching as the food colouring drops fall through the oil and rest on top of the water before slowly starting to mix with the water.
- Now it's time for the magic! Add a teaspoon of Alka Seltzer (if yours are in tablet form, break the tablets into quarters and add a quarter tablet).

Watch the lava lamp come to life with bubbles!

After a few minutes the reaction will settle down. To start it again, simply add more Alka Seltzer.

If you want to store the container and use it at a later time simply set it somewhere safe. If you need to put a lid on the container, make sure the reaction has completely stopped as a gas is released and a build up of pressure from the reaction could cause the container to rupture if you place a lid on it.



## **Glow in the Dark Lava Lamp**

- Same procedure as the basic one but use tonic water instead of regular water.
- You could also add two different colors to create a new and combined color.
- See the glow by using a blacklight/ UV light.

## **Glow in the Dark Lava Lamps Without Tonic Water**

- Instead of food colouring add some glow in the dark pigment (Photoluminescent pigment) to the water. The best part was that this one glowed without needing a black light. Although you can use the black light too.

## **A Final Quick and Easy Lava Lamp Experiment**

If you are still stuck for supplies and need a really simple way of making a lava lamp. Here is an easy way!

Place 2 tablespoons of baking soda in the bottom of a mason jar. Pour oil into the jar. In a second container add vinegar and a few drops of food colouring, mix. Now, using a dropper, add a few drops of coloured vinegar to the top of the oil and watch the reaction!

As the bubbles float through the oil down into water the bubbly reaction will be triggered



## Lava Lamp Science Experiment

Lava Lamps teach so many science concepts.

First, it is a wonderful demonstration about density. Oil is lighter than water and floats on top of the bottom water layer. You can explore this by placing a lid on your lava lamp (only once the reaction is completely finished) and gently tipping the bottle back and forth to watch the waves that form.

Diffusion is also evident as the food colouring mixes with the water in colourful swirls.

Our glow power with Tonic Water is due to the fact that quinine, a component of Tonic Water, fluoresces under black light. We have a different science concept powering the other glow lava lamp.

When we made our Glow in the Dark Lava Lamp with photoluminescent pigment the glow happens even without black light. Glow in the dark pigment powder has luminescent phosphors which luminescence (glow). For this glow to work it needs to charge in the light. The Lava Lamp will need to charge in bright light in order to glow. Once it is charged simply turn off the lights to see the glow. As the glow fades, simply expose it to bright light to charge it again.

The chemical reaction that powers our lava lamp is an acid-base reaction that releases CO<sub>2</sub> (Carbon Dioxide gas). The gas bubbles up (because it is less dense than oil) with bits of the coloured water trapped. At the top the gas is released and the water bubble falls back down to start the process again. The water falls because it is more dense than the oil.

