

# LEARNING RESOURCE

## LAVA LAMP

### MATERIALS

- A clear bottle or glass – any size or shape is fine if it is clear and taller is best.
- Tap water
- Vegetable oil or baby oil
- Food colouring
- Alka seltzer tablet(s) or another soluble or effervescent product, such as aspirin
- Funnel and jug (optional)

### PREPERATION

- None required.

### INSTRUCTIONS

1. Pour oil into your bottle until it is around one third full.
2. Predict what might happen if you add water to your bottle? Will the liquids mix? Pour water into the same bottle leaving at least a 2cm gap at the top and observe.
3. Add a few drops of food colouring into the top of the bottle and observe.
4. Break an alka seltzer tablet into smaller pieces and start to add these to the bottle one piece at a time – watch the bubbles dancing in the bottle. Repeat as many times as you like!

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## EXTENSION

- Once your lava lamp has stopped bubbling do you think you can get the two liquids to mix by giving the bottle a shake? Predict what you think might happen, screw the lid onto the bottle tightly and shake hard. Put the bottle back down and write down your observations.
- Can you add any other liquids to the bottle to make a three layered lava lamp?
- Why does the oil and water not mix together?
- Why does the food colouring mix with the water?
- What is the reaction that is occurring when the alka seltzer tablets dissolves in the water?
- Why do the coloured bubbles rise to the top and then fall back down to the water?

## HOW DOES IT WORK?

Oil and water never ever mix together in one container, they just don't like each other. They will sit in the same container but you will always find the water at the bottom of the container and the oil laying on top – this is because the oil is less dense than the water (or lighter), you could also say that the molecules in the oil are further apart than in the water.

We can force oil and water to mix together by adding in the alka seltzer tablet, this creates the awesome lava lamp effect. The bubbles produced by the 'effervescent' alka seltzer tablet are filled with gas making them light and forcing them to the top of the bottle, when they reach the top they are filled with water which is heavier than oil so they then sink back to the bottom of the container, the process repeats until the tablet runs out.