

Day 3 – Particle Density

Learning: Substances that are less dense will float on top of substances with a greater density.

Group Time:

1. Show them a piece of polystyrene and a rock about the same size, which one weighs more? The rock
2. Why does the rock weigh more than the polystyrene as they are the same size?
3. Show them a picture of the rock and polystyrene particle density. Showing that polystyrene and rock may be the same size, but the polystyrene particles are more spread out so weighing less.

Oil and water experiment (with whole group)

What you need:

- Oil
- Water
- Small Plastic Bottle

What to do:

1. Add a few drops of food colouring to the water.
2. Pour about $\frac{1}{4}$ cup of the coloured water along with a $\frac{1}{4}$ cup of cooking oil into the small soft drink bottle.
3. Screw the lid on tight and shake the bottle as hard as you can.
4. Put the bottle back down and have a look, it may have seemed as though the liquids were mixing together but the oil will float back to the top.

Group Time

1. Why does oil float above the water?
2. Remind them about the polystyrene and the rock. Even though you have the same amount of water and oil, oil weighs less because it has less particles, so it is lighter.

Lava Lamp (using the principle that oil does not mix with water)

<https://www.youtube.com/watch?v=7-BYKKtXCGU>

What you need:

1. 1.5 litre soft drink bottle
2. Water
3. Vegetable oil
4. Food Colouring
5. Dissolvable Panadol tablets
6. Funnel

What to do:

1. First fill your bottle $\frac{1}{4}$ of the way full with water.
2. Next add about 700ml of vegetable oil using a funnel to fill the bottle.

3. Add some food colouring (watch as it sinks down into the water).
7. Finally add a few pieces of the Dissolvable Panadol tablets that have been broken up.

Group Time

1. What does the Panadol tablets produce? **Carbon Dioxide???**
2. What does the Carbon Dioxide do? Rises to the surface pushing the water and food colouring along with it.
3. What happens when the carbon dioxide is released at the top of the bottle? The water and food colouring sink back down as they are more dense than the oil.

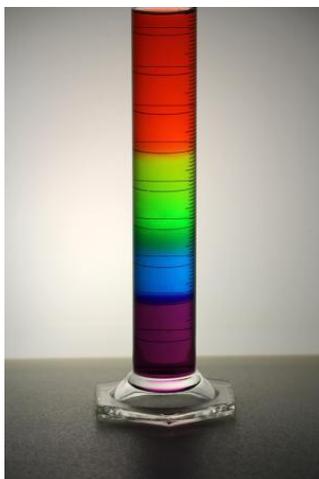
Rainbow Layers Experiment

What you need:

1. Four plastic beakers
2. Four different colours of food colouring
3. Sugar
4. Warm Water
5. Syringe
6. Long Glass
7. Plastic Spoons

What to do

1. In each of the four beakers fill them with 50ml of hot water.
2. Add food colouring to the water, you want a different colour for each density.
3. Add 1 tablespoon of sugar to the first beaker, 2 tablespoons of sugar to the second beaker, 3 tablespoons of sugar to the third beaker, and 4 tablespoons of sugar to the fourth beaker.
4. Stir until sugar dissolves.
5. Now let's make a rainbow using the different density solutions. Fill the glass with the contents of fourth beaker using the syringe.
6. Carefully layer some of the third beaker solution above the fourth beaker liquid. Try not to disturb the fourth beaker layer.
7. Then add second beaker solution, then first beaker solution.



Group Time after the Experiment:

1. Why were you able to layer the different water solutions? Different Particle Densities.
2. What does the sugar do to the water density? Increases the water density.

Show them a bowl with water with a piece a wood and a rock

1. Why does the wood float and rock sink? Wood particle density is less than water.

Make a Popsicle Boat



What you need:

1. 12 Jumbo Popsicle sticks
2. 1 Standard popsicle stick
3. PVA Glue
4. Card
5. Scissors
6. Marker Pens

What to do

