Teacher and Technician Sheet

In this practical students will:

- Carry out and observe the results of the practical.
- Report their findings using evidence from the practical.
- Draw a conclusion of what happens when water is dropped onto wax.

Introduction for teachers:

Wax is a solid and is related to oil. So does it act like oil does when placed in water?

This investigation or art activity allows young children to investigate the effects of mixing waxes with water, but in this activity the water is coloured with food colouring.

Curriculum range:

Lower primary age but can be used with younger secondary age students to investigate materials: links with:

- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions;
- using straightforward scientific evidence to answer questions or to support their findings;
- compare and group together everyday materials on the basis of their properties;
- know that some materials will mix, while others will not;
- build a more systematic understanding of materials by exploring and comparing the properties of a broad range of materials

Going further:

Students could use the effect to create a picture or design.

For older Primary they could move on to make oil and water emulsion see P008.

Hazard warnings:

There are no hazards with this investigation but there is a warning that some food colourings can stain the skin. To prevent this it is advisable to give the children plastic gloves to wear.

It can also be cheaper to dilute the colourings by dropping 10 drops of colour into 20 cm^3 of water.

Equipment:

Per group

- 1 large piece of waxed paper
- 1 wooden toothpick, wooden splint (or spent match)
- Red, green, yellow and blue diluted food colouring in small bottles or 1 % diluted food colourings in stoppered test tubes
- Water in a small bottle
- 5 pipettes or eye droppers for the colourings and water
- Paper towels
- Disposable plastic gloves

Technical notes:

Sandwich wrap or greaseproof paper can be used for the waxed paper and the effect of the attraction of the molecules. However, it‘s not as good visually as using a white background.

White laminating pouches can be used to good effect.

Some food colourings (a natural red in this case) may not leave any colouring on the paper

Food colouring solutions can also be prepared from solid powders if available. Make up a 1% solution of each colour (for example, 0.5 g in 50 cm^3 distilled water)

Sets of food colours in powder form can be purchased from school suppliers and prepared to a solution before use. These will be more economical to buy overall as a lot of solution can be produced from the solid.

Students may have to touch the coloured droplet for this to work or leave the toothpick/spill wetter for the water molecules to attract.

Results:

This is an easy experiment to set up and use. Students are encouraged to observe closely any differences between the droplets and they should be able to observe the attraction of the molecules.

It can be observed that the different food colouring droplets may sit on the paper in different ways.

They will also be left with an attractive design on paper at the end of the experiment.