



Dyeing to meet you!

How did people make their clothes different colours before chemical dyeing?

In this activity we will have a go at dyeing some fabric using different natural dyes. You might want to dye some of the wool you have spun or weaved using one of the other activities in this pack!

You have

- Some white wool or fabric to dye or SDC multi-fibre strips (see suppliers section at end of this activity) – cut in pieces small enough to fit in a beaker
- A selection of the following:
 - Turmeric
 - Saffron
 - Henna
 - Onion skins
 - Red cabbage
 - Bilberries
 - Blackcurrants
 - Tea
 - Coffee
 - Indigo
- Malt Vinegar - (for acid)
- Bicarbonate of soda (baking powder) – (for alkali)
- Beakers/glasses
- Spatulas/teaspoons
- Kettle & water
- A saucepan and access to a kitchen hob
- Measuring jug

Activity

These activities can be carried out using the minimum of science equipment. These are materials that the children will probably have come across before and they may even have some of them at home. This means that the materials are readily available, helps the children to feel comfortable in handling the materials and addresses a number of safety issues.

In pairs or threes choose one of the dyes below to make.

Powdered dyestuff (henna and turmeric)

This is the easiest type to use. Simply sprinkle a small quantity into the bottom of a beaker — just enough to cover it — then pour on boiling, or near boiling, water — about 100-150ml. Stir until as much as possible has dissolved. It is now ready to use. Henna works better if mixed into a paste with a little water before adding the rest of the water.

Onion skins, red cabbage

The cabbage needs to be chopped; the onion skins will do as they are. Place them in water, bring it to the boil and simmer for around 10 mins. The liquid can then be decanted off and used.

Tea, coffee, saffron

Very straight forward. You can use a teabag (open or sealed) or a spoon of coffee in about 100 ml of boiling water. Saffron only needs a few strands or a small pinch in 100 ml of boiling water. Leave them to brew for several minutes and then strain off the liquid.

Bilberries, blackcurrants

Use fresh if possible, otherwise those in a jar or tin work fine. Pour out about 50ml of juice and berries and crush the berries. Then pour on about 100 ml of boiling water. Leave for a few minutes then strain off the liquid.

With all the dyestuffs mentioned you can try changing the PH and colour of the dye by adding vinegar (acid) or baking soda (alkali). The turmeric changes quite spectacularly when baking soda is added, the red cabbage was used by scientists for many years as an indicator to measure acidity or alkalinity.

Once you have made your dye to the required colour, immerse your piece of wool or fabric in the dye and leave for as long as you like before taking it out and allowing it to dry.

And for the adventurous:

Indigo

This is quite complicated. Indigo powder is available from the supplier list. You will also need Washing Soda (sometimes just called Soda Crystals) and some sachets of Dylon Colour Run Remover. Both are available from supermarkets.

Make up a solution of washing soda — cover the bottom of a beaker with the crystals then add 100-150 ml of hot — not boiling — water. Stir until dissolved. Cover the bottom of a clean beaker with Indigo and use a small amount of the washing soda solution to make a paste. Adding a dash of washing up liquid helps to wet the powder. When you are happy with the paste add the rest of the washing soda solution and stir. Finally sprinkle some of the Colour Run Remover into your dye — just cover the surface - and stir. It is now ready to use. The fabric will be green when you take it out of the dye and it changes to blue as you rinse it and leave it in the air. Magic!

If you have access to other plant materials, here are some further suggestions for you to try and the colours they produce:

Bracken — lime green
Lichen — brown to purple
Elderberries — violet
Nettle — yellow green
Golden rod — lemon to gold
Privet leaves — dull to bright yellow
Heather — dull yellow

Extract the dye as for onion skins or red cabbage. Some will need to be boiled for longer. Trial and error is a wonderful thing!

Dyeing outside – ancient style!

NB- this activity effectively takes all day so it could be used as one activity happening on a whole day's event.

You have

Lots of onion skins
A cauldron or billy can (ask Scout or Guide leaders for help or the school cooks!)
Wool or fabric to dye (should be natural colour or white to start with)
Cream of tartar (from chemist)
Alum (from chemist)
A fire to cook on (again – get Scout leader or similar to assist!)

Activity

If you want to dye a large amount of wool or fabric (for example, if your group have spun or woven some wool in one of the other investigate activities) you could try being adventurous and using an open fire outside. You *must* do a risk assessment if you do this and make sure you have permission to light an open fire!

You need a lot of onion skins so get the school cooks and the parents to save all theirs! You can use some plain white ready spun yarn (use only natural fibres, ie. wool or silk) or obtain some fresh sheep's wool from a farm.

To 500g of wool allow 25g of cream of tartar and 100g of alum (available at any chemist). Dissolve the cream of tartar and alum in a small amount of water and then add to 11 litres of cold water. Heat until warm and then add the wool. Bring to boil over one and a half hours. Lift out, don't squeeze or wring, and drip dry. Use at once or store but wet again before dyeing. The wool is now mordanted to make sure the colour fixes.

Put a large amount of onion skins in 8 litres of water – the more skins the more vibrant the colour. Bring slowly to the boil over two hours. Remove from heat and cool a little. Add wool and simmer for up to two hours.

The wool should come out a vibrant golden rust colour!

Useful Questions

- How do you think people discovered all these different dyes?
- Why not investigate what were the most expensive dyes and what were the cheapest?
- Why was urine used in dyeing?
- If you used SDC multifibre strips – which kind of fabric took the dye the best and which the least well? Why do you think this is?

Suppliers

Indigo:

George Weil & Son,
Old Portsmouth Road,
Peasmarsh,
Guilford,
Surrey,
GU3 1LZ

SDC Multifibre Strips of fabric:

The Colour Museum,
Perkin House,
P0 Box 244,
1 Providence Street,
Bradford,
West Yorkshire,
Telephone 01274 390955
BD1 2PW

Useful Websites

Colour museum website: <http://www.sdc.org.uk/museum/mus.htm>

Iron Age dyeing: http://www.bbc.co.uk/history/ancient/british_prehistory/ironage_tasks_gallery_07.shtml

Dylon factsheets: <http://www.dylon.co.uk/information/brochure/bdown.htm>

This activity (except the outdoor dyeing activity) was supplied by The Colour Museum, Bradford.

Contact:

Tel:

	National Curriculum	QCA Unit
KS 1	Science Sc1, Sc3, Sc4	Unit 4D, Unit 5D, Unit 6C, Unit 6D
KS 2	Science Sc1, Sc3, Sc4	Unit 4D, Unit 5D, Unit 6C, Unit 6D

creativeminds

The Creative Minds project works with museums libraries and archives across the Yorkshire region, to provide young people with learning opportunities in Science, Technology, Engineering & Maths (S.T.E.M.). This ground-breaking project is the first of its kind in the country and is managed by MLA Yorkshire. This pack was developed by Creative Minds with funding from Yorkshire Forward.

