

## Cyanotype printing

Outdoor, Age 6 – 16, Cost per student in £– 1.00

Curriculum areas - Biology, Art, Photography, Chemistry, History.

The Cyanotype is an amazing historical process invented by the great John Herschel in 1842. It produces a permanent, beautiful blue negative of objects which have been placed on the pre prepared paper and exposed to UV light.

The paper is developed in running water which washes away the light sensitive iron salts, making the image completely stable in light and leaving a blue image behind. Over several hours this becomes an intense 'cyan' colour as oxygen in the air reacts to the paper.



Ready-made cyanotype paper is expensive and unaffordable for many schools. It is far cheaper to buy the chemistry and coat your own paper in advance, ready for the classroom.

The paper, or material (textiles can be used), is pre prepared by coating it in subdued light then leaving it to dry in darkness, ideally overnight.

Once you have got the hang of this, in a couple of hours you can coat enough paper to make 200 x A6 sheets. The unexposed paper can last several months if stored in the dark.

The whole process is brilliant. Older students can even mix and coat their own paper in advance.

The best video on ['How to mix cyanotype chemistry' is here](#)

### Using cloth and material

I've never done it but the process works on cloth and materials! A good [video by Justine Silver here](#)

### Materials:

- Potassium Ferricyanide
- Ammonium ferric citrate.  
(These sound awful but are actually fairly harmless).
- Absorbent paper. Although watercolour paper is popular, have a go with cheaper alternatives such as unused inkjet paper, newspaper and old maps.
- Rubber gloves for mixing the chemistry.
- Light tight bottles for storing excess chemistry (although better to use up all of the mixture)
- Clip frames (an A4 frame will accommodate 4 images)
- Objects to put on the paper. Flowers, leaves, acetate template, cut out card butterflies etc. Be imaginative, it doesn't have to be a fern! If using acetates (of photocopies) remember the final image will be a negative so to achieve a positive print out a negative template.
- Paper 'photocopied' negative templates can also be used but the exposure time can double due to the paper inhibiting some UV light.
- Access to water



- Hydrogen peroxide - Optional! This costs a bit but if teaching chemistry or needing a quick final result, it makes the final print instantly turn that beautiful dark blue which otherwise will occur naturally after a few hours exposed to air. I call it, (highly incorrectly) liquid oxygen (H<sub>2</sub>O<sub>2</sub>).

### Method

10g Ferric Ammonium Citrate (A) is mixed with to 50ml tap water. Then 4g Potassium Ferricyanide (B) in 50ml tap water. Keep in separate light tight bottles.

Mix A+B 1+1 then coat it onto the paper.

You will need to use more chemistry for larger numbers of sheets of paper. A good video showing the whole process from the start [can be found here](#) (it's a bit slow but covers everything well). A video for the exposing and developing [can be found here](#)



### Troubleshooting

#### Weird paper

There are many variables, even down to the acidity of the paper so if on a budget, find something that is cheap (thin card, or cartridge paper) and experiment before disappointing 30 kids!

#### Old chemistry

The mixed solution will go off after a few weeks, even if kept in the dark, however the neat, un mixed solution seems to last indefinitely.

#### Initials

Get students to write their initials on the back of the photo paper before they coat it so they can identify their work.

#### Templates

As with turmeric and chlorophyll prints, acetate templates made in a photocopier can be used either on their own or along with plants etc, whether to enhance a project or to appease your employer! Make sure you use the correct acetate sheets so the photocopier doesn't gunge up with melted plastic, (if it does,,walk away slowly!). Remember, cyanotypes require a negative to make a final positive image.

When there's a strong sun you can use thin photocopied paper as a template although the exposure times are longer.

#### Tilting the frame towards the sun (for faster exposure)

This works fine with glass clip frames but these should be avoided with small children. The safer 'bendier' plastic frames can result in the leaves etc falling off the paper. It is also best to reassemble the frames yourself.

