The Cyanotype Process

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The cyanotype process was discovered by the scientist and astronomer Sir John Herschel (1792 – 1871) in 1842. Initially, the process had industrial applications as it was adopted by engineers and architects to reproduce technical drawings known as blueprints but it was also famously used by Anna Atkins (1799 – 1871) who made cyanotype photograms of algae, ferns, feathers and waterweeds.

How It Works:
Cyanotype is a UV sensitive contact printing process. Unlike traditional silver-based photography, cyanotypes use a solution of iron compounds. When the iron salts are exposed to either natural or artificial ultraviolet light, they are reduced to their ferrous state which produces a high contrast Prussian blue image when oxidised. Oxidation is speeded up by immersion in running water which also serves to wash away any unused iron salts.

What You Will Need:
Ferric Ammonium Citrate
Potassium Ferricyanide
Distilled Water
Scales
Measuring Flask/Jug
Brown Glass Bottles (to store the two solutions)
Measuring Syringe (I use an old Calpol one)
Brush (I use a Japanese Hake brush as they do not use metal)
Paper
Contact Print Frame (or an old glass picture frame)

The cyanotype process is very simple and can be broken down into four easy steps –

MIXING THE CHEMICALS:
Ferric ammonium citrate and potassium ferricyanide are mixed with distilled water separately and then blended together in equal parts.
PREPARING THE PAPER:
Paper, card or an absorbent material such as cotton or silk is coated in the mixed solution and left to dry overnight in the dark.
PRINTING THE CYANOTYPE:
A negative, digital negative or object is placed on the paper/card/material and exposed to a UV source which can be the sun, a UV lamp or a lightbox.
PROCESSING AND DRYING:
After exposure the print is processed by rinsing under running water. The print is then hung up to dry.

There are many different recipes/ratios which will give you great prints so just Google and work out what works but as a rough estimation to make approximately 50 8x10 sized prints you will need **25g** ferric ammonium citrate which is dissolved in **100ml** distilled water (this is **Solution A**) and **10g** potassium ferricyanide, also dissolved in **100ml** distilled water (**Solution B**). When you are ready to coat your paper simply mix equal amounts of solution A and B together.

TIPS

It is best to coat the paper somewhere with subdued lighting but once coated it must be left somewhere dark, such as a drawer, to dry. Be sure not to touch the coated paper – it's a good idea to leave a border around the edge for this reason.

The exposure time can vary from a couple of minutes to a couple of hours depending upon your light source and the time of year (if using the sun).

A properly exposed print will reverse – the highlights and midtones will turn a green/blue and the shadows will look slightly solarized. The edges of the print will go a kind of tan/light brown/grey colour.

When you are rinsing your print after exposure make sure to wash for at least 5 minutes (but not more than 15) to ensure that excess chemicals have been removed.

If you plan to tone your prints, allow them to dry for at least 24 hours first. Be aware that cyanotype print values will darken over a period of days as the print oxidises.

FURTHER EXPERIMENTATION

There are a number of ways you can play around with your cyanotypes. You can add a dash of hydrogen peroxide into your rinse water to accentuate the blue colour. You can use normal household vinegar in the rinsing stage to decrease contrast. However, the main way to experiment is to tone your prints – this will either warm up the blue colour or replace it altogether with brown or black or even purple. You will need to re-wet your dried cyanotype and you may find it useful to bleach first using washing soda crystals. You only need a VERY small amount of washing soda dissolved in water BUT it is possible to bring back a print which may look like it has disappeared by toning. The toners I have found to be effective include tea – both green and black (I just use tea bags in a developing tray with hot water) and coffee – cheap instant coffee granules seem to work well. However, there are a number of different options so just have a go!

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https://www.silverprint.co.uk/wp-content/uploads/2015/07/Ferric-Ammonium-Citrate-MSDS.pdf
https://www.silverprint.co.uk/wp-content/uploads/2015/07/Potassium-Ferricyanide-MSDS.pdf