



CyanoArt

Alternative photographic
prints–Cyanotype

By

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McCarthy

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the great support by supplying all the chemistry and
film needed.*

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This book has been created as a guide to introduce the art of a cyanotype alternative photo process which was invented in 1842 by Sir John Herschel. The simplicity is the greatest factor attracting the artists and photographers. The photo sensitive emulsion is hand coated on a watercolour paper. There are two sensitizing methods: brushing and using a glass rod. A foam brush can do the job but I use a Japanese hake brush available in most art stores and costs about \$5. If the brush elements have been attached with a metal ferrule cover the metal with paper tape and don't allow the sensitizer to wet it. Dampen the brush with distilled water before using it and remove the excess water with a paper towel. Coat the watercolour paper under safelight conditions (15 watt bulb). Don't use a fluorescent light! Place the paper on the board and keep it at an angle so the sensitizer will run down. Don't press the brush on the paper surface. Coat the paper 4 times by turning it clockwise. Practise with a coloured water. [Here is the original formula created by Sir Herschel:](#)

A.

Distilled Water (room temperature).....60 ml
Ferric Ammonium Citrate (green).....20 grams
Distilled water.....up to 100 ml

B.

Distilled Water (room temperature).....60 ml
Potassium Ferricyanide..... 16 grams
Distilled Water.....up to 100 ml

Ferric Ammonium Citrate (green) and Potassium Ferricyanide are available in USA by Bostick & Sullivan Inc (www.bostick-sullivan.com) and Photographer's Formulary (www.photoformulary.com). In Canada-Argentix.ca (www.argentix.ca)

Keep solution "A" and solution "B" in a dark glass bottle. Mix equal amounts of "A" and "B" before you start coating the paper. 5 ml of each solution will be enough to sensitize 5 to 6 pieces of 8x10 inch paper. You don't need to use a complete darkroom. Mixing the equal amount of A and B should be done under subdued lighting conditions. The windows must be covered (no daylight) or work in the evening. Avoid a fluorescent light which will fog the image.

A good quality **watercolour paper** is always a good choice. There are two types: *cold press* and *hot press*.

Strathmore watercolour paper cold press 400 Series (140 lb.) is an acid free heavy weight paper. It delivers great result with Cyanotype. The rough surface creates more artistic look.

Fabriano studio watercolour paper hot press (140 lb) is made in Italy. The smooth surface create sharper image.

The types of papers that I describe above are easy to be found in most art stores in North America and Europe.

Now we have the sensitizer and the watercolour paper ready. Let's dim the light and start coating with the "hake" brush: Place the paper vertically on the board and hold the board at an angle. Dampen the brush with distilled water and remove the excessive water by pressing the brush on the edges of container, then wet the brush with the sensitizer. Apply the solution on the top of the paper gliding the brush from left to right. Take the brush off the paper and apply another layer beneath the first. Make sure that the layers are overlapped. Continue until the paper is covered. Turn the paper clockwise and coat the same way. Turn the paper clockwise again and coat it. Turn the paper two more times and coat. Leave the coated paper flat for a few minutes and then hang it to dry in the dark. It should be dry completely before you proceed to the next step. (Store the coated and dry paper in the black envelope) It will be O.K. for 10 days.

Cyanotype process can be easily applied on a **fabric**. You can get the best result on a Cotton Fabric. If small pieces of fabric are used the coating can be done with the brush. Place a cardboard under the fabric. Apply the sensitive emulsion like coating the watercolour paper. If you use the larger piece of fabric you can spray the sensitizer or dump it in the bucket with a sensitive emulsion. Dry it in the dark space.

You have to use a **negative** to print the image using a cyanotype process.

Some artist and photographers are creating the negatives digitally and print an overhead transparency or print on ink jet transparency film designed for digital printers. The ink jet transparency film can be found at any photo supply stores, Staples or Office Depot.

To create digital negatives you need any photo editing software. I use Photo Shop. First the image should be converted to Black and White: Image>Adjustment> (scroll down)>Black and White or (Alt+Shift+Ctrl+B)

Then converted to negative: Image>Adjustment> (Scroll Down)>Invert or (Ctrl+I)

The Art Traditionalists are using large format film cameras. The negative is loaded into the film holders and attached to the camera body where it will be exposed.

A lot of money can be spent on camera equipment but to make a beautiful image you can use even a pinhole camera and a piece of glass as a sun exposure printing frame. The most adequate is the 4x5 film camera. Some people think that the print should be

large, but is it the size that delivers everything? Well crafted image speaks for itself regardless of the size. A 4x5 image printed on water colour paper is beautiful and elegant.

There are two types of cameras: Technical (Monorail) and so called Field camera. Monorail cameras are heavier and are designed for use in the studio. The field cameras are lighter and will fold as a box, which is easy to carry. "Calumet" 4x5 monorail camera is easy to find. It is not expensive (\$200-\$300) and has all the features provided with expensive 4x5 equipments. "Graflex Crown Graphic" is representing Field cameras and can be purchased for approximately \$400. The larger format cameras (5x7, 8x10, 11x14) still exist but are a lot more expensive.

Let's talk about the film. I used three types of 4x5 size Black and White negative films: Fomapan 100 Classic, Ilford HP5 ISO 400 and X-ray film (Fuji Medical X-ray film).

1. Ilford HP5 is a great film but it is expensive-It is sold in a pack of 25 sheets
2. Fomapan 100 Classic is good and not expensive-It is sold in a pack of 50
3. Fomapan 400 is perfect-It is sold in a pack of 25
3. X-ray film is acceptable-It is sold in pack of 100 and 8x10 size and larger

Iford HP5 and Fomapan 100 Classic are available at most reputable Photo graphic stores as B&H photo and Video in USA.

In Canada Iford HP5 plus can be found at Henry's and Fomapan 100 Classic and Fomapan 400ASA at Argentix.ca (www.argentix.ca)

The best place for X-Ray film is ZZ medical in USA.

To make the things simple I use D76 developer to process all Black and White negatives. This is a classic Black and White developer and is available at any photo supply stores across Canada and USA or you can mix it yourself.

<i>Water-(50°C-125° F)</i>	<i>750 ml</i>
<i>Metol</i>	<i>2 grams</i>
<i>Sodium Sulfit</i>	<i>100 grams</i>
<i>Hydroquinone</i>	<i>5 grams</i>
<i>Borax</i>	<i>2 grams</i>
<i>Water to make</i>	<i>1Liter</i>

I suggest using distilled water and filtering it before you put it in the container. Dilute the solution before use: One part developer + one part water.

Developing times at 20°C:

HP5 400 ASA 13 min

Fomapan 100 Classic 10 min (Rotary process 8:35)

X-ray (Fuji-blue) Double Emulsion 50ASA

6 min (Visual inspection under the red filter)

I have a good image using the old Kodak Paper Developer D52 known as Selectol. Here it is his Chemical Formula:

<i>Water 50°C</i>	<i>500 ml</i>
<i>Metol</i>	<i>1.5 grams</i>
<i>Sodium Sulfite</i>	<i>22.5 grams</i>
<i>Hydroquinone</i>	<i>6 grams</i>
<i>Sodium Carbonate</i>	<i>17 grams</i>
<i>Potassium Bromide</i>	<i>1.5 grams</i>
Cold Water up to	1 L

Dilute before use 1 to 1 and develop the X-ray film (200ASA for softer image) at 20°C (Inspect visually under the red filter-about 8min). You can use the Selectol to process any Black and White paper.

Look closer to the ingredients for D76 and D52 and you could realise that the main chemicals are the same and this was the reason to work with above mentioned developers. Notice that you need only Potassium Bromide (not expensive at all) and Sodium Carbonate which is known as “Washing soda” (can be bought from most grocery stores)

Now that you have all the chemical ingredients you need a good **scale**. E-bay provides the best and less expensive solution. Professional mini digital scale with a capacity of 200 grams and accuracy 0.01 grams is available for a maximum \$10. I bought 2

scales in case something happened. For the last 5 years I am using one daily and still working perfectly.

Exposure

Cyanotype printing is also known as a “Sun Print”. Two pieces of glass (8x10) a few Binder Metal Clips (available at Staples, Office Depot or Amazon) are adequate for the contact prints.

Place the coated water colour paper facing the emulsion up on the glass, the negative emulsion down and the second piece of glass on the top. Fasten it with the clips and set the frame outside under the direct sun light for about 6 to 10 minutes.

The exposure time should be determined by a few tests (small pieces of coated paper). The paper should have a bronze colour and the image will be visible.

Processing

Place the exposed paper in the tray with water. The blue image will appear almost immediately. Keep washing until the blue in tray is washed away (approximately 5 minutes). If the image is pale you need to give more time under the sun.

To see the final blue colour of the image you need “Hydrogen Peroxide” (available at any pharmacy-3% USP). To prepare a working solution pour 20ml of Hydrogen Peroxide into 300 ml Water. Leave the print for about 2 minutes and then wash it for 5 minutes. If the exposure is right, the bright Prussian blue will appear. Dry the print by hanging it on a clothesline.

*if you skip this process after 24 hours the Prussian blue will appear.

Toning

Some people don't like the blue tone of the image. It can be toned to dark brown or turn the image to black and white.

Solution A:

Water *1000 ml*

Potassium Carbonate (washing soda) *10 grams*

Solution B:

Water *1000 ml*

Instant Coffee *100 grams*

Soak the print in water first. Slip the cyanotype into solution A until the blue colour has bleached away then wash it for a few minutes and slip the bleached print in the Solution B until the new colour reaches the desired density. Wash the print for a few minutes. Make the test first.

*If you use this method expose the cyanotype slightly longer.

To reach a nice brown (sepia) tone you can use a black tea. I use “Earl Grey Tea”. Brew the tea and let it cool to about 30°C. Slip the soaked print into the tea face down. This process is taking longer time to reach the desire colour and density. The brown colour appears even on the uncoated parts and on the back of the paper. Move the print slowly around the tray to avoid the stains. Wash the print for about 3 minutes before hanging it to dry. Make the test first.

Colouring

Cyanotypes are printed on the water colour paper so you can use water colour dyes to colour the important part of the image or to colour all print. The use of transparent water colour paint is a must for colouring a cyanotype print. To make the colours glowing and luminous the artist who is playing with the colours can apply layer after layer. Before you start painting the cyanotype image, the paper should be bone dry and flat. If the part of the image is too dark you can lighten it with a much diluted solution of washing soda.

Summary

This short book can be used as a simple manual. I have been printing cyanotype for the last 5 years. Over 50 images are displayed in my studio. Some are under harsh sunlight during the hot summer days, some are exposed under a fluorescent lights and a few are in my darkroom where is wet and chemicals are stored next to the pictures. I didn't notice any colour or density changes. First tests were a disaster. I use the summer sun for exposure and even after 30 minutes I have a pale image. Instead of giving up this alternative process I began the new research, where I found the formula described above, tweaked the process a little and finally I was able to produce great cyanotype prints, which I am proud of. You can look at a few cyanotype images in the next chapter or go at www.billygoldman.ca where some of the creations are displayed.

I bought all my chemicals, films, paper and other materials from suppliers that are listed in the book. I personally guarantee their excellent services.

Here is the summary of everything that you need to create an excellent cyanotype prints:

1. Black and White negative film
2. Ferric Ammonium Citrate (green)
3. Potassium Ferricyanide
4. Water colour paper
5. Brushes (hake or foam)
6. UV light or Sun
7. Running Water

The Suppliers:

www.argentix.ca –Black and White film, Bulk Chemicals (Canadian Supplier)

www.bostick-sullivan.com – Alternative process

www.photoformulary.com – Bulk Chemicals in US

Photo Gallery



© Billy Goldman, cyanotype printed on water colour paper. (Goldman personal Gallery)

© Billy Goldman cyanotype printed on water colour paper. (Goldman personal Gallery)





Same image but toned black and white with a coffee



© Billy Goldman-Self Portrait-cyanotype print on water colour paper and toned sepia with a black tea (Goldman personal Gallery)



© Billy Goldman, cyanotype printed on watercolour paper (same as the cover) and partly coloured with water colour transparency inks. (Goldman personal Gallery)



© Billy Goldman, cyanotype print on water colour paper and completely coloured.



© Billy Goldman, cyanotype print on water colour and partly coloured.



© Billy Goldman- "Writers club"- Cyanotype print on cotton fabric.

If you find the booklet interesting and helpful or have some suggestions please contact the authors at info@billygoldman.ca