

# PHOTOGRAPHERS' FORMULARY

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## Traditional Cyanotype Kit

Contains chemicals to make approximately 24 8 x 10 prints

The popular and inexpensive cyanotypes have a long scale and distinctive blue color. The process can be used to produce a pale white image on a blue background or a blue image on a white background. Cyanotype is an ultraviolet contact printing process that requires a negative the same size as the print you desire. The image can be transferred to a variety of media; paper, cloth, leather, etc.

The blue color of the print is due to Prussian blue formed from the reaction of ferrous ions (from photo reduction of the ferric ammonium citrate) and potassium ferricyanide. Under most conditions the image is permanent; however, Prussian blue will fade when alkaline. Since perspiration is alkaline, a cyanotype print can be permanently damaged if touched. Cyanotype prints tend to fade in strong light. The color will return if the print is stored in a dark damp area. A faded cyanotype can also be treated with a hydrogen peroxide oxidation bath to restore its color.

### CHEMICALS CONTAINED IN THIS KIT

This kit contains the following chemicals:

Chemical	Amount
Arrowroot starch	20 grams
Potassium ferricyanide	40 grams
Ferric ammonium citrate (green)*	100 grams
Potassium dichromate	1 gram

\* Ferric ammonium citrate (green) is somewhat light sensitive and should be stored in the dark.

### CHEMICAL SAFETY

We strongly advise you to use disposable rubber gloves when handling this compound or its solutions. Clean all trays and containers thoroughly with water followed by soap and water. Please consult with local sewer and water authorities regarding the proper disposal of darkroom chemicals in your area.

The user assumes all risks upon accepting these chemicals. IF FOR ANY REASON YOU DO NOT WISH TO ASSUME ALL RISKS, PLEASE RETURN THE CHEMICALS FOR A CREDIT OR EXCHANGE.

### MIXING THE STOCK SOLUTIONS

You will need at least three dark brown storage containers; two with a capacity of 500 ml and one with a capacity of 100 ml. If you wish to premix the hydrogen peroxide oxidation bath, you will need an additional 500 ml dark brown bottle. For consistent results all solutions should be mixed using distilled water.

## TRADITIONAL CYANOTYPE KIT

### Stock Solution A

Chemical	Amount
Distilled water (20°C/68°F)	400 ml
Ferric ammonium citrate	100 grams
Distilled water to make	500 ml

Place the water in a mixing container or the storage container and add the solid. Stir the solution until the solid has dissolved. Add water to bring the final volume in the container up to 500 ml. Stir (or cap and shake) to ensure that the solution is homogeneous

### Solution B

Chemical	Amount
Distilled water (20°C/68°F)	400 ml
Potassium ferricyanide	40 grams
Distilled water to make	500 ml

Mix as was described for Solution A

### 1 % Potassium Dichromate Solution (optional)

Chemical	Amount
Water (52°C/125°F)	100 ml
Potassium dichromate	1 gram

Place the solid potassium dichromate in the storage container and add 100 ml of water. Stir the solution to dissolve the solid. Store in a bottle with plastic cap. (Do not use a metal cap; the dichromate will corrode it.) Since potassium dichromate is toxic, we recommend that you mix this solution in a sink and, after mixing, wash all the utensils before removing them from the sink.

We strongly recommend that you wear rubber gloves when mixing and handling this solution.

## WASHING

Wash the print for about 5 minutes in running, soft water. The iron salts in hard water can alter the appearance of the print. A short washing period will leave ferric salts in the paper causing the print to fade. Prolonged washing will lighten the image, particularly if the wash water is slightly alkaline.

**Contrast Increase.** A higher contrast print can be obtained if an initial wash bath consisting of a 0.2% solution of potassium ferricyanide is used. (The bath can be prepared by dissolving 2 g of potassium ferricyanide in 1000 ml of water). After this initial bath, the print is then washed in running water as described above.

**Peroxide After-bath.** After drying, a cyanotype print will slowly air oxidize to its final deep blue. To speed this process, place the well washed print in the hydrogen peroxide-oxidation bath. (See Mixing the Solutions) for a few seconds, then rinse with water. Hang the print to dry (or dry it with a hand-held hair dryer).

**After Treatment:** A spot application of a 5% solution of oxalic acid (5 g per 100 ml) can be used to clear the whites of blue. Wash the print after its use. A Prussian blue watercolor can be used for spotting the blue areas.

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### Other Surfaces:

Soak the material, such as cloth containing at least 50% cotton, in the standard sensitizer solution, then hang it up in the dark to dry.

Stretch the material, position the negative, and then hold the negative in place with a glass covering. Expose as described for paper. If you desire the cloth to have a white background, you will have to mask it from the ultraviolet light. We suggest you develop the technique using inexpensive cloth.

### NEW IDEAS AND SUGGESTIONS FOR USING CYANOTYPE

There are several good books in your public library in the photography section that will help you on this process.

Quilts are covering the country so to speak - using the Cyan process. Let your imagination go to work on pillows, jackets, and wall hangings! It isn't just a picture on paper process anymore.

One book we found interesting was Jan Arnow's book entitled *A Handbook of Alternative Photographic Processes*. In it she gives the following ideas to change the color of Cyan prints from the normal blue to several other colors. The process is done as a toning after you have completed the Cyan process entirely.

### TONING SOLUTIONS

#### Brown to Black Tones

Ammonia 28%	10 ml
Distilled Water	100 ml

AND

Tannic Acid	10 grams
Distilled Water	500 ml

Mix both solutions separately. This is a two-step immersion process. Immerse the print in the ammonia solution until the color has been bleached-out. Wash in cool water for 10 minutes. Then immerse the print in the tannic acid solution until the desired color is achieved. Wash under running water for 15 minutes and dry.

#### Violet Tones

Prepare either a mild borax solution OR prepare a warm 5% solution of Lead Acetate (5 grams of lead acetate in 100 ml of water). Immerse the print in either solution until the desired color is achieved. Wash in running water for 15 minutes, then dry.

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### TROUBLESHOOTING

<b>Problem</b>	<b>Explanation</b>
Areas of the coated surface were pre-exposed even before printing	The area where the support was dried is too humid, OR the chemicals are too old.
The emulsion on the negative was eaten away during exposure	The support was still damp when exposed.
Entire print turned blue and overexposed while drying.	It was not washed enough. To prevent this, rinse well, and dry print in darkened room.
Stains remained in the skin after washing and would not come out.	Stains can be removed only by scrubbing with strong soap. Rubber gloves will prevent skin stains.



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**Photographers' Formulary**  
**Traditional Cyanotype Kit 800-922-5255**  
Catalog Number 07-0090

note: This document is the exact copy of the paperwork that accompanies the Photographer's Formulary New Cyanotype Kit, reformatted on letter size paper and saved as a PDF file for distribution to students so they may familiarize themselves with the materials and processes before they purchase a kit. The actual document can be downloaded from the Photographer's Formulary website [www.photoformulary.com](http://www.photoformulary.com) under the Technical Info tab, listed as Formulary New Cyanotype 07-0095 (not to be confused with Formulary Cyanotype 07-0090-07-0091, that is the traditional Cyanotype kit).