PHOTOGRAPHERS' FORMULARY

FORMULARY GOLD PROTECTIVE TONER (GP-1)

Directions for mixing and using Formulary Gold Protective toner
10-liter kit for use in protecting up to 100 8x10 (or 400 4x5) prints.

As applied to this kit, the term “toner” is somewhat a misnomer. Almost all photographic toners are used to alter the color of a black-and-white print to enhance its emotional appeal. This is not the purpose of Gold Protective toning. Rather the purpose is protection of the silver metal in the print for archival reasons. There will be little color change of the print upon gold protective toning. However, with most prints there will be a slight shift towards a blue-black tone, a cooling, or darkening of the image.

CHEMICALS CONTAINED IN THIS KIT

Chemical	Amount
Potassium thiocyanate	100 grams
Gold chloride, solid	1 gram

CHEMICAL SAFETY

All chemicals are dangerous and must be treated with respect. Please read the chemical warnings on each package. **Consult with local sewer and water authorities regarding proper disposal of darkroom chemicals in your area**

Potassium Thiocyanate. Potassium thiocyanate is considered to be nontoxic but it can cause skin eruptions in some individuals. If this should happen, discontinue exposure and consult a physician. This chemical is only remotely related to the deadly potassium cyanide and cannot be converted to it.

Gold Chloride is a caustic and can cause skin burns. In dilute solution, gold chloride will stain the skin purple. The stain is due to gold metal bonded to the protein of the skin and cannot be chemically removed. The only procedure for removing these spots is to let them wear off. If you are concerned with finger stains, we strongly urge you to use rubber gloves, such as Playtex gloves, when working with this toner.

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 WITHIN 30 DAYS FOR A FULL REFUND.

MIXING THE STOCK SOLUTIONS

When completely mixed, Gold Protective Toner has a rather short life (about one working session). Therefore, these directions are written so that you will not have to commit all of the chemicals to the preparation of the working solution unless you wish to do so.

Stock Solution A

You will need a dark brown bottle of at least 1000 ml storage capacity to store this solution. You will also need an eyedropper, a plastic or glass funnel, and a graduated cylinder (or equivalent) to measure the volume of water needed.

Chemical	Amount
Distilled water (20°C/68°F)	500 ml
Gold chloride, solid	1 g
Distilled water to make	1000 ml

Place the 500 ml of water in the storage container and then measure out an additional 100 ml of water to be used to wash the gold chloride out of the bottle.

Gold chloride is very deliquescent and absorbs water readily causing the solid to liquefy. Since the gold chloride will be placed in a water solution, prior liquefication does not hurt it. However, when gold chloride liquefies, the liquid coats the sides and cap of its container making direct transfer of the material all but impossible. Therefore, a wash-transfer procedure will be described, which can be used if the gold chloride is solid or liquid.

Place the funnel on the storage container. Open the bottle of gold chloride and carefully set the cap aside, top side down with the threads facing up (so that any liquid in the cap will not drain out).

Using the eyedropper, transfer about 5 ml of water to the bottle. Very gently, swirl the bottle to dissolve the gold chloride, and then pour the liquid in the storage container. Immediately after pouring and while you are still holding the bottle upside down over the funnel, wash the lip of the bottle with a few eyedroppers full of water letting the water drain into the storage container.

Transfer another 5 ml or so of water to the bottle and repeat the entire washing procedure. Continue washing the bottle with 5 ml portions of water until the wash water no longer has a yellow tint.

Next wash the cap of the bottle with water from the eyedropper. Hold the cap over the funnel and squirt water into the cap and its threads letting the water drain into the funnel. Continue washing until the water is no longer tinted yellow.

Finally, add sufficient distilled or demineralized water to the container to bring its final volume to 1000 ml. Cap and shake the storage container to ensure the solution is homogenous.

Stock Solution B

You will need a brown glass container with a capacity of at least 1000 ml and a mixing bowl.

Chemical	Amount
Distilled water (20°C/68°F)	500 ml
Potassium thiocyanate	100 gram
Distilled water to make	1000 ml

Place the water in the mixing bowl and add the 100 grams of solid contained in the thiocyanate package. Transfer the liquid to the container and add sufficient water to bring the final volume up to 1000 ml. Cap the container and shake it to dissolve the solid.

Working Solution

Sufficient chemicals are provided in this kit to protect 100 8x10 or 400 4x5 prints. This value is variable, however, depending upon the silver density in the prints that are toned-the greater the density, the lower the capacity. Since the working solution is not stable after mixing, the directions given below assume that only two 8x10 (or 4 - 4x5) prints are to be protected.

To prepare 200 ml working solution capable of protecting two 8x10 (or 8 - 4x5) print, mix:

Chemical	Amount
Distilled water (20°C/68°F)	60 ml
Stock Solution A	20 ml
Stock Solution B	20 ml
Distilled water	100 ml

To mix other volumes of working solution, add 1 part of Stock Solution A, 1 part of Stock Solution B and 8 parts of water. For example:

For final Volume of Working Solution

Chemical	Part	100ml	500 ml	1000 ml
Stock Solution A	1	10 ml	50 ml	100ml
Stock Solution B	1	10 ml	50 ml	100 ml
Distilled Water	8	80 ml	400 ml	800 ml

USING THE TONER

The print must be thoroughly fixed and washed. Use an archival procedure for washing. Gold Protective Toner will protect the silver metal from environmental chemicals but cannot protect the paper. If the paper contains residual fixer, the print will degrade in time whether it is gold toned or not.

If the print is dry, presoak it before toning. Immerse the wet print in the working solution at room temperature (20°C/68°F) for 10 minutes or until you can detect a barely perceptible shift in tone towards the blue. After toning wash the print in running water for at least 20 minutes.