

PHOTOGRAPHERS' FORMULARY

FORMULARY SEPIA SULFIDE TONER 221 BLEACH AND REDEVELOPMENT

To make 1 liter of bleach working solution and 1/2 liter of sulfide stock solution.

Formulary Sepia Sulfide is a classic bleach and redevelopment toner that produces rich permanent sepia-brown tones. Most types of paper tone well with this process including resin coated paper. Different brands of paper will give you different tones, therefore it is advised you test the paper you are using before toning a print. The bleach contains potassium ferricyanide that changes the metallic silver to a silver salt. After bleaching the print it is then redeveloped in sodium sulfide. The end result can give the impression of a print made in the late 1800's.

CHEMICALS CONTAINED IN THIS KIT

CHEMICAL	AMOUNT
Potassium Ferricyanide	50g
Potassium Bromide	10 g
Sodium Carbonate, mono	20g
Sodium Sulfide	45 g

FOR YOUR CHEMICAL SAFETY

All chemicals are dangerous and must be treated with respect. Please read the chemical warnings on each package. Sodium sulfide is not sodium sulfite. (Sodium sulfite, a preservative used in almost all photographic developers, is considered to be a bland chemical.) Sodium sulfide is a powerful fogging agent used mainly in toning baths, and is a dangerous chemical if used incorrectly. Sodium sulfide should be used with considerable care. Do not allow it to come into contact with acidic solutions, such as stop bath or acid fixer. Sodium sulfide (as a solid or in solution) will react with acid to form hydrogen sulfide, a foul-smelling and poisonous gas. Hydrogen sulfide gas will fog photographic emulsions so keep paper and film isolated when toning.

Sodium sulfide and its solutions are caustic. Do not allow them to come into contact with the skin as they can cause a chemical burn. If contact should occur, wash the area first with cold water followed by soap and water.

Consult with local sewer and water authorities regarding proper disposal of darkroom chemicals in your area.

Generally, you can dispose of solid Sodium Sulfide or a solution of Sodium Sulfide down a drain. First run cold tap water down the drain for few minutes to make sure no acid remains in the drain trap, place the solid or pour the liquid into the drain. Run tap water down the drain for at least 5 minutes.

POTASSIUM FERRICYANIDE: In spite of the fact that this compound contains cyanide, it is not particularly toxic. The reason is that the cyanide groups are bound to the iron atom and are not free to act as a poison. The cyanide groups can be released as hydrogen cyanide as if the potassium ferricyanide is placed in a strong acid solution: however the copper toning process does not call for acid.

Consult with local sewer and water authorities regarding proper disposal of darkroom chemicals in your area.

Generally, to dispose of excess potassium ferricyanide (solid or in solution) wash the material down the drain with excessive amounts of water.

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 SOLUTIONS

CAUTION: Never use metal utensils or containers in the preparation or in the use of toning solutions.

We recommend you wear a dust mask, splash goggles, rubber gloves and a vinyl apron anytime you are mixing dry chemicals.

SOLUTION A (The bleach working solution)

You will need a bottle with a capacity of at least 1 liter to hold the bleach solution.

CHEMICAL	AMOUNT
Distilled Water (48°C/120°F)	750 ml
Potassium Ferricyanide	50 g
Potassium Bromide	10 g
Sodium Carbonate, mono	20 g
Distilled Cold water to make	1000 ml

Place the warm water in a mixing container and add the potassium ferricyanide. Stir the solution until the solid completely dissolves. Add each chemical in the order given above, stirring the solution after adding each until it is completely dissolved. Finally add cold water to bring the final volume of the solution up to 1000 ml. Stir the final solution to ensure it is mixed thoroughly.

It is best to store this working bleach solution in the dark. Potassium ferricyanide solutions are somewhat light sensitive. Should the stock solution turn blue, the bleach has been ruined and must be discarded.

STOCK SOLUTION B (The redevelopment solution)

This solution must be mixed in a well-ventilated area. Small amounts of hydrogen sulfide will be given off during mixing. This compound is a poisonous and powerful photographic fogging agent.

You will need a 1-liter mixing container and a storage container with it least a 500 ml capacity. Since sulfide solution is quite caustic, you should wear rubber gloves while mixing and transferring this solution.

CHEMICAL	AMOUNT
Distilled water (20°C/68° F)	300ml
Sodium Sulfide	45 g
Distilled water to make	500 ml

Place 300 ml of water in the mixing container and add the sodium sulfide. Stir the solution until the solid completely dissolves. Add cold water to bring the volume up to 500 ml and stir to ensure the solution is mixed thoroughly. Transfer the solution to the storage container.

After mixing, clean all the utensils thoroughly with water followed by soap and water. Be sure the outside of the storage container is clean.

Should any of this solution be spilled on your skin, wash immediately with cold water followed by soap and water.

USING THE TONER

Correctly exposed and fully developed prints work best with this toner. This toner MUST be used in a well-ventilated area.

BLEACHING THE PRINT

Undiluted Stock Solution A is used at room temperature as the bleach. The print to be bleached must be thoroughly washed and wet before it is immersed in the bleach solution. If residual hypo is left on the print, the hypo combined with the ferricyanide in the bleach will cause permanent loss of the image.

Pour just enough Stock Solution A to cover a print into a plastic or glass tray. Immerse the print in the bleach solution and gently rock the tray. The black image will be converted to a light brown or straw colored image, or may disappear altogether depending on your paper, within one minute. Wash the bleached print in running water (68° F) for 10-15 minutes. During the wash, the yellow ferricyanide color on the print will be lost.

The bleach solution can be reused; therefore, return it to its container.

REDEVELOPMENT

A redevelopment working solution is prepared by diluting 1 part of Stock Solution B with 8 parts of water. This working solution is to be discarded after a working session. (See the Safety Discussion on the disposal of sulfide solutions.) For example:

VOLUME OF REDEVELOPMENT SOLUTION DESIRED

CHEMICAL	PARTS	100ML	250ML	500ML
Stock Solution B	1	11	28	56
Distilled Water	8	89	222	444

Place the working solution in a plastic or glass tray and immerse the well-washed, bleached print. Redevelopment of image to a rich sepia tone will occur in about 1 minute.

After redevelopment, wash the print in running water for about 30 minutes.

AFTER TREATMENT

The sulfide bath will soften the emulsion of the print. Therefore it is advisable to harden the print before it is dried. You may fix the toned print in a fixer with hardener (catalog number 03-0146) for 30 minutes, with a 10-minute wash to follow.