

PHOTOGRAPHERS' FORMULARY INC.

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FORMULARY SILVER INTENSIFIER FOR NEGATIVES

These directions cover two kits: the 1/4-liter kit (Catalog number 05-0070) and the 1/2-liter kit (Catalog number 05-0080).

The chemicals in this kit are used to prepare an intensifier that is equivalent to Kodak In-5 and Du-Pont 3-I. The intensifier acts by depositing silver metal on existing silver grains in the emulsion. The amount of new silver deposited is somewhat proportional to the amount of silver originally present in the negative. The intensified image is permanent, has greater contrast than the original negative, and can be toned.

The intensifier is used in room light and the extent of intensification is determined by inspection of the negative as intensification is taking place. After the negative has been intensified sufficiently, it must be fixed and washed.

CHEMICALS CONTAINED IN THIS KIT

Chemical	1/4 Liter	1/2 Liter
Silver Nitrate	15 gram	30 grams
Sodium Sulfite	15 grams	30 grams
Sodium Sulfite	3.7 grams	7.5 grams
Sodium Thiosulfate, Pentahydrate	26 grams	52.5 grams
Sodium Thiosulfate, Pentahydrate	150 grams	150 grams
Metol	6 grams	12 grams

CHEMICAL SAFETY

All chemicals are dangerous and must be treated with respect. Please read the warning on each package. Two chemicals in this kit need special attention: metol and silver nitrate.

Metol: Some individuals become sensitized (develop allergic symptoms) when using metol. If this should occur, discontinue use and consult a physician.

Silver nitrate is both an oxidizer (which can supply oxygen to a fire) and a caustic (which can cause skin burns). Clean up any spilled solid silver nitrate with water and dispose of any excess down the drain. Never dispose of solid silver nitrate in a wastepaper basket.

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

If solid silver nitrate comes into contact with the skin, a chemical burn may result; wash the area with cold water followed by soap and water. Treat any wound in the same manner you would treat a heat burn.

When dilute solutions of silver nitrate are spilled on the skin, a brown to brown-black stain results. The color is due to silver metal bound to the protein of the skin and can't be washed off. While there are chemical methods for removing these brown stains, the best procedure is to just let them wear off.

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

Four stock solutions and a fixer will be mixed. The four stock solutions are used to prepare the working solution just prior to use. The fixer is for the after treatment.

Stock Solution A

You will need a dark brown glass storage bottle with a capacity of 250 ml (or 500 ml) along with a mixing bowl of the appropriate size.

Kit Size

Chemical	1/4 liter	1/2 liter
Distilled water (20°C/68°F)	200 ml	400 ml
Silver nitrate	15 g	30 g
Distilled water to make	250 ml	500 ml

*Use distilled or demineralized water, which is available at any drugstore or supermarket.

Place the water in the mixing bowl and add the silver nitrate. Stir the mixture to dissolve the solid. Add sufficient water to bring the volume up to 250 ml (or 500 ml). Stir the solution to ensure it is homogeneous then transfer it to its storage container.

Be sure to clean the mixing bowl thoroughly after mixing this solution.

Stock Solution B

You will need a storage container with a capacity of 250ml (or 500 ml) and a mixing bowl.

Kit Size

Chemical	1/4 liter	1/2 liter
Distilled water (52°C/125°F)	200 ml	400 ml
Sodium sulfite	15 g	30 g
Distilled water to make	250 ml	500 ml

*Use distilled or demineralized water, which is available at any drugstore or supermarket.

Use the procedure described for Stock Solution A to prepare Stock Solution B.

Stock Solution C

You will need a storage container with a capacity of 250 ml (or 500 ml) and a mixing bowl.

Kit Size

Chemical	1/4 liter	1/2 liter
Distilled water (52°C/125°F)	200 ml	400 ml
Sodium thiosulfate, pentahydrate	26 g	52.5 g
Distilled water to make	250 ml	500 ml

Place the warm water in a mixing bowl and add the sodium thiosulfate. Stir the solution to dissolve the solid. Sodium thiosulfate comes in the form of rather large crystals, which dissolve slowly. After the solid has dissolved, add sufficient water to bring the volume up to 250 ml (or 500 ml). Stir the solution to ensure it is homogeneous then transfer it to its storage container.

Stock Solution D

You will need a dark brown storage container with a capacity of at least 750 ml (or 1500 ml). If you do not have a container that is dark brown use any container and store the solution in the darkroom. For the 1/2-liter kit, a ½-gallon container (1.89 liters) can be used if necessary.

You will also need a mixing bowl of the appropriate size. (You may wish to mix the solution for the 1/2-liter kit in two batches using approximately one-half the amounts given and then combine batches together in the storage container.)

Kit Size

Chemical	1/4 liter	1/2 liter
Distilled water (52°C/125°F)	650 ml	1300 ml
Sodium sulfite	3.7 g	7.5 g
Metol	6 g	12 g
Distilled water to make	750 ml	1500 ml

Place the warm water in the mixing bowl and add a pinch of sodium sulfite. A pinch of sodium sulfite will minimize the initial oxidation of the metal; however, more will prevent the metal from dissolving. Add the metal and stir the solution to dissolve the solid. After all of the metal has dissolved, add the bulk of the sodium sulfite. Again, stir the solution to dissolve the solid. Finally, add sufficient water to bring the total volume up to 750 ml (or 1500 ml) - stir to ensure it is homogeneous - then transfer it to its storage container.

The Fixer (30% solution of Sodium Thiosulfate)

Since the fixer can be reused, only 500 ml will be prepared. You will need a 500 ml storage container and a mixing bowl.

Chemical	Amount
Distilled water (52°C/125°F)	400 ml
Sodium thiosulfate, pentahydrate	150 g
Distilled water to make	500 ml

Place the warm water in the mixing bowl and add the sodium thiosulfate. Stir the solution to dissolve the solid. The thiosulfate will take a long time to dissolve. Stir the solution - let it stand for 5 to 10 minutes then stir again.

The solid will not dissolve if it is just allowed to stand - some stirring is necessary. After the solid has dissolved, add sufficient water to bring the final volume up to 500 ml - stir the solution to ensure it is homogeneous - then transfer it to its storage container.

Mixing the working solution

The stock solutions are stable for at least 6 months; however, the working solution is stable for only about 1/2 hour after it is mixed. In addition, the working solution cannot be reused otherwise it will stain. Therefore, mix only enough working solution to intensify a frame or a roll of film. **A negative can only be intensified once!**

Desired Volume		30 ml	300 ml	500 ml
Chemical	Parts			
Stock Solution A	1	5 ml	50 ml	83 ml
Stock Solution B	1	5 ml	50 ml	83 ml
Stock Solution C	1	5 ml	50 ml	83 ml
Stock Solution D	3	15 ml	150 ml	250 ml

You will need a mixing bowl of approximately twice the size of the final volume of the working solution you wish to prepare. Place the correct volume of Stock Solution A in the bowl and slowly add to it, with rapid stirring, an equal volume of Stock Solution B. A white precipitate will form. To this mixture, add the correct volume of Stock Solution C. Upon stirring, the white precipitate will dissolve. To the resulting solution, slowly add with constant stirring, the proper volume of Stock Solution D. Stir the resulting solution to ensure it is homogeneous. Use the working solution immediately.

Using the Intensifier

Presoak the negative. Place the working solution in a white developing tray (or dish). (If you are working with a roll of film, you will have to use a reel and a tank. Visual inspection will be more difficult.) Working in room light, immerse the wet negative in the working solution and then watch the negative. You will be able to detect a slow darkening as the intensification proceeds. The degree of intensification depends upon the length of time the negative is immersed in the working solution. Constant agitation will produce greater intensification. You should not attempt to intensify longer than 25 minutes. When sufficient intensification has taken place, remove the negative and rinse it in running water. **Do not intensify a negative more than once!**

After-Treatment

The excess silver nitrate in the negative must be removed by a sodium thiosulfate fixer (30% solution - 150 g to 500 ml), otherwise, the negative will stain in time.

Immerse the negative in the 30% sodium thiosulfate solution for 2-3 minutes, and then wash it for 15 to 20 minutes in running water. To ensure the sodium thiosulfate has been removed from the negative, you may wish to use either a Hypo Clear or a Hypo Eliminator. Be sure to wash the negative thoroughly after such a treatment.

The 30% sodium thiosulfate solution cannot be reused. Additional sodium thiosulfate (cat. no. 10-1360) can be ordered from the Formulary.