

PHOTOGRAPHERS' FORMULARY

FORMULARY HYPO-ALUM SEPIA TONER (With Potassium Iodide)

Directions for the 1-liter and the 2-liter Kits

Hypo-Alum Sepia Toner produces brown to reddish-brown tones on almost any print. The actual hue that you will obtain depends upon the toning time, upon the paper, and upon the speed of the paper.

Silver nitrate and potassium iodide are both included in this kit although their use is optional: the silver nitrate can be used to decrease the ripening time and the potassium iodide gives a toning solution that yields warmer tones.

There are a number of different formulations in the photographic literature that are called "Hypo-Alum Toners". All of these toners act by the deposition of silver sulfide on the print. They differ from one another principally in the amounts of the ingredients used in their preparation. The formula contained in this kit is equivalent to the Ilford IT-2 toner.

CHEMICALS CONTAINED IN THIS KIT

This kit contains the following chemicals:

Kit Size

Chemical	1 liter	2 liter
Sodium Thiosulfate, pentahydrate	150 g	300 g
Potassium alum (alum)	25 g	50 g
Silver nitrate	.12 g	.24 g
Potassium iodide	1 g	2 g

CHEMICAL SAFETY

All chemicals are dangerous and must be treated with respect. This kit contains one chemical that needs special attention: silver nitrate

Silver Nitrate is both an oxidizer (can supply oxygen to a fire) and a caustic (can cause skin burns).

Consult with local sewer and water authorities regarding proper disposal of darkroom chemicals in your area. 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. If solid silver nitrate comes in 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 cannot be washed off. While there are chemical methods to remove 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 TONER

You will need a 1 or 2-liter (or larger) mixing bowl and a 1 or 2-liter storage container.

The toning solution is mixed in four separate steps. The first and second steps prepare the toner itself. The third and fourth steps are optional and are explained below.

Step 1

Kit Size

Chemical	1 liter	2 liter
Distilled water (52°C/125°F)	750 ml	1500 ml
Sodium thiosulfate, pentahydrate	150 g	300 g

Place the hot water in a mixing bowl and add the thiosulfate. Stir the solution until the solid goes into solution.

Step 2

Kit Size

Chemical	1 liter	2 liter
Solution from Step 1	750 ml	1500 ml
Potassium alum (alum)	25 g	50 g

Add the alum to the solution obtained from Step 1 and stir until the solid goes into solution.

This solution can be used as such as a Hypo-Alum Toner. If you wish to do so, transfer the solution to the storage container. Skip to the instructions labeled "Final Dilution". If you choose this alternative, be sure to read the comments at the start of Step 3 and

Step 3(optional)

A solution containing only thiosulfate and alum will act as reducer and bleach a print by removal of the silver. When the silver concentration in the bath is high enough, the solution will act as a toner. In order to convert a fresh thiosulfate-alum solution to a toning bath, silver must be added. This is carried out in two stages: silver nitrate is added to the bath and scrap prints are toned in the bath until a satisfactory toning solution is obtained.

Kit Size

Chemical	1 liter	2 liter
Distilled water	5 ml	5 ml
Silver nitrate	.12 g	.24 g

Add the water to the packet containing the silver nitrate. The same amount of water is used whether you are working with a 1-liter or 2-liter kit.

Add the silver nitrate solution to the solution obtained from Step 2. If a precipitate should form, ignore it. Stir the solution to ensure it is homogeneous.

Step 4 (optional)

The toning solution as described above tends to give cold tones. If you wish to obtain warmer tones, then potassium iodide must be added.

Kit Size

Chemical	1 liter	2 liter
Distilled water (20°C/68°F)	50 ml	50 ml
Potassium iodide	1 g	2 g

Place the water in a clean mixing bowl (such as a water glass) and add the potassium iodide. Stir the solution to dissolve the solid.

Pour the iodide solution into the bath obtained from Step 2 (or Step 3). A precipitate usually forms, especially if silver nitrate has been added to the bath. The precipitate is normal therefore just ignore it.

FINAL DILUTION

Transfer the toning solution to its storage container and add sufficient water to bring the final volume in the container up to 1000 ml (or 2000 ml). Cap and shake the container to ensure it is homogeneous.

RIPENING THE TONING SOLUTION

Without sufficient silver in the toning bath, prints will be bleached rather than toned. Some of the required silver can be added to the bath (Step 3) but the final amount must be added by allowing the bath and the silver on a print to attain equilibrium.

To obtain the proper silver concentration, "tone" scrap prints at 50°C/120°F. The first five or so of these prints will be ruined. (The actual number ruined will depend upon print size, density, etc.). The tone of the scrap prints will improve as the bath approaches the proper ratio of ingredients.

CAPACITY OF THE TONING BATH

The ripened bath has a very high capacity and can be used for years. It is reported to improve with use. Add a little water (or better, fresh un-ripened toner solution) from time to time to maintain its volume.

USING THE TONER

The print to be toned should be developed more than usual to obtain the best result. All types of papers can be used but the exact tone will depend upon the paper used. RC papers will tend to gray from loss of their optical brightener in this bath.

The toning bath should be used undiluted and at 50°C/120°F to minimize the toning time. Place the toning solution in a plastic tray. Try to avoid transferring any precipitate to the toning tray; however, if some should be transferred, don't worry about it. Float the toning tray in a larger tray containing hot water. Add hot water to the larger tray from time to time to maintain its temperature.

Immerse a wet well washed print in the hot toning solution. Rock the toning tray to wash the print with fresh solution and to keep any precipitate off its surface. Tone to the desired hue; about 10 minutes will be required.

After toning wash the print in running water for 10-20 minutes. Use a wet cotton swab to clean any scum off the print's surface.