

# PHOTOGRAPHERS' FORMULARY INC.

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## FORMULARY REDUCER II FOR NEGATIVES

### 1- liter kit

The action of Reducer II is super-proportional; it removes more silver metal from the highlights than it does from the shadow areas.

Using a reducer correctly is an art and requires experience. We strongly urge you to practice with this reducer using scrap negatives before attempting reduction of a negative of value.

### CHEMICALS CONTAINED IN THIS KIT

Chemical	Amount
Ammonium Persulfate	25 g
Sulfuric acid, 48%	6 ml
Sodium sulfite, anhydrous	50 g

### CHEMICAL SAFETY

All chemicals are dangerous and must be treated with respect. Please read the chemical warnings on each package. Two chemicals in Reducer II need special attention; sulfuric acid and ammonium persulfate.

**Sulfuric Acid, 48%:** Sulfuric acid, even at 48% strength, is a strong acid. If you should spill the acid, wash the area skin or clothing, immediately with copious amounts of cold water followed by soap and water. Neutralization of spilled acid with alkali is no longer a recommended clean-up procedure.

Ammonium Persulfate and Potassium Permanganate are both oxidizers. They can supply oxygen to any combustible compound and, thus, are potential fire hazards. Always clean up any spilled oxidizer with copious amounts of water. Never dispose of excess solid oxidizer in a wastepaper basket - rather, wash it down a sink drain with water.

Consult with local sewer and water authorities regarding 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 WITHIN 30 DAYS FOR A FULL REFUND.

### MIXING THE WORKING SOLUTIONS

#### Solution A (the reducer)

To mix and store the working solution, you will need a 1-liter container and mixing bowl.

Chemical	Amount
Water* (chloride free)	900 ml
Ammonium persulfate	25 g
Sulfuric acid, 48%	6 ml
Water	to make 1000 ml

\*The action of the ammonium persulfate is retarded by chloride ions. If your water is softened or if your water is chlorinated, use distilled or demineralized water.

Place the 900-ml of chloride free water in a mixing bowl and add the ammonium persulfate. Stir the solution until the solid has dissolved. Add the 6-ml of 48% sulfuric acid and swirl the solution to mix. Add water to bring the total volume up to 1000 ml. Stir the solution to ensure it is homogenous, and then transfer the solution to its storage container.

Solution B (the sulfite after bath)

Chemical	Amount
Distilled water (20°C/68°F)	1000 ml
Sodium sulfite	50 g

Dissolve the 50-g of sulfite in 1000 ml of water. Use any convenient container.

LIFE OF THE SOLUTIONS

Both solutions are stable for an extended period of time and can be reused. For lengthy storage, the persulfate solution (Solution A) should be stored in a tightly capped container away from heat and sunlight.

USING REDUCER II

Photographic reduction takes place by conversion of silver metal to silver sulfate. This conversion is catalyzed by silver sulfate; the photographic reduction is slow at the start, but increases in speed the longer the negative is in contact with the reducer solution. Because of this autocatalytic action, it is very easy to over-reduce your negative. The best procedure is to remove the negative just before you reach the desired reduction level and rinse the negative in the sodium sulfite bath. (Solution B).

The negative to be reduced should first be soaked in water to ensure even wetting when it is placed in the reducer solution. (Solution A).

Place a convenient volume of Solution A in a white tray in a lighted room. Immerse the negative in the solution making sure that it is evenly covered. Rock the tray so that the solution passes continuously over the negative.

After reduction, the negative is first rinsed in sodium sulfite, then washed thoroughly with water. Some workers recommend that an acid fixer be used after (or in place of) the sodium sulfite bath, followed by a thorough water rinse.



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