CATALOG NO 07-0022
CATALOG NO 07-0023

PHOTOGRAPHERS' FORMULARY

REPLACEMENT CHEMICALS FOR PLATINUM AND PALLADIUM PRINTING

This kit 07-0022 or 07-0023 contains 30 ml's of ferric oxalate and potassium chlorate for the preparation of Sensitizer B for Platinum printing.

Chemicals Contained in this kit

Chemical	Amount
CATALOG NO 07-0022	
Ferric Oxalate	30 ml
Potassium Chlorate	.26 gram
CATALOG NO 07-0023	
Ferric Oxalate	30 ml
Potassium Chlorate	.18 gram

Chemical Safety

All chemicals are dangerous and must be treated with respect. This replacement kit may contain two chemicals that need special attention: ferric oxalate and potassium chlorate.

Ferric Oxalate, like potassium oxalate is a poison. You will be using only very small amounts of this chemical. Should you spill it on your skin wash with soap and water.

Potassium Chlorate, a dangerous and explosive chemical is also supplied in your kit. However the amount is so miniscule that no special precautions need be taken. If you find it necessary to dispose of solid potassium chlorate flush it down the drain with lots of water. Do not dispose of solid potassium chlorate in a wastepaper basket or garbage can. It is an oxidizer and under the proper circumstances can supply oxygen to a fire.

The user assumes all risks upon accepting this chemical. If for any reason you do not wish to assume all risks, please return the chemical for a full refund.

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

Ferric Oxalate

The photographic term "ferric oxalate" is a misnomer, which has given rise to a considerable amount of confusion in the photographic literature. There are two common forms of this compound: tripotassium ferric oxalate ($K_3Fe(C_2O_4)_3$) and trihydrogen ferric oxalate $H_3Fe(C_2O_4)_3$). While both forms are photosensitive, only the acidic form is sufficiently photosensitive to be useful in photography. The original formulas for platinum and palladium printing call for dissolving solid ferric oxalate with an excess of oxalic acid. With the original directions it is not clear which of the two forms of ferric oxalate are to be used. Solid tripotassium ferric oxalate is a trihydrate that is thermally stable up to 1100ºC and stable in the dark for extended periods of time. The solid can be used in subdued room light however the solid is destroyed (turns from green to brown) when exposed to Ultraviolet light. Tripotassium ferric oxalate is photo activated by placing it in an acid solution where it is converted to the trihydrogen form.

Photographers Formulary doesn't recommend the use of the green, solid tripotassium ferric oxalate for platinum, palladium or Kallitype printing. Its Photoactivity is low and it is difficult to convert to the more active form.

The ferric oxalate supplied with your kit is a 20% solution of trihydrogen ferric oxalate. Photographers' Formulary Inc prepares this chemical by the iron alum oxalic acid procedure and contains a slight excess of oxalic acid. This

ferric oxalate is ready for use as Sensitizer A without additional mixing. Sensitizer B does require additional mixing which is described below.

Trihydrogen ferric oxalate is photosensitive to light in the 460nm region. As photosensitive material ferric oxalate is very slow when compared with silver grain-emulsions. However ferric oxalate should still be used in a darkroom with a red safety light. Trihydrogen ferric oxalate is probably heat sensitive but the exact extent is not known. To be on the safe side do not heat the solution (or the sensitized paper when it is being dried) over 50ºC/122ºF. Trihydrogen ferric oxalate is very water-soluble and its solution has a yellow to yellow-green appearance when first taken into room light.

Chemical Test for Photoactivity and Excess Ferrous Ions in Ferric Oxalate: In a suitable glass container (a test tube or a whiskey shot glass), place about 2 crystals of potassium ferricyanide (Catalog no 10-1010) and about 2 ml of water. Stir until the solid has dissolved. In the darkroom under a red safety light, add 1 drop of ferric oxalate. Hold the test container up to the red light in such a way that you can see through it as you add the drop of ferric oxalate.

If the ferric oxalate does not contain excess ferrous ions, you will observe only a slight darkening of the solution. If excess ferrous ions are present, the test mixture will turn very dark or black (It actually turns blue). Step out of the darkroom and quickly look at the test container. The solution should appear yellowish brown to orange. If traces of ferrous ions are present, it will appear green. It may have a blue cast. The deeper the blue, the poorer the quality of the ferric oxalate.

Hold the test container up to the side of a 100-watt frosted light bulb. Within a minute you should see a deep blue coloration forming on the side of the test container nearest to the light bulb. The formation of the deep blue color indicates that there is photosensitive ferric oxalate present. This blue is due to Prussian blue, which is formed by a reaction between the newly formed ferrous ions and the ferricyanide ion.

With a little practice using exposed and unexposed solutions of ferric oxalate, you will be able to gauge the quality of the ferric oxalate before you mix it with expensive metal salts.

Mixing the Solutions

Sensitizer B: (Catalog number 07-0022)
(Catalog number 07-0023)

SENSITIZER B: The kit contains one bottle of 30 ml ferric oxalate solution and one packet containing 0.18 g or .26 g of potassium chlorate. In a darkroom, add the contents of the potassium chlorate package to the ferric oxalate solution. There is only a very small amount of potassium chlorate in the package, therefore, be sure that all of it is transferred to the ferric oxalate solution. Cap and shake the' bottle to dissolve all of the solid chlorate.

In the photo process, when ferric oxalate is struck by light, ferric ions are reduced to ferrous ions, which subsequently convert the palladium salt to free metal. The purpose of the potassium chlorate is to reconvert the ferrous ions back to the ferric state. Thus the chlorate acts as a restrainer; increases contrast, and maintain the whites.

The chlorate in Sensitizer B will slowly decompose over a period of weeks and the solution will lose its potency. It is wise to run a test strip about once a week or just before a printing session.