

# PHOTOGRAPHERS' FORMULARY

## FORMULARY UNIVERSAL CONCENTRATE DEVELOPER

Makes 20 liters of working solution

Formulary Universal Concentrate Developer is an economical hydroquinone-phenidone developer, which gives good contrast in films. The chemicals are used to prepare a stock solution, which is diluted 1:19 for film.

This developer is also an excellent paper developer, providing neutral tones, deep blacks and a pleasing tonal gradation. The stock solutions are usable for 4 to 5 months after mixing; the working solutions are one shot. A 1-liter kit is used to make 5 to 20 liters of working solution depending upon dilution used.

### CHEMICALS CONTAINED IN THIS KIT:

CHEMICAL	AMOUNT
Sodium Sulfite	110 grams
Hydroquinone	31 grams
Potassium Carbonate, anhydrous	100 grams
Phenidone	1.3 grams
Potassium Bromide	5 grams
Sodium Hydroxide	2 grams

### CHEMICAL SAFETY:

All chemicals are dangerous and must be treated with respect. Please read the chemical warnings on each package. Please exercise extreme care when handling, and avoid skin or eye contact.

HYDROQUINONE: Hydroquinone is considered by the EPA to be hazardous as well as a skin sensitizer.

SODIUM HYDROXIDE: Although your kit contains only a small amount of solid Sodium Hydroxide, it must be treated with special care. Sodium Hydroxide, as a solid or in solution, is a dangerous chemical. It is a corrosive and when spilled on the skin, will cause a chemical burn.

Its action is insidious because the burn occurs without pain. When working with Sodium Hydroxide wash your hands frequently and without soap. If you detect a soapy feeling while washing, Sodium Hydroxide is present. In such a case, you should wash thoroughly with soap and water.

Beads or pellets of solid Sodium Hydroxide are easily spilled during solution preparation. If spillage occurs outside of a sink, all of the spilled solid must be cleaned up, use a damp disposable towel. If the solid is not cleaned up, it will absorb the moisture from the air and form a puddle of very caustic hydroxide, which will not evaporate. We strongly urge you to wear both safety glasses and rubber gloves when working with solid Sodium Hydroxide or its solutions.

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

## MIXING THE STOCK SOLUTION

You will need a graduated cylinder or other measuring device, a mixing container and a plastic storage bottle, each with a capacity of at least one liter.

CHEMICAL	AMOUNT
Water (52° C/125° F)	750 ml
Sodium Sulfite	110 g
Hydroquinone	31 g
Potassium Carbonate, anhydrous	100 g
Phenidone	1.3 g
Potassium Bromide	5 g
Sodium Hydroxide	2 g
Water (cold) to make	1000 ml

Dissolve the chemicals in the order given. Be sure each chemical is COMPLETELY dissolved before adding the next one. When all of the solids are completely dissolved, add the cold water and stir the solution to ensure it is thoroughly mixed. Store the solution in brown a plastic bottle or in a dark area or use a dark brown plastic bottle.

## LIFE OF THE SOLUTIONS

The stock solution has a shelf life of 4-5 months; the working solutions are one shot.

## USING THE DEVELOPER

The working solution is prepared by mixing 1 part stock solution with 19 parts of water. For example, to prepare 500 ml of working solution, dilute 25 ml of the stock solution with 475 ml of water. Be sure to stir the final solution to ensure it is mixed thoroughly.

Use at least 500 ml of working solution per roll of film to ensure that sufficient chemicals are present for correct development. Discard the developer after a single use. Develop the film at 20° C/68° F.

The exact development time will depend upon the amount of contrast you wish and upon your personal technique of agitation.

Consequently the development time will have to be determined by using test strips in your darkroom. For a starting point, a time within one of the following ranges is recommended.

FILM	ISO RATING	DEVELOPING TIME
Plus X	125	6-8 minutes
Tri X	400	8-10 minutes
T-MAX	100	4-6 minutes

Stop, fix, and wash the film in the usual manner.

## ENLARGING PAPER

The working solution is prepared by mixing one part of the stock solution with nine parts of water. For example, to prepare 500 ml of working solution, dilute 50 ml of the stock solution with 450 ml of water.

Develop enlarging papers for 2 to 3 minutes at 20 C/68 F. Stop, fix, and wash the developed paper in the usual manner. Discard the working solution when it turns quite yellow or no longer adequately develops a print. The developer will produce good blacks with neutral tones.