

PHOTOGRAPHERS' FORMULARY

FORMULARY DIVIDED D-76 FILM DEVELOPER

These directions cover three kits.

Formulary Divided D-76 contains the same chemicals as Kodak[®] D-76; however, the amounts are slightly different.

Another difference in the two developers is that instead of making one solution, as is the case with Kodak[®] D-76, with Divided D-76 two solutions are prepared and used separately. Solution A contains the developing agents while Solution B contains the alkali. When film is developed in Divided D-76, it is first soaked in Solution A. Development does not take place in this solution because it is too acidic. For development, the film is transferred (without washing) to the alkali (Solution B). The extent of development is controlled by both the time the film remains in Solution B and by the amount of developing agent (Solution A) retained on the film prior to the transfer.

Divided D-76 offers several advantages over the classical D-76: (1) over-development is prevented because only a limited amount of developer is present on the film during the actual development; (2) the negative is thinner which helps produce very fine grain; (3) excellent tonal gradation is provided by the slight compensating action of the developer; and (4) development times are shorter.

CHEMICALS CONTAINED IN THIS KIT

Your kit contains the following chemicals:

Chemical	Kit Size		
	1 liter	2 liter	4 liter
Metol	4 g	8 g	16 g
Sodium Sulfite	100 g	200 g	400 g
Hydroquinone	7.5 g	15 g	30 g
Potassium Bromide	1 g	2 g	4 g
Borax	60 g	120 g	240 g

CHEMICAL SAFETY

All chemicals are dangerous and must be treated with respect. Please read the warning labels on each package.

Some individuals become sensitized (develop allergic symptoms or rashes) when using Metol. Please pay special attention to the warning on this package of chemical.

The user assumes all risk 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

You will need two dark brown storage bottles with a 1-liter (2-liter, 4-liter) capacity and a mixing bowl. In addition you will need a temporary 100-ml container (200 ml or 400 ml) to mix the 1% potassium bromide solution needed in the preparation of Solution A.

Making a 1% Potassium Bromide solution

Before mixing Solution A, you will first need to prepare a 1% Potassium Bromide solution. Only a portion will be used in mixing Solution A. The remainder can be discarded or saved for future use. This solution is mixed in this manner to ensure an accurate concentration of the restrainer in the developer.

Place the Potassium Bromide in the temporary container and add 100 ml (200 ml, 400 ml) of water (20° C/68° F). Stir the solution to dissolve the solid. Be sure the solution is homogeneous before continuing.

Solution A

Kit size

Chemical	1 liter	2 liter	4 liter
Distilled water (52° C/125° F)	750 ml	1500 ml	3000 ml
Metol	4 g	8 g	16 g
Sodium Sulfite	100 g	200 g	400 g
Hydroquinone	7.5 g	15 g	30 g
Potassium Bromide, 1%	30 ml	60 ml	120 ml
Cold water to make	1000 ml	2000 ml	4000 ml

To prepare Solution A, place the warm water in a mixing bowl and add a pinch of sodium sulfite. This small amount of sulfite minimizes the initial oxidation of the metol; however, if more is added at this point, the metol will not dissolve. Add the metol and stir the solution until dissolved. It is important that all of the metol is dissolved before proceeding. Then add the sulfite and, again stir until the solid has dissolved. Next add the hydroquinone and stir until dissolved. Measure the proper volume of the potassium bromide solution and add it. It is important that only the specified amount of the 1% solution be added. (Do not add all of the solution that was mixed!) Finally, add water to bring the total volume up to 1 liter (2 liters, 4 liters), stir to ensure it is homogeneous, and then transfer the final mixture to its storage container.

Solution B

Kit Size

Chemical	1 liter	2 liter	4 liter
Distilled water (52° C/125° F)	750 ml	1500 ml	3000 ml
Borax	60 g	120 g	240 g
Cold water to make	1000 ml	2000 ml	4000 ml

Add the warm water to the Solution B container and then add the borax. Cap and shake the container until the solid has dissolved. Add cold water to bring the final volume up to 1 liter (2 liters, 4 liters).

LIFE OF THE SOLUTIONS

The shelf life of Solution A in a full tightly capped bottle is about six months. Solution B has a shelf life of about three months.

USING THE DEVELOPER

Solution A is reusable and can be returned to its storage container. Solution B is used as a one-shot (discarded after a single use). Borax (catalog number 10-0260) for additional Solution B can be obtained from Photographers Formulary.

TIME OF DEVELOPMENT

The time the film remains in Solution A is not important as long as the film is thoroughly soaked. The time the film remains in Solution B controls the development and final contrast of the negative. A change of 30 seconds will not be noticeable. The following Solution B times are suggested:

Film	Time of development in Solution B
Plus-X	2.5 - 4 minutes
Tri-X	3.5 - 5 minutes
T-MAX 100	3.5 - 5 minutes
T-MAX 400	3.5 - 5 minutes

Typical Developing Sequence:

Solution A	3 minutes with agitation every 30 seconds
Solution B	2-5 minutes with agitation every 30 seconds
Wash	30 seconds (DO NOT USE AN ACID STOP BATH)
Fix:	3-4 minutes in TF-4; 2-4 minutes in Rapid Fix
Wash:	30 seconds
Clear:	1-2 minutes with Formulary Hypo-Clear (03-0165)
Wash:	5-10 minutes

PRINTING

Because of the slight compensating action of the developer, the negatives will usually print on #3 paper. The grain will be fine and there will be excellent tonal gradation.