2- Water rinse at room temperature for one minute.

3- Permanganate Bleach: Mix one part solution A to one part solution B. Bleach for 5 minutes using freshly mixed solution for each roll of film.

REMAINING STEPS DONE IN ROOM LIGHT -

4- Rinse in water for two minutes.

5- Metabisulfite Clearing Bath for 3 minutes with at least 15 seconds of agitation per minute.

6- Rinse in Forma-Flo solution for one minute with agitation, then rinse in water for 5 minutes.

7- Re-expose each side of the film for one minute, using a 150-watt light bulb at a distance of one foot. Be careful not to splash water on the hot bulb.

8- Second Developer diluted 1:2 for 3 minutes, 68° F.
Have dry reels ready for this step.

9- A short water rinse or acetic acid stop bath.

10 Fix, final wash, wetting agent, and dry as usual.

First Developer and Second Developer are both one-shot. Use in a daylight-developing tank. Do not use less than 500 ml per tank. There will be an excess of the second developer left after the kit is used up.

You can fix in any black/white acid fix, but it should be a hardening fixer since the slide will be subjected to rough handling. (4 minutes in Rapid Fix with hardener).

The above steps and times are only a starting point. Each individual must work out his own times, temperatures, and agitation as to his method of doing dark room work.

PHOTOGRAPHERS'
FORMULARY INC.

PO Box 950 • Condon MT 59826 • 406-754-2891 • FAX 406-754-2896
E-MAIL formulary @montana.com

PHOTOGRAPHERS'
FORMULARY INC.

REVERSAL PROCESSING USING T-MAX FILM

To process 4 rolls of 35 mm - 36 exposure film

This formula for the reversal of black/white film into slides first appeared in the March/April 1988 issue of *Darkroom Techniques*. It was formulated by Hans F. Dietrich of Victoria, B.C.; an instructor in electron microscopy at the University of Victoria. Mr. Dietrich has given us permission to make a kit of his formula. Seaton Preston, editor of Darkroom Techniques, also granted permission.

Reversal processing conventional black and white film starts with a first developer. In addition to having the usual ingredients the first developer also contains a silver halide solvent. This solvent is essential to obtain clear highlights in the final transparency. After first development and a rinse, the film is bleached to remove the silver formed in the first step. The silver is converted to a chemical soluble in the bleach step.

T-MAX 100 and 400 may be processed to slides in both 35 mm and 120 formats. One added benefit of the 120 sizes is the film's thicker base. This added base thickness offers far greater stability, which is a tremendous asset when you get around to projecting your slides. T-MAX films are coated on a clear-emulsion base, as opposed to some other films, which are coated on a tinted base. Finally, don't underestimate the importance of the 2 to 4 stop exposure advantage offered by the T-MAX films. It really makes life a little easier according to Hans Dietrich.

FOR YOUR CMEMICAL SAFETY

All chemicals are dangerous and must be treated with respect. Please read the warning labels on each package. IF FOR ANY REASON YOU DO NOT WISH TO ASSUME ALL RISKS PLEASE RETURN THE KIT FOR A FULL REFUND WITHIN 30 DAYS.

METOL: some individuals become sensitized (develop allergic symptoms or rashes) when using Metol. Please read the warning label on this package of chemicals.

HYDROQUINONE: this chemical is toxic, a skin and eye irritant and may damage lungs. Please read the chemical warning.

SODIUM THIOSULFATE PENTA: the dust from this chemical can cause irritation to the eyes, skin and lungs. Prolonged skin contact with a solution containing this chemical may cause skin burns. Read the warning labels.

POTASSIUM PERMANGANATE: prolonged inhalation of dust can lead to magnesium poisoning. This chemical may also irritate eyes and skin.

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

LIFE OF THE SOLUTIONS:
You will need two dark brown bottles - one with a capacity of 1 liter; and one with a capacity of 2 liters. Use these to store the two developers in.

MIXING THE WORKING SOLUTION:

FIRST DEVELOPER

CHEMICAL	AMOUNT
Distilled water 120°F/50°C	1450 ml
Metol	4 g
Sodium Sulfite	200 g
Hydroquinone	10 g
Sodium Carbonate (Mono)	120 g
Sodium Thiosulfate (Penta)	32 g
Potassium bromide	8 g
Water to make	2 liters

Place the warm water in the storage container. Add a pinch of sodium sulfite; this amount retards the initial oxidation of the metol. If more sulfite is added at this point the metol will not dissolve. Add the metol then stir (or cap and shake the container) until all of the metol dissolves. Next add the remaining sodium sulfite and stir until dissolved. Add each of the remaining chemicals in the order shown, dissolving each one completely before adding the next one. Finally add cold water to bring the final volume up to 2000 ml. Be sure to stir the solution after adding the final portion of water to ensure that it is homogenous.

SECOND DEVELOPER

CHEMICAL	AMOUNT
Distilled water 120°F/50°C	750 ml
Metol	3.1 g
Sodium Sulfite	45 g
Hydroquinone	12 g
Sodium Carbonate (Anhydrous)	67.5 g
Potassium bromide	1.9 g
Water to make	1 liter

Place the warm water in the storage container. Add a pinch of sodium; this amount retards the initial oxidation of the metol. If more sulfite is added at this point the metol will not dissolve.

Add the metol then stir (or cap and shake the container) until all of the metol dissolves. Next add the remaining sodium sulfite and stir until dissolved. Add each of the remaining chemicals in the order shown, dissolving each one completely before adding the next one. Finally add cold water to bring the final volume up to 1000 ml. Be sure to stir the solution after adding the final portion of water to ensure that it is homogenous.

PERMANGANATE BLEACH:

You will need two bottles with a capacity of 1000 ml each to store the bleach solution:

BLEACH STOCK SOLUTION A

Chemical	Amount
Potassium Permanganate	4 g
Water to make (Distilled)	1 liter

BLEACH STOCK SOLUTION B

Chemical	Amount
Sodium Bisulfate	34.5 g
Water to make (Distilled)	1 liter

One-shot bleach - DISCARD AFTER BLEACHING ONE ROLL.

For the permanganate bleach, make up Stock Solutions A and B using distilled water, since this bleach must not be contaminated by chlorine or bromine. Both stock solutions are stable for a long time. For use, mix one part A and B. Use the bleach one-shot; DISCARD after bleaching one roll of film; NEVER REUSE PERMANGANATE BLEACH.

METABISULFITE CLEARING BATH.

You will need one bottle with a capacity of 1000 ml for the clearing bath solution.

Chemical	Amount
Sodium Metabisulfite	30 g
Water to make	1 liter

This is a special clearing bath formula to be used with the permanganate bleach. Always use the metabisulfite-clearing bath only with the permanganate bleach. Discard after clearing 10 rolls of 35 mm film.

USING THE REVERSAL PROCESS

Summary of Steps:

IN THE DARKROOM - DO NOT USE STAINLESS STEEL REELS

1- FIRST DEVELOPER - undiluted, 500 ml, 10 minutes 68° F.
Agitate each minute.