

Black and white film development

A practical guide from loaded reel to sleeved negatives



Prepare the film and chemistry

- 01 Load the reel in total darkness.** Open the cassette, trim the film leader, and load the film onto a clean, completely dry reel. No safelight is safe for unprocessed film.
- 02 Seal the daylight tank.** Place the loaded reel in the tank, fit the center column if the tank requires one, and secure the lid. Room lights may be turned on only after the tank is fully closed.
- 03 Presoak with water.** Fill the tank with 68°F water, gently agitate, and drain completely immediately before adding developer.
- 04 Prepare D-76 developer.** Mix D-76 stock solution and water at a 1:1 ratio. Bring the working solution to 68°F and prepare enough to cover every reel. For Tri-X 400, set the timer for 9 minutes 45 seconds.

FILM	TEMPERATURE	DILUTION	DEVELOPMENT TIME	AGITATION
Tri-X 400	68°F / 20°C	D-76 1:1	9:45	Every 30 seconds
T-Max 100	68°F / 20°C	D-76 1:1	9:30	Every 30 seconds
T-Max 400	68°F / 20°C	D-76 1:1	10:15	Every 30 seconds
Ilford FP4 125	68°F / 20°C	D-76 1:1	11:35	Every 30 seconds
Ilford HP5	68°F / 20°C	D-76 1:1	11:35	Every 30 seconds

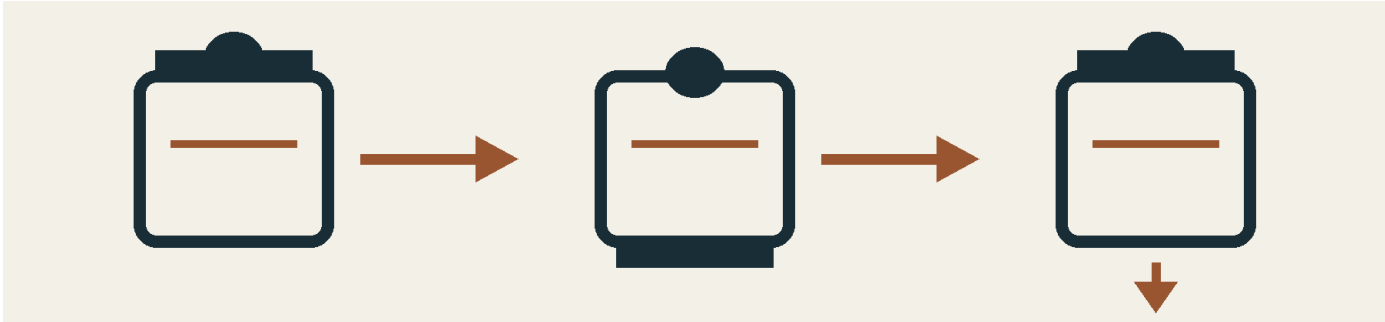
Before pouring chemistry Arrange developer, stop bath or rinse water, fixer, timer, thermometer, and labeled graduates in processing order. Use the tank volume marked for the reel count.

T-Max Films: I prefer T-Max developer.

Films can be developed full strength, different temperatures, and pushed and pulled. Check instructions for other times.

Develop and fix

05 Develop Tri-X 400 for 9 minutes 45 seconds. Pour in D-76 1:1 and start the timer immediately. Invert and rotate the tank, return it upright, then tap it firmly on the counter to release air bubbles. Repeat the agitation cycle every 30 seconds. Drain the developer at the end; the 1:1 working solution is not reusable.



INVERT AND ROTATE	RETURN UPRIGHT	TAP THE TANK
Hold the lid and base securely.	Keep the movement smooth and complete.	Dislodge bubbles after agitation.

Agitation rule Use one hand on the lid and one on the bottom, especially with stainless-steel tanks. Agitate consistently; overly vigorous or irregular movement can produce uneven density.

Stop development and fix the image

- 06 Stop development.** Immediately fill the tank with water or prepared stop bath. Agitate briefly, then drain. Discard the rinse water. Return reusable stop bath to its correctly labeled storage bottle.
- 07 Fix for 5 minutes.** Fill the tank with rapid fixer. Invert and rotate every 30 seconds for the full 5 minutes, then drain the fixer into its labeled bottle; it is reusable until it reaches its tested capacity.
- 08 Turn on the room lights.** After the full fixing time and after the fixer has been drained, the film is light safe. Remove the lid and transfer the reels for washing.

DEVELOPER	STOP OR RINSE	RAPID FIXER	LIGHT SAFE
9:45 • discard	brief • drain	5:00 • reuse	after fixing

Wash dry and sleeve

Remove residual fixer

09 Wash for 5-10 minutes. Place the reels in the film washing cylinder. Use a steady upward flow of clean water through the bottom inlet so water circulates through the reels without overflowing the washer.

10 Use hypo-clearing agent for 2 minutes. Return the reels to the cleaned developing tank, fill with hypo-clearing agent, and agitate as directed by the lab procedure. Drain the solution into its designated container.

11 Wash again for 5 minutes. Return the reels to the washing cylinder. This final wash removes residual fixer and hypo-clearing agent that could stain or damage the negatives over time.

FIRST WASH	HYPO CLEAR	FINAL WASH
5-10 minutes	2 minutes	5 minutes

Finish without water spots or dust

12 Apply wetting agent. Place the reels in the clean developing tank with water and a few drops of wetting agent. Mix gently to avoid foam, then remove the reels.

13 Remove excess water and hang. Pull the film carefully from the reel. With clean, wet fingers and very light pressure, run the film between two fingers once. Hang it in a low-dust location with a wooden clothespin at the top and another at the bottom to keep it straight.

14 Cut and sleeve only when completely dry. Handle film by the edges, cut it into strips that fit Print File sleeves, and store it immediately. Keep negatives as clean as possible so prints do not require unnecessary spotting.

HANDLE	DRY	STORE
Touch edges only	Low dust • no heat	Print File sleeves

Clean-film rule Never sleeve damp film, and never place the emulsion side on a counter. Check that the film is completely dry before cutting.