KODAK PROFESSIONAL XTOL Developer

Kodak

TECHNICAL DATA / **CHEMICAL**

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KODAK PROFESSIONAL XTOL Developer is a two-part powder developer for processing KODAK and other manufacturers' normally exposed, pushed, or pulled black-and-white films. It offers full emulsion speed and easy mixing, and can be used as both a developer and a replenisher in a variety of equipment, from small tanks (8 to 64 fluidounces), trays, or rotary tubes to high-volume processors.

FEATURES	BENEFITS
• Ascorbic acid-based black-and-white film developer	• Very high image quality at full emulsion speed
• No hydroquinone	• Convenient, room-temperature mixing for immediate use
• Two-part powder	• Quick, easy mixing
• One solution for both developer and replenisher	• Versatility • Simplified mixing and storage procedures
• Excellent keeping properties	• Good shelf life (six months after mixing when stored in full bottles) • High resistance to breakdown from oxidation during storage or in replenished processes • Less waste
• Robust, abuse-tolerant, clean-working solution	• Stable performance across a range of temperatures, dilutions, and agitation methods • Less frequent tank cleaning
• Contrast Index similar to that produced by other developers	• Negatives with printing characteristics like those processed in other general-purpose developers
• Excellent emulsion speed with normal and push processing	• Enhanced shadow contrast and improved highlight detail with some films
• Fine grain and high sharpness	• Enhanced sharpness, especially with 1:1 dilution • Enlargeability of negatives 10 percent greater with equivalent sharpness and grain (image quality)

SIZES AVAILABLE

Sizes and catalog numbers may differ from country to country. See your dealer who supplies KODAK PROFESSIONAL Products.

To Make	CAT No.
1 litre	859 0176
5 litres	875 1752
50 litres	818 4517

MIXING INSTRUCTIONS

Note: Observe precautionary information on the containers and in the Material Safety Data Sheets.

For this amount of developer:	Start with this amount of water:
2 litres	1.6 litres
5 litres	4 litres
25 litres	20 litres
50 litres	40 litres

1. Start with an amount of water that is approximately 75 percent of the total volume indicated on the package. See the table above. The water should be at normal room temperature, about 65 to 85°F (18 to 30°C).
2. With stirring, slowly add Part A. Stir until the powder is completely dissolved. At this point, the solution may appear somewhat tawny or copper-colored. This is normal.
3. Continue stirring, and slowly add Part B. Stir until the powder is completely dissolved. The coppery tint will clear from the solution as you add Part B.
4. Add water to bring the final solution to 2, 5, 25, or 50 litres.
5. Stir until the solution is uniform.

If correctly mixed, the specific gravity of the working tank solution is 1.085 ± 0.003 measured at 77 ± 0.5°F (25 ± 0.3°C) at pH 8.2 ± 0.05.

STORING SOLUTIONS

Storage of Mixed Solutions

Store mixed KODAK PROFESSIONAL XTOL Developer in full, tightly closed containers or in a replenisher tank with a floating lid. To maintain shelf life, minimize the amount of air space in the storage container. Partially filled containers allow oxidation of the solution.

STORAGE LIFE OF UNUSED SOLUTIONS		
In Full, Tightly Closed Container	**In Partially Filled, Tightly Closed Container**	**In Replenisher Tank with Floating Lid**
6 months	At least 2 months	Indefinitely if new solution is added to replaced that used by the processor

Note: If you use XTOL Developer diluted 1:1, dilute it just before you use it, and discard it after processing one batch of film. Do not reuse or replenish this diluted solution.

PROCESSING INFORMATION

SMALL-TANK, TRAY, AND ROTARY-TUBE PROCESSING

See the appropriate table on the following pages for starting-point recommendations for specific films.

Note: Some rotary-tube processors allow replenishment of the developer. See "Replenishment" for more information.

Using Full-Strength Developer

Choose the appropriate table for development times and temperatures for using fresh, full-strength XTOL Developer. The capacity of the full-strength developer with normal, unreplenished processing is approximately 15 rolls of 135-36 or 120 film (or the equivalent of 80 square inches [516 square centimetres]) per litre, with time compensation.

To process the maximum number of rolls of film per litre of full-strength XTOL Developer, use time compensation according to the table below. Discard the developer after you process 15 rolls of film per litre.

Time Compensation for KODAK PROFESSIONAL XTOL Developer		
Film Size	**Number of Rolls (per litre)**	**Development-Time Increase**
135-36 or 120 rolls (80 square inches* or equivalent)	1 to 5	Use normal development time
	6 to 10	Increase normal development time by 15 percent
	11 to 15	Increase adjusted development time by 15 percent

*80 square inches = one 135-36 or 120 roll, four 4 x 5-inch sheets, or one 8 x 10-inch sheet; 160 square inches = one 220 roll.

The volume of full-strength XTOL Developer needed to cover the film will depend on the size of your tank or tray or the design of your rotary-tube processor.

Using Diluted Developer

Choose the appropriate development time and temperature table for starting-point recommendations for specific films in small tanks, tray, and rotary tubes.

You can dilute XTOL Developer 1:1 with water (developer:water) for one-shot (single-use) processing. Dilution at 1:1 will provide slightly greater film speed, enhanced sharpness and shadow detail, and slightly more grain.

Use diluted developer only once. Do not replenish or reuse diluted developer.

Note: If your water supply is exceptionally hard (above 200 ppm of $CaCO^3$), you may need to use conditioned water to avoid cloudiness when you mix higher dilutions. Contact your water authority for information on the water in your area.

The volume of diluted XTOL Developer needed to cover the film will depend on the size of your tank or tray or the design of your rotary-tube processor. However, the minimum amount of diluted developer needed to cover the film may not contain enough active ingredients to develop the film fully in the recommended time. We recommend always starting with at least 100 mL (3.5 fluidounces) of full-strength developer to prepare the diluted solution for each 135-36 or 120 roll (or the equivalent of 80 square inches [516 square centimetres]). For example, when processing 4 rolls of film with developer diluted 1:1, use at least 800 mL even if the processing equipment will allow the use of less solution.

Using Seasoned Developer

To use seasoned XTOL Developer in an unreplenished manual process, see the appropriate development time and temperature table for starting-point recommendations for specific films.

You can take the solution from the developer overflow line or the working tank of an in-control replenished process. You can also "pre-season" fresh XTOL Developer by adding one of the following:

- 6.5 mL of KODAK Developer Starting Solution (CAT 146 6382) per litre of developer
- 1 mL of KODAK EKTACHROME R-3 First Developer II Starter (CAT 869 9795 [U.S. and Australia] or CAT 524 0007 [Europe]) per litre of XTOL Developer
- 1.2 mL of KODAK PROFESSIONAL First Developer Starter, Process E-6 (CAT 167 1577 [U.S.] or CAT 526 2670 [Europe and Asia]) per litre of developer

Agitating Rolls in Small Tanks

The times given for small-tank processing in the development time and temperature tables are based on the following agitation procedure:

1. Fill the empty tank with developer.
2. Start the timer. In the dark, carefully place the loaded reel into the developer solution.
3. Quickly attach the top to the tank. Firmly tap the bottom of the tank against the work surface from a height of approximately 1 inch (2.5 cm) to dislodge air bubbles from the surface of the film. Air bubbles can interfere with development and produce low-density circles on the film.
4. Provide initial agitation of up to 5 cycles, depending on your results. For KODAK PROFESSIONAL T-MAX Films, provide initial agitation of 5 to 7 cycles in 5 seconds. For an invertible tank, one cycle consists of rotating the tank upside down and then back to the upright position. For a noninvertible tank, one cycle consists of sliding the tank back and forth over a 10-inch (25.4 cm) distance. With tanks that have a handle for turning the reel, rotate the reel back and forth gently through about one-half turn at a rate of one cycle per second during initial and subsequent agitation. Steps 2 through 4 will take approximately 7 to 20 seconds, depending on the type of tank.
5. Let the tank sit for the remainder of the first 30 seconds.
6. After the first 30 seconds, agitate for 5 seconds at 30-second intervals. Agitation should consist of 2 to 5 cycles, depending on the contrast you need and the type of tank.

Agitating Sheet Film in Trays

Presoaking sheets in water yields more even development, especially when multiple sheets of film are processed together. Even a single sheet should be presoaked so that the rate of development will be the same as multiple sheets processed together.

To process a single sheet:

1. Fill a tray with water that is at the same temperature as the developer.
2. Immerse the film in the water, making sure it is totally covered with solution. Rock the tray occasionally for about 1 minute, then transfer the film to the developer.
3. Slip the film into the developer. Rock the tray immediately to make sure the film is covered with solution.
4. Agitate the film by first raising the left side of the tray about 3/4 inch (2 cm). Lower it smoothly, and then immediately raise and lower the side nearest to you. Next, raise and lower the right-hand side, then the near side again. This agitation cycle takes about 8 seconds.
5. Agitate continuously throughout the development time.
6. At the end of the development time, drain the sheet for a few seconds and transfer it to the stop bath. To avoid contaminating the developer with stop bath, use one hand for lifting the sheet from the developer and the other hand for placing it in the stop bath.

To process two to six sheets together:

1. Fill a tray with water that is at the same temperature as the developer.
2. Immerse the sheets one at a time, emulsion side up, in the tray of water. Make sure that each sheet is covered with water before inserting the next one. Agitate by moving the bottom sheet to the top of the stack every few seconds. Go through the stack twice. Be careful that the corners of the sheet you are handling do not scratch the sheet under it.
3. Take the bottom sheet out of the tray of water, drain it for a few seconds, and place it in the developer, emulsion side up. Make sure that the sheet is covered with developer. Transfer the rest of the sheets to the developer in the same way. Interleave the stack, from bottom to top, until development is complete.

Note: When you use interleaving agitation, go through the stack of sheets completely. Rotate the first sheet in the developer 180° from the rest of the stack so that the notch is at the opposite end. This identifies it as the first sheet; be sure that it is the first sheet you remove from each solution.

4. At the end of the development time, transfer the sheets to the stop bath one at a time in the order they were placed in the developer. Drain each sheet for the same time that the sheets were drained in Step 3 when placed in the developer. To avoid contaminating the developer with stop bath, use one hand for lifting the sheets from the developer and the other hand for placing them in the stop bath.

Final Steps in Small-Tank, Tray, and Rotary-Tube Processing

Step	Time	Comments
Stop Bath	30 seconds	Agitate continuously.
Fixer	Twice as long as it takes the film to clear (lose its milky appearance); see the specific film or fixer instructions.	Agitate continuously for the first 30 seconds and for 5 seconds at 30-second intervals after that.
Rinse	30 seconds	Rinse the film in the tank under running water.
Hypo Clearing Agent	1 to 2 minutes	Agitate continuously for the first 30 seconds and at 30-second intervals after that.
Wash	5 minutes	Run the wash water at least fast enough to provide a complete change of water in the container in 5 minutes. For rapid washing in a small tank, fill the tank to overflowing with fresh water and then dump it all out. Repeat this cycle 10 times.
PHOTO-FLO Solution	30 seconds to 1 minute	To minimize drying marks, treat the film with KODAK PHOTO-FLO Solution after washing.
Dry	As needed	Dry in a dust-free place.

LARGE-TANK (REPLENISHED) PROCESSING

See the large-tank development time and temperature tables for starting-point recommendations for specific films. For critical applications, run tests to determine the best development time. The recommendations in Tables 3 and 7 (Large Tank, Seasoned Developer) are based on a nitrogen-burst agitation cycle of two seconds at 10-second intervals. The recommendations in Tables 4 and 8 (Large Tank, Fresh Developer) are based on manual agitation at 1-minute intervals. Significantly more agitation may require slightly shorter development times; less agitation may require longer times.

If you have a broad film mix that requires a wide variety of development times, you may want to establish a few standard batch cycles, such as 5, 6, 7, 8, 10, and 12 minutes. Then you can assign each film to the nearest batch cycle, based on the recommendations in the tables.

Starting (Preseasoning) a Fresh Working Tank Solution

To start or preseason a fresh working tank solution:

1. Add one of the following to the empty developer tank:
   - 6.5 mL of KODAK Developer Starting Solution (CAT 146 6382) per litre of tank volume
   - 1 mL of KODAK EKTACHROME R-3 First Developer II Starter (CAT 869 9795 [U.S. and Australia] or CAT 524 0007 [Europe]) per litre of tank volume
   - 1.2 mL of KODAK PROFESSIONAL First Developer Starter, Process E-6 (CAT 167 1577 [U.S.] or CAT 526 2670 [Europe and Asia]) per litre of developer
2. Fill the developer tank with fresh XTOL Developer solution.
3. Stir or recirculate until the solution is uniform.

If you choose not to preseason the fresh tank, initial development times will be about 10 percent shorter than those in the tables, but times will approach the times in the tables as the tank approaches a steady state.

Converting to KODAK PROFESSIONAL XTOL Developer from Another Developer

Before changing to XTOL Developer, run several KODAK Black-and-White Film Process Control Strips (CAT 180 2990) through your current in-control process at each of your standard development times. Measure and note the Contrast Index of these strips. Drain and clean the developer tank.

To make a fresh working tank solution, follow the mixing directions above for starting a fresh working tank. Run several more process control strips, adjusting the development time and/or temperature until the process produces Contrast Index results that match your previous Contrast Index results.

For more information, see Kodak Publication No. Z-133E, *Monitoring and Troubleshooting KODAK Black-and-White Film Processes* (CAT 889 4784).

Replenishment

You can replenish this developer in systems that use the full-strength solution (not diluted developer). Use XTOL Developer as a replenisher at a rate of 70 mL for each 135-36 or 120 roll, or the equivalent of 80 square inches (516 square centimetres), of film processed.

You can monitor replenished systems with KODAK Black-and-White Film Process Control Strips (CAT 180 2990). Adjust the replenishment rate up or down in 10 mL increments to keep the process on aim. Allow adequate time for the process to stabilize between replenishment-rate adjustments. Use the lowest replenishment rate that will maintain process control. For more information, see Kodak Publication No. Z-133E, *Monitoring and Troubleshooting KODAK Black-and-White Film Processes* (CAT 889 4784).

System Maintenance

KODAK PROFESSIONAL XTOL Developer is very clean-working, and will rarely need replacement in a properly replenished and maintained process.

Take these steps for routine maintenance:

- Minimize air access to the replenisher tanks. Use floating lids.
- Use a small amount of water to rinse the developer from processor parts left exposed to air after shutdown.
- Replace evaporation losses with water at processor start-up.
- If your processor is equipped with recirculation filters, check them frequently, and change them as needed.

Disposal

Handle all chemicals carefully. When you mix solutions, wear goggles or a face shield, a protective apron, and protective gloves made from neoprene or nitrile rubber. Clean protective clothing after use to remove any chemical residue that can cause contamination. For more information about potential health hazards and safe handling of specific KODAK chemicals, see the chemical labels and the Material Safety Data Sheets (MSDSs) for the chemicals. MSDSs also provide regional contact information. MSDSs are available on the Sino Promise website at www.kodaksino.com/

Development Tables

The following pages contain tables of starting-point development times and temperatures for developer solutions with and without dilution in small tanks, trays, rotary tubes, and large-tank replenished systems. This information includes processing data for KODAK films as well as for a sampling of other manufacturers' films. For critical applications, run tests to determine the best development time. Data for nominal film speeds are in bold face type.

Table 1: Processing Roll Films in Small Tanks

Important

Development times shorter than 5 minutes may produce unsatisfactory uniformity.

ROLL FILM	FORMAT	EI	CI	Small Tank, Full Strength Developer					Small Tank, 1:1 Developer			
				65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)	80°F (27°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)	80°F (27°C)
KODAK PROFESSIONAL PLUS-X 125 Film / 125PX	135	**125/250**	**0.56**	**6½**	**5½**	**5**	**4**	—	**8¼**	**7½**	**6**	—
		500	0.72	9¾	8¼	7½	5¾	—	12¼	11¼	8¾	—
		1000	0.82	11½	10	9	7	—	14¾	13½	10½	—
KODAK PROFESSIONAL PLUS-X 125 Film / 125PX	120/220	32/64	0.52	**6**	**5¼**	**4¾**	**3¾**	**2¾**	7½	**6¾**	**5¼**	4
		125	**0.56**	**7**	**6**	**5½**	**4¼**	**3¼**	**8¼**	**7½**	**6**	—
		250	0.62	7¾	6¾	6¼	4¾	3¾	9¾	8¾	6¾	5¼
		500	0.72	9¾	8¼	7½	5¾	4½	12¼	11¼	8¾	6¾
		1000	0.82	11½	10	9	7	5½	14¾	13½	10½	8
KODAK PROFESSIONAL TRI-X 400 Film / 400TX	135	**400/800**	**0.56**	**8**	**7**	**6¼**	**4¾**	—	**9**	**8½**	**7¼**	—
		1600	0.72	11¼	9¾	8¾	6¾	—	13¼	12¼	10½	—
		3200	0.82	—	11½	10½	8	—	15½	14½	12¼	—
KODAK PROFESSIONAL TRI-X 320 Film / 320TXP	120/220	**320/640**	**0.56**	**8¾**	**7¾**	**7¼**	**5¾**	—	**11¼**	**10¼**	**8**	—
		1250	0.72	13½	12	11	8¾	—	15¾	14½	11½	—
KODAK PROFESSIONAL T-MAX 100 Film / 100TMX	135/120	25/50	0.52	8¼	6¾	6	4¾	—	9	8	6¼	4¾
		100/200	**0.56**	**8¾**	**7½**	**6½**	**5**	—	**9½**	**8½**	**6½**	**5**
		200	0.62	9¾	8	7¼	5½	—	10½	9½	7¼	5½
		400	0.72	11½	9½	8½	6½	—	12¼	10¾	8¼	6¼
		800	0.82	12¾	10½	9½	7¼	—	13¼	11¾	9	7
KODAK T-MAX 400 Professional / TMY; KODAK T-MAX 400 Pro; KODAK PROFESSIONAL T-MAX 400 Film / 400TMY	135/120	100/200	0.52	—	—	—	—	—	—	—	—	—
		400	**0.56**	**7¼**	**6½**	**6¼**	**5¼**	**—**	**9¼**	**8½**	**7**	—
		800	0.62	—	6½	—	5¼	—	9¼	—	7	—
		1600	0.72	—	8½	—	6½	—	12¼	—	9	—
		3200	0.82	—	—	—	7¼	—	—	—	10	—
KODAK PROFESSIONAL T-MAX P3200 Film / P3200TMZ	135	400	0.52	—	9½	8½	6¾	5¼	12½	11½	10	8
		800	0.56	—	10½	9½	7½	6½	14	13	11½	9
		1600	**0.62**	—	**11½**	**10½**	**8¼**	**6½**	**16**	**14**	**12½**	**10**
		3200	**0.72**	—	**13½**	**12¼**	**9½**	**7½**	**18½**	**16½**	**14½**	**11½**
		6400	0.82	—	15¼	14	11	8½	20½	18½	16	13
		12500	0.92	—	17¼	15¾	12¼	9¾	22½	20½	18	14½
		25000	1.02	—	19	17½	13¾	10¾	25	23	20	16
KODAK High Speed Infrared / HIE	135	See Pub No. F-13	0.52	6½	5½	5	4	3¼	8	7½	6¼	5
			0.58	7¼	6	5½	4½	3¾	8¾	8¼	7	5½
			0.65	8	6¾	6	5	4¼	9¾	9	7½	6
			0.75	9¼	7¾	7	5¾	4¾	10¾	10	8½	6¾
			0.85	10½	9	8	6½	5½	12½	11½	9¼	7½
FUJI NEOPAN 400 Professional	135	100/200	0.52	9	7½	6½	5	3¾	8¼	7½	6	4½
		400	**0.58**	**10**	**8¼**	**7¼**	**5¾**	4½	**9¾**	**9**	**7**	**5¼**
		800	0.65	11½	9¾	8¾	6½	5	11½	10½	8	6
		1600	0.75	13½	11½	10½	8	6¼	13½	12½	9¾	7¼
		3200	0.85	16	13½	12	9½	7½	16½	15	11½	8½

ROLL FILM	FORMAT	EI	CI	Small Tank, Full Strength Developer					Small Tank, 1:1 Developer			
				65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)	80°F (27°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)	80°F (27°C)
FUJI NEOPAN 1600 Professional	135	200	0.52	4¼	4	3½	3	2¼	5½	5	4	3½
		400	0.58	5	4½	4	3¼	2½	6	5½	4½	3¾
		800	0.65	5½	5	4½	3½	3	6¾	6¼	5	4¼
		1600	**0.75**	**6½**	**5¾**	**5**	**4**	**3½**	**7½**	**7**	**5¾**	**4¾**
		3200	0.85	7½	6½	5½	4¾	4	8½	8	6½	5¼
		6400	0.95	9	7¼	6½	5½	4¾	9¾	9	7½	6
ILFORD PAN F Plus	135	25	0.52	7¼	6	5½	4¼	3¼	6¾	6	4½	3½
		50	**0.58**	**8½**	**7**	**6**	**4¾**	**3¾**	**7¾**	**7**	**5¼**	**4**
		100	0.65	9½	8	7	5½	4¼	9½	8½	6¼	4½
		200	0.75	11	9	8	6¼	4¾	11¼	10	7½	5½
		400	0.85	12½	10	9	7	5½	13	11½	8½	6½
ILFORD FP-4 Plus	135	32/64	0.52	8	6½	5½	4½	3½	8½	7½	5½	4
		125	**0.58**	**9½**	**8**	**6½**	**5¼**	**4**	**10**	**9**	**6½**	**5**
		250	0.65	11	9	7½	6	4½	12	10¾	8	6
		500	0.75	14	11	9¼	7½	5½	14½	13	9½	7
		1000	0.85	17½	14	11½	9¼	7	17½	15½	11½	8½
ILFORD HP-5 Plus	135	100/200	0.52	8½	7½	6¾	5¼	4	10¼	9	6½	5
		400	**0.58**	**10**	**8½**	**8**	**6¼**	**4¾**	**12**	**10½**	**7½**	**5¾**
		800	0.65	12	10½	9½	7½	5¾	14¼	12½	8¾	6½
		1600	0.75	16	13	12	9	7	18	16	11½	8
		3200	0.85	NR	17½	15	11½	8½	22½	20	14	10
ILFORD DELTA 100 Professional	135	25/50	0.52	8	6¾	6	4½	3½	9	8	6	4¾
		100	**0.58**	**9½**	**8**	**7**	**5½**	**4¼**	**10½**	**9½**	**7¼**	**5½**
		200	0.65	11½	9½	8½	6½	5	12	11	8½	6½
		400	0.75	14½	11½	10½	8	6¼	14	12¾	10¼	8
		800	0.85	18½	14½	12¾	9½	7½	16¾	15½	12½	9½
ILFORD DELTA 400 Professional	135	100/200	0.52	7	6	5½	4¼	3¼	9	8	6	4¾
		400	**0.58**	**8**	**7**	**6¼**	**5**	**4**	**10½**	**9½**	**7**	**5½**
		800	0.65	9½	8	7½	5¾	4½	12¼	11	8½	6½
		1600	0.75	11½	10	9	7	5½	14½	13	10	8
		3200	0.85	14	12	10¾	8¼	6½	17	15½	12	9½

NR = Not Recommended, as determined by testing.

Table 2: Processing Roll Films in Rotary Tubes

Important

Development times shorter than 4 minutes may produce unsatisfactory uniformity.

ROLL FILM	FORMAT	EI	CI	Rotary Tube, Fresh, Full Strength Developer				Rotary Tube, Fresh 1:1 Developer				Rotary Tube, Seasoned (Replenished) Developer			
				65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)	80°F (27°C)	65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)
KODAK PROFESSIONAL PLUS-X 125 Film / 125PX	135	32/64	0.52	6	5¼	4¾	3¾	7½	6¾	5¼	4	7¼	6¼	5¾	4¼
		125/250	**0.56**	**6¾**	**5¾**	**5¼**	**4**	**8¼**	**7½**	**6**	—	**8¼**	**7**	**6½**	**4¾**
		250	0.62	7¾	6¾	6¼	4¾	9¾	8¾	6¾	5¼	9¾	8¼	7½	5¾
		500	0.72	9¾	8¼	7½	5¾	12¼	11¼	8¾	6¾	12¼	10½	9½	7
		1000	0.82	11½	10	9	7	14¾	13½	10½	8	15	12¾	11½	8½
KODAK PROFESSIONAL PLUS-X 125 Film / 125PX	120/220	32/64	0.52	6	5¼	4¾	3¾	7½	6¾	5¼	4	7¼	6¼	5¾	4¼
		125	**0.56**	**6¾**	**5¾**	**5¼**	**4**	**8¼**	**7½**	**6**	—	**8¼**	**7**	**6½**	**4¾**
		250	0.62	7¾	6¾	6¼	4¾	9¾	8¾	6¾	5¼	9¾	8¼	7½	5¾
		500	0.72	9¾	8¼	7½	5¾	12¼	11¼	8¾	6¾	12¼	10½	9½	7
		1000	0.82	11½	10	9	7	14¾	13½	10½	8	15	12¾	11½	8½
KODAK PROFESSIONAL TRI-X 400 Film / 400TX	135/120	100/200	0.52	7¼	6¼	5¾	4¼	—	—	—	—	9	7½	6¾	5
		400/800	**0.56**	**8**	**7**	**6¼**	**4¾**	**9**	**8½**	**7¼**	—	**10**	**8½**	**7½**	**5½**
		800	0.62	9¼	8	7¼	5½	—	—	—	—	11¾	9¾	8¾	6½
		1600	0.72	11¼	9¾	8¾	6¾	13¼	12¼	10½	—	14½	12¼	10¾	8
		3200	0.82	—	11½	10½	8	15½	14½	12¼	—	—	14¾	13	9¾
KODAK PROFESSIONAL TRI-X 320 Film / 320TXP	120/220	80/160	0.52	8	7	6½	5	—	—	—	—	9¾	8½	7¾	6
		320/640	**0.56**	**8¾**	**7¾**	**7¼**	**5¾**	**11¼**	**10¼**	**8**	—	**11**	**9½**	**8¾**	**6¾**
		640	0.62	10¾	9¼	8½	6¾	—	—	—	—	13½	11½	10½	8
		1250	0.72	13½	12	11	8¾	15¾	14½	11½	—	17½	15	13½	10¼
KODAK PROFESSIONAL T-MAX 100 Film / 100TMX	135/120	25/50	0.52	8¼	6¾	6	4¾	9	8	6¼	4¾	10	8¼	7¼	5½
		100/200	**0.56**	**8¾**	**7¼**	**6½**	5	**9¾**	**8¾**	**6¾**	**5**	**11**	**9**	**8**	**6**
		200	0.62	9¾	8	7¼	5½	10½	9½	7¼	5½	12¼	10	8¾	6½
		400	0.72	11½	9½	8½	6½	12¼	10¾	8¼	6¼	14¾	12	10½	7¾
		800	0.82	12¾	10½	9½	7¼	13¼	11¾	9	7	16½	13½	11¾	8¾
KODAK T-MAX 400 Professional / TMY; KODAK T-MAX 400 Pro; KODAK PROFESSIONAL T-MAX 400 Film / 400TMY	135/120	100/200	0.52	—	—	—	—	—	—	—	—	—	—	—	—
		400	**0.56**	**7¼**	**6½**	**6¼**	**5¼**	**9¼**	**8½**	**7**	—	—	—	—	—
		800	0.62	—	6½	6¼	5¼	9¼	8½	7	—	—	—	—	—
		1600	0.72	—	8½	8	6½	12¼	11	9	—	—	—	—	—
		3200	0.82	—	9¾	9	7¼	13¾	12½	10	—	—	—	—	—

ROLL FILM	FORMAT	EI	CI	Rotary Tube, Fresh, Full Strength Developer				Rotary Tube, Fresh 1:1 Developer				Rotary Tube, Seasoned (Replenished) Developer			
				65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)	80°F (27°C)	65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)
KODAK PROFESSIONAL T-MAX P3200 Film / P3200TMZ	135	400	0.52	10¾	9½	8½	6¾	12½	11½	10	8	13½	11¼	10¼	7¾
		800	0.56	12¼	10½	9½	7½	14	13	11½	9	15¼	12¾	11½	8¾
		1600	**0.62**	**13½**	**11½**	**10½**	**8¼**	**16**	**14**	**12½**	**10**	**17**	**14¼**	**13**	**9¾**
		3200	**0.72**	**15½**	**13½**	**12¼**	**9½**	**18½**	**16½**	**14½**	**11½**	**20**	**17**	**15¼**	**11½**
		6400	0.82	17¾	15¼	14	11	20½	18½	16	13	23	19¾	17½	13¼
		12500	0.92	20	17¼	15¾	12¼	22½	20½	18	14½	26	22	19½	15
		25000	1.02	22	19	17½	13¾	25	23	20	16	28¾	24½	21¾	16½
KODAK High Speed Infrared / HIE	135	See Pub No. F-13	0.52	5¼	4½	4	3¼	6½	6	5	4	6½	5¾	5¼	4
			0.58	5¾	5	4½	3¾	7	6½	5½	4½	7¼	6¼	5¾	4½
			0.65	6¼	5½	5	4	8	7¼	6	5	8	7	6½	5
			0.75	7	6¼	5½	4½	9	8½	7	5½	9½	8¼	7½	6
			0.85	8	7	6¼	5¼	10	9½	8	6½	11	9¼	8½	7
FUJI NEOPAN 400 Professional	135	100/200	0.52	6	5	4½	3¼	6½	5½	4	3½	7	6	5¼	3½
		400	**0.58**	**7**	**6**	**5½**	**3¾**	**7½**	**6½**	**4¾**	**4**	**8**	**7**	**6¼**	**4¼**
		800	0.65	8½	7¼	6½	4½	9	8	5¾	4¾	9½	8	7¼	5
		1600	0.75	10½	9	8	5½	11	10	7¼	5¾	11½	9¾	8½	6
		3200	0.85	12½	11	10	7	13	12	9	6¾	13½	11½	10	7½
FUJI NEOPAN 1600 Professional	135	200	0.52	3½	3	2¾	2	4½	3¾	3	2½	4¼	3½	3¼	2½
		400	0.58	4	3¼	3	2¼	5	4¼	3¼	2¾	4¾	4	3½	2¾
		800	0.65	4½	3¾	3¼	2½	5½	4¾	3¾	3	5½	4¾	4	3
		1600	**0.75**	**5¼**	**4½**	**4**	**2¾**	**6¼**	**5½**	**4¼**	**3½**	**6½**	**5½**	**4¾**	**3¼**
		3200	0.85	6	5¼	4¾	3¼	7	6¼	5	4	7½	6¼	5½	4
		6400	0.95	7	6	5½	4	7¾	7	5¾	4½	8½	7½	6½	4¾
ILFORD PAN F Plus	135	25	0.52	5	4¾	4½	2¾	5	4½	3½	3	7	6¼	5½	3¼
		50	**0.58**	**6**	**5½**	**5**	**3¼**	**5¾**	**5¼**	**4**	**3¼**	**8½**	**7¼**	**6½**	**4**
		100	0.65	7	6½	6	3¾	6½	6	4¾	3¾	10	8½	7½	5
		200	0.75	8	7½	7	4½	7½	7	5½	4¼	12	10¼	9½	6
		400	0.85	9½	8¾	8	5¼	8½	8	6¼	4¾	14½	12½	11	7
ILFORD FP-4 Plus	135	32/64	0.52	6	5¼	4½	3	6¼	5½	4	3	9½	7¾	6½	4½
		125	**0.58**	**7**	**6**	**5½**	**3¾**	**7¼**	**6½**	**4¾**	**3½**	**11**	**9**	**7½**	**5¼**
		250	0.65	8½	7½	6½	4½	8¼	7½	5½	4	13	10¾	9½	6¼
		500	0.75	10½	9	8	5½	9¾	9	6¾	5	16	13½	12	7¾
		1000	0.85	12½	11	10	6¾	11¼	10½	8	6	19	16	14	9½

ROLL FILM	FORMAT	EI	CI	Rotary Tube, Fresh, Full Strength Developer				Rotary Tube, Fresh 1:1 Developer				Rotary Tube, Seasoned (Replenished) Developer			
				65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)	80°F (27°C)	65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)
ILFORD HP-5 Plus	135	100/200	0.52	6	5	4½	3½	7½	6½	4½	3½	8½	6¾	5½	4
		400	**0.58**	**7½**	**6¼**	**5½**	**4¼**	**9**	**8**	**5½**	**4¼**	**9½**	**7¾**	**6½**	**5**
		800	0.65	9	7½	6½	5	10½	9½	7	5¼	11½	9½	8	6
		1600	0.75	11	9½	8½	6¼	12½	11½	9	6½	14	11½	10	7¼
		3200	0.85	13½	11½	10½	8	15	14	11	8¼	17	14¼	12½	9
ILFORD DELTA 100 Professional	135	25/50	0.52	5½	5	4½	3½	6¾	6	4¼	3½	8½	7¼	6½	4¼
		100	**0.58**	**7**	**6**	**5½**	**4¼**	**7¾**	**7**	**5**	**4**	**10½**	**8½**	**7½**	**5¼**
		200	0.65	9	7½	6½	5	8¾	8	6	5	13	10½	9	6½
		400	0.75	11½	9	8	6¼	11	10	7½	6	16½	13½	11½	8
		800	0.85	14	11½	10	7½	13½	12	9	7	20	16½	14½	10
ILFORD DELTA 400 Professional	135	100/200	0.52	6	5¼	4¾	3¼	7	6	4½	3¼	7½	6¼	5½	4
		400	**0.58**	**7**	**6¼**	**5½**	**3¾**	**8**	**7**	**5¼**	**4**	**8½**	**7**	**6¼**	**4½**
		800	0.65	8	7	6¼	4½	9	8	6	5	10	8¼	7¼	5¼
		1600	0.75	9½	8	7¼	5¼	11	10	7½	6	12	9½	8½	6¼
		3200	0.85	11	9¼	8½	6¼	13½	12½	9½	7½	14½	11½	10	7½

Table 3: Processing Roll Films in Large Tanks with Seasoned (Replenished) Developer

Important

Development times shorter than 4 minutes may produce unsatisfactory uniformity.

ROLL FILM	FORMAT	EI	CI	Large Tank with Seasoned (Replenished) Developer				
				65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)	80°F (27°C)
KODAK PROFESSIONAL PLUS-X 125 Film / 125PX	135/120/220	32/64	0.52	7¼	6¼	5¾	4¼	—
		125/250	**0.56**	**8**	**6¾**	**6¼**	**4½**	—
		250	0.62	9½	8¼	7½	5½	—
		500	0.72	11¾	10¼	9¼	7	—
		1000	0.82	14¼	12¼	11	8¼	—
KODAK PROFESSIONAL TRI-X 400 Film / 400TX	135/120	100/200	0.52	9	7½	6¾	5	—
		400/800	**0.56**	**10**	**8½**	**7½**	**5½**	—
		800	0.62	11½	9¾	8¾	6½	—
		1600	0.72	14	11¾	10½	7¾	—
		3200	0.82	—	14	12½	9¼	—
KODAK PROFESSIONAL TRI-X 320 Film / 320TXP	120/220	80/160	0.52	9¾	8½	7¾	6	—
		320	**0.56**	**11**	**9½**	**8¾**	**6¾**	**—**
		640	0.62	13	11¼	10½	8	—
		1250	0.72	16¾	14½	13¼	10¼	—
		2500	0.82	—	—	—	—	—
KODAK PROFESSIONAL T-MAX 100 Film / 100TMX	135/120	25/50	0.52	10	8¼	7¼	5½	—
		100	**0.56**	**10¾**	**9**	**7¾**	**5¾**	**—**
		200	0.62	12	9¾	8¾	6½	—
		400	0.72	14	11½	10¼	7½	—
		800	0.82	15¾	13	11½	8½	—
KODAK T-MAX 400 Professional / TMY; KODAK T-MAX 400 Pro; KODAK PROFESSIONAL T-MAX 400 Film / 400TMY	135/120	100/200	0.52	—	—	—	—	—
		400	**0.56**	**8¼**	**7½**	**7**	**5¾**	—
		800	0.62	—	7½	—	5¾	—
		1600	0.72	—	9¾	—	7½	—
		3200	0.82	—	11	—	8¼	—
KODAK PROFESSIONAL T-MAX P3200 FIlm / P3200TMZ	135	400	0.50	12¾	11	10	7¾	6
		800	0.56	14¼	12¼	11¼	8½	6¾
		1600	**0.62**	**15½**	**13¾**	**12½**	**9½**	**7½**
		3200	**0.72**	**18**	**15¾**	**14½**	**11**	**8½**
		6400	0.82	20½	18	16½	12½	9¾
		12500	0.92	23¼	20¼	18½	14	11
		25000	1.02	25¾	22½	20½	15½	12¼
KODAK High Speed Infrared / HIE	135	See Pub No. F-13	0.52	8½	6¾	6	4¾	4
			0.58	10	8	7	5½	4½
			0.65	11½	9	8	6¼	5
			0.75	13	10¼	9	7	5½
			0.85	14½	11	10	7¾	6
FUJI NEOPAN 400 Professional	135	100/200	0.52	9	7½	6¾	5	4
		400	**0.58**	**10**	**8¼**	**7½**	**5½**	**4½**
		800	0.65	11½	9½	8½	6½	5
		1600	0.75	13½	11½	10	8	6
		3200	0.85	16	13½	12	9½	7

ROLL FILM	FORMAT	EI	CI	Large Tank with Seasoned (Replenished) Developer				
				65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)	80°F (27°C)
FUJI NEOPAN 1600 Professional	135	200	0.52	5½	4¾	4¼	3¼	2½
		400	0.58	6	5¼	4¾	3¾	3
		800	0.65	6¾	6	5½	4¼	3½
		1600	**0.75**	**8**	**7**	**6¼**	**5**	**4**
		3200	0.85	9	8	7	5½	4½
		640	0.95	10½	9	8	6¼	5
ILFORD PAN F Plus	135	25	0.52	9½	7½	7	5	3½
		50	**0.58**	**11**	**9**	**8**	**6**	**4½**
		100	0.65	13	11	9½	7	5
		200	0.75	16	13	11½	8½	6
		400	0.85	19	16	14	10½	7½
ILFORD FP-4 Plus	135	32/64	0.52	11½	9	8	6	4½
		125	**0.58**	**13½**	**11**	**9½**	**7**	**5**
		250	0.65	16	12½	11	8	6
		500	0.75	21	15½	13½	10	7
		1000	0.85	NR	NR	17	12	9
ILFORD HP-5 Plus	135	100/200	0.52	11½	9	8	6	4½
		400	**0.58**	**13¼**	**10½**	**9½**	**7**	**5½**
		800	0.65	15¾	13	11½	8½	6½
		1600	0.75	NR	15½	13½	10	8
		3200	0.85	NR	19½	17½	13	10
ILFORD DELTA 100 Professional	135	25/50	0.52	10½	8	7	5½	4¼
		100	**0.58**	**12½**	**10**	**8½**	**6½**	**5**
		200	0.65	15½	12	10½	8	6
		400	0.75	NR	15	13	10	7½
		800	0.85	NR	19	16½	12½	9½
ILFORD DELTA 400 Professional	135	100/200	0.52	9	7½	6½	5	4
		400	**0.58**	**10½**	**8½**	**8**	**6**	**4½**
		800	0.65	12	10	9	7	5¼
		1600	0.75	14	11	10	8	6
		3200	0.85	16½	13½	12	9½	7½

NR = Not Recommended, as determined by testing.

Table 4: Processing Roll Films in Large Tanks with Fresh Developer

Important

Development times shorter than 4 minutes may produce unsatisfactory uniformity.

ROLL FILM	FORMAT	EI	CI	Large Tanks with Fresh Developer				
				65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)	80°F (27°C)
KODAK PROFESSIONAL PLUS-X 125 Film / 125PX	135	**125/250**	**0.56**	**7 1/4**	**6 1/4**	**5 3/4**	**4 1/2**	—
		500	0.72	10 3/4	9 1/4	8 1/2	6 1/2	—
		1000	0.82	13	11 1/4	10 1/4	8	—
KODAK PROFESSIONAL PLUS-X 125 Film / 125PX	120/220	32/64	0.52	6 3/4	5 3/4	5 1/4	4	3 1/4
		125	**0.56**	**7 3/4**	**6 3/4**	**6 1/4**	**4 3/4**	—
		250	0.62	8 3/4	7 1/2	7	5 1/4	4 1/4
		500	0.72	10 3/4	9 1/4	8 1/2	6 1/2	5
		1000	0.82	NR	11 1/4	10 1/4	8	6 1/4
KODAK PROFESSIONAL T-MAX 100 Film / 100TMX	135/120	**100**	**0.56**	**9 1/2**	**8 1/4**	**7 1/4**	**5 1/2**	—
		200	0.62	—	—	—	—	—
		400	0.72	—	—	—	7 1/4	—
		800	0.82	—	—	—	—	—
KODAK PROFESSIONAL T-MAX P3200 Film / P3200TMZ	135	400	0.52	—	10 1/2	9 1/2	7 1/2	—
		800	0.56	—	11 3/4	10 3/4	8 1/2	—
		1600	**0.62**	—	**13**	**12**	**9 1/4**	—
		3200	**0.72**	—	**15 1/4**	**13 3/4**	**10 3/4**	—
		6400	0.82	—	17 1/4	15 3/4	12 1/4	—
		12500	0.92	—	19 1/4	17 1/2	13 3/4	—
		25000	1.02	—	21 1/2	19 1/2	15 1/4	—
KODAK PROFESSIONAL TRI-X 400 Film / 400TX	135/120	**400/800**	**0.56**	**9 1/4**	**8**	**7 1/4**	**5 1/2**	—
		160	0.72	12 3/4	11	9 3/4	7 1/2	—
		3200	0.82	15 1/4	13	11 3/4	9	—
KODAK PROFESSIONAL TRI-X 320 Film / 320TXP	120/220	**320/640**	**0.56**	**10 1/4**	**9**	**8 1/4**	**6 1/2**	—
		1250	0.72	15 3/4	13 3/4	12 1/2	**10**	—

NR = Not Recommended, as determined by testing.

Table 5: Processing Sheet Films in Trays

Important

Development times shorter than 4 minutes may produce unsatisfactory uniformity.

SHEET FILM	EI	CI	Fresh, Full Strength Developer in Trays					Fresh 1:1 Developer in Trays			
			65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)	80°F (27°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)	80°F (27°C)
KODAK PROFESSIONAL T-MAX 100 Film / 100TMX	**100**	**0.56**	**8**	**6¾**	**6**	**4½**	—	**9**	**8**	**6**	—
	200	0.62	—	7¼	—	5	—	—	—	—	—
	400	0.72	—	9½	8½	6½	—	—	—	—	—
	800	0.82	—	—	—	7¼	—	—	—	—	—
KODAK PROFESSIONAL TRI-X 320 Film / 320TXP	**320/640**	**0.56**	**6¾**	**6**	**5½**	**4½**	**—**	**8½**	**7¾**	**6¼**	**—**
	640	0.62	9¾	8¾	8	6½	—	12	11	8¾	—
KODAK T-MAX 400 Professional / TMY; KODAK PROFESSIONAL T-MAX 400 Film / 400TMY	100/200	0.52	—	—	—	—	—	—	—	—	—
	400	**0.56**	**6¾**	**6**	**5¾**	**4¾**	—	**8¾**	**8**	**6½**	—
	800	0.62	—	—	—	—	—	—	—	—	—
	1600	0.72	—	—	—	—	—	—	—	—	—
	3200	0.82	—	—	—	—	—	—	—	—	—

Table 6: Processing Sheet Films in Rotary Tubes

Important

Development times shorter than 4 minutes may produce unsatisfactory uniformity.

SHEET FILM	EI	CI	Fresh Developer				1:1 Developer				Replenished Developer			
			65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)	80°F (27°C)	65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)
KODAK PROFESSIONAL T-MAX 100 Film / 100TMX	25/50	0.52	8¼	6¾	6	4¾	—	—	—	—	10	8¼	7¼	5½
	100/200	**0.56**	**8¾**	**7¼**	**6½**	**5**	**9¾**	**9**	**7¾**	—	11	9	8	6
	200	0.62	9¾	8	7¼	5½	—	—	—	—	12¼	10	8¾	6½
	400	0.72	11½	9½	8½	6½	—	—	—	—	14¾	12	10½	7¾
	800	0.82	12¾	10½	9½	7¼	—	—	—	—	16½	13½	11¾	8¾
KODAK PROFESSIONAL TRI-X 320 Film / 320TXP	80/160	0.52	5¼	4¾	4¼	3½	—	—	—	—	6¾	5¾	5	4
	320/640	**0.56**	**6**	**5¼**	**4¾**	**4**	**7¼**	**6¾**	**5½**	—	7½	6½	5¾	4½
	640	0.62	7	6	5¾	4½	—	—	—	—	8¾	7½	6¾	5½
	1250	0.72	8½	7½	7	5¾	10½	9½	7¾	—	11	9½	8½	6¾
KODAK T-MAX 400 Professional / TMY; KODAK PROFESSIONAL T-MAX 400 Film / 400TMY	100/200	0.52	—	—	—	—	—	—	—	—	—	—	—	—
	400	**0.58**	**7¼**	**6½**	**6¼**	**5¼**	**9¼**	**8½**	**7**	—	—	—	—	—
	800	0.65	—	6½	6¼	5¼	9¼	8½	7	—	—	—	—	—
	1600	0.75	—	8½	8	6½	12¼	11	9	—	—	—	—	—
	3200	0.85	—	9¾	9	7¼	13¾	12½	10	—	—	—	—	—

Table 7: Processing Sheet Films in Large Tanks with Seasoned (Replenished) Developer

Important

Development times shorter than 4 minutes may produce unsatisfactory uniformity.

SHEET FILM	EI	CI	Seasoned Developer in Large Tanks				
			65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)	80°F (27°C)
KODAK PROFESSIONAL T-MAX 100 Film / 100TMX	25/50	0.52	10	8¼	7¼	5½	—
	100	**0.56**	**10¾**	**9**	**7¾**	**5¾**	**—**
	200	0.62	12	9¾	8¾	6½	—
	400	0.72	14	11½	10¼	7½	—
	800	0.82	15¾	13	11½	8½	—
KODAK PROFESSIONAL TRI-X 320 Film / 320TXP	80/160	0.52	6½	5½	5	4	—
	320	**0.56**	**7½**	**6½**	**6**	**4½**	**—**
	640	0.62	8½	7½	7	5½	—
	1250	0.72	10½	9½	8½	6½	—
	2500	0.82	—	—	—	—	—
KODAK T-MAX 400 Professional / TMY; KODAK PROFESSIONAL T-MAX 400 Film / 400TMY	100/200	0.52	—	—	—	—	—
	400	**0.58**	**8¼**	**7½**	**7**	**5¾**	**—**
	800	0.65	—	7½	—	5¾	—
	1600	0.75	—	9¾	—	7½	—
	3200	0.85	—	11	—	8¼	—

NR = Not Recommended, as determined by testing.

Table 8: Processing Sheet Films in Large Tanks with Fresh Developer

Important

Development times shorter than 4 minutes may produce unsatisfactory uniformity.

SHEET FILM	EI	CI	Fresh Developer in Large Tanks				
			65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)	80°F (27°C)
KODAK PROFESSIONAL T-MAX 100 Film / 100TMX	**100**	**0.56**	**9½**	**8¼**	**7¼**	**5½**	—
	200	0.62	—	—	—	—	—
	400	0.72	—	—	—	7¼	—
	800	0.82	—	—	—	—	—
KODAK PROFESSIONAL TRI-X 320 Film / 320TXP	**320/640**	**0.56**	**8½**	**7½**	**7**	**5½**	**—**
	1250	0.62	12¼	10¾	10	8	—

MORE INFORMATION

Kodak has many publications to assist you with information on Kodak products, equipment, and materials. The following publications are available from dealers who sell Kodak products, or you can contact Sino Promise in your country for more information.

E103CF	*Chemicals for KODAK Black-and-White Films (Matrix)*
F-8	*KODAK PLUS-X Pan and PLUS-X Pan Professional Films*
F-13	*KODAK High Speed Infrared Film*
F-9	*KODAK TRI-X Pan and TRI-X Pan Professional Films*
F-32	*KODAK T-MAX Professional Films*
P-255	*KODAK Technical Pan Film*
Y-30	*KODAK Plotting Form for Black-and-White Film Processing (20-sheet packages, CAT 176 9314)*
F-4016	*KODAK PROFESSIONAL T-MAX Films*
F-4017	*KODAK PROFESSIONAL TRI-X 320 and 400 Films*
F-4018	*KODAK PROFESSIONAL PLUS-X 125 Films*

For assistance in controlling processes, the following are available:

Z-133E	*Monitoring and Troubleshooting KODAK Black-and-White Film Processes*
	and
--	*KODAK Black-and-White Film Process Control Strips* (CAT 180 2990)
Y-30	*KODAK Plotting Form for Black-and-White Film Processing* (20-sheet package, CAT 176 9314)

For the latest version of technical support publications for KODAK PROFESSIONAL Products, visit: www.kodaksino.com/

The products described in this publication may not be available in all countries. In countries other than the U.S., contact your local Sino Promise representative, or your usual supplier of KODAK PROFESSIONAL Products.

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