



KODAK XTOL Developer

for Rotary-Tube Processors

DESCRIPTION

This is a new 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. It is for use as both a developer and a replenisher.

Although this developer can be used in a variety of equipment from small tanks, rotary-tube processors, to high-volume processors, this publication will cover only *rotary-tube* processing equipment.

For information on replenished processing in large tanks or information on processing in small tanks and trays, see KODAK Publications J-106, *KODAK XTOL Developer for Replenished Processing Systems*, or J-107, *KODAK XTOL Developer for Small Tank and Tray Processing*.

FEATURES	BENEFITS
<ul style="list-style-type: none"> • New ascorbic acid based black-and-white film developer 	<ul style="list-style-type: none"> • Offers very high image quality at full emulsion speed
<ul style="list-style-type: none"> • No hydroquinone 	<ul style="list-style-type: none"> • Convenient, room-temperature mixing; ready for immediate use
<ul style="list-style-type: none"> • Easy mixing 	<ul style="list-style-type: none"> • Two-part powder dissolves quickly in room-temperature water, ready for immediate use
<ul style="list-style-type: none"> • Versatile 	<ul style="list-style-type: none"> • Stable performance through a wide range of temperatures and dilutions
<ul style="list-style-type: none"> • Excellent keeping properties • Long, stable useful life 	<ul style="list-style-type: none"> • Mixed solution has excellent shelf life (full bottles keep up to one year after mixing) • High resistance to breakdown from oxidation during storage • Less waste
<ul style="list-style-type: none"> • Provides more emulsion speed (shadow detail) than most developers for normal and push processing 	<ul style="list-style-type: none"> • Most films yield about 1/3 stop more emulsion speed than most developers • Enhanced shadow contrast and improved highlight detail with some films

FEATURES	BENEFITS
<ul style="list-style-type: none"> • Fine grain and high sharpness 	<ul style="list-style-type: none"> • Enhanced sharpness, especially with dilution • Able to print 10 percent larger with equivalent sharpness and grain (image quality) than with other common developers
<ul style="list-style-type: none"> • Robust, abuse tolerant, and clean working 	<ul style="list-style-type: none"> • Stable performance across a wide range of temperatures and dilutions • Long solution life
<ul style="list-style-type: none"> • Contrast index similar to other developers 	<ul style="list-style-type: none"> • Produces negatives with printing characteristics like those expected from other general-purpose developers

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	888 8182
5 litres	875 1752
50 litres	818 4517

MIXING

To mix 1 litre of XTOL Developer:

1. Start with 750 mL of water at normal room temperature, about 65°F (18°C) or warmer.
2. With stirring, slowly add Part A. Stir until 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 completely dissolved. The copper tint will clear from the solution as Part B is added.
4. Add water to bring the final solution to 1 litre, and stir until the solution is uniform.

To mix 5 litres of XTOL Developer:

1. Start with 4 litres of water at normal room temperature, about 65°F (18°C) or warmer.
2. With stirring, slowly add Part A. Stir until completely dissolved. The solution may appear somewhat tawny or coppery-colored. This is normal.
3. Continue stirring, and slowly add Part B. Stir until completely dissolved. As Part B is added, the coppery-colored tint will clear from the solution.
4. Add water to bring the final solution to 5 litres, and stir until the solution is uniform.

MANUAL PROCESSING

The development times and temperatures in the tables that follow are starting-point recommendations for fresh, unrefilled and refilled solutions. For critical applications, run tests to determine the best development time. Data for nominal film speed are in bold face type.

First Use, Full-Strength Developer

Refer to **Table 1** for starting-point development times for roll films in full-strength developer and **Table 2** for sheet films.

CAPACITY AND REUSE

The capacity of this developer used full strength with normal processing is approximately 15 rolls of 135-36 or 120 film (80 square inches [516 square centimetres] or equivalent) per litre, with time compensation.

Time Compensation

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

Time Compensation		
KODAK 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 = 1 roll of 35 mm 36 exposures
 1 roll of 120 film
 4 4 x 5-inch sheets
 1 8 x 10-inch sheet

DILUTE DEVELOPER

KODAK XTOL Developer may be diluted 1:1, 1:2 or 1:3 with water (developer:water) for one-shot processing. Dilution will provide slightly greater film speed, enhanced sharpness, and slightly enhanced grain.

Refer to **Table 3** for starting-point development times for roll films in fresh, diluted developer, and **Table 4** for sheet films.

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

Important: If your water supply is exceptionally hard, you may need to use purified water for higher dilutions to avoid cloudiness.

SEASONED DEVELOPER

Refer to **Table 5** for starting-point development times for roll films in seasoned developer and **Table 6** for sheet films.

Seasoned XTOL Developer can be taken from the developer overflow line or from the working tank of an in-control replenished processor.

Fresh XTOL Developer can be “preseasoned” by adding 6.5 mL KODAK Developer Starting Solution (CAT 146 6382) per litre of developer. Or use 1 mL of KODAK EKTACHROME R-3 First Developer and Color Developer Starter (CAT 102 0072) per litre of XTOL Developer.

REPLENISHMENT

You can replenish this developer (full strength only, not dilute) to increase the capacity of the developer. Use XTOL Developer as a replenisher at a rate of 70 mL for each roll of 135-36 exposure, or equivalent 80 square inches (516 square centimetres) of film processed. See KODAK Publication J-106 for additional information on running a replenished process.

FINAL STEPS IN PROCESSING BLACK-AND-WHITE FILMS

Some rotary-tube processors have automated cycles. Refer to the manufacturer's instructions and recommendations.

Step	Time	Comments
• Stop Bath	30 seconds	—
• Fixer	Fix for twice as long as it takes the film to clear (lose its milky appearance).	—
• Rinse	30 seconds	—
• Hypo Clearing Agent	1 to 2 minutes	—
• Wash	5 minutes	If washing the film in a separate film washer, run the wash water at least fast enough to provide a complete change of water in the container in 5 minutes.
• Dry	As needed	Dry in a dust-free place. To minimize drying marks, treat the film with KODAK PHOTO-FLO Solution after washing, or wipe the surface carefully with a soft viscose sponge.

STORAGE

Store mixed KODAK XTOL Developer in a tightly closed container. Solutions in full bottles have a longer shelf life; partially filled containers allow some oxidation of the solution.

Storage Life of Unused Solutions	
Full, Tightly Closed Container	Partially Filled, Tightly Closed Container
Approximately 1 year	At least 2 months

DISPOSAL

Dispose of used developer in accordance with your local regulations. Refer to the Material Safety Data Sheets for additional information.

If you have environmental or safety questions about Kodak products or services, contact Kodak Environmental Services at 1-716-477-3194, between 8 a.m. and 5 p.m. (Eastern time).

Kodak also maintains a 24-hour health hotline to answer questions about the safe handling of photographic chemicals. If you need health-related information about Kodak products, call 1-716-722-5151.

TABLE 1: Rotary-Tube Processing with Full-Strength Developer and Continuous Agitation



Important

Development times shorter than 4 minutes may produce unsatisfactory uniformity.

FRESH, FULL-STRENGTH DEVELOPER							
ROLL FILM	FORMAT	EI	CI	DEVELOPMENT TIME (minutes)			
				65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)
KODAK PLUS-X Pan / PX / 5062 KODAK PLUS-X 125 Pro	135	32/64	0.52	5.00	4.00	3.25*	2.00*
		125	0.58	5.50	4.50	4.00	3.00*
		250	0.65	6.25	5.50	4.75	3.50*
		500	0.75	7.75	6.50	6.00	4.50
		1000	0.85	10.00	8.00	7.50	6.00
KODAK PLUS-X Pan Professional / PXP / 6057 KODAK PLUS-X 125 Pro	120/220	32/64	0.52	5.00	4.00	3.25*	2.50*
		125	0.58	5.75	4.50	4.00	3.00*
		250	0.65	6.75	5.50	5.00	3.50*
		500	0.75	8.50	7.00	6.00	4.50
		1000	0.85	11.00	9.00	8.00	6.00
KODAK VERICHROME Pan / VP / 6041	120	32/64	0.52	5.00	4.00	3.50*	2.50*
		125	0.58	6.00	5.00	4.00	3.00*
		250	0.65	7.00	6.00	5.00	4.00
		500	0.75	8.50	7.50	6.50	5.00
		1000	0.85	10.50	9.00	8.00	6.00
KODAK TRI-X Pan / TX / 5063 KODAK TRI-X 400 Pro	135	100/200	0.52	5.00	4.50	4.00	3.00*
		400	0.58	5.75	5.00	4.50	3.50*
		800	0.65	6.50	5.50	5.00	4.00
		1600	0.75	8.00	7.00	6.00	5.00
		3200	0.85	9.50	8.00	7.00	6.00
KODAK TRI-X Pan / TX / 6043 KODAK TRI-X 400 Pro	120	100/200	0.52	5.00	4.25	4.00	3.00*
		400	0.58	6.00	5.00	4.50	3.50*
		800	0.65	7.00	5.75	5.00	4.00
		1600	0.75	8.50	7.00	6.25	5.00
		3200	0.85	10.00	8.00	7.50	6.00
KODAK TRI-X Pan Professional / TXP / 6049	120/220	80/160	0.52	5.00	4.00	3.50*	3.00*
		320	0.58	5.50	4.50	4.00	3.50*
		640	0.65	6.50	5.50	5.00	4.00
		1250	0.75	8.50	7.00	6.50	5.00
		2500	0.85	11.00	9.00	8.50	6.50
KODAK T-MAX 100 Professional / TMX / 5052 KODAK T-MAX 100 Pro	135	25/50	0.52	6.00	5.00	4.50	3.50*
		100	0.58	7.00	6.00	5.25	4.00
		200	0.65	8.00	7.00	6.00	4.50
		400	0.75	9.50	8.00	7.00	5.50
		800	0.85	11.50	9.00	8.00	6.50
KODAK T-MAX 100 Professional / TMX / 6052 KODAK T-MAX 100 Pro	120	25/50	0.52	6.00	5.00	4.50	3.25*
		100	0.58	7.00	5.75	5.00	3.75*
		200	0.65	8.25	6.75	5.75	4.25
		400	0.75	10.00	8.25	7.00	5.00
		800	0.85	11.75	9.50	8.25	6.00

FRESH, FULL-STRENGTH DEVELOPER							
ROLL FILM	FORMAT	EI	CI	DEVELOPMENT TIME (minutes)			
				65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)
KODAK T-MAX 400 Professional / TMY / 5053	135	100/200	0.52	6.00	5.00	4.50	3.50*
		400	0.58	6.50	5.50	5.00	4.00
		800	0.65	7.50	6.50	5.50	4.50
		1600	0.75	8.50	7.50	6.50	5.00
		3200	0.85	10.00	8.50	7.50	5.75
KODAK T-MAX 400 Professional / TMY / 6053	120	100/200	0.52	5.50	4.75	4.25	3.25*
		400	0.58	6.25	5.25	4.75	3.75*
		800	0.65	7.25	6.25	5.50	4.25
		1600	0.75	8.50	7.25	6.50	5.00
		3200	0.85	10.00	8.50	7.50	5.75
KODAK T-MAX P3200 Professional / TMZ / 5054	135	100/200	0.48	7.00	6.00	5.50	4.50
		400	0.52	8.00	7.00	6.00	5.00
		800	0.58	9.00	8.00	7.00	5.50
		1600	0.65	10.00	9.00	8.00	6.00
		3200	0.75	12.00	10.00	9.00	7.00
		6400	0.85	14.50	11.50	10.00	8.00
		12500	0.95	17.00	13.50	12.00	9.00
		25000	1.05	NR	NR	NR	NR
KODAK High Speed Infrared / HIE / 2481	135	See Publication F-13	0.52	5.25	4.50	4.00	3.25*
			0.58	5.75	5.00	4.50	3.75*
			0.65	6.25	5.50	5.00	4.00
			0.75	7.00	6.25	5.50	4.50
			0.85	8.00	7.00	6.25	5.25
AGFAPAN APX 25	135	12	0.52	4.00	NR	NR	NR
		25	0.58	6.00	4.00	2.00*	1.00*
		50	0.65	9.00	6.00	4.00	2.50*
		100	0.75	14.00	10.00	7.50	5.00
		200	0.85	NR	NR	NR	NR
AGFAPAN APX 100	135	25/50	0.52	5.00	4.50	4.25	2.50*
		100	0.58	6.00	5.50	5.00	3.00*
		200	0.65	7.50	7.00	6.00	3.75*
		400	0.75	9.50	8.50	7.50	4.75
		800	0.85	12.00	10.00	9.00	6.00
AGFAPAN 400	135	100/200	0.52	6.50	5.50	4.50	3.50*
		400	0.58	8.00	6.50	5.50	4.00
		800	0.65	9.50	7.75	6.50	5.00
		1600	0.75	12.00	9.50	8.00	6.50
		3200	0.85	15.00	12.00	10.00	8.00
FUJI NEOPAN 400 Professional	135	100/200	0.52	6.00	5.00	4.50	3.25*
		400	0.58	7.00	6.00	5.50	3.75*
		800	0.65	8.50	7.25	6.50	4.50
		1600	0.75	10.50	9.00	8.00	5.50
		3200	0.85	12.50	11.00	10.00	7.00

FRESH, FULL-STRENGTH DEVELOPER							
ROLL FILM	FORMAT	EI	CI	DEVELOPMENT TIME (minutes)			
				65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)
FUJI NEOPAN 1600 Professional	135	200	0.52	3.50*	3.00*	2.75*	2.00*
		400	0.58	4.00	3.25*	3.00*	2.25*
		800	0.65	4.50	3.75*	3.25*	2.50*
		1600	0.75	5.25	4.50	4.00	2.75*
		3200	0.85	6.00	5.25	4.75	3.25*
		6400	0.95	7.00	6.00	5.50	4.00
ILFORD PAN F Plus	135	25	0.52	5.00	4.75	4.50	2.75*
		50	0.58	6.00	5.50	5.00	3.25*
		100	0.65	7.00	6.50	6.00	3.75*
		200	0.75	8.00	7.50	7.00	4.50
		400	0.85	9.50	8.75	8.00	5.25
ILFORD FP-4 Plus	135	64	0.52	6.00	5.25	4.50	3.00*
		125	0.58	7.00	6.00	5.50	3.75*
		250	0.65	8.50	7.50	6.50	4.50
		500	0.75	10.50	9.00	8.00	5.50
		1000	0.85	12.50	11.00	10.00	6.75
ILFORD HP-5 Plus	135	100/200	0.52	6.00	5.00	4.50	3.50*
		400	0.58	7.50	6.25	5.50	4.25
		800	0.65	9.00	7.50	6.50	5.00
		1600	0.75	11.00	9.50	8.50	6.25
		3200	0.85	13.50	11.50	10.50	8.00
ILFORD DELTA 100 Professional	135	25/50	0.52	5.50	5.00	4.50	3.50*
		100	0.58	7.00	6.00	5.50	4.25
		200	0.65	9.00	7.50	6.50	5.00
		400	0.75	11.50	9.25	8.00	6.25
		800	0.85	14.00	11.50	10.00	7.50
ILFORD DELTA 400 Professional	135	100/200	0.52	6.00	5.25	4.75	3.25*
		400	0.58	7.00	6.25	5.50	3.75*
		800	0.65	8.00	7.00	6.25	4.50
		1600	0.75	9.50	8.00	7.25	5.25
		3200	0.85	11.00	9.25	8.50	6.25

* Development times shorter than 4 minutes may produce unsatisfactory uniformity.

TABLE 2: Rotary-Tube Processing with Fresh, Full-Strength Developer and Continuous Agitation



Important

Development times shorter than 4 minutes may produce unsatisfactory uniformity.

FRESH, FULL-STRENGTH DEVELOPER							
SHEET FILM	FORMAT	EI	CI	DEVELOPMENT TIME (minutes)			
				65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)
KODAK PLUS-X Pan Professional / PXT / 4147	Sheet	32/64	0.52	4.50	3.75*	3.25*	2.75*
		125	0.58	5.50	4.50	4.00	3.00*
		250	0.65	7.00	5.75	5.00	4.00
		500	0.75	9.50	8.00	7.00	5.25
		1000	0.85	13.00	11.25	10.00	7.50
KODAK T-MAX 100 Professional / TMX / 4052	Sheet	25/50	0.52	6.50	5.50	4.75	3.50*
		100	0.58	7.75	6.25	5.50	4.25
		200	0.65	9.00	7.25	6.25	5.00
		400	0.75	11.00	8.25	7.25	5.75
		800	0.85	13.50	10.00	8.50	6.75
KODAK TRI-X Pan Professional / TXT / 4164	Sheet	80/160	0.52	4.25	3.75*	3.25*	2.50*
		320	0.58	5.00	4.50	4.00	3.00*
		640	0.65	6.25	5.50	5.00	3.75*
		1250	0.75	8.00	7.25	6.50	4.75
		2500	0.85	10.00	8.75	8.00	6.00
KODAK T-MAX 400 Professional / TMY / 4053	Sheet	100/200	0.52	6.50	5.50	5.00	3.50*
		400	0.58	7.50	6.25	5.50	4.00
		800	0.65	8.50	7.00	6.25	4.50
		1600	0.75	9.75	8.00	7.00	5.25
		3200	0.85	11.25	9.00	8.00	6.00
KODAK EKTAPAN / PNT / 4162	Sheet	25/50	0.52	4.50	3.50*	3.00*	2.00*
		100	0.58	6.00	5.00	4.25	3.00*
		200	0.65	7.50	6.50	5.75	4.00
		400	0.75	10.00	8.50	7.50	5.50
		800	0.85	13.00	11.00	9.75	7.00

* Development times shorter than 4 minutes may produce unsatisfactory uniformity.

TABLE 3: Rotary-Tube Processing with Fresh, Dilute Developer and Continuous Agitation



Important

Development times shorter than 4 minutes may produce unsatisfactory uniformity.

FRESH, DILUTE DEVELOPER															
ROLL FILM	FORMAT	EI	CI	DEVELOPER DILUTION											
				1:1				1:2				1:3			
				68°F (18°C)	70°F (20°C)	75°F (21°C)	80°F (24°C)	68°F 18°C	70°F 20°C	75°F 21°C	80°F 24°C	68°F 18°C	70°F 20°C	75°F 21°C	80°F 24°C
KODAK PLUS-X Pan / PX / 5062 KODAK PLUS-X 125 Pro	135	32/64	0.52	4.50	4.00	3.00*	2.25*	5.50	5.00	3.50*	2.75*	6.00	5.50	4.25	3.25
		125	0.58	5.75	5.00	3.75*	2.75*	6.50	5.75	4.25	3.25*	7.00	6.50	5.00	4.00
		250	0.65	6.75	6.00	4.50	3.25*	7.50	6.50	5.00	4.00	8.25	7.50	6.00	5.00
		500	0.75	8.00	7.00	5.50	4.00	9.00	8.00	6.25	5.00	10.00	9.00	7.50	6.00
		1000	0.85	9.50	8.50	6.50	5.00	11.00	10.00	8.00	6.00	12.00	11.00	9.00	7.50
KODAK PLUS-X Pan Professional / PXP / 6057 KODAK PLUS-X 125 Pro	120/220	32/64	0.52	4.50	4.00	2.75*	2.00*	5.50	5.00	4.00	2.75*	6.75	6.00	4.50	3.50*
		125	0.58	5.75	5.00	3.50*	2.50*	6.75	6.00	4.50	3.25*	7.75	7.00	5.25	4.00
		250	0.65	6.75	6.00	4.25	3.25*	7.75	7.00	5.25	4.00	8.75	8.00	6.25	5.00
		500	0.75	8.75	7.50	5.25	4.00	9.25	8.50	6.50	5.00	10.25	9.50	7.75	6.25
		1000	0.85	11.50	10.00	7.00	5.25	12.00	11.00	8.00	6.25	13.25	12.00	9.75	8.00
KODAK VERICHROME Pan / VP / 6041	120	32/64	0.52	4.50	4.00	3.00*	2.25*	5.75	5.00	3.75*	3.00*	6.75	6.00	4.50	3.50*
		125	0.58	5.75	5.00	3.75*	2.75*	6.75	6.00	4.50	3.50*	7.75	7.00	5.25	4.25
		250	0.65	6.75	6.00	4.50	3.25*	8.00	7.00	5.50	4.25	8.75	8.00	6.25	5.00
		500	0.75	8.50	7.50	5.50	4.25	9.25	8.50	6.75	5.00	10.25	9.50	7.75	6.00
		1000	0.85	11.00	9.50	6.75	5.25	11.25	10.50	8.25	6.00	13.00	12.00	9.50	7.25
KODAK TRI-X Pan / TX / 5063 KODAK TRI-X 400 Pro	135	100/200	0.52	5.50	5.00	3.75*	3.00*	6.50	6.00	4.50	3.50*	7.50	7.00	5.75	4.50
		400	0.58	6.75	6.00	4.50*	3.50*	7.50	7.00	5.50	4.00	9.00	8.00	6.50	5.00
		800	0.65	7.75	7.00	5.25	4.00	8.75	8.00	6.50	5.00	10.50	9.50	7.75	6.00
		1600	0.75	9.00	8.00	6.75	5.00	10.50	9.50	8.00	6.00	12.00	11.00	9.00	7.00
		3200	0.85	10.50	9.50	7.25	6.00	12.50	11.50	9.50	7.00	14.00	13.00	10.50	8.50
KODAK TRI-X / TX Pan / 6043 KODAK TRI-X 400 Pro	120	100/200	0.52	5.00	4.50	3.50*	3.00*	6.25	6.00	5.00	3.50*	8.25	7.50	5.75	4.25
		400	0.58	6.25	5.50	4.25	3.50*	7.25	7.00	5.75	4.00	9.25	8.50	6.75	5.00
		800	0.65	7.25	6.50	5.00	4.00	8.50	8.00	6.75	4.75	11.00	10.00	7.75	5.75
		1600	0.75	9.00	8.00	6.00	4.75	10.50	10.00	8.25	5.75	13.00	12.00	9.25	7.00
		3200	0.85	11.50	10.00	7.25	5.75	12.75	12.00	9.75	6.75	15.25	14.00	10.75	8.25
KODAK TRI-X Pan Professional / TXP / 6049	120/220	80/160	0.52	5.75	5.25	4.00	3.25*	6.75	6.50	5.75	4.25	9.00	8.50	7.00	5.25
		320	0.58	6.75	6.00	4.75	3.75*	7.75	7.50	6.75	5.00	10.50	10.00	8.00	6.25
		640	0.65	7.75	7.00	5.50	4.50	9.25	9.00	8.00	5.75	12.25	11.50	9.25	7.25
		1250	0.75	9.25	8.50	6.75	5.50	11.50	11.00	9.50	7.00	15.00	14.00	11.00	9.00
		2500	0.85	11.50	10.50	8.25	6.50	14.00	13.50	11.25	8.50	18.50	17.00	13.75	11.00
KODAK T-MAX 100 Professional / TMX / 5052 KODAK T-MAX 100 Pro	135	25/50	0.52	7.75	7.00	5.50	4.50	10.50	9.50	7.50	6.00	14.00	13.00	10.00	8.00
		100	0.58	8.75	8.00	6.25	5.00	12.00	11.00	8.50	7.00	15.50	14.50	11.50	9.00
		200	0.65	9.75	9.00	7.25	6.00	13.50	12.50	10.00	8.00	18.00	16.50	13.00	10.00
		400	0.75	11.50	10.50	8.50	7.00	15.50	14.00	11.50	9.00	21.00	19.50	15.00	11.50
		800	0.85	13.00	12.00	9.75	8.00	18.00	17.00	13.50	10.00	NR	23.00	17.50	13.00
KODAK T-MAX 100 Professional / TMX / 6052 KODAK T-MAX 100 Pro	120	25/50	0.52	6.75	6.50	6.00	5.50	8.75	8.50	7.75	7.00	11.50	11.00	10.00	9.50
		100	0.58	7.75	7.50	6.75	6.00	10.00	9.50	8.50	8.00	13.00	12.50	11.50	10.50
		200	0.65	8.75	8.50	7.75	7.00	11.50	11.00	10.00	9.00	15.25	14.50	12.75	11.50
		400	0.75	10.25	9.75	8.75	8.00	13.50	13.00	11.50	10.00	18.50	17.50	15.00	12.50
		800	0.85	11.50	11.00	10.00	9.00	15.75	15.00	13.00	11.00	23.50	22.00	18.00	14.00

FRESH, DILUTE DEVELOPER															
ROLL FILM	FORMAT	EI	CI	DEVELOPER DILUTION											
				1:1				1:2				1:3			
				68°F (18°C)	70°F (20°C)	75°F (21°C)	80°F (24°C)	68°F 18°C	70°F 20°C	75°F 21°C	80°F 24°C	68°F 18°C	70°F 20°C	75°F 21°C	80°F 24°C
KODAK T-MAX 400 Professional / TMY / 5053 KODAK T-MAX 400 Pro	135	100/200	0.52	6.50	6.00	4.75	4.00	8.50	8.00	6.50	5.00	10.50	10.00	8.00	6.50
		400	0.58	7.75	7.00	5.50	4.50	9.50	9.00	7.50	5.75	12.00	11.50	9.25	7.50
		800	0.65	8.75	8.00	6.25	5.00	10.75	10.00	8.50	6.50	14.00	13.00	10.50	8.50
		1600	0.75	10.00	9.25	7.25	6.00	12.50	11.50	10.00	7.50	16.25	15.00	12.00	9.50
		3200	0.85	11.50	10.50	8.50	7.00	14.50	13.50	11.50	8.50	18.50	17.00	13.75	10.50
KODAK T-MAX 400 Professional / TMY / 6053 KODAK T-MAX 400 Pro	120	100/200	0.52	6.00	5.50	4.50	3.75*	8.00	7.50	6.50	5.00	10.75	10.00	8.00	6.50
		400	0.58	7.00	6.50	5.25	4.25	9.00	8.50	7.25	5.50	11.75	11.00	9.00	7.00
		800	0.65	8.25	7.50	6.00	4.75	10.50	9.50	8.00	6.00	13.00	12.00	10.00	7.75
		1600	0.75	9.75	9.00	7.00	5.50	12.00	11.00	9.00	7.00	15.00	14.00	11.50	8.75
		3200	0.85	11.25	10.50	8.25	6.25	14.00	13.00	10.50	8.00	17.25	16.00	13.00	10.00
KODAK T-MAX P3200 Professional / TMZ / 5054	135	100/200	0.48	9.25	8.50	6.75	5.50	12.00	11.00	8.50	7.00	15.50	14.00	10.50	8.50
		400	0.52	9.75	9.00	7.25	6.00	13.00	12.00	9.50	7.50	16.50	15.00	11.50	9.00
		800	0.58	10.75	10.00	8.00	6.50	14.25	13.00	10.50	8.25	18.00	16.50	13.00	10.00
		1600	0.65	12.00	11.00	9.00	7.00	15.50	14.50	11.50	9.00	19.50	18.00	14.50	11.00
		3200	0.75	13.50	12.50	10.00	8.00	17.50	16.00	13.00	10.50	22.00	20.50	16.50	12.50
		6400	0.85	15.50	14.50	11.75	9.50	19.50	18.00	14.50	12.00	25.50	23.50	18.50	14.00
		12500	0.95	17.50	16.50	13.50	11.00	22.00	20.00	16.50	13.50	28.50	26.00	20.50	16.00
		25000	1.05	21.00	19.50	16.00	13.00	25.00	23.00	18.50	15.00	NR	NR	23.00	18.00
KODAK High Speed Infrared / HIE / 2481	135	See Pub F-13	0.52	6.50	6.00	5.00	4.00	9.25	8.50	7.00	5.50	12.00	11.00	9.00	7.00
			0.58	7.00	6.50	5.50	4.50	10.00	9.00	7.50	6.00	13.50	12.50	10.00	8.00
			0.65	8.00	7.25	6.00	5.00	11.00	10.00	8.00	6.50	15.00	13.50	11.00	9.00
			0.75	9.00	8.50	7.00	5.50	12.50	11.50	9.25	7.25	17.00	15.50	12.50	10.00
			0.85	10.00	9.50	8.00	6.50	14.50	13.00	10.50	8.50	19.00	17.50	14.00	11.50
AGFAPAN APX 25	135	12	0.52	4.00	3.50*	2.50*	1.75*	5.50	5.00	4.25	3.00*	7.00	6.50	5.50	4.00
		25	0.58	4.50	4.00	3.00*	2.00*	6.25	5.75	4.75	3.50*	8.00	7.50	6.00	4.50
		50	0.65	5.50	5.00	3.75	2.75	7.00	6.50	5.50	4.00	9.00	8.50	7.00	5.25
		100	0.75	7.25	6.50	5.00	3.50	9.00	8.50	6.75	5.00	11.25	10.25	8.50	6.25
		200	0.85	9.25	8.50	6.50	5.00	12.25	11.50	9.00	6.50	13.50	13.00	10.50	8.00
AGFAPAN APX 100	135	25/50	0.52	5.75	5.25	4.25	3.00*	8.00	7.50	6.50	5.00	11.75	11.00	9.00	7.00
		100	0.58	6.50	6.00	5.00	3.75*	9.25	8.75	7.50	5.75	12.75	12.00	10.25	8.00
		200	0.65	7.50	7.00	5.75	4.50	11.25	10.50	8.50	6.50	14.25	13.50	11.50	9.50
		400	0.75	9.25	8.50	7.00	5.50	14.00	13.00	10.50	7.50	17.00	16.00	13.50	11.00
		800	0.85	12.00	11.00	9.00	7.00	17.00	16.00	12.50	9.00	19.75	19.00	16.00	13.50
AGFAPAN 400	135	100/200	0.52	7.25	6.50	5.00	4.00	9.25	8.50	7.00	5.00	11.25	10.50	8.00	6.50
		400	0.58	8.75	8.00	6.25	5.00	11.50	10.50	8.50	6.00	13.25	12.50	9.50	7.50
		800	0.65	11.00	10.00	7.75	6.00	13.50	12.50	10.00	7.00	16.00	15.00	11.50	9.00
		1600	0.75	14.25	13.00	9.75	7.00	16.50	15.50	12.50	9.00	20.00	18.50	14.00	11.00
		3200	0.85	19.00	17.00	12.75	9.00	20.00	18.50	15.00	11.00	NR	22.50	17.00	14.00
FUJI NEOPAN 400 Professional	135	100/200	0.52	6.50	5.50	4.00	3.50*	8.50	8.00	6.25	5.25	12.00	11.00	8.50	7.00
		400	0.58	7.50	6.50	4.75	4.00	9.75	9.00	7.25	5.75	13.50	12.50	9.75	7.75
		800	0.65	9.00	8.00	5.75	4.75	11.50	10.50	8.25	6.50	15.25	14.00	11.00	8.50
		1600	0.75	11.00	10.00	7.25	5.75	13.50	12.50	9.50	7.50	18.00	16.50	13.00	9.50
		3200	0.85	13.00	12.00	9.00	6.75	15.75	14.50	11.50	8.75	21.00	19.50	15.50	11.00

FRESH, DILUTE DEVELOPER															
ROLL FILM	FORMAT	EI	CI	DEVELOPER DILUTION											
				1:1				1:2				1:3			
				68°F (18°C)	70°F (20°C)	75°F (21°C)	80°F (24°C)	68°F 18°C	70°F 20°C	75°F 21°C	80°F 24°C	68°F 18°C	70°F 20°C	75°F 21°C	80°F 24°C
FUJI NEOPAN 1600 Professional	135	200	0.52	4.50	3.75*	3.00*	2.50*	5.25	5.00	4.25	3.50*	7.00	6.50	5.25	4.25
		400	0.58	5.00	4.25	3.25*	2.75*	5.75	5.50	4.50	3.75*	7.75	7.25	5.75	4.75
		800	0.65	5.50	4.75	3.75*	3.00*	6.50	6.00	5.00	4.00	8.50	8.00	6.25	5.25
		1600	0.75	6.25	5.50	4.25	3.50*	7.25	6.75	5.50	4.50	9.50	9.00	7.25	5.75
		3200	0.85	7.00	6.25	5.00	4.00	8.25	7.75	6.50	5.25	10.75	10.00	8.25	6.50
		6400	0.95	7.75	7.00	5.75	4.50	9.50	9.00	7.50	6.00	12.25	11.50	9.50	7.50
ILFORD PAN F Plus	135	25	0.52	5.00	4.50	3.50*	3.00*	6.50	6.00	4.75	3.75*	8.25	7.50	5.50	4.50
		50	0.58	5.75	5.25	4.00	3.25*	7.25	6.75	5.25	4.25	9.50	8.50	6.25	5.00
		100	0.65	6.50	6.00	4.75	3.75*	8.25	7.50	6.00	4.75	10.50	9.50	7.00	5.50
		200	0.75	7.50	7.00	5.50	4.25	9.50	8.75	7.00	5.25	11.75	10.50	8.00	6.25
		400	0.85	8.50	8.00	6.25	4.75	11.50	10.50	8.00	5.75	13.50	12.00	9.00	7.00
ILFORD FP-4 Plus	135	64	0.52	6.25	5.50	4.00	3.00*	7.25	6.50	5.00	3.50	9.00	8.00	6.00	4.25
		125	0.58	7.25	6.50	4.75	3.50*	8.25	7.50	5.75	4.00	10.00	9.00	6.75	5.00
		250	0.65	8.25	7.50	5.50	4.00	9.50	8.50	6.75	4.75	11.50	10.50	7.75	5.75
		500	0.75	9.75	9.00	6.75	5.00	11.25	10.50	8.00	5.75	14.25	13.00	9.75	6.75
		1000	0.85	11.25	10.50	8.00	6.00	13.75	12.50	9.50	7.00	18.25	16.50	12.00	8.00
ILFORD HP-5 Plus	135	100/200	0.52	7.50	6.50	4.50	3.50*	8.50	8.00	6.25	4.25	10.50	9.50	7.00	5.25
		400	0.58	9.00	8.00	5.50	4.25	9.50	9.00	7.25	5.25	12.25	11.00	8.50	6.25
		800	0.65	10.50	9.50	7.00	5.25	11.75	11.00	9.00	6.50	14.25	13.00	10.00	7.50
		1600	0.75	12.50	11.50	9.00	6.50	14.50	13.50	11.00	8.00	17.50	16.00	12.50	9.50
		3200	0.85	15.00	14.00	11.00	8.25	17.50	16.50	13.50	10.00	21.50	19.50	15.00	11.50
ILFORD DELTA 100 Professional	135	25/50	0.52	6.75	6.00	4.25	3.50*	8.25	7.50	5.75	4.25	9.75	9.00	7.00	5.25
		100	0.58	7.75	7.00	5.00	4.00	10.00	9.00	6.75	5.00	11.75	10.50	8.00	6.25
		200	0.65	8.75	8.00	6.00	5.00	11.50	10.50	8.00	6.00	13.25	12.00	9.50	7.25
		400	0.75	11.00	10.00	7.50	6.00	13.75	12.50	9.50	7.25	15.75	14.50	11.50	8.50
		800	0.85	13.50	12.00	9.00	7.00	17.00	15.00	11.00	8.50	19.25	17.50	13.50	10.00
ILFORD DELTA 400	135	100/200	0.52	7.00	6.00	4.50	3.25*	8.25	7.50	5.75	4.25	10.50	9.50	7.00	5.25
		400	0.58	8.00	7.00	5.25	4.00	10.00	9.00	6.75	5.00	12.25	11.00	8.25	6.25
		800	0.65	9.00	8.00	6.00	5.00	11.50	10.50	8.25	6.00	14.25	13.00	10.00	7.75
		1600	0.75	11.00	10.00	7.50	6.00	14.25	13.00	10.25	7.50	17.50	16.00	12.50	9.50
		3200	0.85	13.50	12.50	9.50	7.50	18.00	16.50	13.00	9.50	22.50	20.00	15.00	12.00

* Development times shorter than 4 minutes may produce unsatisfactory uniformity.

TABLE 4: Rotary-Tube Processing with Fresh, Dilute Developer and Continuous Agitation



Important

Development times shorter than 4 minutes may produce unsatisfactory uniformity.

FRESH, DILUTE DEVELOPER															
SHEET FILM	FORMAT	EI	CI	DEVELOPER DILUTION											
				1:1				1:2				1:3			
				68°F (18°C)	70°F (20°C)	75°F (21°C)	80°F (24°C)	68°F 18°C	70°F 20°C	75°F 21°C	80°F 24°C	68°F 18°C	70°F 20°C	75°F 21°C	80°F 24°C
KODAK PLUS-X Pan Professional / PXT / 4147	Sheet	32/64	0.52	5.00	4.50	3.25*	2.50*	6.00	5.50	4.25	3.50*	7.00	6.50	5.25	4.00
		125	0.58	6.25	5.50	4.00	3.25*	7.25	6.50	5.00	4.00	8.25	7.50	6.25	4.75
		250	0.65	7.50	6.75	5.00	4.00	8.50	7.75	6.25	5.00	10.00	9.25	7.50	5.75
		500	0.75	10.00	9.00	6.75	5.00	11.00	10.25	8.25	6.25	14.25	13.00	9.75	7.50
		1000	0.85	12.50	11.50	9.00	7.00	14.00	13.00	10.50	8.00	19.25	17.00	12.50	10.00
KODAK T-MAX 100 Professional / TMX / 4052	Sheet	25/50	0.52	6.75	6.50	5.75	5.00	9.50	9.00	8.00	7.00	12.25	11.50	10.00	9.00
		100	0.58	7.75	7.50	6.75	6.00	10.50	10.00	9.00	8.00	13.75	13.00	11.50	10.50
		200	0.65	9.00	8.50	7.50	6.75	12.00	11.50	10.00	9.00	16.25	15.00	13.00	11.50
		400	0.75	10.50	9.75	8.50	7.50	14.25	13.50	11.50	10.00	20.00	18.50	15.25	13.00
		800	0.85	12.00	11.50	10.00	8.50	17.00	16.00	13.50	11.00	24.00	22.00	17.75	14.50
KODAK TRI-X Pan Professional / TXT / 4164	Sheet	80/160	0.52	5.75	5.00	3.75*	2.75*	7.50	6.50	4.75	3.75*	8.25	7.50	5.50	4.50
		320	0.58	6.75	6.00	4.50	3.25*	8.25	7.50	5.75	4.25	10.00	9.00	6.50	5.25
		640	0.65	7.75	7.00	5.50	3.75*	9.50	8.50	6.50	5.00	11.50	10.50	7.75	6.25
		1250	0.75	9.75	9.00	6.75	4.50	12.00	11.00	8.00	6.00	13.75	12.50	9.50	7.75
		2500	0.85	12.00	11.00	8.25	5.50	14.75	13.50	10.25	7.25	17.50	16.00	12.00	9.25
KODAK T-MAX 400 Professional / TMY / 4053	Sheet	100/200	0.52	7.25	6.50	5.25	4.25	9.50	8.50	6.75	5.25	12.50	11.00	8.75	7.00
		400	0.58	8.25	7.25	5.75	4.75	10.50	9.50	7.50	5.75	14.00	12.25	9.75	7.75
		800	0.65	9.25	8.25	6.75	5.25	11.75	10.75	8.50	6.50	15.50	13.50	11.00	8.50
		1600	0.75	10.75	9.50	7.75	6.00	13.75	12.50	10.00	7.50	17.75	15.50	12.50	9.75
		3200	0.85	12.50	11.00	9.00	7.00	16.00	14.50	12.00	8.75	20.50	18.00	14.50	11.00
KODAK EKTAPAN / PNT / 4162	Sheet	25/50	0.52	5.25	4.50	3.50*	2.75*	6.25	5.50	4.25	3.50*	8.00	7.00	4.75	4.00
		100	0.58	7.25	6.00	4.50	3.25*	7.75	7.00	5.00	4.00	10.00	8.50	6.00	4.50
		200	0.65	9.00	7.75	5.50	3.75*	9.75	8.75	6.50	4.75	12.00	10.50	7.50	5.50
		400	0.75	12.00	10.00	7.00	5.00	12.50	11.25	8.50	6.00	15.00	13.50	10.00	7.25
		800	0.85	14.75	12.50	9.00	6.50	15.00	13.75	11.00	8.00	18.25	16.50	12.50	9.50

* Development times shorter than 4 minutes may produce unsatisfactory uniformity.

TABLE 5: Rotary-Tube Processing with Replenished, Full-Strength Developer and Continuous Agitation



Important

Development times shorter than 4 minutes may produce unsatisfactory uniformity.

REPLENISHED, FULL-STRENGTH DEVELOPER							
ROLL FILM	FORMAT	EI	CI	DEVELOPMENT TIME (minutes)			
				65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)
KODAK PLUS-X Pan / PX / 5062 KODAK PLUS-X 125 Pro	135	32/64	0.52	6.00	4.75	4.00	3.00*
		125	0.58	7.00	5.50	5.00	3.50*
		250	0.65	8.75	6.75	6.00	4.00
		500	0.75	10.50	8.50	7.50	5.00
		1000	0.85	NR	11.50	10.00	7.00
KODAK PLUS-X Pan Professional / PXP / 6057 KODAK PLUS-X 125 Pro	120/220	32/64	0.52	6.00	4.75	4.00	3.00*
		125	0.58	7.00	5.75	5.00	3.50*
		250	0.65	8.50	7.00	6.00	4.50
		500	0.75	11.00	9.00	8.00	6.00
		1000	0.85	14.00	11.50	10.50	8.00
KODAK VERICHROME Pan / VP / 6041	120	32/64	0.52	6.00	5.00	4.25	3.00*
		125	0.58	7.00	5.75	5.00	3.50*
		250	0.65	8.50	6.75	6.00	4.50
		500	0.75	11.00	8.50	7.50	5.50
		1000	0.85	14.00	11.50	10.00	7.50
KODAK TRI-X Pan / TX / 5063 KODAK TRI-X 400 Pro	135	100/200	0.52	6.00	5.00	4.50	3.50*
		400	0.58	7.00	5.75	5.25	4.00
		800	0.65	8.00	7.00	6.25	5.00
		1600	0.75	10.00	8.25	7.50	6.00
		3200	0.85	12.00	10.00	9.00	7.00
KODAK TRI-X Pan / TX / 6043 KODAK TRI-X 400 Pro	120	100/200	0.52	6.00	5.00	4.50	3.25*
		400	0.58	7.00	6.00	5.25	4.00
		800	0.65	8.00	6.75	6.00	4.75
		1600	0.75	10.00	8.50	7.50	5.75
		3200	0.85	12.00	10.00	9.00	6.50
KODAK TRI-X Pan Professional / TXP / 6049	120/220	80/160	0.52	6.00	5.00	4.25	3.50*
		320	0.58	7.00	5.75	5.00	4.25
		640	0.65	8.00	6.75	6.25	5.00
		1250	0.75	11.00	9.25	8.00	6.50
		2500	0.85	NR	11.50	10.00	8.00
KODAK T-MAX 100 Professional / TMX / 5052 KODAK T-MAX 100 Pro	135	25/50	0.52	7.50	6.50	6.00	4.00
		100	0.58	9.00	7.75	7.00	5.00
		200	0.65	11.00	9.00	8.00	6.00
		400	0.75	13.50	11.00	9.50	7.00
		800	0.85	17.50	13.50	11.00	8.00
KODAK T-MAX 100 Professional / TMX / 6052 KODAK T-MAX 100 Pro	120	25/50	0.52	8.00	6.00	5.00	3.75*
		100	0.58	9.50	7.00	6.00	4.50
		200	0.65	11.00	8.25	7.00	5.25
		400	0.75	13.00	10.00	8.50	6.25
		800	0.85	15.50	12.00	10.00	7.50

REPLENISHED, FULL-STRENGTH DEVELOPER							
ROLL FILM	FORMAT	EI	CI	DEVELOPMENT TIME (minutes)			
				65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)
KODAK T-MAX 400 Professional / TMY / 5053 KODAK T-MAX 400 Pro	135	100/200	0.52	7.00	6.00	5.50	4.00
		400	0.58	8.00	6.75	6.00	4.50
		800	0.65	9.00	7.75	7.00	5.00
		1600	0.75	10.50	9.00	8.00	6.00
		3200	0.85	12.00	10.25	9.00	7.00
KODAK T-MAX 400 Professional / TMY / 6053 KODAK T-MAX 400 Pro	120	100/200	0.52	7.25	5.50	4.50	3.75*
		400	0.58	8.25	6.50	5.50	4.25
		800	0.65	9.50	7.50	6.25	4.75
		1600	0.75	11.00	8.75	7.50	5.75
		3200	0.85	12.50	10.00	8.50	6.75
KODAK T-MAX P3200 Professional / TMZ / 5054	135	100/200	0.48	9.00	7.00	6.00	5.00
		400	0.52	10.00	8.00	7.00	5.50
		800	0.58	11.00	9.25	8.00	6.00
		1600	0.65	13.00	10.25	9.00	7.00
		3200	0.75	15.00	12.00	10.50	8.00
		6400	0.85	17.00	13.50	12.00	9.00
		12500	0.95	20.00	15.50	13.50	10.50
		25000	1.05	24.00	18.00	16.00	13.00
KODAK High Speed Infrared / HIE / 2481	135	See Publication F-13	0.52	6.50	5.75	5.25	4.00
			0.58	7.25	6.25	5.75	4.50
			0.65	8.00	7.00	6.50	5.00
			0.75	9.50	8.25	7.50	6.00
			0.85	11.00	9.25	8.50	7.00
AGFAPAN APX 25	135	12	0.52	4.00	3.00*	NR	NR
		25	0.58	6.00	5.00	4.50	3.00*
		50	0.65	10.00	7.50	6.50	4.50*
		100	0.75	15.00	12.00	10.50	7.50
		200	0.85	NR	NR	NR	NR
AGFAPAN APX 100	135	25/50	0.52	7.00	6.00	5.50	3.50*
		100	0.58	8.50	7.25	6.50	4.25
		200	0.65	10.50	9.00	8.00	5.25
		400	0.75	13.00	11.00	10.00	6.50
		800	0.85	17.00	14.50	13.00	8.00
AGFAPAN 400	135	100/200	0.52	8.00	6.50	5.50	4.25
		400	0.58	9.50	7.50	6.50	5.00
		800	0.65	12.00	9.50	8.00	6.00
		1600	0.75	15.00	12.50	10.50	7.50
		3200	0.85	18.00	15.00	13.00	9.50
FUJI NEOPAN 400 Professional	135	100/200	0.52	7.00	6.00	5.25	3.00*
		400	0.58	8.00	7.00	6.25	4.25
		800	0.65	9.50	8.00	7.25	5.00
		1600	0.75	11.50	9.75	8.50	6.00
		3200	0.85	13.50	11.50	10.00	7.50

REPLENISHED, FULL-STRENGTH DEVELOPER							
ROLL FILM	FORMAT	EI	CI	DEVELOPMENT TIME (minutes)			
				65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)
FUJI NEOPAN 1600 Professional	135	200	0.52	4.25	3.50*	3.25*	2.50*
		400	0.58	4.75	4.00	3.50*	2.75*
		800	0.65	5.50	4.75	4.00	3.00*
		1600	0.75	6.50	5.50	4.75	3.50*
		3200	0.85	7.50	6.25	5.50	4.00
		6400	0.95	8.50	7.50	6.50	4.75
ILFORD PAN F Plus	135	25	0.52	7.00	6.25	5.50	3.25*
		50	0.58	8.50	7.25	6.50	4.00
		100	0.65	10.00	8.50	7.50	5.00
		200	0.75	12.00	10.25	9.50	6.00
		400	0.85	14.50	12.50	11.00	7.00
ILFORD FP-4 Plus	135	64	0.52	9.50	7.75	6.50	4.50
		125	0.58	11.00	9.00	7.50	5.25
		250	0.65	13.00	10.75	9.50	6.25
		500	0.75	16.00	13.50	12.00	7.75
		1000	0.85	19.00	16.00	14.00	9.50
ILFORD HP-5 Plus	135	100/200	0.52	8.50	6.75	5.50	4.00
		400	0.58	9.50	7.75	6.50	5.00
		800	0.65	11.50	9.50	8.00	6.00
		1600	0.75	14.00	11.50	10.00	7.25
		3200	0.85	17.00	14.25	12.50	9.00
ILFORD DELTA 100 Professional	135	25/50	0.52	8.50	7.75	6.50	4.25
		100	0.58	10.50	8.50	7.50	5.25
		200	0.65	13.00	10.50	9.00	6.50
		400	0.75	16.50	13.50	11.50	8.00
		800	0.85	20.00	16.50	14.50	10.00
ILFORD DELTA 400 Professional	135	100/200	0.52	7.50	6.25	5.50	4.00
		400	0.58	8.50	7.00	6.25	4.50
		800	0.65	10.00	8.25	7.25	5.25
		1600	0.75	12.00	9.50	8.50	6.25
		3200	0.85	14.50	11.50	10.00	7.50

* Development times shorter than 4 minutes may produce unsatisfactory uniformity.

TABLE 6: Rotary Tube Processing with Replenished, Full-Strength Developer



Important

Development times shorter than 4 minutes may produce unsatisfactory uniformity.

REPLENISHED, FULL-STRENGTH DEVELOPER							
SHEET FILM	FORMAT	EI	CI	DEVELOPMENT TIME (minutes)			
				65°F (18°C)	68°F (20°C)	70°F (21°C)	75°F (24°C)
KODAK PLUS-X Pan Professional / PXT / 4147	Sheet	32/64	0.52	5.50	4.50	4.00	3.00*
		125	0.58	7.00	5.75	5.00	3.75*
		250	0.65	9.00	7.25	6.00	4.75
		500	0.75	12.50	9.75	8.00	6.00
		1000	0.85	17.00	13.75	11.50	9.00
KODAK T-MAX 100 Professional / TMX / 4052	Sheet	25/50	0.52	8.50	6.75	5.50	4.25
		100	0.58	10.50	8.00	6.50	5.00
		200	0.65	12.50	9.75	7.75	6.00
		400	0.75	14.50	11.50	9.50	7.00
		800	0.85	17.00	13.75	11.50	8.50
KODAK TRI-X Pan Professional / TXT / 4164	Sheet	80/160	0.52	5.25	4.50	4.00	3.00*
		320	0.58	6.50	5.50	4.75	3.50*
		640	0.65	8.00	6.75	6.00	4.50
		1250	0.75	10.00	8.50	7.50	5.50
		2500	0.85	13.00	11.00	9.50	7.00
KODAK T-MAX 400 Professional / TMY / 4053	Sheet	100/200	0.52	8.25	6.50	5.50	4.25
		400	0.58	9.25	7.50	6.25	4.75
		800	0.65	10.50	8.50	7.00	5.25
		1600	0.75	12.00	9.50	8.00	6.00
		3200	0.85	13.50	11.00	9.50	7.00
KODAK EKTAPAN / PNT / 4162	Sheet	25/50	0.52	5.50	4.50	4.00	2.50*
		100	0.58	8.00	6.50	5.50	4.00
		200	0.65	10.50	8.75	7.50	5.50
		400	0.75	14.00	12.00	10.50	7.50
		800	0.85	17.50	15.50	14.00	10.00

* Development times shorter than 4 minutes may produce unsatisfactory uniformity.

KODAK XTOL Developer for Rotary-Tube Processors

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- J-106 *KODAK XTOL Developer for Replenished Processing Systems*
- J-107 *KODAK XTOL Developer for Small Tank and Tray Processing*
- F-7 *KODAK VERICHROME Pan Film*
- F-8 *KODAK PLUS-X Pan and PLUS-X Pan Professional Films*
- F-9 *KODAK TRI-X Pan and TRI-X Pan Professional Films*
- F-10 *KODAK EKTAPAN Film*
- F-13 *KODAK High Speed Infrared Film*
- F-32 *KODAK T-MAX Professional Films*

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