

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	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	7¼	6¼	5¾	4½	—
		500	0.72	10¾	9¼	8½	6½	—
		1000	0.82	13	11¼	10¼	8	—
KODAK PROFESSIONAL PLUS-X 125 Film / 125PX	120/220	32/64	0.52	6¾	5¾	5¼	4	3¼
		125	0.56	7¾	6¾	6¼	4¾	—
		250	0.62	8¾	7½	7	5¼	4¼
		500	0.72	10¾	9¼	8½	6½	5
		1000	0.82	NR	11¼	10¼	8	6¼
KODAK PROFESSIONAL T-MAX 100 Film / 100TMX	135/120	100	0.56	9½	8¼	7¼	5½	—
		200	0.62	—	—	—	—	—
		400	0.72	—	—	—	7¼	—
		800	0.82	—	—	—	—	—
KODAK PROFESSIONAL T-MAX P3200 Film / P3200TMZ	135	400	0.52	—	10½	9½	7½	—
		800	0.56	—	11¾	10¾	8½	—
		1600	0.62	—	13	12	9¼	—
		3200	0.72	—	15¼	13¾	10¾	—
		6400	0.82	—	17¼	15¾	12¼	—
		12500	0.92	—	19¼	17½	13¾	—
		25000	1.02	—	21½	19½	15¼	—
KODAK PROFESSIONAL TRI-X 400 Film / 400TX	135/120	400/800	0.56	9¼	8	7¼	5½	—
		160	0.72	12¾	11	9¾	7½	—
		3200	0.82	15¼	13	11¾	9	—
KODAK PROFESSIONAL TRI-X 320 Film / 320TXP	120/220	320/640	0.56	10¼	9	8¼	6½	—
		1250	0.72	15¾	13¾	12½	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	5¼	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	—	—	—	—	—