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2004 FILM DEVELOPING CHART

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FORTE FILMS & PAPERS

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	Kodak D-76 Arista [®] 76 Powder Arista [®] Prem Powder (Straight)	Kodak D-76 Arista [®] 76 Powder Arista [®] Prem Powder (1:1 Dilution)	Ilford ID-11 (Straight)	Ilford ID-11 (1:1 Dilution)	Arista [®] Liquid Film Developer Working Solution	Arista [®] Premium Liquid Developer 1:9	Marathon [®] Film Developer 1:9	Kodak HC 110 Dilution B 1:31	Kodak Xtol (Straight)	TMAX Developer 1:4	TMAX RS Developer 1:4	AGFA Rodal 1:25
Arista.Edu [®] 100	6	8 1/2	6	9	7	5	5 1/2	4 1/2	6	-	-	6
Arista.Edu [®] 200	7	9	7	12	7 1/2	6	6 1/2	5	7	-	-	7 1/2
Arista.Edu [®] 400	7 1/2	11	7 1/2	13	8	10	7 1/2	5	8	-	-	8
Arista Pro [®] 50	6 1/2	10 1/2	6 1/2	8 1/2	7	4 1/4	4 1/4	4	6 3/4	4	-	6
Arista Pro [®] 125	8	11	8 1/2	11	7	5 1/4	4 1/4	9	8 1/2	8	7 1/2	9
Arista Pro [®] 400	7 1/2	11	7 1/2	13	8	7	5 1/4	5	8	6 1/2	4 1/2	6
Arista DMAX [®] 100	9	12	8 1/2	11	7	6	6	6	7 1/2	7	6	9
Arista DMAX [®] 400	9 1/2	14	9 1/2	14	8	7 1/2	6	7 1/2	7 1/2	6 1/2	5	9
Agfapan APX 100	9	12	9	12	7	8	6	6	6 3/4	6 1/2	5	8
Agfapan APX 400	10	14	10	14	8	10	5 1/4	6	-	7	6	10
Berger BPF 200	9	13 1/2	9	13 1/2	10	-	6 1/2	6	-	-	-	6 1/2
Fortepan 100	6	8 1/2	6	9	7	5	5 1/2	4 1/2	6	-	-	6
Fortepan 200	7	9	7	12	7 1/2	6	6 1/2	5	7	-	-	7 1/2
Fortepan 400	8	-	9	14	8	10	7 1/2	-	8	-	-	8
Fuji Neopan 100 SS	8	10	8	10	7	8	5 1/4	7	-	-	-	7
Fuji Neopan 400	7 1/2	9 1/2	7	9 1/2	8	6	4 1/4	5	-	6	5 1/2	4 1/2
Fuji Neopan 1600	7 1/2	9	6 1/2	8	-	7 1/2	4 1/4	7	-	4 1/2	5	-
Fuji Acros 100	7 1/4	10 1/2	6 3/4	-	7	5	5 1/4	4 1/2	8	5 1/2	5 1/4	-
Ilford Pan-F Plus	6 1/2	10 1/2	6 1/2	8 1/2	7	4 1/4	4 1/4	4	6 3/4	4	-	6
Ilford FPA Plus	8	11	8 1/2	11	7	5 1/2	4 1/4	9	8 1/2	8	7 1/2	9
Ilford HPS Plus	7 1/2	11	7 1/2	13	8	7	5 1/4	5	8	6 1/2	4 1/2	6
Ilford Delta 100	9	12	8 1/2	11	7	7	6	6	7 1/2	7	6	9
Ilford Delta 400	9 1/2	14	9 1/2	14	8	7 1/2	6	7 1/2	7 1/2	6 1/2	5	9
Ilford Delta 3200	10 1/2	-	10 1/2	-	-	10	9	14 1/2	7	8 1/2	-	11
Ilford SFX 200	10	14 1/2	10	17	-	-	9	9	7	8 1/2	6	6
Kodak TMAX 100 (Old)	9	12	8	12	7	7	6	7	6 3/4	8	8	5 1/2
Kodak 100 TMAX (New)	6 1/2	9 1/2	8	12	7	7	6	6	7 1/2	7 1/2	8	5 1/2
Kodak TMAX 400 (Old)	8	12 1/2	7	12 1/2	8	7 1/2	5 1/4	6	6 1/2	7	7	6
Kodak 400 TMAX (New)	8	12 1/2	7	12 1/2	8	7 1/2	5 1/4	6	6 1/2	7	7	6
Kodak TMAX 3200 (Old)	15	-	-	-	-	15	9	11 1/2	11	11 1/2	13	8
Kodak P3200TMAX (New)	14	-	-	-	-	15	9	10 1/2	13 1/2	12	14 1/2	8
Kodak Plus-X (Old)	5 1/2	7	7	-	-	5 1/2	4	5	5 1/4	5 1/2	6	6
Kodak 125 Plus-X (New)	5 1/2	8 1/2	7	-	-	5 1/2	4	-	5 3/4	5 3/4	4 1/4	6
Kodak Tri-X (Old)	8	10	7 1/2	10	8	6	4 1/4	7 1/2	6 1/2	6	6	7
Kodak 400 Tri-X (New)	6 3/4	9 3/4	7 1/2	10	8	6	4 1/4	-	7	6	4 1/2	7
Kodak 320TXP (New)	9	12 3/4	-	10	8	6	-	4 3/4	7 3/4	7 1/4	4	7
Macco IR520C (Precision/Aura)	8	14	5	-	-	-	-	7	-	4	-	14
Macco UP 25	6	11	6	-	-	-	-	4	-	4	-	7
Macco Cube400	11	-	9	-	-	-	-	9	-	10	-	-

With more than forty different films, this chart can help you establish the best developing times for your personal darkroom workflow. Like all published developing times, these times are recommendations only. Your actual developing times may vary. All times are in minutes with your developer at 68° F and are intended for small tank processing.

- TROUBLESHOOTING TIPS:**
1. Film is totally clear without edge markings (frames numbers or manufacturer/film name) = Film was fixed prior to developing
 2. Film is clear in image area but edge-marking is fully developed = Film was not exposed
 3. Image is "thin" or looks "light" and low in contrast but edge marking is black and fully developed = Image was under exposed
 4. There are white waterspots on the film after drying = Use a wetting agent like Arista[®] Flo or Kodak Photo Flo prior to drying
 5. Film is overall gray or totally black rather than clear after processing = Film was fogged/exposed prior to processing
 6. There are crescent shaped markings on roll film = Film was bent when loaded onto developing reel, or the developing reel itself was bent
 7. Milky blotches on roll film = Film came in contact with itself when loaded onto reel
 8. In tray processing, scratches found on emulsion side of sheet film = Improper shuffling of film in tray
 9. Film turns brown shortly after processing = Exhausted/contaminated fixer. Use fresh fixer
 10. Lightning-like streaks on film = Caused by fast auto-rewind on very dry days
 11. Small, worm-like pattern in film image = Reticulation caused when chemicals are too hot or too cold
 12. Film edge is increasingly fogged across the roll when using a plastic tank = Tank is missing center core
 13. Film has overall white milky appearance = Film has not been fixed long enough. Use fresh fix or fix longer
 14. TMAX or other T-Grain film has deep magenta/purple color to base = Dye has not been fully removed from film base. Fix longer.

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