

TECHNICAL INFORMATION

DELTA 3200 PROFESSIONAL

EI 3200/36°, HIGH SPEED, BLACK AND WHITE PROFESSIONAL FILM FOR SUPERB PRINT QUALITY

ILFORD DELTA 3200 Professional is a high speed, black and white professional film for making quality photographs in difficult exposing conditions. It is ideal for action and available light photography. It is designed to be exposed at EI 3200/36 and given extended development.

Recommended developers are ILFORD ILFOTEC DD-X, ILFORD MICROPHEN and ILFORD ID-11.

DELTA 3200 Professional 35mm film is coated on 0.125mm/5-mil acetate base and is available in 36 exposure cassettes. DELTA 3200 Professional 35mm film is supplied in DX coded cassettes, suitable for all 35mm cameras.

DELTA 3200 Professional roll film is also coated on 0.125mm/5-mil clear acetate base. It is available in 120 lengths and is edge numbered 1 to 19.

EXPOSURE RATING

The recommended meter setting for DELTA 3200 Professional is EI 3200/36, but good image quality can also be obtained at meter settings from EI 400/27 to EI 6400/39. It can be used in all types of lighting.

DELTA 3200 Professional is particularly recommended for exposing in the range EI 1600/33 to EI 6400/39. It can be exposed at ratings up to EI 25000/45, but it is important to make test exposures first to ensure the results will be suitable for the intended purpose.

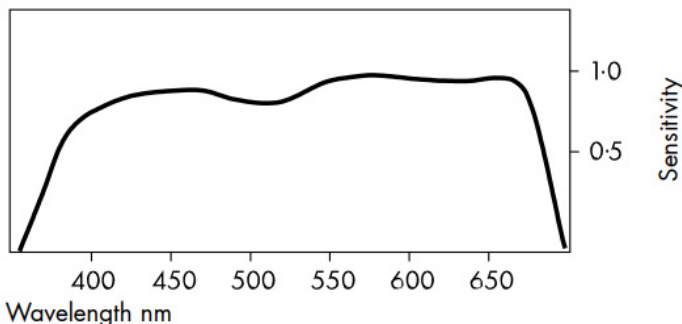
DELTA 3200 Professional has an ISO speed rating of 1000/31° (1000ASA, 31 DIN) to daylight.

The ISO speed was measured using ILFORD ID-11 developer at 20°C/68°F with intermittent agitation in a spiral tank.

It should be noted that exposure index (EI) range recommended for DELTA 3200 Professional is based on a practical evaluation of film speed and is not based on foot speed, as is the ISO standard.

SPECTRAL SENSITIVITY

Wedge spectrogram to tungsten light (2856K)



HANDLING

DELTA 3200 Professional is a very fast film. Always load and unload the camera in subdued light. We advise that DELTA 3200 Professional film is not subjected to airport scanners – but if it is, we advise to always carry the film as hand luggage.

FILTER FACTORS

DELTA 3200 Professional film may be used with all types of filters (eg colour, polarising and neutral density filters) in the usual way. Follow the instructions given by the filter manufacturer.

The exposure increase in daylight may vary with the angle of the sun and the time of day. In the late afternoon or the winter months, when daylight contains more red light, green and blue filters may need slightly more exposure than usual.

Cameras with through-the-lens metering will usually adjust the exposure automatically when using filters. With some automatic exposure cameras, the correction given for deep red and orange filters can produce negatives under exposed by as much as 1 ½ stops.

MAKING LONG EXPOSURES

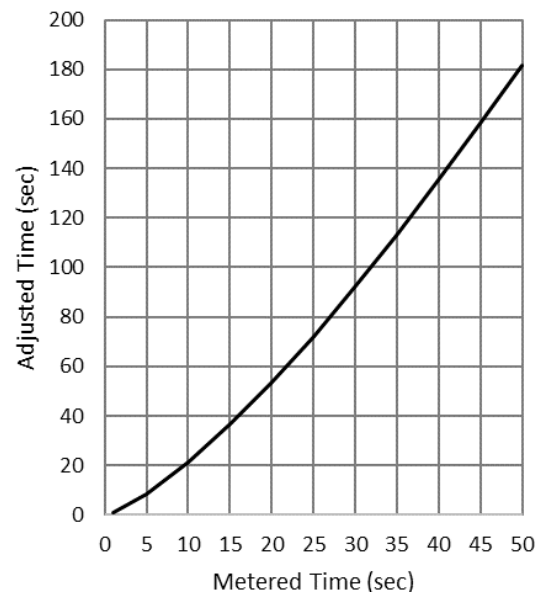
For exposures between ½ and 1/10 000 second, no adjustments are needed for reciprocity law failure.

When exposures longer than 1 second are given, DELTA 3200 Professional, along with other films, needs to be given more exposure than indicated by a meter. Use the graph to calculate the increased exposure time which should be given once the metered time is known.

The graph is based on the formulae $T_a = T_m^{1.33}$

T_a = Adjusted Time

T_m = Metered Time



CHOOSING THE BEST ILFORD DEVELOPER FOR THE JOB

DELTA 3200 Professional will give good results in a wide range of developers when exposed at meter settings up to EI 6400/39. At higher speed ratings, ILFOTEC DD-X and MICROPHEN developers are recommended. Further details are given in the table below.

Manual processing (eg spiral tank, dish/tray, deep tank) and rotary processors

	Liquid	Powder
Best overall image quality at meter setting:-		
EI 400/27	ILFOTEC DD-X	PERCEPTOL (stock)
EI 800/30	ILFOTEC DD-X	PERCEPTOL (stock)
EI 1600/33	ILFOTEC DD-X	MICROPHEN (stock)
EI 3200/36	ILFOTEC DD-X	MICROPHEN (stock)
EI 6400/39	ILFOTEC DD-X	MICROPHEN (stock)
Finest grain	ILFOTEC DD-X	PERCEPTOL (stock)
Maximum sharpness	ILFOTEC DD-X	MICROPHEN (stock)
Maximum film speed (up to EI 25000/45)	ILFOTEC DD-X	MICROPHEN (stock)
One-shot convenience	ILFOSOL 3 (1+9) or ILFOTEC DD-X	-
Replenishable	ILFOTEC DD-X	ID-11
Rapid processing	ILFORD DD-X	MICROPHEN (stock)

Machine Processing

Dip and dunk	ILFOTEC DD ID-11	Best overall image quality (liquid) and long tank life Best overall image quality (powder) and long tank life
Short leader	ILFOTEC RT RAPID	Rapid processing, best overall image quality and long tank life.
Roller transport	ILFOTEC RT RAPID	Rapid processing

DEVELOPMENT TIMES

The table below gives development times for both manual and machine processing DELTA 3200 Professional. The development times are intended as a guide and may be altered if a different result is needed. For manual processing in spiral tanks and deep tanks, the development times are based on intermittent agitation. Where continuous agitation is used for manual processing (as in a dish/tray or with some types of developing tank), reduce these times by up to 15%. For use in rotary processors without a pre-rinse, reduce the spiral tank development times by up to 15%. A pre-rinse is not recommended as it can lead to uneven processing.

Note. Development times may need adjusting to suit individual processing systems and working practices. If an established system is producing good results, adjust the recommended development times until the desired contrast level is obtained. Development times in other manufacturers' developers are included for your convenience and are only a general guide. Other manufacturers can and do change their product specifications from time to time, and the development times may change as a result.

35mm and Roll Film - 20°C/68°F

ILFORD developer	Dilution	Meter setting (EI)					
		400/27	800/30	1600/33	3200/36	6400/39	12500/42

Spiral tank, deep tank, dip and dunk machines (min/20°C/68°F)

ILFOTEC DD-X *	1+4	6	7	8	9½	12½	17
ILFOSOL 3	1+9	6	7½	10	11	18	–
	1+14	11	13	15½	17	23	–
ILFOTEC HC	1+15	–	–	5	8	13	–
	1+31	6	7½	9	14½	–	–
ILFOTEC LC29	1+9	–	–	5	8	13	–
	1+19	6	7½	9	14½	–	–
ID-11	stock	7	8	9½	10½	13	17
MICROPHEN *	stock	6	7	8	9	12	16½
PERCEPTOL	stock	11	13	15	18	–	–

Non-ILFORD Developers (min/20°C/68°F)

Rodinal	1+25	5½	7	9	11	20	–
Kodak D-76	stock	7	8	9½	10½	13	17
Kodak HC-110	A	–	–	5	8	13	–
	B	6	7½	9	14½	–	–
Kodak T-Max	1+4	5½	6½	7½	8½	11	14
Kodak Xtol	stock	5	6	6½	7½	10	12½

* = Recommended developers

35mm and Roll Film - 24°C/75°F

ILFORD developer	Dilution	Meter setting (EI)					
		400/27	800/30	1600/33	3200/36	6400/39	12500/42

Spiral tank, deep tank, dip and dunk machines (min/24°C/75°F)

ILFOTEC DD-X*	1+4	–	5	6	7	9	12
ILFOSOL 3	1+9	5½	7	8	9	15½	–
	1+14	7	8	10	11	19	–
ILFOTEC HC	1+15	–	–	–	5½	8½	–
ILFOTEC HC	1+31	5	6	7	10½	–	–
ILFOTEC LC29	1+9	–	–	–	5½	8½	–
	1+19	5	6	7	10½	–	–
ID-11	stock	6	7	8	9	11	13½
MICROPHEN*	stock	–	5	6	7	9½	13½
PERCEPTOL	stock	9½	10½	12	15½	–	–

Non-ILFORD Developers (min/24°C/75°F)

Rodinal	1+25	–	–	5½	7½	15	–
Kodak D-76	stock	6	7	8	9	11	13½
Kodak HC-110	A	–	–	–	5½	8½	–
	B	5	6	7	10½	–	–
Kodak T-Max	1+4	–	5½	6½	7½	9½	13
Kodak Xtol	stock	–	5½	6	7	9	11

* = Recommended developers

Dip and dunk machines (min/24°C/75°F)

ILFOTEC DD	1+4	8	8½	9½	10½	13½	19
Kodak T-Max RS	stock	4	4½	5	6½	8½	10½
Kodak Xtol	stock	8	9	10½	13½	17½	23

ILFOLAB FP40, roller transport and short leader machines (sec/26°C/79°F)

ILFOTEC RT RAPID	1+1+2	54	65	73	84	104	–
	1+1+5	95	108	120	153	176	–

NOTE

When using meter settings of EI 12500/42 and above, it is important to make test exposures first to ensure the results will be suitable for the intended purpose. A guide to development times for meter settings EI 12500/42 is given in the development time tables. For exposures at EI 25000/45, use the guide in the below table.

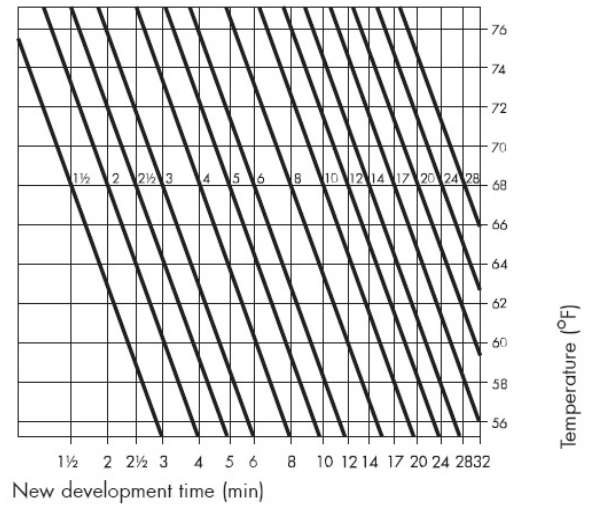
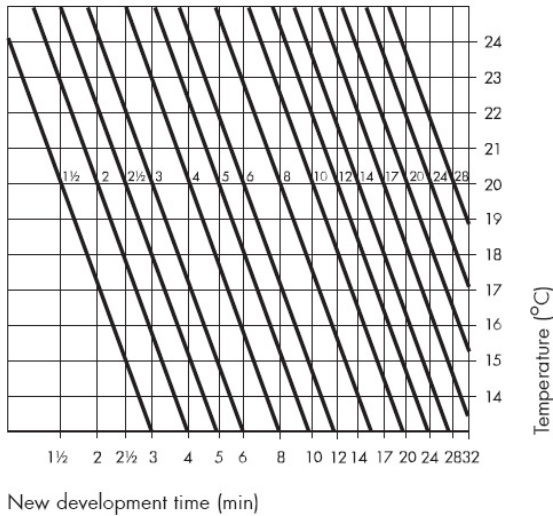
Meter setting EI 25000/45 manual processing

ILFORD Developer	Dilution	20°C/68°F	24°C/75°F
		min	min
ILFOTEC DD-X	1+4	25	17
MICROPHEN	STOCK	22	17½

PROCESSING

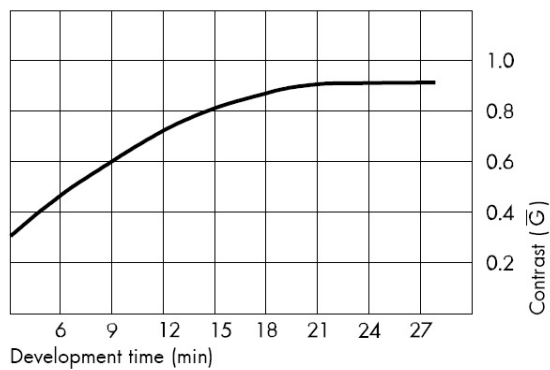
Processing at Different Temperatures

DELTA 3200 Professional film can be processed over a range of temperatures. Approximate development times at temperatures other than 20°C/68°F may be calculated from the charts below. For example, if 12 minutes at 20°C/68°F is recommended, the time at 22°C/71½°F will be 10 mins and the time at 18°C/64½°F - 15 mins.



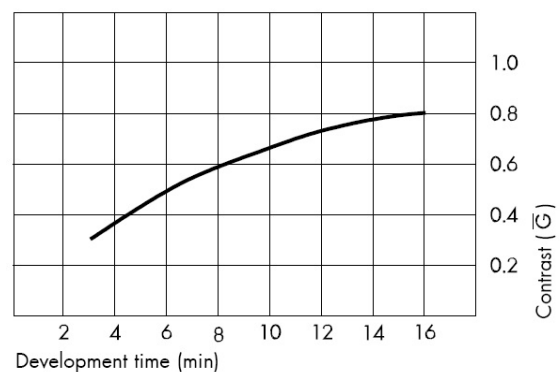
CONTRAST – TIME GRAPHS

ILFOTEC DD-X



DELTA 3200 Professional film developed in ILFORD ILFOTEC DD-X 1+4 at 20°C/68°F.

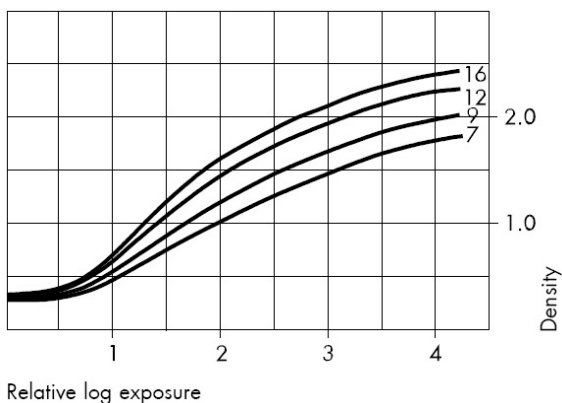
MICROPHEN



DELTA 3200 Professional film developed in ILFORD MICROPHEN stock at 20°C/68°F.

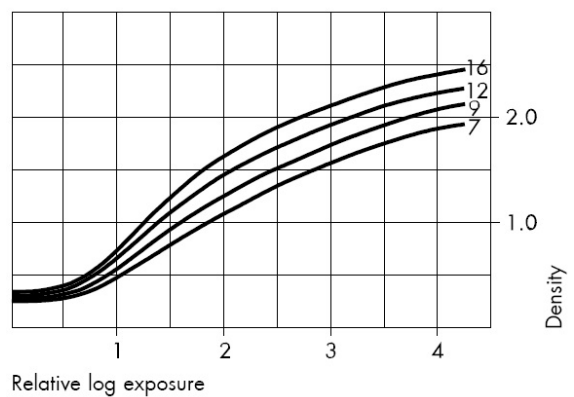
CHARACTERISTIC CURVES

ILFOTEC DD-X



DELTA 3200 Professional film developed in ILFORD ILFOTEC DD-X 1+4 for 7,9,12 and 16min at 20°C/68°F.

MICROPHEN



DELTA 3200 Professional film developed in ILFORD MICROPHEN stock for 7,9,12 and 16min at 20°C/68°F.

PROCESSING

DELTA 3200 Professional can be processed in all types of processing equipment including spiral tanks, rotary processors, dishes/trays, deep tanks and automatic processors. Standard capacity figures and replenishment rates can be maintained. When fixing DELTA 3200 Professional however, slightly longer times than used with conventional film are recommended for best results.

Safelight recommendations

Handle DELTA 3200 Professional film in total darkness.

Agitation

Intermittent agitation is recommended for use in spiral tanks and deep tanks. With spiral tanks, invert the tank four times during the first 10 seconds, then invert the tank four times again during the first 10 seconds of each further minute. Otherwise, follow the recommendations given by the processing equipment manufacturer.

Stop, fix, wash and rinse

For best results it is recommended that all process solutions are kept at the same temperature or at least within 5°C (9°F) of the developer temperature.

Stop Bath

After development the film can be rinsed in water, but we recommend that an acid stop bath is used such as ILFORD ILFOSTOP (with indicator dye). ILFORD ILFOSTOP is also recommended for all machine processing applications. When tanks or dishes (trays) of process solutions are in use, a stop bath immediately stops development and reduces carry over of excess developer into the fixer bath. This helps to maintain the activity and prolong the life of the fixer solution.

ILFORD ILFOSTOP

Dilution	1+19
Temperature Range	18–24°C (64–75°F)
Time (sec) at 20°C (68°F)	10
Capacity (films per litre, unrefilled)	15x (135-36)

The process time given is the minimum required, if necessary, a longer time may be used and should not cause any process problems provided it is not excessive.

Fix

The recommended fixers are ILFORD RAPID FIXER or ILFORD HYPAM FIXER.

ILFORD RAPID OR HYPAM FIXERS

Dilution	1+4
Temperature Range	18–24°C (64–75°F)
Time (mins) at 20°C (68°F)	2-5
Capacity (films per litre, unrefilled)	24x (135-36)

Wash

Wash the films in running water for 5–10 minutes at a temperature within 5°C (9°F) of the process temperature. Or see note below for greater economy when using spiral tanks.

Note: For spiral tank use, the following method of washing is recommended. This method of washing is faster, uses less water yet still gives negatives suitable for long term storage.

After fixing, fill the spiral tank with water at the same temperature, +/- 5°C (9°F), as the processing solutions and invert it five times. Drain the water away and refill. Invert the tank ten times. Once more drain the water away and refill. Finally, invert the tank twenty times and drain the water away.

Rinse

For a final rinse use ILFORD ILFOTOL wetting agent added to water, it helps the film to dry rapidly and evenly. Start by using 5ml per litre of rinse water (1+200), however the amount of ILFOTOL used may need some adjustment depending on the local water quality and drying method. Too little or too much wetting agent can lead to uneven drying. Remove excess rinse solution from the film before drying.

Drying

To avoid drying marks, use a clean squeegee or chamois cloth to wipe DELTA 3200 Professional film before hanging it to dry. Dry DELTA 3200 Professional at 30–40°C/86–104°F in a drying cabinet or at room temperature in a clean dust-free area.

STORAGE

Unexposed Film

For immediate use, store DELTA 3200 Professional in a cool (10–20°C/50–68°F), dry place in its original packaging. DELTA 3200 Professional may be stored in a fridge/freezer but allow plenty of time for the film to acclimatise prior to use.

Exposed film

Once exposed, process DELTA 3200 Professional as soon as practical. Exposed films should always be stored in cool, dry conditions - as recommended above.

Negatives

Store processed negatives in a cool (10–20°C/50–68°F), dry place, in the dark. Suitable storage sleeves include those made of cellulose triacetate, Mylar, paper (pH6.5–7.5) or inert polyester.

A wide range of fact sheets is available which describe and give guidance on using ILFORD PHOTO products. Some products in this fact sheet might not be available in your country.

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