

FACT SHEET

FP4 *Plus*

ISO 125/22° BLACK AND WHITE PROFESSIONAL FILM FOR HIGH PRINT QUALITY AND FLEXIBILITY IN USE

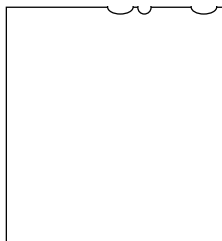
ILFORD FP4 Plus is an exceptionally fine grain, medium speed, black and white film. It is ideal for high quality indoor and outdoor photography, particularly when giant enlargements are to be made. In addition to general photography, FP4 Plus is also suited to copying and internegative work, and has many applications in scientific, technical and industrial photography.

FP4 Plus is robust and will give usable results even if it is overexposed by as much as six stops, or underexposed by two stops. It is compatible with all major processing systems, including those which give the standard short fixing and washing times.

FP4 Plus 35mm film is coated on 0.125mm/5-mil acetate base and is available in 24 or 36 exposure cassettes, or in bulk lengths of 17 and 30.5 metres (56 and 100ft). FP4 Plus 35mm film is supplied in DX coded cassettes, suitable for all 35mm cameras.

FP4 Plus rollfilm is coated on 0.110mm/4-mil clear acetate base with an anti-halation backing which clears during development. It is available in 120 and 220 lengths and is edge numbered 1 to 19 (120) and 1 to 40 (220).

FP4 Plus sheet film is coated on 0.180mm/7-mil polyester base with an anti-halation backing which clears during development. It is available in a wide range of standard sizes. The emulsion faces the user when sheet film is held in the position shown.



EXPOSURE RATING

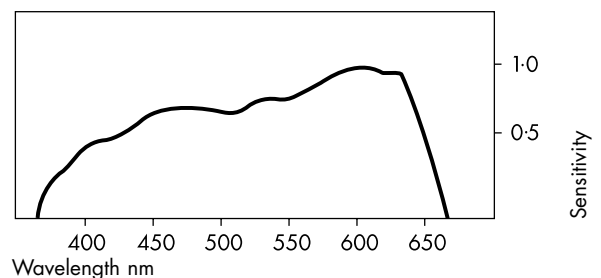
FP4 Plus has a speed rating of ISO 125/22° (125ASA, 22DIN, EI 125/22) to daylight. The ISO speed rating was measured using ILFORD ID-11 developer at 20°C/68°F with intermittent agitation in a spiral tank.

Best results are obtained at EI 125/22, but good image quality will also be obtained at meter settings from EI 50/18 to EI 200/24.

It should be noted that the exposure index (EI) range recommended for FP4 Plus 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 (2850K)



FILTER FACTORS

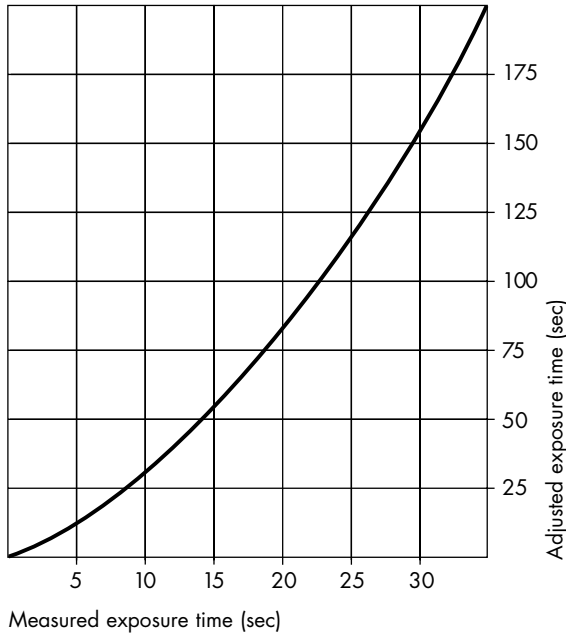
FP4 Plus film may be used with all types of filters (eg colour, polarising and neutral density filters) in the usual way. Follow the instructions given by the filter manufacturer.

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 1/2 stops.

MAKING LONG EXPOSURES

For exposures between 1/2 and 1/10 000 second, no adjustments are needed for reciprocity law failure. When exposures longer than 1/2 second are given, FP4 Plus, 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 measured time is known.



CHOOSING THE BEST ILFORD DEVELOPER FOR THE JOB

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

	Liquid	Powder
Best overall image quality	ILFOTEC DD-X	ID-11 (stock)
Finest grain	ILFOTEC DD-X	PERCEPTOL (stock)
Maximum sharpness	ILFOSOL S	ID-11 (1+3)
Maximum film speed	ILFOTEC DD-X	MICROPHEN (stock)
One-shot convenience	ILFOSOL S ILFOTEC DD-X	ID-11 (1+1) MICROPHEN (1+1)
Economy	ILFOTEC LC29 (1+29)	ID-11 (1+3) MICROPHEN (1+3)
Rapid processing	ILFOTEC HC (1+15)	-
Replenishable	ILFOTEC HC	ID-11

Machine processing

Dip and dunk	ILFOTEC DD ID-11 ILFOTEC HC	Best overall image quality (liquid) and long tank life Best overall image quality (powder) and long tank life Flexible process time, range of dilutions and economy
Short leader	ILFOTEC RT RAPID ILFOTEC HC	Rapid processing, best overall image quality and long tank life Range of dilutions, flexibility and economy
Roller transport	ILFOTEC RT RAPID	Rapid processing

DEVELOPMENT TIMES

The table gives development times for both manual and machine processing FP4 Plus. These times will produce negatives of average contrast suitable for printing in all enlargers. 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.

35mm film, Rollfilm & Sheet film

Dilution	Meter setting		
	EI 50/18	EI 125/22	EI 200/24

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

ILFORD developer

ILFOTEC DD-X	1+4	8	10	12
ILFOSOL S	1+9 1+14	4½ 7½	6½ 9½	7½ –
ILFOTEC HC	1+15 1+31	– 6	4 8	5 9
ILFOTEC LC29	1+9 1+19 1+29	– 6 8	4 8 12	5 9 –
ID-11	stock 1+1 1+3	6½ 8 17	8½ 11 20	10 15 –
MICROPHEN	stock 1+1 1+3	– – –	8 10 14	9 14 18
PERCEPTOL	stock 1+1 1+3	9 13 17	12 15 21	– – –

Non-ILFORD developer

Acufine Acufine	stock	–	4	6
Agfa Refinal	stock	–	6	9
Agfa Rodinal	1+25 1+50	– –	9 15	13 20
Kodak D-76	stock 1+1 1+3	6 9 14	8 11 16	9 15 20
Kodak HC-110	A B	– 6	4½ 9	6 12
Kodak Microdol-X	stock 1+3	10 17	15 23	– –
Kodak T-Max	1+4	–	8	9
Paterson Acutol	1+10	7	9	12
Tetenal Ultrafin	1+10 1+20	– –	7 11	9 14
Tetenal Ultrafin Plus	1+4	–	6	9

Dip and dunk machines (min/24°C/75°F)

ILFOTEC DD	1+4	–	7	–
Kodak T-Max RS	stock	–	7½	–

ILFOLAB FP40, roller transport and short leader machines (sec)

ILFOTEC RT RAPID	stock/26°C/78°F	–	50	–
ILFOTEC HC	1+11/24°C/75°F	–	85	–
Kodak Duraflo RT	stock/26°C/78°F	–	50	–

Some products in this fact sheet might not be available in your country

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.

METER SETTINGS BELOW EI 50/18 AND ABOVE EI 200/24

If FP4 Plus has been inadvertently exposed at settings below EI 50/18 or above EI 200/24, the following guide will ensure usable negatives are obtained. Obviously, the quality of negatives processed in this way will not be so high as conventionally processed ones.

Manual processing (min/20°C/68°F) - accidental exposure only

ILFORD developer	Dilution	Meter setting	
		EI 25/15 and below	EI 400/27 and above
35mm film			
MICROPHEN	stock	-	16
PERCEPTOL	stock	8½	-

35mm film

MICROPHEN	stock	-	16
PERCEPTOL	stock	8½	-

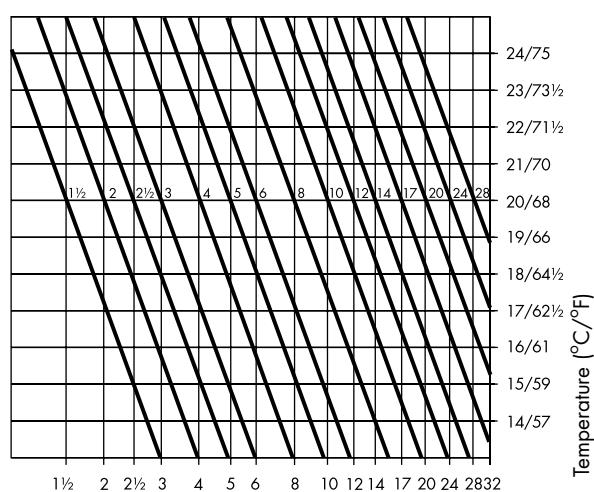
Rollfilm and sheet film

MICROPHEN	stock	-	16
PERCEPTOL	stock	8½	-

PROCESSING AT DIFFERENT TEMPERATURES

FP4 Plus film can be processed over a range of temperatures. Development at 20°C/68°F is recommended and the times are given in the development times table. If development is not possible at 20°C/68°F, the following chart can be used. The chart is based at 20°C/68°F for a general developer, and can be used to give an estimate of development times at temperatures around 20°C/68°F

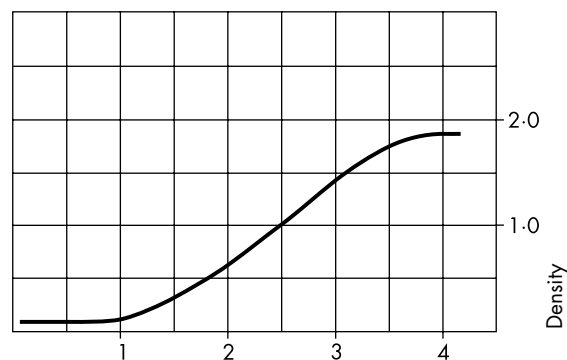
For example, if 4 minutes at 20°C/68°F is recommended, the time at 23°C/73°F will be 3 minutes and the time at 16°C/61°F will be 6 minutes.



New development time (min)

Note The chart can only be used as a guide because different developers and processing techniques can vary the results.

CHARACTERISTIC CURVE



Relative log exposure

FP4 Plus rollfilm developed in ILFORD ILFOTEC HC (1+31) for 8 minutes at 20°C/68°F with intermittent agitation. This curve is also representative of the 35mm and sheet film formats.

PROCESSING

FP4 Plus 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. FP4 Plus is very robust in processing and will tolerate less than ideal processing conditions. Also, it will not contaminate the processing chemicals.

Safelight recommendations

Handle FP4 Plus film in total darkness. For very brief inspections during processing, use the ILFORD 908 (very dark green) safelight filter, with a 15W bulb, fitted in a darkroom lamp (such as the ILFORD DL10 or DL20). Do not allow direct lighting from the safelight to fall on the film.

Agitation

Intermittent agitation is recommended for use in spiral tanks and deep tanks. Continuous agitation is recommended in dishes/trays (by rocking the dish/tray or by interleaving the sheets). 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.

Fixation

After development, rinse the film in water or an acid stop bath (ILFORD ILFOSTOP or ILFOSTOP PRO) and fix in ILFORD HYPAM or ILFORD UNIVERSAL RAPID fixer (1+4) for 2–4 minutes at 20°C/68°F. A hardener is recommended only when processing at high temperatures (above 30°C/86°F) or in a roller transport processor.

Washing

Where a non-hardening fixer, such as HYPAM or UNIVERSAL RAPID, has been used, wash the film in running water for 5–10 minutes at a temperature within 5°C/9°F of the processing temperature.

For spiral tank use, when a non-hardening fixer has been used, 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.

- 1 Process the film in a spiral tank.
- 2 Fix it using HYPAM or UNIVERSAL RAPID fixer.
- 3 After fixation, fill the tank with water at the same temperature as the processing solutions, and invert it five times.
- 4 Drain the water away and refill. Invert the tank ten times.

5 Drain and refill it for the third time and invert the tank twenty times. Drain the water away.

A final rinse in water to which a few drops of ILFORD ILFOTOL (1+200) wetting agent have been added will aid rapid and uniform drying.

Drying

To avoid drying marks, use a clean squeegee or chamois cloth to wipe FP4 Plus film before hanging it to dry. Dry FP4 Plus at 30–40°C/86–104°F in a drying cabinet or at room temperature in a clean dust-free area.

STORAGE

Store FP4 Plus in a cool (10–20°C/50–68°F), dry place in its original packaging.

Exposed film

Once exposed, process FP4 Plus as soon as practical. Images on exposed but unprocessed film will not degrade for up to several months when stored as recommended.

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 products. Some products in this fact sheet might not be available in your country.

ILFORD Imaging UK Limited, Town Lane, Mobberley
Knutsford, Cheshire WA16 7JL, England
www.ILFORD.com