

ILFOCHROME CLASSIC

PROCESS P 3X/XL

MAIN FEATURES

ILFOCHROME CLASSIC process P 3X is a photographic process based on silver dye-bleach technology designed for the processing of ILFOCHROME CLASSIC papers and films in roller-transport or leader belt processors. Replenishers and starter additives make it easy to use, very stable and economical.

The chemicals are supplied in the form of liquid concentrates.

Because of the low replenishment rates used, process P 3X only creates little overflow, which is favourable in terms of waste disposal. The very low wash rates also contribute to lower the cost of warm water.

PROCESSING STEPS

ILFOCHROME Process P 3X consists of three processing steps with intermediate and final washes. Each step is described below.

DEVELOPER – DE 3X

The composition of DE 3X corresponds to that of a superadditive black-and-white developer. Special ingredients in minor concentration enable the building during processing of a positive silver mask in proportion to the exposure. The silver mask controls the subsequent bleaching of the yellow dyes. This improves the colour rendition, particularly in the blue, green, yellow and magenta hues.

Development is a critical processing step that must follow strict temperature and time tolerances.

BLEACH – BL 3X

In this bath the silver previously formed in the developer and the dyes incorporated in the layers are bleached simultaneously. As the dyes can only be bleached in the presence of silver, the bleaching of the dyes automatically stops when all the silver is bleached out.

FIXER – FX 3X

In the fixing bath, all silver salts contained in the sensitized material are changed into water soluble silver thiosulfate complexes. FX 3X is practically a neutral conventional black-and-white fixer; it is well buffered so that its pH remains fairly constant when small amounts of the acid bleach are carried in.

WASHES

The intermediate and final washes are important processing steps which have a direct influence on the quality and permanence of the prints.

The first wash (tank 2) stops the development and avoids the transfer of undiluted developer into the bleach. The second wash (tank 4) prevents the fixer bath from being contaminated by concentrated acid bleach bath. Tanks 2 and 4 are connected in a forward cascade. Use soft water for this cascade.

The final wash removes all processing chemicals and soluble reaction products from the layers. It must be split between at least two tanks, connected in a countercurrent cascade, to provide thorough washing in the time prescribed. Use hard water for the final wash.

PACKAGING

REPLENISHERS		
DEVELOPER (DER 3X)	1 bottle PART A	5 litres
	1 bottle PART B	1.5 litre
	1 bottle PART C	1.5 litre
BLEACH (BLR 3X)	2 bottles PART A	2.5 litres each
	1 bottle PART B	2.5 litres
	1 bottle PART C	1.5 litre
FIXER (FXR 3X)	2 bottles PART A	5 litres each
	1 bottle PART B	4 litres
STARTER ADDITIVES		
DEVELOPER (DSA 3X)	1 bottle concentrate	1.5 litre
* DEVELOPER (DA 3XL)	1 bottle	750ml
BLEACH (BSA 3X)	1 bottle PART A	1.5 litre
	1 bottle PART B	1.5 litre
FIXER (FSA 3X)	1 bottle concentrate	5 litres

* This developer additive (DA 3XL) is only required when the process is running at "turbo" speed. DA 3XL is not part of the standard P 3X package and must be ordered separately.

MIXING INSTRUCTIONS

DER 3X • DEVELOPER REPLENISHER						
Final volume	Water	Part A	*DA 3XL	Part B	Part C	Water
25 litres	10 litres	5 litres	* 750ml	1.5 litres	1.5 litres	→ 25l
BLR 3X • BLEACH REPLENISHER						
Final volume	Water	Part A	Part B	Part C	Water	
25 litres	10 litres	2x2.5 litres	2.5 litres	1.5 litre	→ 25l	
FXR 3X • FIXER REPLENISHER						
Final volume	Water	Part A	Part B	Water		
25 litres	10 litres	2x5 litres	4 litres	→ 25l		
DE 3X • DEVELOPER						
Final volume	DER 3X		DSA 3X			
25 litres	23.5 litres		1.5 litre			
BL 3X • BLEACH						
Final volume	Water	BLR 3X	BSA 3X Part A	BSA 3X Part B	Water	
25 litres	10 litres	8.3 litres	1.5 litre	1.5 litre	→ 25l	
FX 3X • FIXER						
Final volume	Water	FXR 3X	FSA 3X	Water		
50 litres	30 litres	12.5 litres	5 litres	→ 50l		

The P 3X processing solutions can be prepared at room temperature, using lukewarm (25–35 °C), filtered and iron-free tap water. Use separate mixers for each of the three baths; do not use them for processes other than ILFOCHROME. Mixing vessels and storage tanks must be made of suitable material (see details in P 3X Process Manual). It is good practice to measure the specific gravity before using the mixed baths.

PROCESSING DATA

The different processing steps are described below. The first three steps require complete darkness; the steps following the bleach can be done in white light.

Processing step		Processing time	Temperature
Developer	DE	105 seconds (* 75 s)	36±0.5°C
First Wash	W1	30 seconds (* 22 s)	34 ±2°C
Bleach	BL	105 seconds (* 75 s)	36 ±1°C
Second Wash ¹⁾	W2	30 seconds (* 22 s)	34 ±2°C
First Fixer ²⁾	FX1	105 seconds (* 75 s)	36±2°C
Second Fixer ²⁾	FX2	105 seconds (* 75 s)	36±2°C
Third Wash	W3	105 seconds (* 75 s)	28–34°C
Fourth Wash ³⁾	W4	105 seconds (* 75 s)	28–34°C
Drying ⁴⁾			40–60°C (opaque materials) 50–70°C (film materials)

* This processing time (75 seconds) is used for paper materials processed at “turbo” speed. The processing time for film materials remains the same as standard (105 seconds).

- ¹⁾ W1 and W2 should be connected in a forward cascade and supplied with soft water.
- ²⁾ The second fixer step increases the capacity of the bath when processing film. Each tank should be equipped with a circulation pump and a temperature regulator. The tanks should be connected in a countercurrent cascade.
- ³⁾ W3 and W4 should be connected in a countercurrent cascade and supplied with hard water.
- ⁴⁾ The exact values depend on the dryer design and on local working conditions (temperature and relative humidity).

PROCESSING FILM MATERIAL

BAT 3X is a ready-to-use solution that should be added when film material is processed in order to ensure good sensitometric stability.

BLEACH ADDITIVE (BAT 3X)	1 bottle ready-to-use solution	1.5 litre
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If BAT 3X is added manually, this should be done each time 0.25 m² of material is processed per litre of tank volume. For example, for a tank volume of 50 litres, add 375 ml of BAT 3X after 12.5 m² of film material have been processed.

REPLENISHMENT RATES

	Opaque materials	Film materials
DER 3X	300 ml/m ²	350 ml/m ²
BLR 3X	200 ml/m ²	240 ml/m ²
FXR 3X	300 ml/m ²	450 ml/m ²
BAT 3X		30 ml/m ²

WASH WATER HARDNESS

The first wash cascade should be supplied with soft water. Hard water in the first cascade may cause cyan stain. A water softener must be installed if necessary.

The second wash cascade should be supplied with hard water. Soft water may lead to reddish shadows and blacks. The water hardness can be increased by addition of magnesium sulphate.

The values of water hardness for both cascades are given below.

	D	F	UK	USA
first cascade	4 °dH	7 °f	5 °b	65 ppm
second cascade	≥6 °dH	≥10 °f	≥7 °b	≥100 ppm

KEEPING PROPERTIES

Process P 3X concentrates keep for at least one year, if stored in the original packaging at a temperature between 10°C and 25°C. The expiry date is printed on the boxes.

The storage tanks for the replenishers must have lids to prevent accidental contamination of the solutions; well fitting floating lids are also needed to cover the developer and bleach replenishers in order to reduce oxidation and evaporation. Do not prepare more replenisher than will be used within a period of 4 weeks.

Working solution	maximum storage time
DE 3X and DER 3X	4 weeks
BL 3X and BLR 3X	4 weeks
FX 3X and FXR 3X	at least 3 months

If the process is correctly replenished and the necessary minimum throughput respected, the tank solutions will keep almost indefinitely. The minimum daily throughput should amount to at least 10% of the developer tank volume, expressed in square metres. For a machine with 40 litres of developer, at least 4 m² of material should be processed daily.

CONDITIONING ADDITIVE

CONDITIONING ADDITIVE (CA 1.5)	1 bottle ready-to-use solution	1.5 litre
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NOTE

Process P 3X cannot be used to process ILFOCHROME MICROGRAPHIC or ILFOCHROME RAPID materials.

For more details on Process P 3X/XL, please refer to the P 3X Process Manual (TB 46).

Specifications subject to change without notice.

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Further information on ILFORD colour products can be obtained from your local ILFORD representative.