ILFORD

FACT SHEET RC PAPERS

PROCESSING B&W PAPER

PROCESSING AND FINISHING ILFORD RESIN COATED PAPERS

ILFORD resin coated papers are processed in a similar way to other resin coated papers. All ILFORD resin coated papers can be dish/tray or machine processed.

Additional recommendations on processing ILFORD MULTIGRADE RC WARMTONE and ILFORD MULTIGRADE RC COOLTONE papers are given in their respective fact sheets.

Note Photographic chemicals are not hazardous when used correctly. Always follow the health and safety recommendations on the packaging. Photochemicals material safety data sheets containing full details for the safe handling, disposal and transportation of ILFORD chemicals are available from ILFORD.

DISH/TRAY PROCESSING

Agitation

Use intermittent agitation when dish/tray processing prints, that is, intermittently rock the dish/tray when processing single sheets, or interleave them when processing several sheets of paper at once.

To interleave prints, slip the sheets face down, one at a time, into the dish/tray. Then pull out the bottom sheet and place it on top of the remaining sheets in the dish/tray. Continue moving the bottom sheet to the top, until the processing step is complete.

Development

ILFORD developer	Dilution	°C/°F	Time (min)
MULTIGRADE	1+9	20/68	1
MULTIGRADE	1+14	20/68	1½
ILFOSPEED	1+9	20/68	1
PQ UNIVERSAL	1+9	20/68	1½–3
BROMOPHEN	1+3	20/68	1½–3
UNIVERSAL	1+9	20/68	1½–3

* Approximately double these times are recommended with MULTIGRADE RC COOLTONE paper to obtain the coolest image colour – see the MULTIGRADE RC COOLTONE fact sheet

MULTIGRADE developer is recommended for dish/tray processing MULTIGRADE papers. ILFOSPEED developer is recommended for dish/tray processing ILFOSPEED RC DeLuxe paper.

To maintain print to print consistency when batch processing a large number of prints, it may be advantageous to reduce exposure slightly and extend development.

MULTIGRADE 1+9 and ILFOSPEED 1+9

On correctly exposed prints, the image will begin to appear after about 6–15 seconds with these developers. The minimum recommended development time for high quality prints is approximately 45 seconds; after this time there is a more gradual image build-up. Overexposed prints developed for a minimum of 35 seconds are acceptable for those applications where the highest quality is not required.

Developer capacity

The following table gives the developing capacity of one litre of working strength developer.

ILFORD developer	Dilution	20·3x25·4cm (8x10 inches) ILFORD prints
Liquids		
MULTIGRADE	1+9	100
MULTIGRADE	1+14	70
ILFOSPEED	1+9	100
PQ UNIVERSAL	1+9	70
UNIVERSAL	1+9	70
Powder		
BROMOPHEN	1+3	70

* Approximately half these capacities are achieved if only MULTIGRADE RC COOLTONE is processed. This is because of the longer development times recommended with MULTIGRADE RC COOLTONE paper.

MULTIGRADE and ILFOSPEED developers

MULTIGRADE and ILFOSPEED developers are suitable for developing all black and white papers. MULTIGRADE developer can be used at the standard dilution of 1+9 or at 1+14 for greater development control and for economy.

MULTIGRADE and ILFOSPEED developers are clean working and have excellent keeping properties. They can be stored as concentrates in full unopened bottles for up to 2 years; in half full bottles, they have a shelf life of 6 months. Diluted developer will stay in good condition in the open dish/tray for two working days, at dilution 1+9, and for one working day, at dilution 1+14.

Stop bath

After development, rinse prints in an acid stop bath, such as ILFOSTOP or ILFOSTOP PRO. A stop bath stops development immediately, reduces the risk of staining and will extend the life of the fixer bath. The use of a stop bath is strongly recommended.

ILFORD stop bath	Dilution	°C/°F	Time (sec)
Liquid			
ILFOSTOP	1+19	18–24/ 64–75	30
ILFOSTOP PRO	1+19	18–24/ 64–75	30

A guide to the capacity of ILFOSTOP solution is 60 20·3x25·4cm (8x10 inches) prints in 1 litre of working strength solution. ILFOSTOP contains a colour indicator which turns from yellow to purple when the working solution is exhausted. ILFOSTOP PRO has a higher capacity of 90 20·3x25·4cm (8x10 inches) prints in 1 litre of working strength solution. Alternatively, discard the solution if the prints still feel slimy after 10 seconds in the bath.

Fixation

ILFORD non-hardening fixer	Dilution	°C/°F	Time (min)
Liquids			
ILFORD PAPER FIXER	1+3	18–24/ 64–75	½
HYPAM	1+4	18–24/ 64–75	½
HYPAM	1+9	18–24/ 64–75	1
MULTIGRADE	1+4	18–24/ 64–75	½
UNIVERSAL RAPID	1+4	18–24/ 64–75	½
Powder			
ILFOFIX II	stock	18–24/ 64–75	2

The use of a hardening fixer is not recommended as it reduces washing efficiency. There is no benefit in extending fixation beyond the recommended time; some loss of print quality might be seen when long fixing times are given, due to image etching.

Fixer capacity

The capacity of a fixer is limited by the build up of silver in the bath. A silver level of 4–6g/l is safe for all commercial use with resin coated papers.

This approximates to 80 20·3x25·4cm (8x10 inches) prints per litre of working strength fixer. For prints with maximum stability, that is, for long term storage, a silver level of 1g/l should be used. This approximates to 20 20·3x25·4cm (8x10 inches) prints per litre of working strength fixer.

Two-bath fixing

Although not normally recommended with resin coated papers, two-bath fixing can be beneficial when toning for aesthetic effect or to protect the print for display.

Two-bath fixing at 18–24°C/64–75°F

	Dilution	Fixing time (min) Bath 1		Bath 2
Liquids				
ILFORD PAPER FIXER	1+3	½	+	½
HYPAM	1+4	½	+	½
HYPAM	1+9	1	+	1
MULTIGRADE	1+4	½	+	½
UNIVERSAL RAPID	1+4	½	+	½
Powder				
ILFOFIX II	stock	2	+	2

Washing

	Temperature (°C/°F)	Time (sec)
Fresh, running water	Above 5/9	120

When it is important to obtain a print in the shortest possible time, vigorously wash ILFORD resin coated papers for 30 seconds in running water.

Prolonged immersion in water can cause edge penetration and print curl with resin coated papers: for this reason, avoid wet times longer than 15 minutes.

Drying

A final rinse in ILFORD ILFOTOL, diluted 1+200 with water, aids even and rapid drying.

Optimum quality results are obtained with the ILFORD series of dryers, for example, the ILFOLAB 1250RC. ILFORD dryers give the best possible finish on all ILFORD paper surfaces, and produce a high gloss finish on ILFORD glossy papers.

When a dryer for resin coated prints is not available, remove surplus water from the prints and leave them to dry. At room temperature, prints dry in 10–20 minutes.

Note ILFORD resin coated paper, as with other resin coated papers, should not be glazed/ferrotyped or dried on a drum or flatbed glazer, as this can cause the polyethylene in the paper to stick to the glazing surface.

MACHINE PROCESSING

ILFORD resin coated papers can be processed in all conventional machines for black and white resin coated papers. They are not suitable, however, for activation type processing.

ILFORD processors

The ILFOLAB MG 2650 processor is particularly recommended for high quality, rapid machine processing. ILFORD 2000RT developer/replenisher and fixer/replenisher are recommended for use with this processor. They are supplied as liquid concentrates. A developer starter is not needed.

For the convenience of automatic processing without the need to use large, floor standing equipment, the ILFOLAB 2150RC table-top processor is recommended. ILFORD 2000TL or ILFORD 2150XL developer and fixer are recommended for use with this processor. They are supplied as 4 litre packs of liquid concentrate, which are simply poured into the processor and mixed to the correct dilution automatically by the processor.

Other processors

This section is a guide to setting up processors for ILFORD resin coated papers using ILFORD 2000RT developer/replenisher and fixer/replenisher. These are diluted 1+4 to make tank or replenisher solution. These suggestions are only a guide, and the processing cycle should be checked in the processor. For further guidance, contact your local ILFORD company or distributor.

Suggested development times

The preferred temperature range is 20–30°C/68–86°F.

Temperature (°C/°F)	Development time (sec) including transfer time to next tank
20/68	46
25/77	32
30/86	22
35/95	15
40/104	12

These times are for non-replenished systems, with a maximum solution life of seven days. They are also for replenished systems with a solution life of up to three months. The suggested developer replenishment rate is 150–250ml/m^2 (14–24ml/ft^2) paper processed.

The solution life is dependent on paper throughput, and a suggested minimum is 2·8m^2 of paper per litre of working strength solution per week. If paper throughput is considerably less than this, to maintain print quality, it may be necessary either to make up fresh tank solution every 6 weeks instead of 12 weeks, or to double the replenishment rates.

Suggested fixing times

The same times and temperatures as for development can be used for fixing. The actual fixing time, however, is shorter, and 20 seconds is ample above 20°C/68°F. These recommendations are suitable for both replenished and non-replenished systems. In non-replenished systems, the maximum paper throughput is 4m^2 per litre of working strength solution. The suggested fixer replenishment rate for replenished systems is 300–450ml/m^2 (28–42ml/ft^2) of paper processed. The maximum silver concentration in the fixer bath is 4–6g/l.

Note If fixing is not complete, then adequate washing is impossible.

Washing times

Wash for at least 15 seconds at temperatures above 5°C/9°F. Set the water flow so as to fill the wash tank in 4 minutes or less.

Hot air drying

Use temperatures up to 85°C/185°F.

TONING AND CHEMICAL REDUCTION

ILFORD papers respond in a similar way to other resin coated papers to the usual techniques of toning and chemical reduction.

RETOUCHING

ILFORD prints can be spotted and air brushed using dye (for a glossy finish) or water colour (for a matt finish), in the same way as most resin coated papers.

When knifing resin coated prints, damp the area to be knifed, then use a sharp, pointed blade to scrape away the emulsion. Alternatively, bleach out specks completely using local chemical reduction. After knifing or local reduction, rewash and dry the print, then spot the resulting white area in the usual way.

BACKWRITING

The back of ILFORD resin coated papers is treated to accept pencil, most ball pens, non-water-soluble felt-tipped pens, fast drying stamp pad inks and all printing inks formulated for polyethylene printing. Many users also photocopy information onto the back of prints, although, strictly, this is not recommended.

MOUNTING

ILFORD prints can be mounted in one of the following ways. Where prints are to be mounted for long periods (in excess of 1–2 years), the dry mounting method is recommended.

Dry mounting

ILFORD prints can be dry mounted in the usual way. The use of a foil overlay is recommended for glossy surfaces and the use of silicone release paper for other surfaces.

Although the manufacturers' recommendations should be followed, most tissues will give good results in a dry mounting press at a temperature of 80–90°C/176–194°F with prints under pressure for about 30–40 seconds.

Double-sided adhesive sheets/cold mounting films

These provide a very effective and convenient means of mounting ILFORD papers onto porous or non-porous surfaces, without the need for special machinery. Some adhesive sheets allow the print to be repositioned after fixing. Several makes are available in sheet or roll form.

Spray adhesives

Spray adhesives are suitable for mounting ILFORD papers.

Note Always read the safety advice given by the manufacturers before using spray adhesives.

Contact adhesives

These adhesives are available in liquid form for brushing or spraying and are suitable for mounting ILFORD prints onto porous or non-porous mounts. Solvents must be allowed to evaporate completely from both print and mount before the two are brought into contact.

Wet mounting

ILFORD papers can be mounted onto porous surfaces (eg hardboard) using wet adhesives such as those designed for wall coverings. When mounting large prints, this method is an advantage, as there is time to position the print correctly and remove any air bubbles that might have become trapped between the print and the mount, without damaging the print. Wet mounting resin coated prints on non-porous materials (eg metal) is not recommended.

DISPLAY OF PRINTS

Prints made for display must be toned to protect them from the oxidising gases that are found in many environments. Oxidising gases come from everyday items such as newly laid carpet, wet gloss paint, newly applied adhesives and traffic fumes. Selenium toner is recommended as it has little effect on the image colour. Sulphide (or sepia) toning also gives an image of increased stability, as do polysulphide toners (for example, Kodak Brown Toner).

Some metal replacement toners, for example, gold toner and platinum toner can protect the image, but other metal replacement toners, such as blue (iron) toner and red (copper) toner may not give extra protection as the image might fade. Dye toners do not give extra protection.

Also recommended for image protection are image stabilising solutions, such as Agfa Sistan, Tetenal Stabinal and Fuji AgGuard.

Laminating may also help to protect the image, but ideally prints should be toned before laminating. ILFORD ILFOGUARD laminating and encapsulating films are recommended.

Long term print storage

When exceptionally long term print life is needed, prints must be processed as described in this fact sheet and then stored under special storage conditions. The ANSI standard on print storage (ANSI IT9.20–1994) has two levels of storage conditions: medium term and extended term. Medium term is for prints with a life expectancy of at least 10 years. Extended term is for prints with a longer life expectancy and to prolong the life of all prints. Briefly, the main conditions are:

Freedom from chemical contamination, either airborne or from storage containers. Also protection from high levels of ultra-violet radiation, particularly sunlight but also fluorescent lighting.

For medium term storage: a stable temperature up to 25°C/77°F (but preferably below 20°C/68°F) with a maximum daily cycling of ±2°C/4°F; and a stable humidity between approximately 20%RH and 50%RH with a maximum daily cycling of ±10%.

For extended term storage: a stable temperature up to 18°C/64°F (but preferably lower) with a maximum daily cycling of ±1°C/2°F; and a stable humidity between approximately 30%RH and 50%RH with a maximum daily cycling of ±5%.

A wide range of fact sheets is available which describe and give guidance on using ILFORD products.

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

94056G.www November 1999