

FACT SHEET

THE ILFORD BLACK & WHITE PHOTOGRAPHIC CHEMICAL RANGE

AN OVERVIEW OF THE RANGE OF PHOTOCHEMICALS FOR PROCESSING BLACK & WHITE FILMS AND PAPERS

INTRODUCTION

The range of ILFORD chemicals for black and white photographic film and paper processing is wide and of high quality. They are designed for use in a wide range of processing applications and complement the features of ILFORD black and white films and papers. Used appropriately they ensure excellent results are achieved not only with ILFORD products but also with quality black and white films and papers from other manufacturers.

This fact sheet briefly describes the properties of each product in the ILFORD range of black and white chemicals. More detailed information about using individual chemicals can be obtained from the technical fact sheet for each chemical and also the technical fact sheets for ILFORD film and paper products. These fact sheets are available from your local ILFORD company or agent or can be got directly from the ILFORD web site at **www.ilford.com**.

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

Environmental and safety considerations

ILFORD makes every effort to comply with the recommendations made by recognised international authorities for user safety and environmental protection.

Health and safety information is always given on the packaging of each product and should always

be read before using the product. Some photographic chemicals are classified as hazardous and care must be taken in handling them but when used correctly, following the instructions and guidelines that are given, they can be used quite safely. It is recommended that gloves, eye protection and an apron or overall are worn when handling and mixing all chemicals. Always follow the specific health and safety recommendations on the chemical packaging. Keep all foodstuffs away from areas where photographic chemicals are being prepared and used. Store all photochemicals out of the reach of children and do not allow them to use photochemicals unsupervised.

Photochemical material safety data sheets containing full details for the safe handling, disposal and transportation of ILFORD chemicals are available from ILFORD agents or directly from the ILFORD web site at **www.ilford.com**.

THE ILFORD BLACK AND WHITE PHOTOCHEMICAL RANGE

Film developers

The range of ILFORD film developers includes products covering all general purpose black and white film processing applications. The range contains nine general purpose developer product brands as well as two starter and two replenisher products:-

ILFOTEC DD and ILFOTEC DD STARTER solution
ILFOTEC RT RAPID and ILFOTEC RT RAPID
STARTER solution
ILFOTEC HC developer and ILFOTEC HC
replenisher
ILFOTEC DD-X
ILFOTEC LC29
ILFOSOL S
ILFORD ID11 developer and ILFORD ID11
replenisher
ILFORD MICROPHEN
ILFORD PERCEPTOL

In addition to these there are two specialist film developers:-

ILFORD PHENISOL
ILFOMED CP

Paper developers

The range of ILFORD paper developers includes products covering all general purpose black and white paper processing applications. The range contains five product brands:-

ILFORD MULTIGRADE
ILFORD PQ UNIVERSAL
ILFORD BROMOPHEN
ILFORD 2000RT
ILFORD 2150XL

Fixers

The range of ILFORD fixers includes products covering all general purpose black and white film and paper processing applications. The range contains five product brands:-

ILFORD RAPID FIXER
ILFORD HYPAM
ILFOFIX II
ILFORD 2000RT
ILFORD 2150XL

Other processing chemicals

The range of ILFORD chemical sundries includes products covering all general purpose black and white film and paper processing applications. The range contains seven product brands:-

ILFOSTOP a stop bath with indicator
ILFOSTOP PRO a stop bath without indicator
ILFORD HYPAM HARDENER a fix hardening agent
ILFORD WASHAID a washing aid
ILFORD ILFOTOL a wetting agent
ILFORD ILFOCLEAN II a systems cleaner
ILFORD BIOCLEAN a biocide

CHEMICAL RANGE

FILM DEVELOPERS

The following information is a guide to choosing the most suitable ILFORD developer for a particular job or process system.

The basic characteristics that divide the film developer product range are; whether the developer is a powder or liquid concentrate and whether it can be used for high and/or low volume process applications.

	Liquid Concentrate	Powder
High Volume	ILFOTEC DD ILFOTEC RT Rapid ILFOTEC HC	ILFORD ID11
Low Volume	ILFOTEC DD-X ILFOTEC LC29 ILFOSOL S ILFOTEC HC	ILFORD ID11 ILFORD MICROPHEN ILFORD PERCEPTOL

Looking at the developers by application

The following table looks at choosing a developer for a particular process system.

	Spiral tank	Dish/Tray	Rotary processors	Deep Tank	Dip & Dunk (Hanger)	Short leader processors	Roller Transport processors	Continuous processors
Liquids								
ILFOTEC DD	✓	✓	✓	✓	✓	✓	✓	✓
ILFOTEC RT RAPID	✓	✓	✓	✓	✓	✓	✓	✓
ILFOTEC HC	✓	✓	✓	✓	✓	✓	✓	✓
ILFOTEC DD-X	✓	✓	✓	✓	✓	✓	✓	✓
ILFOTEC LC29	✓	✓	✓	✓	✓	✓	✓	✓
ILFOSOL S	✓	✓	✓	✓	✓	✓	✓	✓
Powders								
ID11	✓	✓	✓	✓	✓	✓	✓	✓
MICROPHEN	✓	✓	✓	✓	✓	✓	✓	✓
PERCEPTOL	✓	✓	✓	✓	✓	✓	✓	✓

✓ = Recommended
 ✗ = Not recommended

A guide to the features of each film developer

The following table compares simplistically key performance features of the various film developers in broad terms. It does not attempt an in depth comparison of performance for individual film and developer combinations.

	Overall Image Quality	Fine Grain	High Sharpness	Push Processing	Economy	Ease of use	Shelf life	Replenishable
Liquids								
ILFOTEC DD	E	E	G	G	G	E	G	YES
ILFOTEC RT RAPID	G	G	E	E	G	G	G	YES
ILFOTEC HC	G	G	E	G	E	G	E	YES
ILFOTEC DD-X	E	E	G	E	G	E	G	–
ILFOTEC LC29	G	G	E	G	E	E	G	–
ILFOSOL S	G	G	E	–	E	E	G	–
Powders								
ID11	E	E	E	G	E	G	E	YES
MICROPHEN	E	G	E	E	E	G	E	–
PERCEPTOL	E	E	G	–	E	G	E	–

E = Excellent combination
 G = Good combination
 – = Not recommended

LIQUID CONCENTRATE FILM DEVELOPERS

ILFOTEC DD developer and ILFOTEC DD STARTER solution

ILFORD ILFOTEC DD is a replenishable developer for all general purpose black and white films. For machine processing it is recommended that it is used in conjunction with ILFORD ILFOTEC DD STARTER solution. It is supplied as a liquid concentrate to make up replenisher, the addition of ILFOTEC DD STARTER solution turns the replenisher into machine tank developer. ILFOTEC DD is specifically designed to be used in applications where large quantities of film are processed such as replenished dip and dunk (hanger) processing systems. With some adjustments to development times and operating temperature it can also be used in deep tanks and continuous long leader processors. ILFOTEC DD has a long tank life and good resistance to contamination, reliably producing superb quality negatives under a wide range of conditions. The recommended working temperature range is 20–24°C (68–75°F).

For some applications ILFOTEC DD working strength solutions can be used as developer without using ILFOTEC DD STARTER.

ILFOTEC RT RAPID developer and ILFOTEC RT RAPID STARTER solution

ILFORD ILFOTEC RT RAPID is a replenishable developer for the machine processing all general purpose black and white films, it must be used in conjunction with ILFORD ILFOTEC RT RAPID STARTER solution. It is supplied as a two part liquid concentrate kit, part A and part B, that on dilution make up replenisher solution. The addition of ILFOTEC RT RAPID STARTER turns the working strength replenisher into working strength developer. ILFOTEC RT RAPID is specifically designed for replenished roller transport and short leader card process systems when very short development times or high temperatures are needed. It is the recommended developer for the ILFOLAB FP40.

It is not recommended for developing films in dip and dunk (hanger) or rotary tube or continuous long leader processors or deep tanks, spiral tanks and dishes (trays).

ILFOTEC RT RAPID has a long tank life and good resistance to contamination, reliably producing excellent results under a wide range of conditions. The recommended operating temperature range is 22–28°C (72–82°F).

ILFOTEC HC developer and ILFOTEC HC replenisher

ILFORD ILFOTEC HC is an economic, versatile, highly concentrated liquid developer for processing all general purpose black and white films. Using the appropriate dilution it can be used in all process systems including, dishes (trays), small tanks, deep tanks, dip and dunk (hanger) processors, rotary tube processors, continuous long leader processors, roller transport processors and short leader card processors.

To use ILFOTEC HC developer the concentrate is first diluted to make a stock solution. The developer stock solution must be further diluted for use. The degree of dilution will depend on the film to be processed and the method of processing. Do not use ILFOTEC HC developer as replenisher.

For replenished and machine processing applications ILFOTEC HC is used in conjunction with a separate ILFORD ILFOTEC HC replenisher liquid. To use ILFOTEC HC replenisher the concentrate is first diluted to make a stock solution. The replenisher stock solution must be further diluted for use. The degree of replenisher dilution will depend on the developer dilution being used. Do not use ILFOTEC HC replenisher as developer.

ILFOTEC HC solutions have a long life and good resistance to contamination, reliably producing high quality, sharp results under a wide range of conditions. The recommended operating temperature range is 20–24°C, (68–75°F).

ILFOTEC DD-X

ILFOTEC DD-X is a low dilution, fine grain, liquid developer which gives full film speed. Designed for one-shot processing of individual films, used as recommended it gives superb quality negatives with a crisp fine grain structure that are easy to print and allow a high degree of enlargement. Correctly exposed negatives developed in ILFOTEC DD-X have a full range of tones, with depth in the shadows, a smooth transition through the mid-tones and bright detailed highlights.

ILFOTEC DD-X gives excellent results with all films, in particular it complements the features of ILFORD films especially the ILFORD DELTA PROFESSIONAL range. With some fast films such as DELTA3200, DELTA400 and HP5 Plus it gives an effective speed enhancement making it an excellent choice for push processing.

ILFOTEC LC29

ILFOTEC LC29 is a high dilution developer giving economy and flexibility in use, it yields negatives with good grain and sharpness. With ILFOTEC LC29 there is a choice of dilution, 1+29, 1+19 and 1+9. Depending on the dilution chosen ILFOTEC LC29 can be used either one-shot or for greater economy be reused during a single working session.

ILFOSOL S

ILFOSOL S is a one-shot general purpose black and white film developer. It is particularly suited to developing slow and medium speed films such as PANF, 100DELTA and FP4 Plus, giving good grain and excellent sharpness. The recommended dilution for use is 1+9 but for greater economy and to enable practical development times to be used when processing at high ambient temperatures it can be used at a higher dilution of 1+14.

POWDER FILM DEVELOPERS

ILFORD PERCEPTOL, ID11 and MICROPHEN powder developers have been formulated to exploit the full potential of conventional black and white film emulsions in all formats. These developers enable ILFORD and other films to be developed to optimise their individual speed and quality and show consistency in performance throughout their long working lives.

ILFORD ID11 developer and ILFORD ID11 replenisher

ID11 is a fine grain film developer for all general film processing requirements where fine grain negatives are required without loss of emulsion speed. ID11 developer is recognised internationally as a standard in many fields of scientific and technical photography.

ID11 produces excellent results with all films and is ideal where a wide range of films and film speeds have been used. ID11 ensures the best balance of fine grain, sharpness and tonal rendition producing negatives which allow a high degree of enlargement. Do not use ID11 developer as a replenisher.

For replenished and machine processing applications ID11 is used in conjunction with a separate ILFORD ID11 replenisher powder. Do not use ID11 replenisher as developer.

ILFORD MICROPHEN

MICROPHEN is a fine grain film developer which gives an effective increase in film speed. A speed increase of up to half a stop can be achieved with most films but with faster films such as HP5 Plus, DELTA400 and DELTA3200 it is more. Many developers that give an increase in film speed usually produce a corresponding increase in grain size, MICROPHEN is formulated to overcome this disadvantage, the low alkalinity of the developer reduces grain size and grain clumping. Therefore MICROPHEN is said to have a high speed/grain ratio, i.e. it gives a speed increase while retaining much of the grain characteristics associated with fine grain developers.

MICROPHEN is particularly useful when using extended development times to push process fast films such as HP5 Plus, DELTA400 DELTA3200 and SFX200.

ILFORD PERCEPTOL

PERCEPTOL is an extra fine grain film developer which gives excellent image quality. It is designed for use when very fine grain negatives are required and a decrease in film speed is not important. It has been specially formulated to get optimum results from high resolution lenses. It exploits the superb grain structure of ILFORD medium and slow speed films, 100DELTA, FP4 Plus and PANF Plus and produces significantly finer grain in ILFORD fast films, DELTA400, HP5 Plus and DELTA3200, compared with a standard fine grain developer.

PERCEPTOL produces excellent results with any lens/film combination and is therefore ideal when texture and definition are critical - negatives developed in PERCEPTOL are capable of producing sharper and better quality enlargements than those produced using a standard fine grain developer.

SPECIALIST FILM DEVELOPERS

ILFORD PHENISOL

PHENISOL is a low dilution liquid concentrate developer primarily used for processing scientific photographic products i.e. nuclear emulsion, L4 glass plates and Q plates. It can also be used for manual or machine processing of all X-ray films and plates and is the developer recommended to obtain the highest contrast from ILFORD ORTHO Plus copy film.

ILFOMED CP

ILFOMED CP is a low dilution liquid concentrate developer used for machine processing cineradiographic films.

PAPER DEVELOPERS

Machine developers

ILFORD 2000RT developer

2000RT is a liquid concentrate developer/replenisher recommended for use with all types of black and white RC photo paper processors. It is easy to use as no starter solution is required. The recommended dilution for both the tank and replenisher solution is 1+4. It is a robust, economical, clean working developer with a long tank life. It can be used at a wide range of development temperatures, 20–40°C (68–104°F). The suggested replenishment rate for the paper processed is 150–250 ml/m² (14–23 ml/ft²). With most papers it gives a print image tone just slightly cool of neutral.

ILFORD 2150XL developer

2150XL developer is a liquid concentrate developer specifically designed for use in the ILFORD ILFOLAB 2150 table top RC photo paper processors. It is extremely easy to use, the developer is poured into the front reservoir of the processor and automatically diluted for use. The image tone it gives to paper is similar to that of ILFORD 2000RT developer.

Dish/Tray developers

ILFORD MULTIGRADE developer

MULTIGRADE is a liquid concentrate developer suitable for developing all black and white papers. It can be used at the standard dilution of 1+9 or at 1+14 for greater development control and economy. MULTIGRADE developer is clean working and has excellent keeping properties and gives a neutral image tone with most papers.

ILFORD PQ UNIVERSAL

PQ UNIVERSAL is a liquid concentrate developer suitable for developing all black and white papers. Used at a dilution of 1+9 it is clean working and has excellent keeping properties. It gives a slightly warm of neutral image tone with most papers. It can also be used for the dish/tray processing of some sheet film products.

ILFORD BROMOPHEN

BROMOPHEN is a powder developer suitable for developing all black and white papers. It is made into a stock solution that is diluted 1+3 for use. It is economical, clean working and has good keeping properties. It gives a slightly warm of neutral image tone with most papers.

FIXERS

ILFORD 2000RT fixer

2000RT is a non-hardening, liquid fixer concentrate specially designed for the rapid fixing of resin coated paper in processing machines complementing the 2000RT developer. It can be used at a wide range of fixer temperatures, 20–40°C (68–104°F). The suggested replenishment rate for the paper processed is 300–450 ml/m² (28–41 ml/ft²). 2000RT fixer must not be used with fix hardeners.

ILFORD 2150XL fixer

2150XL is a non-hardening liquid fixer specifically designed for use in the ILFORD ILFOLAB 2150 table top resin coated paper processors. It is extremely easy to use, the fixer is poured into the front reservoir of the processor and automatically diluted for use. 2150XL fixer must not be used with fix hardeners.

ILFORD RAPID FIXER

ILFORD RAPID FIXER is a non-hardening rapid fixer supplied as a liquid concentrate for fixing black and white film and paper in all manual and machine processing applications. It is easy and convenient to use in the temperature range of 18–40°C (64–104°F). ILFORD RAPID FIXER must not be used with fix hardeners.

ILFORD HYPAM

HYPAM is a non-hardening liquid rapid fixer that can be used with the fix hardening agents that are needed for some film processing applications. Without the addition of a hardener it is suitable for all black and white film and paper, manual and machine processing applications in the temperature range of 18–40°C (64–104°F). HYPAM is the recommended fixer for all ILFORD scientific products and other X-ray films, plates and cineradiographic films. If the addition of a hardener is required use ILFORD HYPAM HARDENER.

ILFOFIX II

ILFOFIX II is a standard (hypo) non-hardening powder fixer. It is made into a stock solution for the manual fixing of films and papers. It must not be used with fix hardeners.

OTHER PROCESSING CHEMICALS

ILFOSTOP

ILFOSTOP is a low odour acid stop bath that stops development immediately, it contains an indicator dye that changes colour from yellow to purple as the stop bath becomes exhausted. It is specifically recommended for dish/tray processing of paper where it helps maintain the activity of the fixer bath and longer wash times minimises the risk of residual dye stain on the print.

ILFOSTOP PRO

ILFOSTOP Pro is a low odour acid stop bath without an indicator dye. It stops development immediately and is recommended for all manual and machine film and paper processing applications where a stop bath can be used. ILFOSTOP PRO is the recommended stop bath for all ILFORD scientific products and other X-ray films and plates.

ILFORD HYPAM HARDENER

ILFORD HYPAM HARDENER is a concentrated liquid hardener that is used to turn working strength solutions of ILFORD HYPAM into a hardening fixer for Black & White films. The use of ILFORD HYPAM HARDENER is only recommended if:-

- the film process temperature is above 30°C (86°F)
- poor film drying performance is being experienced
- shorter film drying times are needed
- there is a risk of physical damage to the film, e.g. if a roller transport processor is used.

For paper processing applications using a fix hardener is not recommended.

ILFORD WASHAID

ILFORD WASHAID is formulated to aid the efficient removal of the by-products of fixation, it is particularly useful in speeding up the washing of fibre based papers and is designed to be used with the ILFORD archival washing sequences. It can be used to aid the rapid washing of all films and papers saving both time and water.

ILFORD ILFOTOL

ILFOTOL is a wetting agent used as a final rinse before drying films. It can be used in manual and machine processes to aid rapid, even drying and so greatly reducing the risk of drying marks occurring. ILFOTOL can also be used as a final rinse before drying fibre based prints again it promotes even drying. Additionally it can be used to clean glass and plastic lenses and filters and as an anti-static treatment.

ILFORD ILFOCLEAN

ILFOCLEAN is a developer systems cleaner in four parts, A and B the cleaner, C the neutraliser and D the de-activator. It will efficiently remove silver deposits from all developer tanks, circulation systems, rollers and developing dishes. It should not be used to clean fixer tanks and dishes or rubber rollers or wash tanks.

ILFORD BIOCLEAN

BIOCLEAN is used to help prevent micro-biological contamination in wash tanks of all photographic process machines.

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