

**FACT SHEET****ILFOSPEED RC DIGITAL  
B&W PAPER FOR DIGITAL EXPOSURE****PREMIUM QUALITY BLACK AND WHITE PANCHROMATIC PHOTOGRAPHIC  
PAPER ON A RESIN COATED BASE FOR USE WITH DIGITAL ENLARGERS**

**ILFORD ILFOSPEED RC DIGITAL** is a premium quality black and white, panchromatic photographic paper that has a neutral image colour. It is coated onto a bright white, medium weight (190g/m<sup>2</sup>), water resistant, resin-coated base.

ILFOSPEED RC DIGITAL has been designed using traditional silver halide technology based upon the emulsions used in the successful and popular ILFORD ILFOSPEED RC Deluxe and ILFORD Galerie FB graded papers. It has panchromatic sensitivity optimised for compatibility with tricolour laser enlargers such as the Lambda, Zeta and Theta models supplied by Durst and the Lightjet models supplied by Océ (Cymbolic Sciences).

ILFOSPEED RC DIGITAL has excellent contrast, sharpness and surface finish that will give superb continuous tone black and white images or text from digital files prepared from either black and white or colour film negatives or positives, prints and digital originals. The results are equal to those seen when using conventional black and white printing materials and exposing equipment.

ILFOSPEED RC DIGITAL is available in the ILFORD.44M pearl surface finish as mural roll formats up to 127cm (50in) wide and 30m (98ft) in length.

ILFOSPEED RC DIGITAL is a revision of the paper formerly made available as ILFORD SP857P paper.

**EXPOSURE**

ILFOSPEED RC DIGITAL is specifically designed to be exposed by tricolour laser enlargers. It has not been designed for use in LED, LCD, CRT or conventional printing systems, however it may give results in some systems that might be suitable for some applications. Consult your equipment manufacturer if you need help or advice setting it up to expose ILFOSPEED RC DIGITAL paper.

**Safelight recommendations**

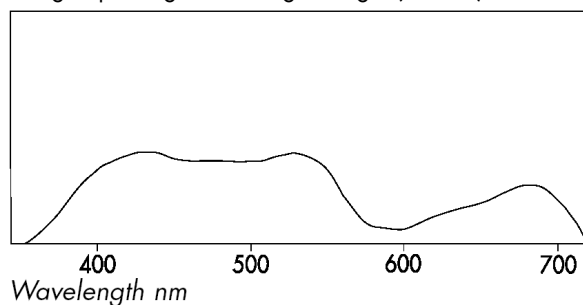
ILFOSPEED RC DIGITAL has panchromatic sensitivity therefore we recommend that all handling of unpacked paper is done in total darkness. However if an orientation safelight is required then a GB2 safelight screen can be used. A GB2 safelight screen is a sandwich of two ILFORD 908 dark green filters plus a 0.6 neutral density filter and when used as recommended only allows a user to avoid becoming disoriented.

ILFOSPEED RC DIGITAL will be safe for approximately 1 minute in direct light using a GB2 with a 15 watt bulb at a distance of 1.2m (4ft). If the distance between the paper and the safelight is doubled then this time will be quadrupled. The safe time is also longer when the light from the safelight does not fall directly on the paper.

As an alternative a single 908 safelight filter could be used, provided it does not directly light the paper and is not closer than 2.5m (8ft).

**SPECTRAL SENSITIVITY**

Wedge Spectrogram to tungsten light (2850K)

**ISO Contrast range**

ILFOSPEED RC DIGITAL is a fixed contrast paper equivalent to the ILFOSPEED RC Deluxe grade four conventional enlarging paper.

It has an ISO range R of 60.

**ISO Speed**

The ISO speed of ILFOSPEED RC DIGITAL is very similar to ILFORD ILFOCHROME CLASSIC P3/P3X and ILFOCOLOUR RA4 products exposed using the same device.

**Exposing light sources**

ILFOSPEED RC DIGITAL is designed for use with the red, green and blue lasers used in digital enlargers. However it can also be used with conventional tungsten or tungsten halogen light sources.

**CALIBRATION FOR USE**

Due to the complex nature of printing using digital enlargers and printers, specific calibration recommendations for all the different equipment makes and models now available cannot be made. To obtain optimum results we recommend that you follow your equipment maker's recommendations and carry out tests

of the paper in your enlarger. The information we have provided below is only a guide to getting started with some of the more popular models and it should not be viewed as absolute.

### **Durst Lambda 130, 131, 76 Plus Calibration & Durst Theta 50/51 B&W**

To calibrate any of the above models for ILFOSPEED RC DIGITAL follow the manufacturer's standard calibration sequence. When using the paper for the first time, create and save a new product file for "ILFORD ILFOSPEED RC DIGITAL black and white paper" in the drop down list of products available, this can be done by copying an existing file in the Lambda's software.

Use the "No Contrast" and "No Sharpness" settings.

As a starting point to calibrate for ILFOSPEED RC DIGITAL use the figures in the following table.

	Dmax	Basic Calibration (Starting values)	
R	208	C	0.00
G	214	M	126.61
B	215	Y	75.51
		K	47.19

Expose and process a calibration strip. Put the resulting step wedge through the Lambda's densitometer and allow it to calculate any corrections. Apply the corrections and repeat the test until no more corrections are called for.

A visual check of progress can be made by comparing the ILFOSPEED RC DIGITAL black and white calibration strip with a standard colour calibration strip. There will be some differences but overall the monochrome calibration strip should be a good tone representation of the colour one.

### **Durst Theta 50/51 B&W**

ILFOSPEED RC DIGITAL is available in 10" and 20" rolls suitable for the Theta 50/51 BW and has been tested and recommended by Durst for use in this machine.

The Durst Theta 50/51 BW is also found with an RA4 colour processing option. To date no information is available on compatibility although it is highly likely that the RA4 processor can be drained, washed out and refilled with standard black and white process chemicals, ILFORD 2000RT developer and fixer are recommended.

### **Lambda Pi50**

ILFOSPEED RC DIGITAL cannot be calibrated or exposed by the Lambda Pi50 due to the lower green laser output of this model. In order to use ILFOSPEED RC DIGITAL, the Lambda Pi50 must be upgraded to either the Lambda 131 or 130 configurations.

Please contact your local Durst representative for details.

### **Océ (Symbolic Science) Lightjet 430, 500XL and Lightjet 5000 Calibration**

Before attempting to calibrate any of the Océ (CSI) Lightjets, the appropriate product profile information for ILFOSPEED RC DIGITAL must be added into the enlargers' look up tables. Once the appropriate product profiles have been installed add the product name to the list of those available and associate it with the product profiles. The product profile information provides the user with a good starting point. To proceed follow the normal calibration sequence.

For the Lightjet 5000 series running fusion v2 software the following values may provide a good starting point. Set the resolution to 12 pixels/mm Red = 13, Blue = 798, Green = 503

A good calibration balance is made when the CMY patches on the DMax calibration strip are similar in density and between 0.8 - 1.0.

For each Lightjet model the product profiles folder is called "ILFOSPEED RC DIGITAL". This folder should be added to the files in X:\picto\blend\material20\ where X: can be either drive C: or D:

The ILFOSPEED RC DIGITAL product profile information can either be downloaded from the ILFORD website at **[www.ilfordphoto.com](http://www.ilfordphoto.com)** or made available to users through your local ILFORD representative.

## **IMAGE QUALITY**

### **Density and Contrast Control**

The density and contrast of the printed image is controlled by manipulation of the original digital file, this can be done by using the software of the enlarger but it is mostly done off-line before the image is sent to it for printing.

Black and White prints can be made directly from colour digital files although the results are often unsatisfactory unless the file is first converted to greyscale. We would therefore recommend colour files be converted to Greyscale, prior to printing. The smaller files made by discarding the colour information are also much quicker to RIP and write. There is another advantage to doing this, as some colour originals printed straight to Black & White do not make suitable or interesting images without some adjustment to their contrast or density.

When using film or existing prints to make prints digitally the quality of the final image seen is not only dependent on the quality of the original negative or positive or print used, but also on the quality or method of the scanning used to make the digital image file. The resolution at which the original negative or positive or print is scanned must be appropriate for the size of the final output image. Files made from low resolution scans or files that are too small for the final print enlargement output may lose

shadow and highlight details or show pixels and posterisation or some other form of image deterioration. When image capture has been done digitally, the image quality of the final print will depend on the quality of the digital image file created. If the file is too small for the desired enlargement then details may be lost or other artefacts seen.

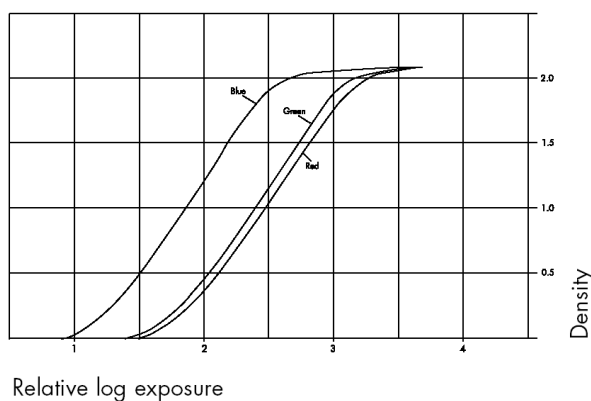
### Latent Image Stability

No significant change in picture quality will be seen when ILFOSPEED RC DIGITAL is left for a period of 24 hours after exposure and before processing.

### Dimensional Stability

ILFOSPEED RC DIGITAL has a good dimensional stability. When processed as recommended the sheet/roll size will not vary by more than 0.1% between before and after processing.

### Characteristic Curve



ILFOSPEED RC DIGITAL pearl paper exposed for  $10^{-4}$  seconds to broad band colour filters illuminated by a xenon flash tube. Developer: MULTIGRADE diluted 1+9. Development: 1 minute at 20°C/68°F.

### MACHINE PROCESSING

ILFOSPEED RC DIGITAL can be processed in all wide format, roller transport and leader belt process machines used for conventional black and white resin coated papers. It can also be used in wide format ILFOCHROME P3/P3X and P4 process systems provided that the processor is fitted with a bleach bath bridge. It is not suitable for activation or RA4 processing.

#### Setting up a processor

To set up a processor for ILFOSPEED RC DIGITAL use ILFORD 2000RT developer/replenisher and ILFORD 2000RT fixer/replenisher.

ILFORD 2000RT chemicals are recommended for processing ILFOSPEED RC DIGITAL, these are diluted 1+4 to make tank and replenisher solutions, but the paper is also compatible with all other conventional black and white machine processing paper chemicals.

### Note

Photographic chemicals are not hazardous when used correctly. 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. 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.ilfordphoto.com](http://www.ilfordphoto.com)**.

To ensure that ILFOSPEED RC DIGITAL will calibrate with your digital enlarger and before the calibration procedure is started, it is very important to make sure that the developer in the processor is in good condition and able to get a good maximum density from the paper. To do this, use the following simple method: -

- Take a sample of ILFOSPEED RC DIGITAL and expose it to white light e.g. the normal room lighting or daylight. (The length of exposure is not critical but do not over-expose, 2 to 3 seconds is sufficient).
- Process the exposed sheet.
- Measure the black achieved using a calibrated reflection densitometer, (if it is available use the visual density measurement setting).
- The measurement should be at least 2.15.
- If it is, proceed to calibrate the paper in your enlarger.
- If it is not, carry out one or more of the following actions and re-test the paper until the required maximum density is achieved: -
  - adjust the development time.
  - adjust the developer temperature.
  - completely change the developer for fresh solution.
- Checking the maximum density from the processor should be done regularly. If it usually results in making adjustments to the settings or making fresh developer then check the developer replenishment rate and increase it.
- The measured minimum density of the processed paper should not exceed an absolute density of 0.03 when measured by a calibrated reflection densitometer.

### Suggested development times and temperatures

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

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

These suggestions are only a guide and the processing time and temperature should be checked in the processor. The times are for either non-replenished systems, with a maximum solution life of seven days or for replenished systems with a solution life of up to three months. Replenishment rates will vary between different designs of processor and the use they receive. A guide for developer replenishment rate is 150-250ml/m<sup>2</sup> (14-23ml/ft<sup>2</sup>) of paper processed.

### **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 replenished systems, the replenishment rates will vary with different designs of processor, but a guide for fixer replenishment is 300-450ml/m<sup>2</sup> (28-41ml/ft<sup>2</sup>) of paper processed. For non-replenished systems, the maximum paper throughput is 4m<sup>2</sup> per litre (43ft<sup>2</sup>/US quart) of working strength solution. The maximum silver concentration in the fixer bath can be 4-6g/l.

### **Note**

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

### **Washing times**

The efficiency of the wash and water consumption depends on the processor design and water temperature. As a general rule, wash the paper for at least 15 seconds at temperatures above 5°C/9°F.

### **Hot air drying**

Use temperatures up to 85°C/153°F.

### **DISH/TRAY AND TROUGH PROCESSING**

ILFOSPEED RC DIGITAL has been designed for machine processing however it can be processed in dishes (trays) or troughs in the same way as other resin coated papers but processing must be carried out in total darkness. The recommended ILFORD chemicals are ILFORD MULTIGRADE developer, and ILFORD RAPID FIXER.

Processing details are supplied with the chemicals. The use of an acid stop bath in between the developer and fixer such as a 2% solution of acetic acid is also recommended. A low odour, indicator stop bath such as ILFOSTOP can be used but care must be taken with washing the paper to ensure the indicator dye leaves no trace.

Wash the prints for 2 minutes in cold running water at temperatures above 5°C/9°F. A longer wash time should not cause any problem provided the total wet time does not exceed 15 minutes.

### **TONING AND CHEMICAL REDUCTION**

ILFOSPEED RC DIGITAL paper responds in a similar way to other resin coated papers to the usual techniques of toning and chemical reduction.

### **RETOUCHING**

ILFOSPEED RC DIGITAL prints can be spotted and air brushed using dye (for a glossy finish) or watercolour (for a matt finish), in the same way as most resin-coated papers.

When knifing resin-coated prints, dampen the area to be knifed, and 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.

### **MOUNTING**

ILFOSPEED RC DIGITAL prints can be mounted in one of the following ways. Where prints are to be mounted for long periods (in excess of 12 years), the dry mounting method is recommended.

### **Dry mounting**

ILFOSPEED RC DIGITAL prints can be dry mounted in the usual way. The use of a silicone release paper is recommended for the .44M pearl surface whereas a foil overlay is recommended for glossy 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 (144-165°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 ILFOSPEED RC DIGITAL paper 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 ILFOSPEED RC DIGITAL.

### **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 ILFOSPEED RC DIGITAL 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

ILFOSPEED RC DIGITAL paper can be mounted onto porous surfaces (e.g. 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 (e.g. metal) is not recommended.

### DISPLAY OF PRINTS

It is recommended that prints made for display are 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 (sepia) toning also gives an image of increased stability as do polysulphide toners (e.g. Kodak Brown Toner) but these will also give a significant warm, brown shift in image tone.

Some metal replacement toners can also protect the image, e.g. gold and platinum toners, but also with a shift in image tone. Other metal replacement toners such as blue (iron) and red (copper) give no extra protection and the image might fade. Dye toners give no protection to the image.

Also recommended for image protection with a minimal effect on image tone are image stabilising solutions such as Agfa Sistan, Tetenal Stabinal and Fuji AgGuard.

Laminating and encapsulation may also help to protect the image but ideally, prints should be toned before laminating and encapsulation.

### STORAGE

#### Unprocessed paper

Store unused ILFOSPEED RC DIGITAL paper in a cool, dry place in its original packaging. Avoid conditions of high temperature and/or high humidity. ILFOSPEED RC DIGITAL will keep in excellent condition for up to two years when stored as recommended.

#### Prints

ILFOSPEED RC DIGITAL prints processed as recommended in this fact sheet will have a more than adequate storage life for most purposes. However print life will be shortened in adverse storage conditions, or if the print is exposed to oxidising gases.

#### 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 ISO standard on print storage (ISO 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 ten 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 cycle of +/- 2°C/4°F; and a stable humidity between approximately 20%RH and 50%RH with a maximum daily cycle of +/- 10%.

For extended term storage: a stable temperature up to 18°C/65°F (but preferably lower) with a maximum daily cycle of +/- 1°C/2°F; and a stable humidity between approximately 30%RH and 50%RH with a maximum daily cycle of +/- 5%

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.

**HARMAN technology Limited**, Town Lane, Mobberley,  
Knutsford, Cheshire WA16 7JL, England  
[www.ilfordphoto.com](http://www.ilfordphoto.com)