

ILFORD**HARMAN** technology Limited

TECHNICAL INFORMATION

GALERIE RC DIGITAL SILVER
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 GALERIE RC DIGITAL SILVER 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/m²), water resistant, resin-coated base.

GALERIE RC DIGITAL SILVER has been designed using the very latest black and white silver halide emulsion technology. It has spectral sensitivity and exposure characteristics specially suited to optical digital exposure systems with tricolour laser enlargers or LED systems produced by Durst, Océ, Polieletronica, Fuji and others.

GALERIE RC DIGITAL SILVER 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.

GALERIE RC DIGITAL SILVER is available in the ILFORD Pearl 44M and Glossy 1M surface finishes as mural roll formats up to 127cm (50in) wide and 30m (98ft) in length.

IMPROVEMENTS OVER ILFOSPEED RC DIGITAL

GALERIE RC DIGITAL SILVER is an upgrade from ILFORD ILFOSPEED RC DIGITAL and features a completely redesigned emulsion. The new emulsion offers significant improvements over the previous product. Namely :-

- Better Dmax – Up to 2.15 OD.
- Improved latent image characteristics post exposure.
- Optimised sensitometric curve shape to improve ease of calibration and calibration accuracy.
- Improved speed and better RGB sensitivity balance.
- Better highlight / shadow detail as a result of more accurate calibrations

EXPOSURE

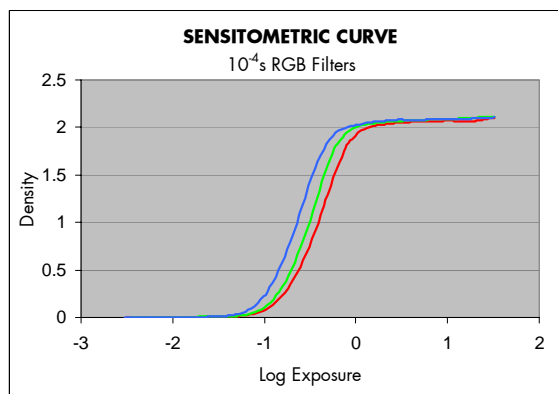
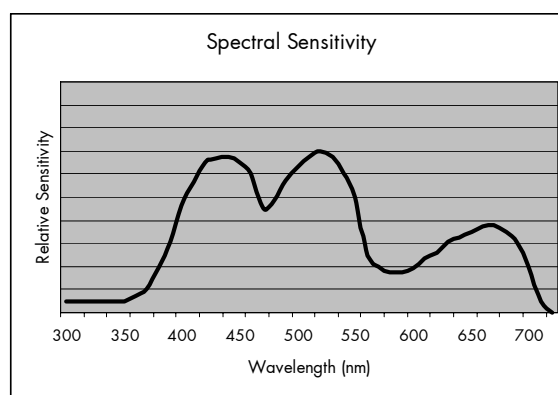
Most digital enlarger systems are designed to expose colour photographic paper. Support for Black and White is limited, but excellent results can be achieved with some experimentation.

Safelight recommendations

GALERIE RC DIGITAL SILVER has panchromatic sensitivity therefore we recommend that all handling of unpacked paper is done in total darkness.

SPECTRAL SENSITIVITY

Wedge Spectrogram to tungsten light (2850K)



GALERIE RC DIGITAL SILVER 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.

Exposing light sources

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

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CALIBRATION FOR USE

The information we provide below is intended as a good starting point for calibration. It should be noted that manufacturers of digital photo printers support for Black and White is relatively limited and some experimentation may be required in order to achieve the best results.

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

To calibrate any of the above models for GALERIE RC DIGITAL SILVER follow the manufacturer's standard calibration sequence. When using the paper for the first time, create and save a new product file for "ILFORD GALERIE RC DIGITAL SILVER 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 GALERIE RC DIGITAL SILVER use the figures in the following table.

	Dmax	Basic Calibration (Starting values)	
R	205	Y	0.00
G	210	M	25
B	210	C	35
		D	135

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 GALERIE RC DIGITAL SILVER 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

GALERIE RC DIGITAL SILVER 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.

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 GALERIE RC DIGITAL SILVER must be added into the

enlargers' look up tables. These files are available to download direct from the product page on our website, or from our FTP server.

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 = 0, Blue = 50, Green = 50

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 "GALERIE RC DIGITAL SILVER". This folder should be added to the files in X:\picto\blend\material20\ where X: can be either drive C: or D:

If using System manager 4.2 to calibrate and image, then just the target file needs adding to the correct folder; C:\Picto\targets

The GALERIE RC DIGITAL SILVER product profile information can either be downloaded from the ILFORD PHOTO website at www.ilfordphoto.com or made available to users through your local ILFORD representative.

Fuji Frontier BW

Fuji Frontier 3 series machines are quite easily converted to Black and White and produces excellent results. Please contact your HARMAN technology representative for more information.

A black and white Calibrero device (available from HARMAN technology Ltd) is needed for accurate calibration.

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 some adjustment to the contrast and density is applied. There are many third party software applications suitable for converting colour images to B&W. We would recommend colour files finally be converted to Greyscale, prior to printing. The smaller files are much quicker to RIP and write.

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Latent Image Stability

GALERIE RC DIGITAL SILVER has very stable latent image characteristics in the 0-1 hr period post exposure making very accurate calibration possible. No significant change in image density is observed post exposure for a period of 24 hours prior to processing making image quality over long runs consistent.

Dimensional Stability

GALERIE RC DIGITAL SILVER 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.

MACHINE PROCESSING

GALERIE RC DIGITAL SILVER 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 GALERIE RC DIGITAL SILVER use ILFORD 2000RT developer/replenisher and ILFORD 2000RT fixer/replenisher.

ILFORD 2000RT chemicals are recommended for processing GALERIE RC DIGITAL SILVER, these are normally 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.

** **NB** Black and White Frontier installations require chemicals diluted to 1+3.

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 PHOTO website at

www.ilfordphoto.com.

To ensure that GALERIE RC DIGITAL SILVER 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 GALERIE RC DIGITAL SILVER 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 approx 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 0.06 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	90
25/77	60
30/86	45
35/95	40
40/104	35

The preferred temperature range is 25-35°C/77-95°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 300-350ml/m² (28-33ml/ft²) of paper processed.

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Suggested fixing times

The same times and temperatures as for development can be used for fixing. 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/m² (28-41 ml/ft²) of paper processed. For non-replenished systems, the maximum paper throughput is 4m² per litre (43ft²/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 15°C/59°F.

Hot air drying

Use temperatures up to 85°C/153°F.

DISH/TRAY AND TROUGH PROCESSING

GALERIE RC DIGITAL SILVER 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 15°C/59°F. A longer wash time should not cause any problem provided the total wet time does not exceed 15 minutes.

TONING AND CHEMICAL REDUCTION

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

RETOUCHING

GALERIE RC DIGITAL SILVER 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

GALERIE RC DIGITAL SILVER 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

GALERIE RC DIGITAL SILVER 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 GALERIE RC DIGITAL SILVER 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 GALERIE RC DIGITAL SILVER.

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 GALERIE RC DIGITAL SILVER 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

GALERIE RC DIGITAL SILVER 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.

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

Prints

GALERIE RC DIGITAL SILVER prints processed as recommended in this technical guide 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 technical guide 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 technical guides are available which describe and give guidance on using ILFORD PHOTO products. Some products in this technical guide might not be available in your country.

HARMAN technology Limited, Town Lane, Mobberley, Knutsford, Cheshire WA16 7JL, England
www.ilfordphoto.com