

## INFORMATION SHEET

# MAKING YOUR FIRST BLACK & WHITE PRINT

A STEP BY STEP GUIDE TO PRINT PROCESSING FOR HOBBYISTS,  
STUDENTS AND SCHOOLS

**FAST AND EASY PRINTING**

Making a black and white print with ILFORD materials is a quick and simple three-step process. Two or three minutes after exposing the paper you can turn on the darkroom light and admire your print as it washes in running water. After another two minutes you can hang it up to dry.

ILFORD MULTIGRADE IV RC paper is the perfect choice if you are making your first print. Controlling the print contrast is easy. By using MULTIGRADE filters 12 contrast grades can be achieved from 00 (very soft) to 5 (very hard), enabling a wide range of negative types to be printed. Once you have mastered the basics, then there are no limits on the creative options that you can try — some of the techniques are outlined in this leaflet.

**PRINTING EQUIPMENT**

You can use any enlarger to make prints on MULTIGRADE IV RC DeLuxe paper: one of the two ILFORD MULTIGRADE filter sets, above or below the lens, is sure to fit your model. You will also need some of the darkroom accessories shown in the illustration — plus your negatives, of course, and a pack of MULTIGRADE IV RC DeLuxe paper.

A number of household items are also needed: a clock with a clear second hand, a pair of scissors, a squeegee or sponge, and plastic pegs or a hair dryer. As you gain expertise, you may wish to buy a focusing aid, a dedicated darkroom timer, and a puffer brush for removing dust from negatives.

If possible, buy different colour processing dishes/trays for each solution or mark each dish/tray clearly developer, stop and fix, and store chemicals in matching colour containers. A trace of fixer or stop bath can contaminate the developer, leading to inconsistent results or — at worst — completely blank prints.

**EQUIPMENT ACCESSORIES**

ILFORD makes a range of darkroom accessories which can aid your darkroom skills considerably. The accessories are available from photographic dealers and include the following:

**SAFELIGHTS**

The SL1 and DL10 safelights can be used on a work top or by attaching them to the wall. The SL1 has an orange filter specially designed for black and white papers. The DL10 can be fitted with a variety of different 20.3x25.4cm (8x10 in) safelight filters. The ILFORD 902 safelight filter is recommended for all ILFORD printing papers.

**DT30**

This digital thermometer has an LED display which gives a stabilised reading 15 seconds after immersion in your developer, stop bath or fixer.

**EM10 EXPOSURE MONITOR**

This measures the amount of exposure needed to make a black and white or colour print. It is battery operated and simple to use.

## USING 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**

Do not use utensils for food preparation to make up and store photochemicals. Keep all foodstuffs away from areas where photographic chemicals are being prepared and used.

Do not use soft drink bottles to store chemicals. Always label containers clearly, and store them safely, out of reach of children.

Do not allow children to use photochemicals unsupervised.

## THE CHEMICALS YOU NEED

For your first print, use the ILFORD chemicals mentioned below. They are easy to mix and use, because they are supplied in liquid form. All are available in small bottles, so they are economical if you make prints only occasionally.

ILFORD MULTIGRADE developer makes the image appear on the paper. You should mix up only as much developer as you need to fill the developing dish/tray about half full: pour the used solution down the drain after finishing your processing session.

ILFORD ILFOSTOP stop bath brings development to an end, and prolongs the life of the fixer.

ILFORD RAPID FIXER makes the developed image permanent. ILFORD RAPID FIXER works quickly.

You can make up and use ILFOSTOP and ILFORD RAPID FIXER for more than one printing and processing session.

## PROCESS SUMMARY

For MULTIGRADE IV RC Deluxe paper

Step	Time	Temperature
<b>Development</b>		
ILFORD MULTIGRADE developer diluted 1+9 or ILFORD PQ UNIVERSAL developer diluted 1+9	1 minute  2 minutes	20°C/68°F  20°C/68°F
<b>Stop bath</b>		
ILFORD ILFOSTOP diluted 1+19	10 seconds	About 20°C/68°F — preferably no warmer than 24°C/75°F and no cooler than 18°C/64°F
<b>Fix</b>		
ILFORD RAPID FIXER diluted 1+4	30 seconds	as above
<b>Wash</b>	In running water for 2 minutes	No cooler than 5°C/41°F
<b>Dry</b>	Variable	Room temperature or with a cool hair dryer

## CONTROLLING PRINT CONTRAST

### Multigrade filter sets

To work with ILFORD MULTIGRADE materials, you need to be able to control the colour of the light from the enlarger — usually by putting filters into the light path. White light produces a print of normal contrast, about grade 2; yellow (green) light reduces contrast, and magenta (blue) light increases it.

MULTIGRADE filters are available in kits of 12 filters, covering in half grades the equivalent of paper grades 00 to 5. If your enlarger has a filter drawer, choose a set of unmounted square filters. There is also a below-the-lens kit of mounted filters for enlargers that do not have a filter drawer.

We strongly recommend that you use MULTIGRADE filters to control the colour of the light — even if your enlarger is equipped with a colour head. MULTIGRADE filters are density-balanced so that exposure times remain constant at contrast levels lower than grade 4. If you switch to filter 4 or a higher contrast filter, you need only double the exposure. If you nevertheless wish to use a colour head, you will find filtration recommendations below.

### Colour enlargers

Refer to the chart below to set filtration if you use the colour head of your enlarger instead of individual MULTIGRADE filters. With a colour head you will need to make a fresh exposure test each time you change contrast — or determine exposure compensation values by experiment. Most colour head enlargers will be provided with a chart with compensation values to indicate what increase in exposure time can be anticipated when the contrast is changed.

Durst	Kodak	Meopta
Dunco	Advena	Meopta
Durst	Beseler	
Kaiser	Chromega	
Kienzle	De Vere	
Leitz	Fujimoto	
Lupo	IFF	
	Jobo	
	LPL	
	Omega	
	Paterson	
	Simmard	
	Vivitar	

MULTIGRADE filter	Durst (max 170M)	Durst (max 130M)	Kodak	Meopta
00	150Y	120Y	199Y	150Y
0	90Y	70Y	90Y	90Y
1/2	70Y	50Y	70Y	70Y
1	55Y	40Y	50Y	55Y
1 1/2	30Y	25Y	30Y	30Y
2	0	0	0	0
2 1/2	20M	10M	5M	20M
3	45M	30M	25M	40M
3 1/2	65M	50M	50M	65M
4	100M	75M	80M	85M
4 1/2	140M	120M	140M	200M
5	170M*	130M	199M	—

\*Some enlargers in this group have a maximum magenta setting higher or lower than 170M. For these enlargers, set the highest possible magenta value as an approximate equivalent to filter 5.

### Going further

ILFORD MULTIGRADE IV RC DeLuxe paper is a uniquely versatile material. Using the techniques suggested below, you can exploit the paper's qualities to print from difficult negatives, create nostalgic sepia prints when combined with toning, or eliminate grey tones for striking images. There is only room to outline these creative techniques here.

### Divided filtration

With a single sheet of MULTIGRADE paper you can make a print of any contrast — but why stop at one contrast level? Some negatives have high contrast overall, and low contrast in a small area. You can deal with this problem by making two exposures using the same negative and paper; set different levels of contrast for each exposure, and use your hand or a piece of card to shade first one part of the print, then the other.

### Printing from colour negatives

MULTIGRADE paper produces reasonable black and white prints from colour negatives. Use a MULTIGRADE filter 3 or 4 to set an initial contrast level.

### Paper negatives

Use a sheet of glass to press a washed and dried print face-to-face with a fresh sheet of MULTIGRADE paper, then expose the 'sandwich' to the light of the enlarger, using a MULTIGRADE filter 5. This produces a paper negative which you can again contact print in the same way to eliminate grey tones, making the print entirely black and white.

### Toning

All MULTIGRADE papers respond well to toning. This traditional process turns the blacks of the print to a warm brown or some other colour. Particularly recommended are MG WARMTONE FB and MG WARMTONE RC. Ask your local photo dealer about toning kits.

### **ILFORD PAPERS**

ILFORD manufactures a range of papers to suit your individual printing needs. The processing procedure outlined in this information sheet makes reference to ILFORD MULTIGRADE RC DeLuxe but this is just one of eight black and white papers that ILFORD produces for general photographic use. More information about all ILFORD products is available from our website at [www.ilford.com](http://www.ilford.com).

### **MULTIGRADE PAPERS**

ILFORD MULTIGRADE papers are popular because they make printing extremely easy and economical. With one box of paper you get 12 contrast steps from 00–5 — equivalent to 6 boxes of graded paper.

**MULTIGRADE IV RC DeLuxe** MULTIGRADE IV RC papers set the standards by which other resin coated papers are judged. MULTIGRADE IV RC DeLuxe has a medium weight RC base and is available in glossy, pearl and satin surfaces. MULTIGRADE IV RC Portfolio has a double weight RC base and is available in glossy and pearl surfaces. MULTIGRADE IV RC is extremely easy and quick to process and dry.

### **MULTIGRADE RC COOLTONE**

A general purpose mid-weight resin coated printing paper for all those photographers and printers who desire a cool image tone. Its surface characteristics, cool image tone and bright white base tint can produce images that appear sharp and crisp with more 'punch'. It is available in both glossy and pearl surfaces in a variety of popular cut sheet sizes.

**MULTIGRADE IV FB FIBER** MULTIGRADE IV FB Fiber is coated onto a traditional double weight fibre base, giving unmounted prints a distinctive 'feel' similar to that of lightweight card. Some collectors and gallery curators prefer fibre prints for their proven long term stability, and in addition the print surface is easier to retouch. MULTIGRADE IV FB Fiber is available in glossy and matt surfaces. However, prints on fibre-based papers need more careful processing and washing than resin coated (RC) prints, and fibre-base (FB) prints do not dry flat as RC prints do.

### **MULTIGRADE WARMTONE**

MULTIGRADE RC WARMTONE (on an RC base) and MULTIGRADE FB WARMTONE (on an FB base) are specially designed to be receptive to all toners, and can be toned to give subtle colour changes or dramatic effects. MULTIGRADE RC WARMTONE is available in glossy and pearl surfaces. MULTIGRADE FB warmtone is available in glossy and semi-matt surfaces.

### **GRADED PAPERS**

ILFORD manufactures graded paper for the specialist printer and for applications where variable contrast is not necessary.

### **ILFORD ILFOSPEED RC DeLuxe**

This graded RC paper is available in a range of grades 0–5, with glossy, semi-matt and pearl surfaces. The resin coated base ensures that processing, washing and drying are quick and easy.

### **ILFOBROM GALERIE FB**

Available in a range of grades 1–4 with glossy and matt surfaces, ILFOBROM GALERIE FB is a paper of uncompromising quality. Processing this fibre-based material is exacting, but in the hands of an expert printer, ILFOBROM GALERIE FB brings out every detail and tone of even the most subtle negatives.

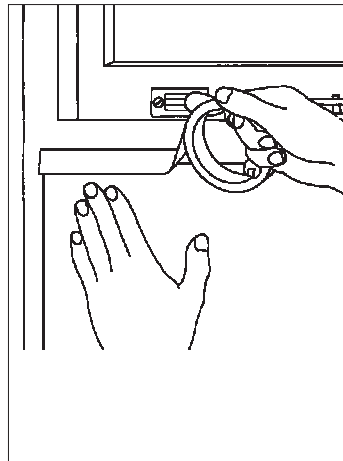
## HOW TO MAKE YOUR FIRST BLACK AND WHITE PRINT

Excellent prints can be obtained from your black and white negatives by commercial processing laboratories, and most photofinishers and minilabs. So why make your own prints? Print making is a creative technique that is enjoyable and fulfilling. Producing your own prints allows you to choose the main area of interest for yourself and enlarge it to almost any size and shape desired. By 'dodging' and 'burning', that is, using your hands or pieces of card to hold back light from or give extra light to selected areas of your print you can emphasise key elements of the picture. Other simple techniques can be used to great effect such as using different contrasts for different areas of the print or using two or more negatives to produce one print. Developing your skills as a printer will allow you to make outstanding individual prints that give you great satisfaction and pleasure.

Making the most of your negatives is not difficult. You do not need a purpose-built darkroom, just a room that can be blacked out. You do not even need running water, because the washing stage of print-making takes place in daylight. Whatever room you choose for your print darkroom workspace you must try to divide it into two areas. A dry area for the enlarger, print composition, negative handling, etc. and a wet area for mixing solutions and print processing. You should try to create a physical divide between the two such as having wet and dry work benches set apart from one another or if the same bench must be used erect a splash barrier.

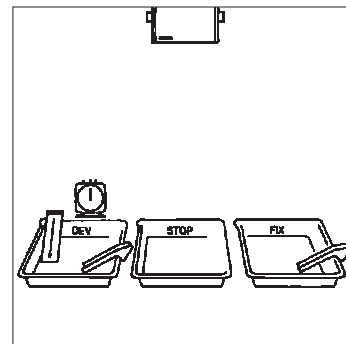
You do need an enlarger, but it need not be expensive: even the simplest is capable of making fine prints on ILFORD MULTIGRADE paper.

## 1 Setting up your darkroom



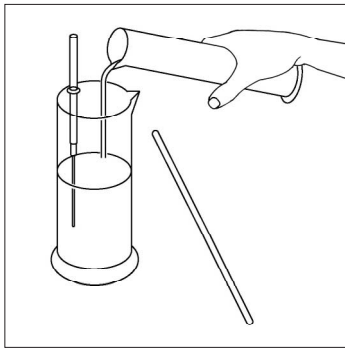
Kitchens, bathrooms, lofts, attic, cellars and basements and spare rooms have been used as either temporary or permanent darkrooms. The room you have chosen for your darkroom needs to be completely blacked out to stop light from entering. For windows use thick card cut to shape and held in place with black canvas tape. For doors use tape or black cloth or canvas to seal the edges. While absolute light-tightness is not required for black & white printing and processing, there should be no visible cracks.

## 2 Setting up your safelights and equipment



Set up your safelight (e.g. the ILFORD SL1 safelight) at least 1.2m/4ft from the developing dish. Lay out three processing dishes, label them DEV, STOP and FIX, two pairs of print tongs, and a clock for timing development. Then mix up the processing chemicals using water at about 23°C/73°F. The aim is to process at a working temperature of 20°C/68°F +/- 1°C/2°F, so a few degrees are allowed for heat lost in mixing and cooling.

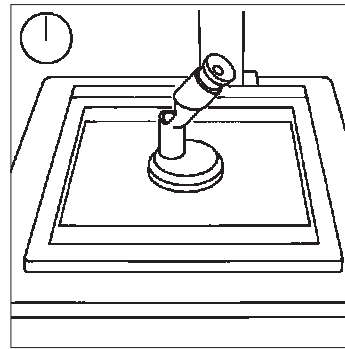
### 3 Mixing your chemicals



Mix up the developer solution 1+9 by measuring out 60ml of ILFORD MULTIGRADE developer in a 150ml cylinder, and adding this to 540ml of water in a 600ml cylinder. For the stop bath, add 30ml of ILFORD ILFOSTOP stop bath to 570ml of water (1+19). For fixing, add 120ml of ILFORD RAPID FIXER to 480ml of water (1+4). (This gives enough processing solutions to process about 40 20.3x25.4cm/8x10in MULTIGRADE RC prints).

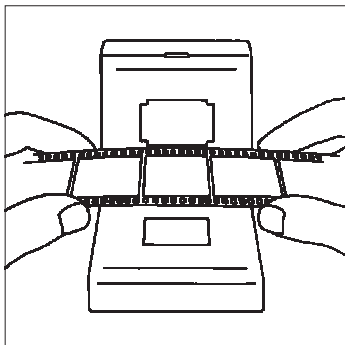
The chemicals are now ready to place in their respective dishes.

### 5 Focusing your image



With the lens at full aperture, turn on the enlarger. Place an easel loaded with a spare piece of paper on the baseboard. Move the enlarger head to frame and focus the image. You can use a special 'focus finder' placed in the centre of the image to focus on the negative grain for the sharpest possible image.

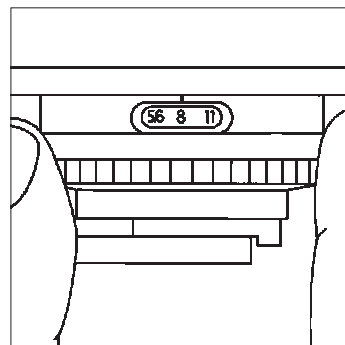
### 4 Choosing your negative



Choose the negative for printing, and make sure it is clean. Remove any dust with a puffer brush. Hold the negatives so you can read the edge numbers, then turn the negatives round (not over) so the numbers are furthest away from you. Place the negatives in the negative carrier of the enlarger. Slide the negative carrier into place. Switch on the safelight and switch off the roomlights.

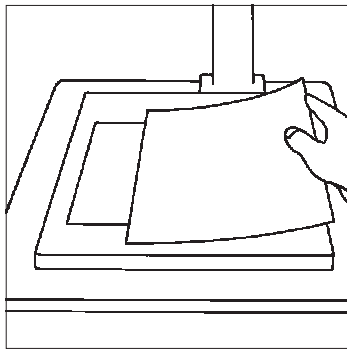
You can check the negatives are the right way round by seeing if the edge numbers are projected onto the baseboard the right way round.

### 6 Setting the aperture (f stop)



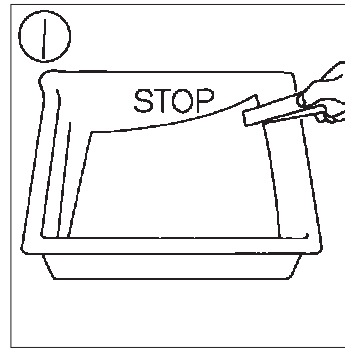
Turn the lens' aperture ring from full aperture to f8 to increase edge sharpness and give more even illumination. Count the number of clicks involved, so you can do it without looking at the lens. The actual aperture used can vary, but should give an exposure time of about 10 seconds. Shorter times are hard to time accurately; longer ones are tedious. Slide a MULTIGRADE filter 2 into the filter drawer of your enlarger, or into the holder below the lens. This filter produces a good range of print tones with an average negative. If you have a colour enlarger, you may prefer to use the colour head to dial in filtration equivalent to a MULTIGRADE filter 2.

## 7 Exposing a test print



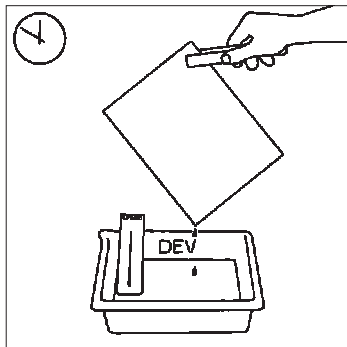
With the safelight on, and the room lights off, put a sheet of MULTIGRADE paper into the easel, shiny side up. (Reseal the packet carefully.) You are now ready to make a test print. Switch on the enlarger lamp and expose the whole sheet for two seconds. Cover one-quarter of the sheet with opaque card, and expose the rest for another 2 seconds. Cover half of it, and expose the rest for another 4 seconds. Cover three-quarters, and expose the last part for another 8 seconds.

## 9 Stopbath



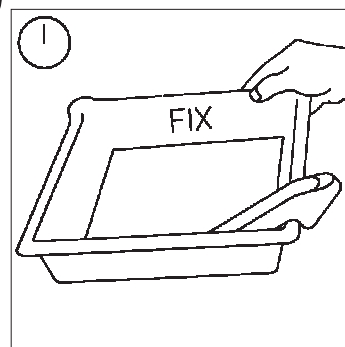
As one minute shows on the timer, quickly and smoothly slide the developed paper into the stop bath. take care not to contaminate the developer tongs with the stop bath. Rock the dish for about 30 seconds. Use the second pair of tongs (from the fixer) to lift the print while solution drains from it, and transfer it to the dish of ILFORD RAPID FIXER solution. (The timing of this step is not critical.)

## 8 Developing a print



Check the thermometer in the dish of developer (20°C/68°F) and set the timer to zero. Slide the paper quickly and smoothly into the developer, making sure there are no air bubbles on the shiny surface. Start the timer. Rock the developer dish continuously backward and forward to send the solution gently over the print. After 50 seconds, use tongs to lift the paper out, and drain off the developer.

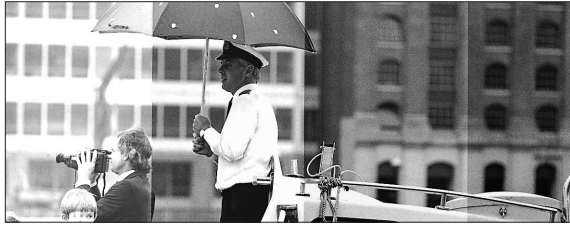
## 10 Fixing a print



Slide the paper into the dish of fixer, and rock the dish to get a good flow of chemicals over the surface of the print. Fixing takes only 30 seconds in fresh solution. It does not matter if this time is exceeded slightly, but prints should not be left in the fixer for minutes on end. If not washing a print straight away, store it in a dish of clean water.



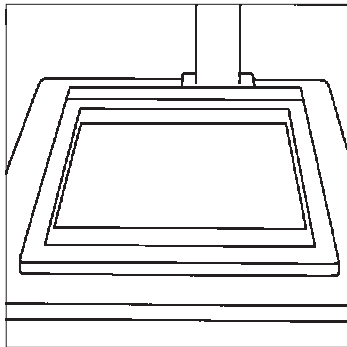
## 11 Examining the test print



Rinse the test print and examine it under a bright light (daylight or room lighting). It shows four strips, each one stop darker than the one next to it. The lightest had only 2 seconds exposure; the next, 4 seconds. The third strip received 8 seconds (2+2+4), and the darkest strip received 16 seconds (2+2+4+8). Note these times and the aperture used on the test for reference, so that you can learn from your results. From the test, estimate the correct exposure for the final print.

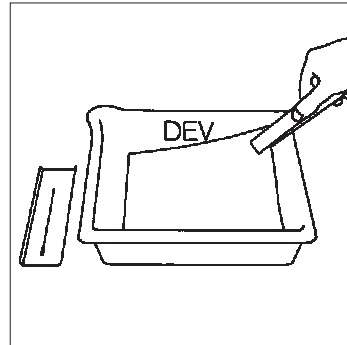
One strip should look about right, but if one strip is too dark and the next too light, the right exposure will be somewhere in between. If all the strips are too light, open up the aperture by two stops and repeat the test. If they are all too dark, close it by one stop and repeat the test.

## 12 Making the final print



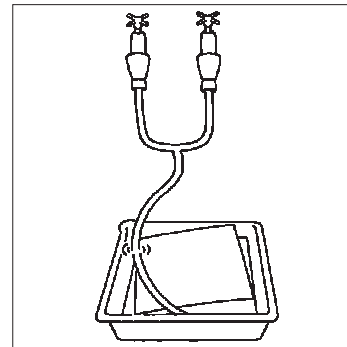
Switch the room light off and, by safelighting, position the easel under the enlarger to frame the print as you want it. Take out a new sheet of MULTIGRADE paper, and place this on the easel. Using the timer, give the paper the correct exposure worked out by examining the test print.

## 13 Repeat the processing steps



Repeat the processing steps (8-10) exactly as you did before. Again, check the temperature of the developer and time the development stage. If the developer has cooled more than a few degrees, warm it up by pouring it into a 600ml cylinder and running hot water over the outside of it. (The temperature of the stop and fix are not as critical.)

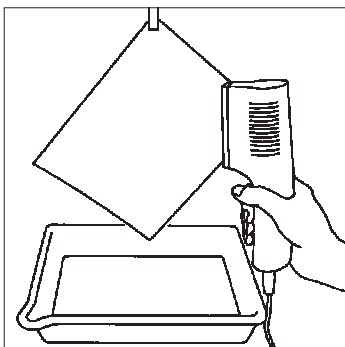
## 14 Wash the final print



Wash the print for 2 minutes in a good flow of water ideally at about 20°C/68°F but cold water above 5°C/41°F will give adequate washing. Empty the wash tray a few times to ensure a complete change of wash water, or use rubber tubing to syphon water from the bottom of the tray.

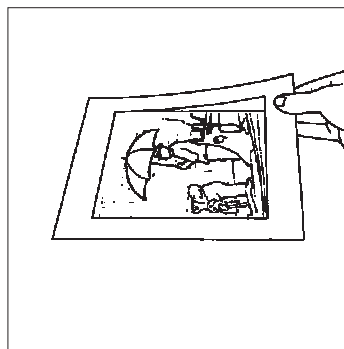


## 15 Drying



After the wash, drain the print and use a squeegee or sponge to remove any excess water. Attach a wooden or plastic clip to one corner, and hang the print over a drip tray to dry. Drying can be speeded up by using a hairdryer on a low setting, kept moving and about 30cm/1ft away from the print. MULTIGRADE prints dry naturally in a warm room in under 30 minutes.

## 17



Even a correctly exposed and processed print may not have a full range of tones if the negative had too much or too little contrast. If your print looks too grey, and lacks either solid black shadows or clean white highlights (or both) use a MULTIGRADE filter 3 or higher at step six. Use a MULTIGRADE filter 1 if there is too much contrast, and your print is dominated by extreme black and white tones, with too few shades of grey in between.

## 16 Examining the final print



Examine the final print by bright lighting. The picture should contain a full range of tones from small areas of pure white (as white as the paper edges) to small areas of intense black, with all the greys in between. If it does not, check that you followed the instructions accurately — particularly step 8. Although the image appears within seconds, the print needs a full 50 seconds to mature. Don't be tempted to remove it too soon!

All solution volumes in this step by step guide are metric measurements. If you use US liquid measurements please use the table of conversion factors below.

1 litre = 33.8 US fluid oz  
3.8 litres = 1 US gallon  
29.6 ml = 1 US fluid oz.

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.

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