

**IMAGO DIRECT POSITIVE PAPER is a black and white paper that is direct positive orthochromatically sensitized. However the emulsion is not poured onto an FB or RC base, but rather a polyester base. The world-famous Ilfochrome® paper also uses a Melinex base.**

The DPP can be used both for shooting and enlargement. It can be used in large-format or pinhole cameras as sheet film. It is also suitable for photograms and experimental photography.

The sensitivity is between 3 and 6 ISO.

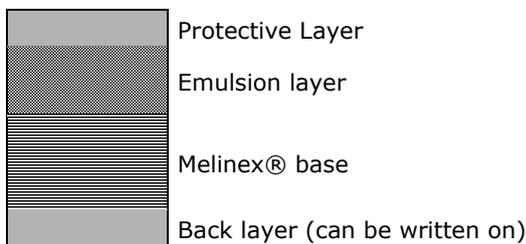
It is relatively high contrast, and corresponds with a gradation of 3 to 4; the contrast range is roughly equivalent to a slide film with around 4 to 5 apertures.

It delivers prints with very deep, rich blacks and luminous whites, with excellent reproduction. The print tone is neutral.

**Summary of important product features:**

- Low sensitivity, orthochromatically sensitized black and white paper, can be used at 3-6 ISO both as shooting and enlargement material
- Excellent maximum density
- High-quality, durable and modern polyester base, also known as Melinex, in high-gloss Ilfochrome® look.
- Medium to high contrast, which can be influenced both with pre-flashing and the developer
- Very good reciprocity behavior, even after multi-minute exposures, which is especially important with pinhole cameras
- Good tone reproduction, with fine differentiations in the color spectrum
- Loading of the sheet film holders and processing possible with indirect red light (test first)
- Optimal flatness thanks to high-quality polyester base

**Layer structure:**



**Formats:**

6,5 x 9 cm	
9 x 12 cm	
10,2 x 12,7 cm	4 x 5 inch
10 x 15 cm	
12,7 x 17,8 cm	5 x 7 inch
13 x 18 cm	
18 x 24 cm	
20,3 x 25,4 cm	8 x 10 inch
24 x 30,5 cm	9.5 x 12 inch
27,9 x 35,6 cm	11 x 14 inch
30,5 x 40,6 cm	12 x 16 inch
40,6 x 50,8 cm	16 x 20 inch
50,8 x 61 cm	20 x 24 inch

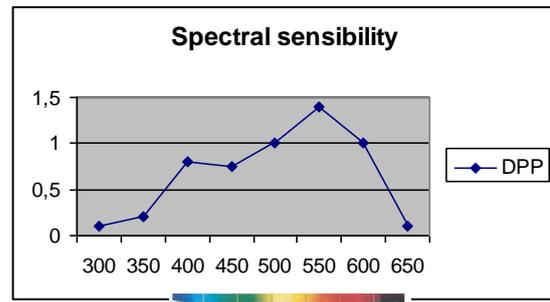
More formats on request

**Packaging / Note**

The label of the box lists the: Material description, format, item number, sensitivity and darkroom safelights needed.

**Technical exposure data**

**Spectral sensitivity:**



**Gray tone card:**

Black	1,64	1,81	White	0,00	0,00
Gray	1,28	1,69	Gray	0,28	0,02
Gray	0,90	0,88	Gray	0,66	0,16
Red	0,54	1,43	Cyan	0,63	0,05
Green	0,84	0,44	Magenta	0,49	0,26
Blue	1,00	0,46	Yellow	0,16	0,05



The effective density of the various colors tells us how they are reproduced by the DPP, i.e. whether they are under- or overexposed. These exposures were shot in daylight with a slightly cloudy sky, i.e. with neutral lighting conditions.

The medium gray and maximum density match:

- The sensitivity is 6 ISO
- The tone reproduction is optimally adjusted
- Strong underexposure in the red tones

Minor, linear overexposure in the other color ranges

**Storage:**

Cool and dry

**DPP as exposure material**

The material can be used like a sheet film in your sheet film holder. This must be loaded in complete darkness or with muted dark red light, as is the case for orthochromatically sensitized films. Your only concern is that the image will be reproduced as a mirror image.

The sensitivity of 3 to 6 ISO is greatly dependent on the exposure situation and the lighting conditions. Be aware that the difference can be up to 100%! Even a deviation of 30% (1/3 of an aperture) can make an image unusable. The higher the blue component of the light, the higher the sensitivity. On the other hand, the higher the red component of the light, the lower the sensitivity.

Daylight, cloudy day.	= 5-6 ISO
Daylight, sunny, with some clouds	= 4-5 ISO
Daylight, sunny	= 4 ISO
Daylight, sunny, but at sunrise, sunset	= 3 ISO

**Lighting**

For photographic applications with various cameras (large format, pinhole or other camera systems), there are two different options for exposure - **with** or **without pre-flash**.

A pre-requisite for a good result is always precise exposure metering.

**No pre-flash:**

Images without pre-flash are very dependent on the exposure conditions, and can lead to a somewhat graphic effect and high contrast images with reduced gray tones.

**Pre-flash technique:**

It is necessary to use subtle pre-flash in order to influence the steep tone gradation or high contrast, and achieve a defined image with all the gray tones.

The pre-flash is carried out with an opal diffuser (diffusing disc, frosted glass pane) directly before the actual exposure. A prerequisite is correct exposure metering. 2-3 light values are

deducted from the measured value (1/3 to 1/2 f-stop), the diffusing disc is placed directly in front of the lens and then it is subtly pre-flashed.

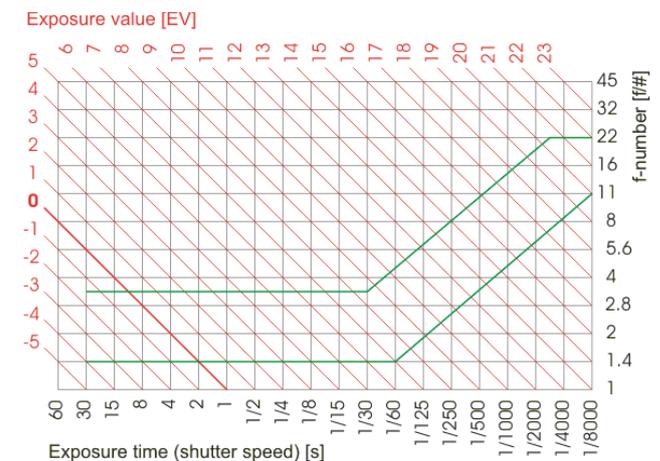
Example with the same aperture + time: measured value f 8, 8" - initially pre-flashed through the opal diffuser with f 8, 2", achieving a good approximate value for the pre-flash. This can be individually increased or decreased. (e.g. up to f 8, 8" main exposure, 2" pre-flash = -2 f stop)

Example with the same time + aperture: measured value f 8 - exposed with f 16 = 2 stops underexposed creates a good approximate value for the pre-flash. This can be individually increased or decreased.

When this technique is used the ISO sensitivity is between 4 and 6.

Tip: a few trial runs are required

Measured: f 11 2" pre-flash - 7" main exposure - ISO 6

**F/stop table****Transferral of color and B/W slides:**

A stepped grey wedge, from white to black with a lot of gray tones, can be created in a darkroom with an enlarger. This is a test to determine the exposure time for the pre-flash.

The first recognizable step after the deepest black is the right exposure time. The entire paper should be exposed with this, and then the photographed motif. This achieves a good differentiation over the entire tonal range.

**Darkroom lighting**

It is important to use **dark red** darkroom lighting, such as that used for orthochromatic films, to prevent fogging of the paper.

We explicitly recommend Safelight Ilford 906, or similar bulbs with this spectral composition.

The exposure distance should also be

considered (further away), and indirect exposure is also recommended.

**Attention:** if these parameters are not observed then the results will not be optimal - the paper will be foggy, and the contrasts and maximum density will be lost.

**Development process**

The paper should be developed immediately after exposure so that no changes occur to the latent image.

IMAGO DIRECT POSITIVE PAPER can be processed in the same processing solutions as standard B/W photo paper, either in a tray or with automatic paper development machines.

The stable layer means that pre-hydration is not necessary.

Development: the development is possible in any standard paper developer, with a dilution for normal contrast. Depending on the developer we recommend a slightly longer development time of 2 to 4 minutes, in order to optimize the maximum density. The Rollei Print Neutral RPN in a dilution of 1+9 is particularly suitable. The processing temperature of the developer bath should be between 20 °C and 24 °C.

**Stop bath**

The stop bath between the development and fixer baths prevents:

- Post development
- The contamination of the fixer bath with alkaline developer

Maco Ecostop	1+19	1 minute
Rollei Citrin Stop	1+19	1 minute

**Fixer bath**

The fixer bath clarifies the layer, removes the sensitive silver salt in unexposed and undeveloped areas, and stabilizes the image silver (the ideal conclusion of the process is then in the final rinse, where the not easily soluble silver salts are completely removed).

A reference point for the correct fixer time is double the time needed for clarification of the film. With standard fixer baths this normally means a fixer time of between 3 and 5 minutes.

**Final bath**

The final bath with a wetting agent guarantees even run-off of the water, so that no drops, spots or streaking occurs. Some wetting agents also guarantee protection from fungus and bacteria formation. High dilution (between 1+100 and 1+1000) and gentle movements

should be used to minimize the creation of foam, as this would lead to unsatisfactory drying.

**Possible sources of error:**

Image is too bright - it is overexposed  
= too much light

Image is too dark - it is underexposed  
= too little light

The image is dull - no blacks

= incorrect darkroom lighting or lighting too close to the paper, developer too diluted, development time too short, developer temperature too cold

Image has drying spots  
= use wetting agent.

**Color rendering and example images**



Kodak and Jobo color and gray card

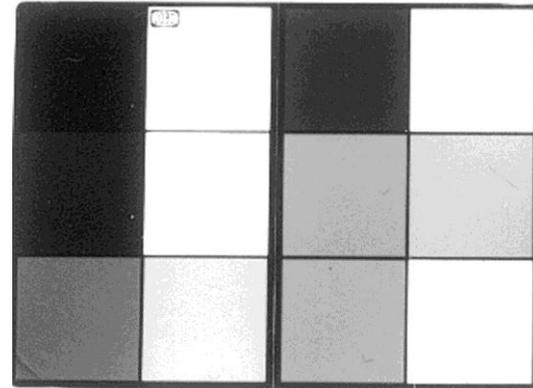
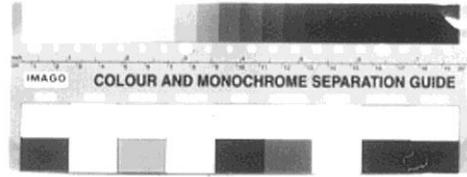
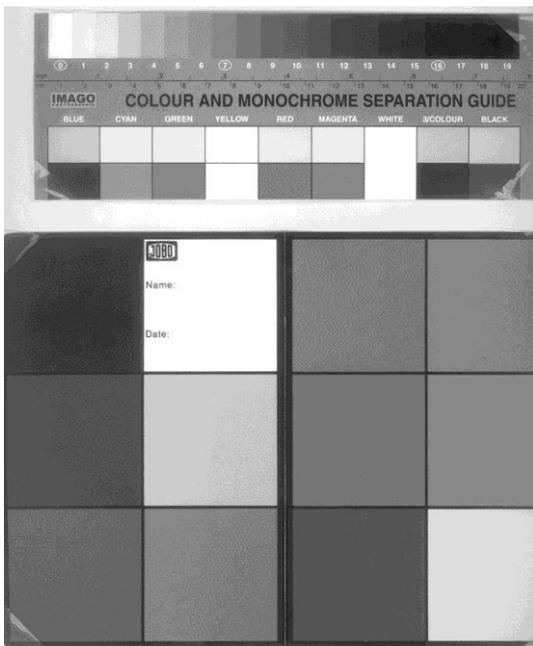
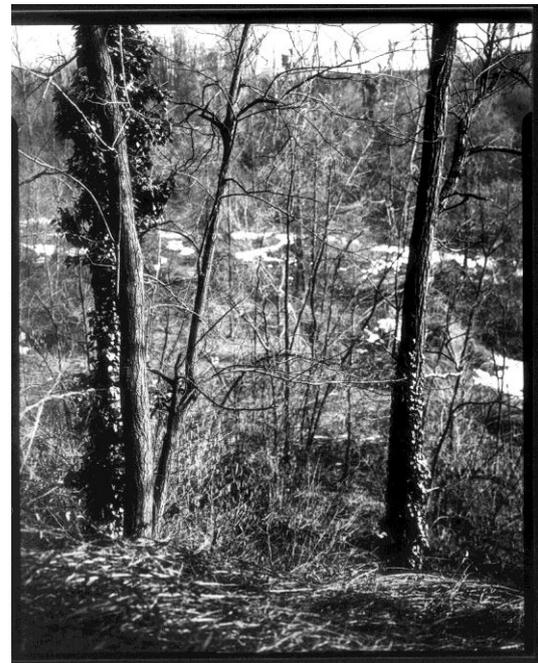


Image of the color and gray card with Imago DPP

Pre-flash f 11 2" (frosted glass)  
Main exposure f 11 8" at ISO 8



Kodak and Jobo color and gray card in grayscale



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Exposure example in practice:  
Pre-flash with frosted glass 1/15" f 8, main exposure ¼" f 8-5.6 – at ISO 4

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