

KODAK PROFESSIONAL PORTRA Black & White Paper



Discontinuance of KODAK PROFESSIONAL Black & White Photographic Papers

Due to the ongoing transition to digital output technologies in both professional and educational markets, Kodak has announced manufacturing discontinuance of Black & White Photographic Papers. Sales will cease by the end of 2005.

KODAK Black & White Films and Black & White Processing Chemicals will continue to be produced.

The final availability of specific Black & White papers will vary based on type, size, configuration and surface. Please contact your normal supplier of KODAK PROFESSIONAL Products for the latest information.

KODAK PROFESSIONAL PORTRA Black & White Paper is a fast, chromogenic resin-coated paper for making non-silver image, black-and-white prints from color, chromogenic, or black-and-white negatives. This paper offers major improvements over the former KODAK EKTAMAX RA Professional Paper, including image stability comparable to that of current Kodak Professional color negative papers.

PORTRA Black & White Paper can be exposed both digitally and optically. It is designed for processing in KODAK EKTACOLOR Chemicals for Process RA-4. It is compatible with KODAK PROFESSIONAL PORTRA ENDURA and SUPRA ENDURA Papers for printing and processing.

PORTRA Black & White Paper is available in E (lustre), F (glossy), and N (matte) surfaces.

FEATURES	BENEFITS
<ul style="list-style-type: none"> • Rapid processing in Process RA-4 • Excellent image quality 	<ul style="list-style-type: none"> • No need for dedicated black-and-white process • Excellent sharpness • Great highlight/shadow detail • Outstanding monochrome reproduction of relative color tones
<ul style="list-style-type: none"> • Unsurpassed image stability 	<ul style="list-style-type: none"> • Images remain neutral • No yellowing of whites under light or dark conditions • Stability comparable to current Kodak Professional color negative papers
<ul style="list-style-type: none"> • Excellent neutrals 	<ul style="list-style-type: none"> • Neutral prints regardless of negative film type • Spectral sensitivity, gray-tone rendering, and D-max similar to those of KODAK PROFESSIONAL SUPRA ENDURA Paper
<ul style="list-style-type: none"> • Lower D-min 	<ul style="list-style-type: none"> • Improved whites and cleaner highlights

FEATURES	BENEFITS
<ul style="list-style-type: none"> • Significantly faster printing speed compared to KODAK PANALURE SELECT RC Paper; printing speed similar to PORTRA ENDURA and SUPRA ENDURA Paper 	<ul style="list-style-type: none"> • Increased compatibility with color negative papers for greater efficiency in the lab
<ul style="list-style-type: none"> • Improved raw stock keeping 	<ul style="list-style-type: none"> • Color consistency • Unexposed paper will not change hue when stored for extended periods
<ul style="list-style-type: none"> • Excellent reciprocity 	<ul style="list-style-type: none"> • Consistent results with long or short exposures

SIZES AVAILABLE

Sizes and catalog numbers may differ from country to country. See your dealer who supplies KODAK PROFESSIONAL Products.

STORAGE AND HANDLING

Store unprocessed paper at 55°F (13°C) or lower in the original sealed package. High temperatures or high humidity may produce undesirable photographic changes. Avoid moisture condensation by removing the package from cold storage the day before printing.

Size	Warm-Up Times (Hours) to Reach Room Temperature of 21°C (70°F)		
	From a Storage Temperature of		
	-18°C (0°F)	2°C (35°F)	13°C (55°F)
8 x 10-inch (100-sheet box)	4 hours	3 hours	2 hours
16 x 20-inch (50-sheet box)	3 hours	2 hours	2 hours
20 x 24-inch (50-sheet box)	3 hours	2 hours	2 hours
3 1/2-inch x 775-foot roll	8 hours	6 hours	4 hours
8-inch x 575-foot roll	10 hours	7 hours	4 hours
20-inch x 50-foot roll	6 hours	5 hours	3 hours
30-inch x 100-foot roll	8 hours	6 hours	4 hours
40-inch x 100-foot roll	9 hours	7 hours	5 hours

Handle paper carefully by the edges. The paper is packaged with the emulsion side of all sheets facing in the same direction. For complete light, moisture and photo-activity protection, use the inner bag *and* the two-part cardboard box to store the paper.

DARKROOM RECOMMENDATIONS

Handle the paper in total darkness. Be sure that your darkroom is lighttight. Eliminate stray light from enlarger heads, timers, LEDs, etc.

Note: Using a safelight *will* affect your results. *If absolutely necessary*, you can use a safelight equipped with a KODAK 13 Safelight Filter (amber) and a 7 1/2-watt bulb. Keep the safelight at least 1.2 metres (4 feet) from the paper. Run tests to determine that safelight use gives acceptable results for your application.

EXPOSURE

Digital Printing

You can expose KODAK PROFESSIONAL PORTRA Black & White Paper with many types of digital printers. For up-to-date starting values for Kodak digital printers and other manufacturers' equipment, refer to the following documents (available at www.kodak.com/go/portrabwpaper):

- Calibrating the Gretag Lightjet 5000 Printer, CIS-223
- Calibrating Durst lambda Digital Laser Imagers, CIS-215
- Calibrating the Durst Dice America Epsilon 30 LED Printer, CIS-221
- Calibrating KODAK LED Printers, CIS-227
- Calibrating the KODAK PROFESSIONAL Digital Multiprinter, CIS-228
- Calibrating the Polielettronica LaserLab, CIS-230

Optical Printing

Expose this paper in automatic printers or enlargers equipped with tungsten or tungsten-halogen light sources or photo enlarger lamps (e.g., No. 212 or 302). Set up and balance the printer or enlarger according to the manufacturer's instructions.

Do not use fluorescent lamps to expose this paper. Use a heat-absorbing glass to remove infrared radiation. Because voltage changes affect light output and color quality, use a voltage regulator.

Keep negatives and the equipment optical system clean. Mask negatives to eliminate stray light.

For optimum contrast and gray-tone rendering of colors, use a color filter pack that consists of dichroic filters, KODAK Color Printing Filters (CP), or KODAK Color Compensating Filters (CC). You can also use CP or CC filters between the lamp and the negative. You can also use CC filters between the negative and the paper; however, use as few CC filters between the negative and the paper as

possible. If you use cyan filtration, use filters with the suffix “-2” (e.g., “CP10-2”).

Printing Color Negatives

The spectral sensitivity and printing speed of KODAK PROFESSIONAL PORTRA Black & White Paper is similar to KODAK PROFESSIONAL PORTRA ENDURA and SUPRA ENDURA Papers. Therefore the printing conditions for those papers are a good starting point for PORTRA Black & White Paper. If you do not use these papers, start with 45M + 45Y.

Adjust the exposure as required to control print density. Filtration adjustments will not change the color balance or hue of KODAK PROFESSIONAL PORTRA Black & White Paper, but they will cause a change in contrast. You can remove approximately 20M and 20Y to lower print contrast, or add magenta and yellow filtration to increase contrast slightly. Do not add more than 20 units of magenta and yellow filtration to increase contrast—it will impact red color-lightness reproduction.

Printing Black-and-White Negatives

You can also print black-and-white negatives onto this paper. Three methods provide suitable results:

- Put a piece of unexposed, processed (D-min) KODAK PROFESSIONAL PORTRA Film in the exposing beam along with the filters you normally use to print color negatives.
- Simulate a piece of film D-min by adding CC35M and CC65Y filtration to the filtration that you use to print color negatives.
- Use a starting filter pack of 80M + 110Y to simulate the 45M + 45Y and the film D-min.

Printing Chromogenic Films

If you already have a filter pack that provides good neutrals on KODAK PROFESSIONAL SUPRA ENDURA or PORTRA ENDURA Paper, use that to print chromogenic films onto this paper. Otherwise, use the following as starting points:

- For KODAK PROFESSIONAL PORTRA 400BW Film, start with 50M + 45Y.
- For KODAK PROFESSIONAL T400 CN Film, start with 70M + 75Y.

LATENT-IMAGE KEEPING

You should not notice shifts in the latent image with keeping times from 1 minute to 24 hours. Therefore, you do not need to change your printing procedures to compensate for latent-image shifts under normal temperature and handling conditions. If shifts do occur, you can minimize their effect by keeping the time between exposure and processing as consistent as possible.

PROCESSING

Use KODAK EKTACOLOR Chemicals for Process RA-4 to process this paper. For information on Process RA-4, see KODAK Publication Z-130, *Process RA-4 Using KODAK EKTACOLOR RA Chemicals*.

Note: Process RA-2 SM and other manufacturers' reduced time processes (development time less than 45 seconds) are not recommended.

Use a drying temperature below 93°C (200°F). Do not ferrotype this paper.

Note: You may notice a change in image hue for the first few minutes following processing. Once the print has cooled to room temperature, the hue will remain constant.

Process Control and Image Hue

Processing conditions may affect the color (hue) of PORTRA Black & White Paper. You may see a hue change on the magenta/green axis due to variations in developer tank activity and pH. Low developer activity and/or pH (typically severe oxidation and/or under-replenishment) will cause a shift toward a green hue. High developer activity and/or pH (usually over-replenishment) will cause a shift toward a magenta hue.

To help prevent these shifts, ensure that your process is in control by using KODAK PROFESSIONAL Pro Strips Color Negative Paper Control Strips / for Process RA-4, CAT 129 8587. These recommendations apply to KODAK EKTACOLOR RA Chemicals for Process RA-4, which will provide the best results with PORTRA Black & White Paper. Tank aims for chemical constituents and pH may differ for other manufacturers' chemicals, causing unexpected hue shifts.

Improvements to PORTRA Black & White Paper have eliminated the sensitivity to leuco cyan dye resulting from minor changes in bleach-fix tank pH. You should not experience leuco cyan dye or have to make adjustments to your bleach-fix tank pH due to normal process variations.

RETOUCHING

If possible, do any required retouching on color negatives before you make prints—especially if you plan to make more than one print from each negative. For information on retouching negatives, see KODAK Publication E-71, *Retouching Color Negatives*.

If the negative image is small, you can make corrections much more easily by applying dry or liquid dyes to small or large areas of the enlarged print. For information on retouching prints, see KODAK Publication No. E-70, *Retouching Prints on KODAK EKTACOLOR and EKTACHROME Papers*.

Note: Do not use oil-base paints, resins, or other materials frequently used to retouch silver-gelatin black-and-white prints. These materials can harm the dye structure of PORTRA Black & White Paper.

POST-PROCESS TREATMENTS

Mounting Prints

Mount the prints with KODAK Dry Mounting Tissue, Type 2, or a photographic mounting adhesive. If tissue is used, the temperature across the heating platen should be 82 to 93°C (180 to 200°F). Apply pressure for 30 seconds, or longer in case of a thick mount. Preheat the cover sheet that is used over the face of the print to remove moisture that can cause sticking.

Note: The hue of hot mounted prints may temporarily change while the print is hot. It will return to normal when the print returns to room temperature.



Caution

Temperatures above 99°C (210°F) and/or high pressures may cause physical and color changes in prints.

If prints are displayed behind glass, maintain a slight separation between the prints and the glass.

Lacquering

For more information on lacquering and other post-process treatments, see KODAK Publication E-176, *Post-Process Treatment of Color Prints—Effects on Image Stability*.

VIEWING

For consistency, labs should always evaluate print quality under the same type of lighting conditions that will be used for print viewing and display.

A good average viewing condition is a light source with a color temperature of 5000 ± 1000 K, a Color Rendering Index (CRI) of 85 to 100, and an illuminance of at least 50 footcandles (538 lux). Some fluorescent lamps, such as the cool white deluxe (made by several manufacturers) or Phillips 5000 K Ultralume, meet these conditions.

Satisfactory results can be obtained by using a mixture of incandescent and fluorescent lamps. For each pair of 40-watt cool white deluxe fluorescent lamps, use a 75-watt frosted tungsten bulb. Your light source should meet the standards specified in ANSI PH2.30-1989, Viewing Conditions—Color Prints, Transparencies, and Photomechanical Reproductions.

Image Hue

Because PORTRA Black & White Paper uses colored dyes to form images, it can exhibit slight variations in hue (when we use the term hue in this publication, we are referring to the image tone). In fact, viewers may be more sensitive to hue variations in these prints than they are to hue variations in color prints.

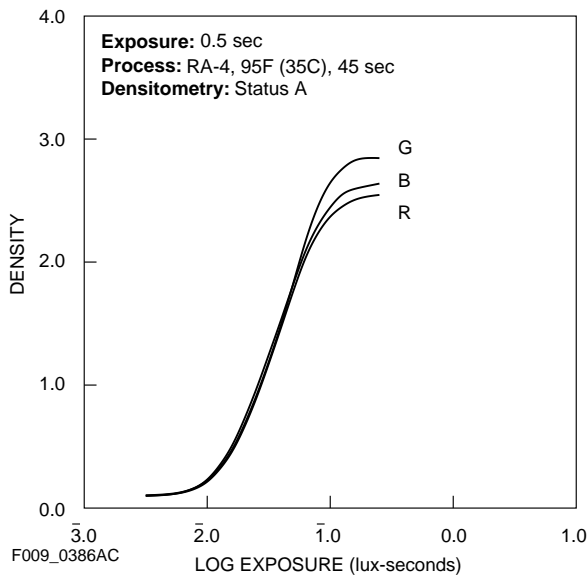
Note: For hue sensitive applications, conventional black-and-white (silver) paper will provide the best performance.

While some processing conditions may have an effect, the most likely contributor to hue variations is the color quality of the viewing light. Use a light source such as daylight, tungsten, or tungsten-halogen/quartz-halogen. These sources provide continuous frequency of energy in the visible spectrum and will result in a neutral rendering of the image. Where there is little control over viewing conditions, a conventional black-and white (silver) paper might be a more appropriate choice.

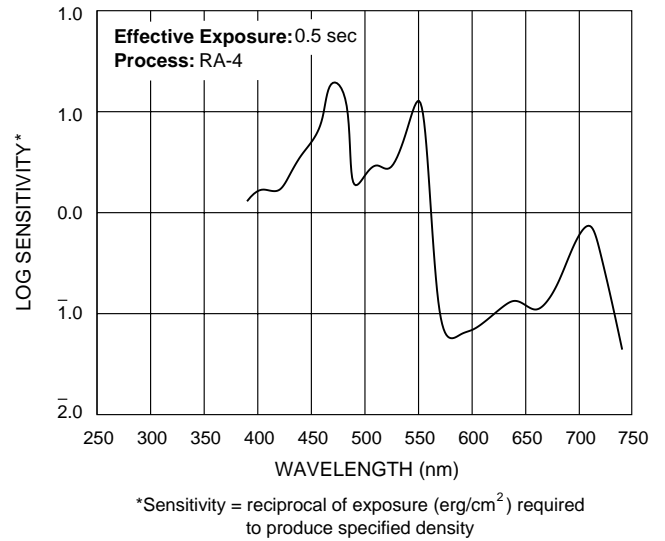
Other illuminants may result in a warm image tone. For example, a silver-based black-and-white image reflects all frequencies of light equally, so a slight deficiency in one color of the viewing light will not have an adverse effect. However, a chromogenic image (e.g., an image on PROFESSIONAL PORTRA Black & White Paper) is formed by dyes that have specific color absorption and reflection characteristics. Dyes do not reflect all frequencies of light equally. Instead, they reflect only specific wavelengths of red, green, and blue light. So, if a non-continuous light source (e.g. mercury vapor and low-energy/high-efficiency fluorescent tubes) is deficient in green light, a chromogenic print may look very pink (magenta), depending on the dye and the green-region deficiency of the light source.

CURVES

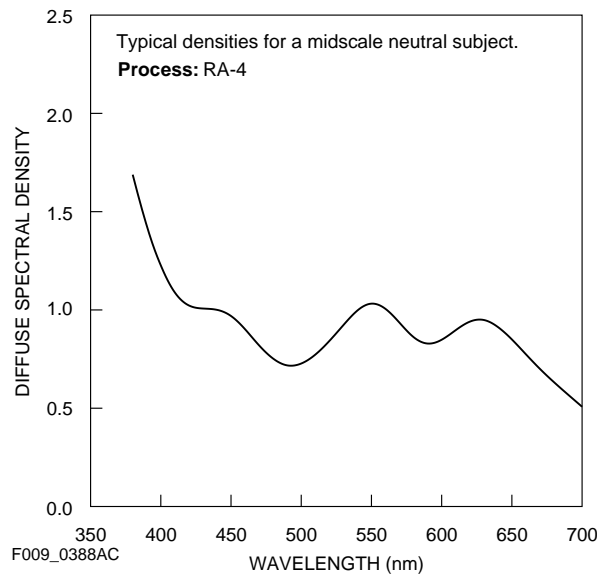
Characteristic Curve



Spectral-Sensitivity Curves



Spectral-Dye-Density Curves



NOTICE: The sensitometric curves and data in this publication represent product tested under the conditions of exposure and processing specified. They are representative of production coatings, and therefore do not apply directly to a particular box or roll of photographic material. They do not represent standards or specifications that must be met by Eastman Kodak Company. The company reserves the right to change and improve product characteristics at any time.

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MORE INFORMATION

Kodak has many publications to assist you with information on Kodak products, equipment, and materials.

The following publications are available from Kodak Customer Service, from dealers who sell Kodak products, or you can contact Kodak in your country for more information.

- E-70 *Retouching Prints on KODAK EKTACOLOR and EKTACHROME Papers*
- E-71 *Retouching Color Negatives*
- E-4021 *KODAK PROFESSIONAL PORTRA ENDURA Paper and KODAK PROFESSIONAL SUPRA ENDURA Paper*
- G-27 *KODAK PANALURE SELECT RC Paper*

For the latest version of technical support publications for KODAK PROFESSIONAL Products, visit Kodak on-line at:

<http://www.kodak.com/go/professional>

If you have questions about KODAK PROFESSIONAL Products, call Kodak.

In the U.S.A.:

1-800-242-2424, Ext. 19, Monday–Friday

9 a.m.–7 p.m. (Eastern time)

In Canada:

1-800-465-6325, Monday–Friday

8 a.m.–5 p.m. (Eastern time)

Note: The Kodak materials described in this publication for use with KODAK PROFESSIONAL PORTRA Black & White Paper are available from dealers who supply KODAK PROFESSIONAL Products. You may use other materials, but you may not obtain similar results.



EASTMAN KODAK COMPANY

Kodak Professional
Imaging Solutions

KODAK PROFESSIONAL PORTRA
Black & White Paper
KODAK Publication No. **G-4006**

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Minor Revision 6-05
Printed in U.S.A.

CAT 127 1378