

# KODAK PROFESSIONAL ENDURA Metallic VC Digital Paper



## TECHNICAL DATA / COLOR PAPER

June 2009 • E-4047

KODAK PROFESSIONAL ENDURA Metallic VC Digital Paper is a color negative paper with a unique metallic appearance. It is coated on a patented multi-laminate base that provides durable, tear-resistant prints.

This paper is ideal for a variety of portrait/social applications—for example, glamour, wedding, prom, and special-events photography and for many commercial applications. It is optimized for digital printing.

Like other KODAK PROFESSIONAL ENDURA Papers and Materials, ENDURA Metallic VC Digital Paper features state-of-the-art image stability. Other improvements include process robustness and a dramatic increase in D-max in digital applications.

ENDURA Metallic VC Digital Paper is available in a variety of roll sizes. It can be intermixed with other KODAK PROFESSIONAL Papers in KODAK EKTACOLOR Chemicals for Process RA-4.

FEATURES	BENEFITS
<i>New in KODAK PROFESSIONAL ENDURA Metallic VC Digital Paper</i>	
<ul style="list-style-type: none"> <li>Advanced color coupler technology</li> </ul>	<ul style="list-style-type: none"> <li>10% increase in color gamut</li> <li>Strong, bright colors</li> <li>Clean looking whites</li> <li>Vibrant greens, blues, magentas and reds</li> <li>Neutral tone scale from highlights to shadows</li> </ul>
<ul style="list-style-type: none"> <li>Robust and economical performance</li> </ul>	<ul style="list-style-type: none"> <li>Up to a 10% reduction in developer replenishment rate</li> <li>Print consistency, easy to calibrate work flow</li> <li>Clean process, reduced process maintenance</li> <li>Lower environmental impact</li> <li>Lower operating costs</li> </ul>
<ul style="list-style-type: none"> <li>Exceptional high intensity reciprocity characteristics</li> </ul>	<ul style="list-style-type: none"> <li>Improved digital fringing performance</li> <li>Optimized text and fringing characteristics in all digital devices</li> <li>For digital CRT, LED, and laser exposing devices</li> <li>Improved calibration robustness</li> </ul>

FEATURES	BENEFITS
<i>Retained from KODAK PROFESSIONAL ENDURA Metallic Paper</i>	
<ul style="list-style-type: none"> <li>Metallic look combined with a smooth, glossy surface</li> </ul>	<ul style="list-style-type: none"> <li>Distinctive, cutting-edge appearance</li> </ul>
<ul style="list-style-type: none"> <li>Exceptional durability and tear resistance</li> </ul>	<ul style="list-style-type: none"> <li>Long print life</li> </ul>
<ul style="list-style-type: none"> <li>Minimum curl with humidity changes</li> </ul>	<ul style="list-style-type: none"> <li>Excellent print appearance and handling</li> </ul>
<ul style="list-style-type: none"> <li>Pencil writeability on the back</li> </ul>	<ul style="list-style-type: none"> <li>Convenience in marking prints for identification</li> </ul>
<ul style="list-style-type: none"> <li>State-of-the-art image stability*</li> </ul>	<ul style="list-style-type: none"> <li>Improved light stability - over 100 years before noticeable fading in typical home display</li> <li>Significantly improved dark stability - over 200 years before noticeable fading under most common storage conditions</li> <li>Superior performance in professional applications creating new standards for image permanence</li> </ul>

\* Based on product application including specific light levels and temperature conditions; testing conducted as specified in ANSI Publication IT9.9-1996 and ISO Publication 10977, "Stability of Colour Photographic Images-Methods for Measuring," including use of illustrative endpoint criteria of 30% dye fade.  
 † In independent, long-term testing of KODAK PROFESSIONAL ENDURA Media against the previous generation of KODAK PROFESSIONAL Media, ENDURA Media was found to exhibit significantly improved image stability in terms of color balance and dye fade. These independent results confirmed the internal Kodak testing and, in fact, revealed that Kodak's published estimates concerning image longevity were conservative.†  
 ‡ The Image Permanence Institute at the Rochester Institute of Technology.

## DARKROOM RECOMMENDATIONS

Handle unprocessed paper in total darkness. Be sure that your darkroom is light tight. 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) with a 7 1/2-watt bulb. Keep the safelight at least 1.2 metres (4 feet) from the paper. Keep safelight exposure as short as possible. Run tests to determine that safelight use gives acceptable results for your application.

## STORAGE AND HANDLING

Store unprocessed paper between 40 and 75° F (4 and 24° C) in the original sealed package. High temperatures or high humidity may produce unwanted print quality changes.

To avoid moisture condensation on unexposed paper that has been refrigerated, allow the paper to warm up to room temperature before opening the package. For best results, remove the paper from cold storage the day before you use it, or allow the paper to warm up for the appropriate time from the following table:

Warm-Up Times (Hours) to Reach Room Temperature of 21° C (70° F)			
Size	From a Storage Temperature of		
	-18° C (0° F)	2° C (35° F)	13° C (55° F)
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

**Note:** Be sure to use sharpened cutting equipment. The effects of dull cutting blades will be more noticeable with this paper than with traditional papers because of its tear-resistant characteristics.

## EXPOSURE

### Digital Printing

You can expose KODAK PROFESSIONAL ENDURA Metallic VC Digital Paper with many types of digital printers. It performs well with the following Kodak digital printers:

- KODAK PROFESSIONAL LED Color Printer
- KODAK PROFESSIONAL LED II Printer 20P/20R
- KODAK PROFESSIONAL Digital Multiprinter
- KODAK PROFESSIONAL Digital Multiprinter II
- KODAK PROFESSIONAL LF CRT Color Printer
- KODAK PROFESSIONAL RP 30 Laser Printer
- KODAK PROFESSIONAL RR 30 Laser Printer
- KODAK PROFESSIONAL SRP 30 Laser Printer
- KODAK PROFESSIONAL RP 50 LED Printer

For up-to-date starting values for Kodak digital printers and other manufacturers' equipment, refer to KODAK Publication CIS-285, *Digital Printer Aims for KODAK PROFESSIONAL ENDURA Metallic VC Digital Paper* (available at [www.kodak.com/go/endura](http://www.kodak.com/go/endura)).

**Note:** The unique reflective characteristics of KODAK PROFESSIONAL ENDURA Metallic VC Digital Paper may require one or two extra calibration runs.

### Color Management

This paper is optimized for digital printing and is compatible with both external color management systems as well as color management contained within the digital printers software.

### Optical Printing

KODAK PROFESSIONAL ENDURA Metallic VC Digital Paper is optimized for digital printers. If exposed optically the the image will be high in contrast and if balanced on flesh tones the neutrals will appear cyan.

## LATENT-IMAGE KEEPING

Under normal conditions, you should not notice shifts in the latent image with keeping times from 5 seconds 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, minimize them by keeping the interval between exposure and processing as consistent as possible.)

## PROCESSING

Use KODAK EKTACOLOR RA Chemicals for Process RA-4, and use KODAK PROFESSIONAL Pro Strips Color Negative Paper Control Strips for Process RA-4 (see "Process Control").

**Note:** Although Kodak does not recommend Process RA-2SM for professional media, some customers may judge the results acceptable for certain applications. Customers should test the media to determine acceptability, as this process may provide warmer results than desired.

When fully converted to this paper, your developer replenishment rate should be approximately 10% lower than with KODAK PROFESSIONAL SUPRA ENDURA or KODAK PROFESSIONAL ENDURA Metallic Paper. Review your process control charts and make adjustments as needed to stay in control.

Bleach-fix replenishment rates will stay the same for Process RA-4. When using KODAK EKTACOLOR PRIME Bleach-Fix Replenisher, replenishment rates will need to increase.

For detailed information on replenishment rates and processing this paper in continuous or roller-transport processors, see KODAK Publication No. Z-130, *Using KODAK EKTACOLOR RA Chemicals*. For information on processing this paper in trays or rotary-tube and drum processors, see KODAK Publication No. J-39, *Tray, Drum, and Rotary-Tube Processing with KODAK EKTACOLOR RA Chemicals*. Both publications are available through our website at [www.kodak.com/go/photochemicals](http://www.kodak.com/go/photochemicals).

Do not use drying temperatures above 93° C (200° F) to avoid damaging prints. *Underdrying* can produce tackiness that tends to make paper stick when it is wound into rolls before cutting. *Overdrying* can cause curl and complicate transport in print finishing.

Do not ferrotype this paper—its surface dries to a natural gloss without ferrotyping.

## PROCESS CONTROL

To produce high-quality color prints consistently and with a minimum of waste, you need to match your process to a standard for density, color, and contrast each time you process paper. In addition to monitoring process parameters such as solution times, temperature, replenishment rates, solution concentrations, etc., you should regularly run control strips to ensure best results.

KODAK PROFESSIONAL Pro Strips Color Negative Paper Control Strips / for Process RA-4 are designed specifically for use with KODAK PROFESSIONAL Papers and KODAK PROFESSIONAL Print and Display Materials in professional labs. These control strips are designed to detect process conditions that can degrade the quality of your finished prints. They are better able to track the papers that are processed in professional finishing laboratories.

For more information, see KODAK Publication No. CIS-202, *Using KODAK PROFESSIONAL Pro Strips Color Negative Paper Control Strips / for Process RA-4*.

## SCANNER TOOLS

The KODAK Q-60 Color Input Targets are available on KODAK EKTACHROME Professional Film in both 35 mm and 4 x 5 inch formats and on KODAK EKTACOLOR Paper. Developed primarily for use by prepress houses in the printing industry, this target can also be used by professional photographers, desktop publishers, and in the emerging hybrid imaging area.

The target is designed for use in the commercial and desktop arenas as a comparative control tool to help customers calibrate their input product to the final output. This target maps the gamut of color space that KODAK EKTACHROME Film and EKTACOLOR Paper can reproduce.

When used properly, customers will be able to compare their output—whether it is separations for the printed page and four-color printing, or second-generation originals from a film recorder to the originals. This will help customers optimize the capabilities of their system for color reproduction of an extreme range of color gamut.

Scanner color characterization targets produced in accordance with ANSI IT8.7/1 (transmission) and IT8.7/2 (reflection) Standards (or ISO 12641) are available from Kodak.

The KODAK PROFESSIONAL Q-60 Color Input Target / Q-60R2 is manufactured on KODAK PROFESSIONAL ENDURA Paper, and is likewise identified by a watermark with a single grey dot under PAPER. This target can be used with both the newer ENDURA Papers and older papers. The older Q-60R1 target, which has the same two-dot watermark as the older papers, can be used with the newer papers.

## ILLUMINATION FOR EVALUATION OF PRINTS

Evaluation of prints for color and density requires higher illumination levels than those used in normal display conditions. A good average condition is a light source with a color temperature of 5000 K  $\pm$ 1000, a Color Rendering Index of 85 to 100, and an illuminance of at least 50 footcandles (538 lux). Fluorescent lamps such as cool white deluxe (made by several manufacturers) meet these conditions.

You can also use 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.

Viewing conditions should meet ANSI Standard PH2.30-1989.

## RETOUCHING NEGATIVES

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 No. 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. Although you'll probably do most retouching with dyes, you may sometimes want to use black lead, colored pencils, or opaque. Because color prints have separate dye layers, you can't use an etching knife to reduce density as you can with black-and-white materials. For information on retouching prints, see KODAK Publication No. E-70, *Retouching Prints on KODAK EKTACOLOR and EKTACHROME Papers*.

## POST-PROCESS TREATMENTS

### Mounting Prints

You can mount prints with dry mounting tissue. The temperature across the heating platen should be 82 to 93° C (180 to 200° F). Preheat the cover sheet that you use over the face of the print to remove moisture. Apply pressure for 30 seconds, or up to 3 minutes in the case of a thick mount.



### Caution

Temperatures above 93° C (200° F) for long periods of time can cause physical and color changes in prints. Excessive moisture can also cause color shifts. To minimize these changes, mount at the lowest temperature and over the shortest possible time.

You can also use contact-type adhesive or cement for cold-mounting.

For information on lacquering and other post-process treatments, see KODAK Publication No. E-176, *Post-Processing Treatment of Color Prints—Effects on Image Stability*, available through our website at [www.kodak.com/go/professional](http://www.kodak.com/go/professional).

## DISPLAY

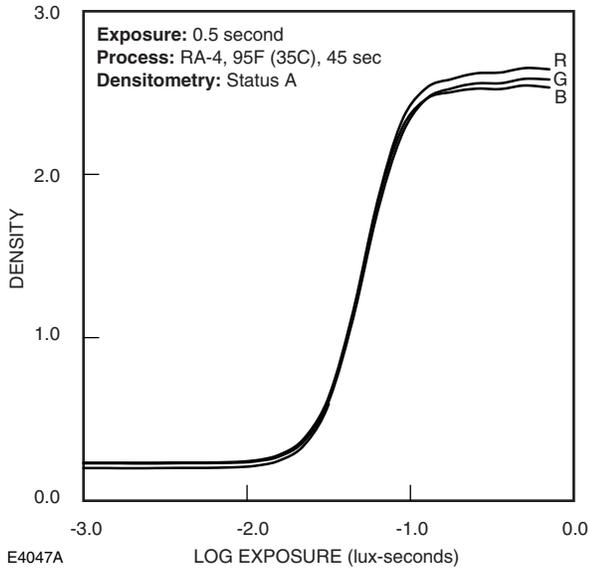
KODAK PROFESSIONAL ENDURA Metallic VC Digital Paper has been formulated to provide excellent dye stability and print longevity for prints displayed under typical home lighting conditions (i.e., 120 lux for 12 hours a day) and typical home dark storage conditions (i.e., 20 to 23° C [68 to 73.4° F] and 50% humidity).

Photographic dyes, like all dyes, can change with time and exposure to sunlight, ultraviolet radiation, excessive heat, and high humidity. To help prevent changes in photographic dyes, follow these guidelines:

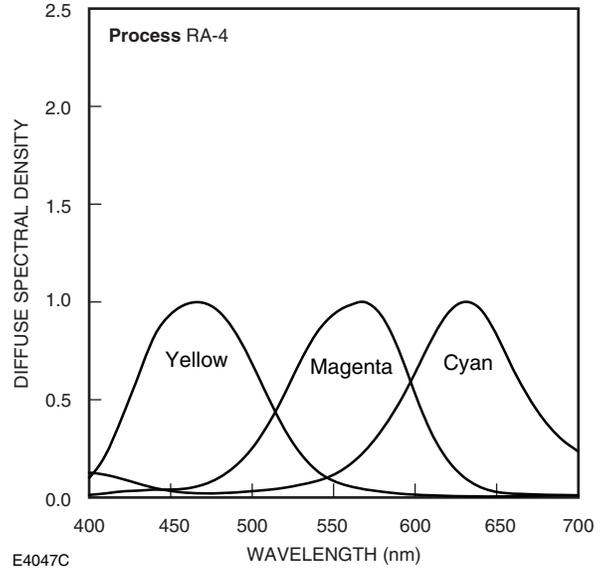
- Illuminate prints with tungsten light whenever possible.
- Display prints in the lowest light level consistent with your viewing needs.
- If a print is exposed to direct or indirect sunlight or fluorescent light, use an ultraviolet-absorbing filter (such as glass) between the light source and the print.
- If prints are displayed behind glass, maintain a slight separation between the prints and the glass.
- Keep the temperature and humidity as low as possible.
- Use album materials described in KODAK Publication No. E-30, *Storage and Care of KODAK Photographic Materials - Before and After Processing*.

# CURVES

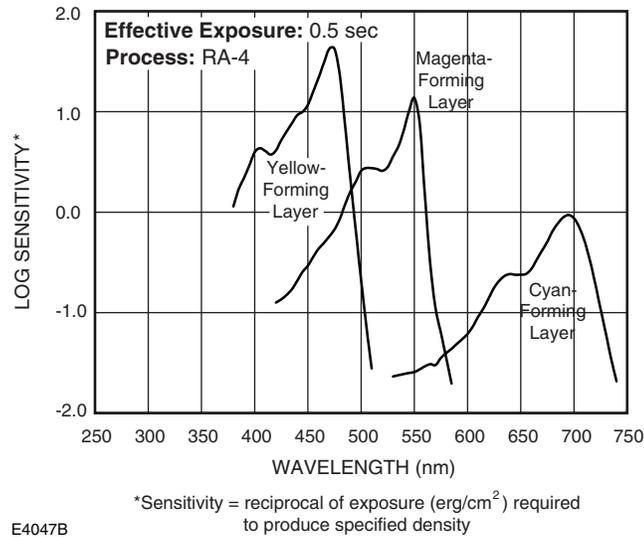
**Characteristic Curves**



**Spectral-Dye-Density Curves**



**Spectral-Sensitivity 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.

# KODAK PROFESSIONAL ENDURA Metallic VC Digital Paper

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## SIZES AVAILABLE

KODAK PROFESSIONAL ENDURA Metallic VC Digital Paper is available in a variety of roll sizes.

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

Other roll sizes are available on a special-order basis; contact your KODAK PROFESSIONAL Sales Representative.

## MORE INFORMATION

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

Additional information is available on the Kodak website and through the U.S.A./Canada faxback system.

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

E-30	<i>Storage and Care of KODAK Photographic Materials—Before and After Processing</i>
E-70	<i>Retouching Prints on KODAK EKTACOLOR and EKTACHROME Papers</i>
E-71	<i>Retouching Color Negatives</i>
E-176	<i>Post-Processing Treatment of Color Prints—Effects on Image Stability</i>
J-39	<i>Tray, Drum, and Rotary-Tube Processing with KODAK EKTACOLOR RA Chemicals</i>
K-4	<i>How Safe is Your Safelight?</i>
Z-130	<i>Using KODAK EKTACOLOR RA Chemicals</i>

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 ENDURA Metallic VC Digital Paper are available from dealers who supply KODAK PROFESSIONAL Products. You can use other materials, but you may not obtain similar results.

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