Kodak Professional COLOR METALLIC PAPER PAPIER PAPEL

—NOTICE—
KODAK PROFESSIONAL ENDURA Metallic Paper replaces KODAK PROFESSIONAL Color Metallic Paper. ENDURA Metallic Paper offers state-of-the-art image stability, a unique eye-catching look, and superior process robustness.

KODAK PROFESSIONAL Color Metallic 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, teen portrait, wedding, sports, and special-events photography. It is also well suited for many commercial applications—for example, large-format retail point-of-sale displays, trade show images, product shots, and industrial images. It is optimized for use with optical printing equipment, but also gives excellent results in most digital printing equipment.

FEATURES	BENEFITS
• Metallic look combined with a smooth glossy surface	• Distinctive appearance that enhances many portrait/social and commercial subjects
• Lively colors and glowing skin tones	• Striking prints and flattering portraits
• Exceptional durability and tear resistance	• Less print damage from handling
• Minimum curl with humidity changes	• Easier print handling
• Pencil writeability on the back	• Convenience in marking prints for identification
• Processing in KODAK EKTACOLOR RA Chemicals	• Rapid access and convenient processing with other papers and materials for Process RA-4

STORAGE AND HANDLING

Store unprocessed paper at 13°C (55°F) or lower 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 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
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
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

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

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.

DARKROOM RECOMMENDATIONS

Handle unprocessed 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) 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.

EXPOSURE

Optical Printing

KODAK PROFESSIONAL Color Metallic Paper is slightly slower than KODAK PROFESSIONAL PORTRA III and SUPRA III Papers. As a starting point, use the same printing times and include a density series to determine your preferred exposure.

Expose KODAK PROFESSIONAL Color Metallic Paper in automatic printers or enlargers equipped with tungsten or tungsten-halogen light sources or photo enlarger lamps. Set up and balance the printer or enlarger according to manufacturer's instructions.

Do not use fluorescent lamps. Use a heat-absorbing glass to remove infrared radiation.

Keep negatives and the equipment optical system clean. Mask negatives to eliminate stray light. You can use the white-light or tricolor exposure method.

White-Light Exposure Method

Control color balance with dichroic filters built into the printer or enlarger, or with KODAK Color Printing (CP) Filters (Acetate) placed between the lamp and the negative. You can use any number of filters between the light source and the negative. If you use cyan filtration, use filters with the suffix "-2," (e.g. "CP10C-2").

1. Start with a filter pack of 45M + 45Y to make a test print.
2. Evaluate the test print under light of the same color and brightness that you will use to display the final print. (See "Viewing.")
3. Judge print density first. If necessary, make another print by adjusting the exposure as recommended in the following table.

If your print is	Do this	OR	Do this
TOO LIGHT	Open the lens aperture to increase the light level		Increase the exposure time
TOO DARK	Close the lens aperture to decrease the light level		Decrease the exposure time

4. Then judge the color balance. You can use the *KODAK Color Print Viewing Filter Kit*, KODAK Publication No. R-25, to evaluate your test print. The kit contains 18 color-print viewing filters and instructions to help you determine filter adjustments for the white-light exposure method.

If your print is	Subtract these filters	OR	Add these filters
CYAN	Magenta + Yellow (Red)		Cyan
MAGENTA	Cyan + Yellow (Green)		Magenta
YELLOW	Magenta + Cyan (Blue)		Yellow
RED	Cyan		Magenta + Yellow
GREEN	Magenta		Cyan + Yellow
BLUE	Yellow		Cyan + Magenta

5. Remove neutral density from your filter pack. For example, if you determine that a filter pack of 40R + 10Y + 10C will give you a pleasing print:
   a. Convert any primary filters (R, G, B) to their subtractive equivalents (C, M, Y): 40R = 40M + 40Y.
   b. Add filters of the same color: 10Y + 40Y = 50Y.
   c. If the new filter pack has all three subtractive colors, cancel the neutral density by subtracting the smallest density value from all three densities:

10C	40M	50Y		
-10	-10	-10		
	30M	40Y	=	filtration without neutral density

6. Adjust the exposure for the new filter pack. An exposure time that produced a print of satisfactory density may not produce an acceptable density when you change the filter pack. The following table gives filter factors for calculating exposure adjustments when you use KODAK Color Printing (CP) Filters.

Filter Factors for CP Filters			
Filter	**Factor**	**Filter**	**Factor**
05Y	1.1	05R	1.2
10Y	1.1	10R	1.3
20Y	1.1	20R	1.5
30Y	1.1	30R	1.7
40Y	1.1	40R	1.9
50Y	1.1	50R	2.2
05M	1.2	05G	1.1
10M	1.3	10G	1.2
20M	1.5	20G	1.3
30M	1.7	30G	1.4
40M	1.9	40G	1.5
50M	2.1	50G	1.7
05C	1.1	05B	1.1
10C	1.2	10B	1.3
20C	1.3	20B	1.6
30C	1.4	30B	2.0
40C	1.5	40B	2.4
50C	1.6	50B	2.9

To use the factors, *divide* the old exposure time by the factor for any filter you *remove*. If you add a filter, *multiply* the time by the factor. If you add or remove two or more filters, multiply the individual factors and use the result as your factor. You may need to modify these factors for your equipment.

Note: The filter factors listed in the table take into account the effects of filter surfaces.

When you adjust the filtration in equipment that has built-in dichroic filters, any noticeable differences in density are due to differences in the color density of the print. For example, you have a print with acceptable density, but a magenta balance. When you add magenta filtration to correct the color balance, the print will become too light, so you must use a longer exposure time.

A rule of thumb for magenta dichroic filtration is to change the exposure time by one percent for every unit of change in filtration. For example, if you increase the magenta filtration by 20M, increase the exposure time by 20 percent. Changes in yellow dichroic filtration do not usually affect the apparent print density. If you use cyan dichroic filtration, use the filter factors in the table above as starting points for adjusting exposure.

Tricolor Exposure Method

Use KODAK WRATTEN Gelatin Filters No. 25 (red), No. 99 (green), and No. 47B (blue) to give the paper three separate exposures. Do not move the paper or the enlarger until you have made all three exposures. Typical exposure times for making an enlargement from a normally exposed negative are given in the table below.

Filter	Times for an Aperture Setting of *f*/8* for KODAK PROFESSIONAL Color Metallic Paper (3x Enlargement of a KODAK PROFESSIONAL PORTRA Film Negative)
Red	1.6 seconds
Green	2.8 seconds
Blue	2.0 seconds

* For an enlarger equipped with a Photo Enlarger Lamp No. 212 or No. 302; the setting may vary with other types of lamps.

Evaluate the test print under light of the same color and brightness that you will use to display the final print. (See “Viewing.”)

Judge the print density first. If necessary, make another print by adjusting the exposure as recommended in the table below.

If your print is	Do this	OR	Do this
TOO LIGHT	Open the lens aperture to increase the light level		Increase all exposure times proportionally
TOO DARK	Close the lens aperture to decrease the light level		Decrease all exposure times proportionally

Then judge color balance.

If your print is	Subtract these filters	OR	Add these filters
CYAN	Red		Blue + Green
MAGENTA	Green		Red + Blue
YELLOW	Blue		Red + Green
RED	Blue + Green		Red
GREEN	Red + Blue		Green
BLUE	Red + Green		Blue

Digital Printing

You can expose KODAK PROFESSIONAL Color Metallic Paper with some types of digital printers. It performs well with the following Kodak digital printers:

- KODAK PROFESSIONAL LED Color Printer
- KODAK PROFESSIONAL LED II Color Printer
- KODAK PROFESSIONAL Digital Multiprinter
- KODAK PROFESSIONAL LF CRT Color Printer

Because new digital printers are being developed and introduced rapidly, any comprehensive list of appropriate equipment becomes outdated quickly.

For up-to-date starting values for Kodak digital printers and other manufacturers’ equipment, go to **www.kodak.com/go/metallicPaper**.

Device Calibration

Manufacturers of digital printing equipment normally provide specific calibration procedures with their equipment.

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

LATENT-IMAGE KEEPING

Under normal conditions, 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, minimize them by keeping the interval between exposure and processing as consistent as possible.)

PROCESSING

Use KODAK EKTACOLOR RA Chemicals for Process RA-4.

Replenishment rates are the same as those for other KODAK PROFESSIONAL Papers.

For detailed information on 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**.

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

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 use drying temperatures above 93°C (200°F) to avoid damage to prints.

VIEWING

Evaluate prints under lights of the same color quality and brightness that you will use to view the final prints. A good average condition is a light source with a color temperature of 5000 K ± 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

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 KODAK Dry Mounting Tissue, Type 2. 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 longer in case of a thick mount.

Caution

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

You can also use a 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**.

DISPLAY

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.

SIZES AVAILABLE

PROFESSIONAL Color Metallic Paper is available in a variety of roll and sheet sizes.

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

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

Size in. x in. (cm x cm)	Surface	Sheets Per Package	CAT No.
8 x 10 (20.3 x 25.4)	Glossy	50	111 2796
11 x 14 (27.9 x 35.6)	Glossy	50	190 9456
12 x 17 (30.5 x 43.2)	Glossy	50	157 7022
16 x 20 (40.6 x 50.8)	Glossy	50	109 5629
20 x 24 (50.8 x 60.96)	Glossy	50	112 4569

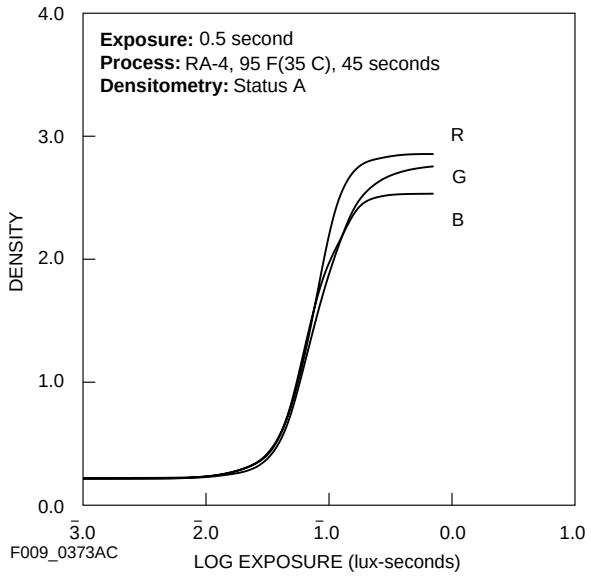
Rolls in. x ft. (cm x m)	Surface	Spec No.	CAT No.
4 x 550 (10.2 x 167.6)	Glossy	224	833 4807
5 x 275 (12.7 x 83.8)	Glossy	224	149 1802
5 x 550 (12.7 x 167.6)	Glossy	224	163 4187
6 x 550 (15.2 x 167.6)	Glossy	224	189 5432
8 x 275 (20.3 x 83.8)	Glossy	224	119 0578
8 x 550 (20.3 x 167.6)	Glossy	224	127 7870
10 x 275 (25.4 x 83.8)	Glossy	224	135 4729
10 x 550 (25.4 x 167.6)	Glossy	224	828 2618
11 x 275 (27.9 x 83.8)	Glossy	224	189 5382
11 x 550 (27.9 x 167.6)	Glossy	224	804 9512
12 x 275 (30.5 x 83.8)	Glossy	224	113 6274
20 x 150 (50.8 x 45.7)	Glossy	223	838 5288
20 x 275 (50.8 x 83.8)	Glossy	224	153 0138
30 x 150 (76.2 x 45.7)	Glossy	223	167 0793
32 x 150 (81.3 x 45.7)	Glossy	223	164 4764
40 x 100 (101.6 x 30.5)	Glossy	223	175 5198

Rolls in. x ft. (cm x m)	Surface	Spec No.	CAT No.
40 x 150 (101.6 x 45.7)	Glossy	223	174 0828
50 x 166 (127 x 50)	Glossy	223	382 0859*

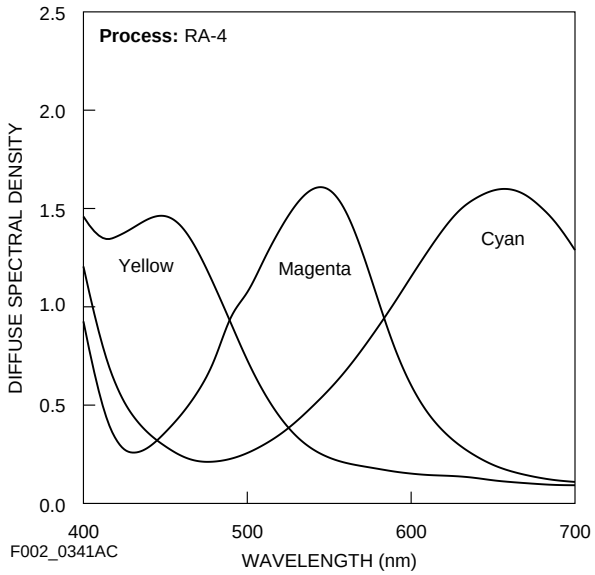
* Available April 2001

CURVES

Characteristic Curves

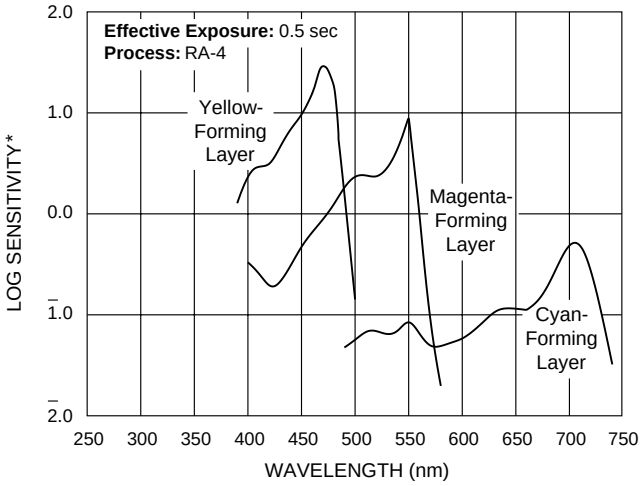


Spectral-Dye-Density Curves



KODAK PROFESSIONAL Color Metallic Paper

Spectral-Sensitivity Curves



*Sensitivity = reciprocal of exposure (ergs/cm^2) required to produce specified density

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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.

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

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

Kodak Professional Division
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