

KODAK PROFESSIONAL ENDURA Transparency and Clear Optical Display Materials



The Attraction is Undeniable.

KODAK PROFESSIONAL ENDURA Transparency Optical Display Material and KODAK PROFESSIONAL ENDURA Clear Optical Display Material are designed for making large backlit display transparencies from color negatives or internegatives. They are ideal for producing tradeshow displays, point-of-purchase materials, and indoor transit displays for airports and subways.

Both materials feature a strong, tear-resistant 7-mil ESTAR Thick Base with good splicing characteristics. KODAK PROFESSIONAL ENDURA Transparency Optical Display Material has a white-pigmented base, which provides built-in diffusion for use on illuminators without built-in diffusers. KODAK PROFESSIONAL ENDURA Clear Optical Display Material is a clear-base material designed for use on illuminators that have built-in diffusers.

These products are intended for optical exposure. For digital exposing devices, use KODAK PROFESSIONAL ENDURA Transparency Digital Display Material or KODAK PROFESSIONAL ENDURA Clear Digital Display Material and refer to KODAK Publication E-4031.

Use KODAK EKTACOLOR RA Chemicals for Process RA-4 to process this material. With appropriate changes in transport speed and solution replenishment rates, this product can be intermixed with other KODAK PROFESSIONAL ENDURA Papers and Display Materials.

FEATURES	BENEFITS
• Robust processing characteristics	• Less sensitivity to process variations caused by image-density variations, bleach-fix contamination, and changes in product mix or processor utilization • Clean process; reduced processor maintenance • Less sensitivity to bleach-fix pH • Reduced operating costs • True 110-second development time
• New emulsion technology	• High quality prints and high productivity • Excellent latent image keeping from 5 seconds to 24 hours • Consistent results and easier print matching across digital and optical systems
• Advanced color coupler technology	• Brighter, more saturated colors, especially blues, cyans, purples, yellows and greens • Wider color gamut • Accurate color reproduction, consistent results • Deep, rich blacks; uniform high D-max • Higher contrast for more vibrant prints
• Separate optical and digital products	• Optimized performance for each application
• Reduced developer replenishment rates	• Less effluent • Less frequent mixing • Lower processing costs • Lower environmental impact
• State-of-the-art image stability	• Improved permanence for both light and heat exposure • Long-lasting image performance
• Antihalation coating on non-emulsion side	• Improved sharpness • Higher readability
• Improved post-process robustness	• No color shift with overlaminates and adhesives

SIZES AVAILABLE

KODAK PROFESSIONAL ENDURA Transparency Optical Display Material

CAT No.	Sheets cm x cm (in. x in.)	Number of Sheets
891 5506	20.3 x 25.4 (8 x 10)	50
897 4560	27.9 x 36.6 (11 x 14)	50

CAT No.	Rolls cm x m (in. x ft.)	Spec No.
854 9180	27.9 x 30.5 (11 x 100)	902
814 7001	30.5 x 30.5 (12 x 100)	901
160 2796	50.8 x 30.5 (20 x 100)	901
862 3159	50.8 x 30.5 (20 x 100)	902
112 5921	61 x 30.5 (24 x 100)	901
870 7176	76.2 x 30.5 (30 x 100)	901
845 9364	101.6 x 30.5 (40 x 100)	901
126 1049	109.2 x 30.5 (43 x 100)	901
185 0213	127.0 x 30.5 (50 x 100)	901
873 8155	157.5 x 30.5 (62 x 100)	901
861 3671	182.9 x 30.5 (72 x 100)	901
188 1093	188.0 x 30.5 (74 x 100)	901

KODAK PROFESSIONAL ENDURA Clear Optical Display Material

CAT No.	Sheets cm x cm (in. x in.)	Number of Sheets
890 3270	20.3 x 25.4 (8 x 10)	50
848 1350	24.1 x 25.4 (9.5 x 10)	50
869 7120	27.9 x 36.6 (11 x 14)	50
862 8331	50.8 x 61 (20 x 24)	10

CAT No.	Rolls cm x m (in. x ft.)	Spec No.
875 0028	50.8 x 30.5 (20 x 100)	901
804 7144	101.6 x 30.5 (40 x 100)	901
185 1914	127.0 x 30.5 (50 x 100)	901
817 0383	182.9 x 30.5 (72 x 100)	901

STORAGE AND HANDLING

Store unprocessed materials 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 material that has been refrigerated, allow it to warm up to room temperature before opening the package. For best results, remove the material from cold storage the day before you use it, or allow it 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 (in. x ft)	From a Storage Temperature of		
	-18°C (0°F)	2°C (35°F)	13°C (55°F)
20 x 100	8 hours	7 hours	4 hours
30 x 100	10 hours	8 hours	5 hours
20 x 100	11 hours	9 hours	6 hours
50 x 100	12 hours	10 hours	7 hours

DARKROOM RECOMMENDATIONS

Handle these materials carefully to avoid kink marks and fingerprints.

Handle these materials in *total darkness*. Be sure that your printing and processing darkrooms are lighttight. Eliminate any stray light from equipment in the darkroom.

Note: Using a safelight *will* affect your results. These materials are very sensitive to safelights; sensitometric shifts can occur before you observe any changes in D-min.

EXPOSURE

KODAK PROFESSIONAL ENDURA Transparency and Clear Optical Display Materials have been optimized to produce prints optically.

There are two basic methods for exposure:

- A single “white-light” exposure using cyan, magenta and yellow filters.
- Three successive exposures through red, green and blue filters.

White-Light Exposure Method

Starting Filter Pack	
Transparency	40M + 40Y
Clear	35M + 30Y

If the enlarger does not have dichroic filters for the filter pack, use KODAK Color Printing Filters (Acetate). Use the CP Filters only between the light source and the negative. This way, any number of filters can be used between the light source and the negative. If cyan filtration is necessary, use filters identified by the suffix “-2,” as in “CP10C-2.”

If a starting filter pack is not available, make a first test transparency with the filter pack recommended above for KODAK PROFESSIONAL Films. Since light quality, optical components, filters, and dial settings may vary considerably between enlargers, this filter pack is only a starting point. Adjust the exposure to produce a satisfactory density. If the color balance is not satisfactory, try a different filter or combination of filters. Once a good transparency has been made from a typical negative, use the same “filter pack” for trial exposures with other negatives.

Tricolor Exposure Method

To use this method, a timer is needed to time three different exposures without disturbing the enlarger or easel. Use a timer that can be read or set in the dark.

The recommended KODAK WRATTEN Gelatin Filters are the No. 25 (red), No. 99 (green), and No. 47B (blue). Install a heat-absorbing glass near the light source. With a Photo Enlarger Lamp No. 212 or No. 302, operated at 115 volts, typical times at $f/8$ for a 6X enlargement from a normal color negative are:

Times for an Aperture Setting of $f/8$ for 8 x 10 Enlargement of a 120 Size KODAK PROFESSIONAL PORTRA 160NC Film Negative		
Filter	Transparency	Clear
Red	1.6 seconds	4.6 seconds
Green	1.8 seconds	7.2 seconds
Blue	3.8 seconds	11.3 seconds

PROCESSING

KODAK EKTACOLOR Chemicals for Process RA-4 are required. Do not use chemicals designed for Process EP-2.

Process this material in roller-transport processors capable of handling the ESTAR Thick Base. Processing recommendations are the same as for KODAK PROFESSIONAL Papers, however the speed must be adjusted to provide a 1 minute 50 second development time and a 1 minute 50 second bleach/fix time. Replenishment rates are higher for these materials than for KODAK PROFESSIONAL Papers.

POST-PROCESS TREATMENTS

Retouching

KODAK PROFESSIONAL ENDURA Transparency Optical Display Material and KODAK PROFESSIONAL ENDURA Clear Optical Display Material are easily spotted or retouched using standard retouching techniques. Do not use opaque retouching materials. See KODAK Publication E-70, *Retouching Prints on KODAK EKTACOLOR and EKTACHROME Papers*.

Laminating Prints

You can laminate prints made with KODAK PROFESSIONAL ENDURA Transparency Optical Display Material and KODAK PROFESSIONAL ENDURA Clear Optical Display Material.

Note: Many municipalities have adopted as part of their local fire codes the National Fire Protection Association (NFPA) 701-1999 *Standard Methods of Fire Tests for Flame Propagation of Textiles and Films*, which applies to plastic films used for decorative or other purposes inside buildings. To comply with this standard, you must protect displays using any of these plastic films.

We strongly recommend that you take one or both of the following measures to protect all large displays, especially if the material is displayed in a public area:

- Fully enclose the materials in a light box or an illuminator.
- Frame and laminate the materials to a non-combustible mounting board, wall, glass, or 1/4-inch or thicker polycarbonate, e.g., Lexan, support.

Other standards covering the burning characteristics of these products may apply to markets outside the U.S. Check with the appropriate local agency. Do not use these materials as backdrop displays in theaters.

For more information, see CIS-37, *Combustion of KODAK Films, Resin-Coated Photographic Papers, and Print and Display Materials*.

VIEWING

These materials are intended specifically for transmission viewing. When the transparency is viewed by reflected light, it should appear darker than a normal reflection print.

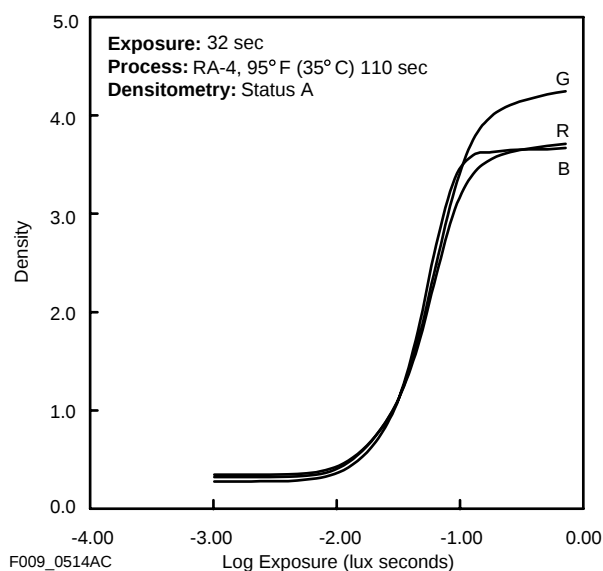
The degree of density will depend on the amount of light behind the transparency. Too much light will adversely affect the transparency quality by reducing the D-max and shadow densities excessively, resulting in a low-contrast image. With some illuminators, it may be necessary to use some neutral density or reduce the number of bulbs.

Color balance of the display transparency will depend on the color of the light source. A Color Rendering Index (CRI) of 90 or higher generally will give acceptable results. For best results, use cool white deluxe fluorescent bulbs.

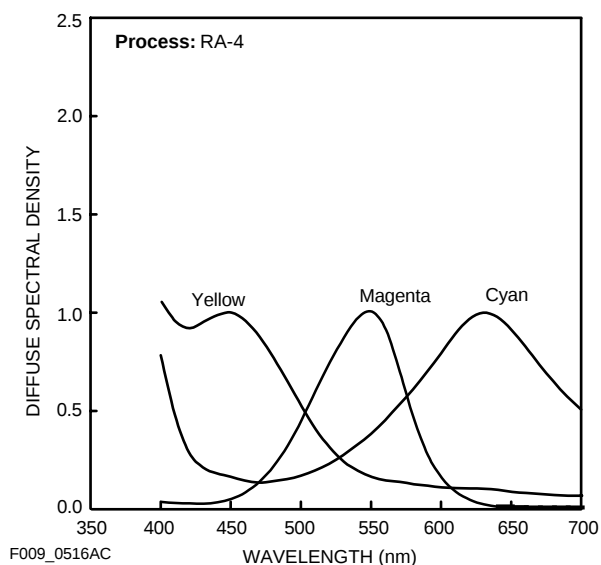
For critical evaluation, use an illuminator that meets ANSI Standard PH2.30-1985.

CURVES

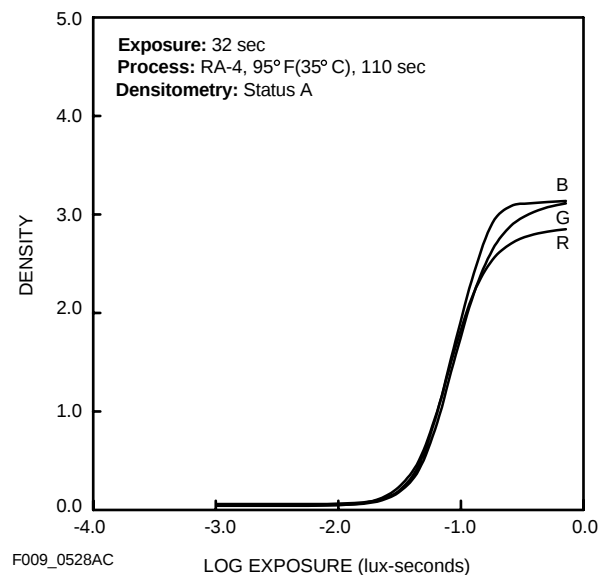
Characteristic Curves:
KODAK PROFESSIONAL ENDURA Transparency Optical
Display Material



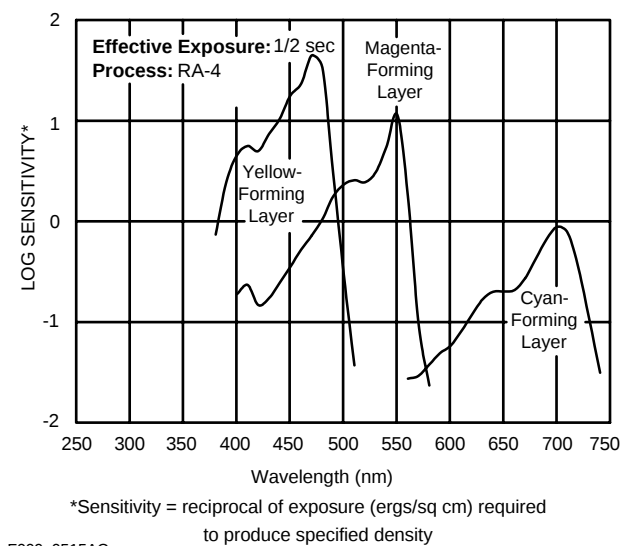
Spectral-Dye-Density Curves



Characteristic Curves:
KODAK PROFESSIONAL ENDURA Clear Optical Display
Material



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.

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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.

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-190	<i>KODAK PROFESSIONAL PORTRA Films</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 Transparency and Clear Optical Display Materials 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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EASTMAN KODAK COMPANY

Kodak Professional

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Display Materials
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