KODAK VISION Premier Color Print Film / 2393™

RICHER COLORS ON THE SCREEN

Now, there's a new choice in motion picture print films—KODAK VISION Premier Color Print Film. A film with a different look. Richer blacks. More saturated colors. Cleaner performance. A film worthy of the KODAK VISION Film family name.

The upper tone scale of VISION Premier Film is significantly higher in density than EASTMAN EXR Color Print Film, so shadows are deeper, colors are more vivid, and the image snaps and sizzles on the screen. The toe areas of the sensitometric curves are matched more closely, producing more neutral highlights on projection. Cinematographers can be more creative with lighting and exposure, and still see remarkable results.

BENEFITS FOR LABS	BENEFITS FOR DISTRIBUTORS/ EXHIBITORS
• Polyester base provides greater tear strength, durability, dimensional stability, and archival keeping • Elimination of rem-jet (no carbon black or prebath-soluble binder) • Potential for reduced chemical and water usage in processing • Improved cleanliness on high-speed printers (less white dirt) • Protection from static marks prior to printing • Reduced dirt attraction to processed prints and static protection prior to processing • Better transport characteristics for processed film • Superior halation protection (no colored fringes in titles) • Improved safelight edgefog protection for digital soundtrack area • Improved fades and dissolves, and less propensity to safelight fog • Extremely rich blacks, higher color saturation, and more neutral highlights on projection • Improved laser subtitling	• Polyester base allows cleaner, more durable prints • No colored fringes in titles, and improved safelight edgefog protection for digital soundtrack • Improved fades and dissolves, and less propensity to safelight fog • Extremely rich blacks, higher color saturation, and more neutral highlights on projection • Improved laser subtitling

Like its counterpart KODAK VISION Color Print Film, VISION Premier Film is coated on a polyester base without rem-jet, for a cleaner process and cleaner screen images. We've incorporated a processing-surviving, anti-static layer to reduce dirt attraction, and a scratch-resistant backing layer to improve projection life. And there are no color shifts during fades and dissolves. So, from set to lab to screen, day to day, you'll have more consistent performance.

These are not incremental improvements. They are quantum leaps forward in film technology. And with VISION Premier Film, you'll have the finest motion picture color print film Kodak has ever made.

STORAGE

Unexposed print film is not adversely affected by short-term storage at room temperature (less than 25˚C (77˚F). Store unexposed film at 13˚C (55˚F) or lower when storage exceeds 1 month. If refrigerated, allow the sealed can or foil bag to equilibrate to room temperature before opening to avoid condensation. Rebag unused raw stock and seal it in film cans before returning it to refrigeration.

Process exposed film promptly. This film exhibits excellent latent image keeping. When exposed film must be kept several days before processing, the tone scale of VISION Premier Color Print Film / 2393 shows little change. Depending on the storage temperature, labs can compensate for the small latent image speed loss by increasing printer TRIMS slightly (a neutral increase of 1 to 2 printer points) if there is a long delay between printing and processing. You can slow changes in latent image by storing exposed film at lower temperatures. For critical applications, such as sensitometric exposures used for process control, keep exposed film strips at 0˚C (32˚F) or lower.

For short-term "active" storage and projection of processed prints (e.g., commercial film exchanges and theatres), store at room temperature of 20 to 25˚C (68 to 77˚F) at 50 to 60 percent relative humidity. Avoid prolonged unconditioned storage at high temperatures or excessive humidity. For medium-term storage, store at 10˚C (50˚F) or lower, at a relative humidity of 20 to 30 percent. For more information on long-term storage, see KODAK Publication No. H-23, *The Book of Film Care*.

For extended-term storage (for preservation of material having permanent value), store at 2˚C (36˚F) or lower, at a relative humidity of 20 to 30 percent. Molecular Sieves* in a sealed can will provide additional benefit.

©Eastman Kodak Company, 1998

Processed prints made on this film will show less than 10-percent image dye loss, even after several decades of storage at room temperature and 50-percent relative humidity.

COLOR BALANCE

Color print film is balanced to be printed from a color negative, duplicate negative, or internegative, using either an additive or subtractive printer. Black-and-white (silver image) negatives can be printed to yield a fairly neutral image, although slight coloration may be seen in highlights or shadows.

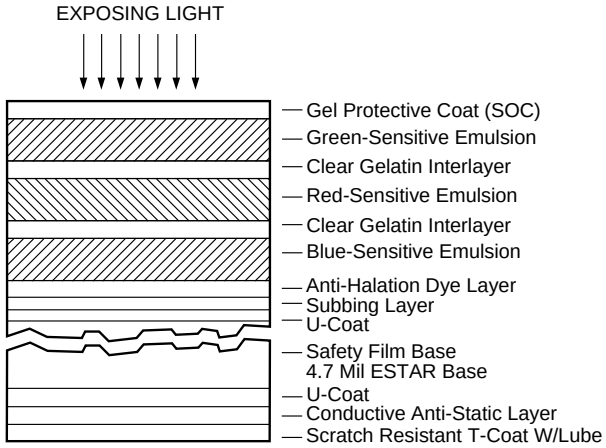
Overall filtration should include a UV-absorbing filter, such as a KODAK WRATTEN Gelatin Filter No. 2B.

FILM STRUCTURE

KODAK VISION Premier Color Print Film / 2393 is coated on an 120 micrometre (0.0047-inch) ESTAR Base featuring a proprietary electrically conductive anti-static layer, a polymeric scratch-resistant backing layer, and a process-surviving backside lubricant. Unlike rem-jet, the anti-static layer remains with the film after processing, eliminating the electrostatic attraction of dirt particles to the processed print, even at very low relative humidity. A very thin polymeric backing layer coated on top of the anti-static layer provides superior resistance to scratches, cinch marks, and abrasion of both raw stock and processed film. The backing layer also contains process-surviving lubricant and matte to optimize winding and transport characteristics.

An antihalation layer containing proprietary solid particle dyes is coated under the normal emulsion. These dyes offer superior protection against exposure by light reflected back from the support surfaces, minimizing color fringing in critical scenes like white titles and night scenes with automobile headlights. The antihalation layer also provides improved resistance to safelight edgefog, since it is coated between the support and the emulsion layers, and absorbs any support light-piping from the edge of the roll.

The imaging layers are coated on top of the antihalation layer and they contain new patented emulsion and coupler technology. The bottom layer is sensitive to blue light, and produces the yellow dye image. An interlayer controls diffusion of developer and development by-products. The next layer is sensitized to red light, and yields the cyan dye image. Another interlayer is coated on top of it. The top image-forming layer is sensitized to green light, and produces magenta dye. The very thin topmost layer (SOC) provides protection from scratches. Process-surviving lubricant and matte are used in the SOC to optimize winding and transport characteristics. The emulsion layers also contain absorber dyes to precisely control film speed and reduce intragrain light scatter, increasing sharpness and further reducing halation. These soluble absorber dyes, which give the raw stock emulsion its familiar purple-blue color, are washed out during processing.



This drawing illustrates only the relative layer arrangement of the film and is not drawn to scale.

F002_0698AC

IDENTIFICATION

KODAK VISION Premier Color Print Film / 2393 raw stock has the typical blue-purple emulsion color of print film. Slight batch-to-batch variations in raw stock color are normal. The back side of the raw stock has no rem-jet, appears dark blue to slate-gray, and has a slight iridescence.

This film has slightly less surface gloss than processed 2386 / E / 3386 / E Film. When viewed by reflected light, the back side exhibits a slight iridescence, with subtle color bands due to the dichroic nature of the very thin back-side coatings.

After processing, “2393 KODAK” is visible along the length of the film, along with strip number and date codes.

This film is available on ESTAR base *only.* Most 35 mm applications use KS-1870 (ISO type “P”) print perforations.

DARKROOM RECOMMENDATIONS

You can use sodium-vapor lamps with a KODAK No. 8 Safelight Filter / dark yellow in safelights providing general darkroom illumination. The filtered sodium-vapor lamp provides the best visual efficiency with the least visual effect on the film.

If you are using a low-wattage tungsten bulb for task-lighting, filter it with a KODAK 8 Safelight Filter / dark yellow. You can use amber Light Emitting Diodes (LEDs) (590 nm peak wavelength) for minimal task or path lighting; however, do not use them for prolonged or general darkroom illumination.

* Available from FPC, 6677 Santa Monica Boulevard, Hollywood, California 90038, 213-468-5774.

PROCESSING

Process this film in Process ECP-2B. No change in process sequence is required.

Because there is no rem-jet to remove, VISION Premier Color Print Film offers the potential for eliminating the current prebath chemicals and reducing water usage. However, exercise care if the rem-jet removal steps are eliminated, as replenishment rates will change dramatically if dry film enters the developer directly. Soluble dye buildup in the seasoned developer will also increase. Greatly reducing water flow will lead to increased concentrations of total process effluent from the laboratory, which may have regulatory implications. For further assistance, contact your Kodak engineering representative.

The antihalation dyes used in VISION Premier Color Print Film are decolorized and removed during processing. Although most of the dye is removed in the developer, complete removal is also dependent on the "tail end" solutions, such as the bleach.

To prevent static during projection, maintain a relative humidity of 50 to 60 percent in the projection room.

It is important that you maintain a "clean" process: proper solution mix and storage procedures to minimize "tar" formation, process machine and recirculation designed to minimize aeration (e.g., submerged racks), periodic cleaning of racks and tanks, proper maintenance of squeegees and wiper blades, and efficient filtration.

For more information, see KODAK Publication No. H-24.09, *Manual for Processing KODAK Motion Picture Films, Process ECP-2B Specifications, Module 9*.

LABORATORY AIM DENSITY (LAD) CONTROL METHOD

To control your process, use Process ECP-2 control strips for this product available through your local sales representative.

To aid in color timing and curve placement, negative originals should be timed relative to the Laboratory Aim Density (LAD) Control Film supplied by Eastman Kodak Company. The LAD Control Film provides both objective sensitometric control and subjective verification of the duplicating procedures used by the laboratory.

For print films, the LAD patch is printed to a neutral gray of 1.0 visual density (1.00 Equivalent Neutral Density) on the processed print at the setup lights.

The Status A densities are:

	R	G	B
Density	1.09	1.06	1.03

For more information, see KODAK Publication No. H-61, *LAD—Laboratory Aim Density*.

RECIPROCITY

You can print this film on a variety of printers, ranging from slow step-optical printers to very high-speed continuous contact printers used for release printing. Exposure times may range from 1/10 of a second to almost 1/3000 of a second, with little or no change in tone scale. For printers that change exposure time during printing, new speed reciprocity correction should be used. KODAK VISION Premier Color Print Film / 2393 has improved fade and dissolve characteristics. Printers with mechanical fader cams will no longer need to use filter correction to achieve neutral color balance with fades and dissolves. Printers with programmable light valves will need to reprogram the fade and dissolve algorithm in the printer to obtain neutral color balance with fades and dissolves. Consult the printer manufacturer for the proper test procedure to obtain the appropriate corrections.

PRINTER CONDITIONS

Pictorial Printing

The printer setup for KODAK VISION Premier Color Print Film / 2393 is similar to EASTMAN Color Print Film 2386 / E / 3386 / E, with little or no change required.

For example, if you use an additive-type printer, such as a Bell and Howell Printer, Model 6123, to print originals, you can use a 90 V dc lamp, a KODAK WRATTEN Gelatin Filter No. 2B, a KODAK Heat Absorbing Glass, No. 2043, a printer speed of 240 feet per minute, and the printer settings in the table below:

Beam	TRIM	Neutral-Density Filter	TAPE
Red	14	0.40	25
Green	14	0.50	25
Blue	11	0.60	25

You can also expose this film with a subtractive printer with a KODAK WRATTEN Gelatin Filter No. 2B, a KODAK Heat Absorbing Glass, No. 2043, and suitable color-balancing filters (KODAK WRATTEN Color Compensating Filters).

Sound-Track Printing

Analog and digital sound-track printer setup and control procedures for KODAK VISION Premier Color Print Film / 2393 are similar to Film 2386 / E / 3386 / E, with little or no change required.

Analog variable area positive sound tracks of silver plus dye usually restrict the exposure to the top two emulsion layers by inserting KODAK WRATTEN Gelatin Filters No. 12 and No. 2B* in the light beam. The optimum variable-area sound-track density for the print is between 1.1 and 1.8 (read at 800 nm). You can achieve excellent frequency response and a high signal-to-noise ratio in this density range.

Note: With the same soundtrack negative, the print density of VISION Premier Color Print Film / 2393 is about .1 higher than VISION Color Print Film / 2383.

For a variable area positive sound track of silver plus magenta dye only, printed from a negative sound track, restrict the exposure to the top two emulsion layers by inserting KODAK WRATTEN Gelatin Filter No.12 and KODAK Color Compensating Filter 110 Cyan in the light beam. The optimum variable-area sound-track density for the print is between 0.8 and 1.1 (read at 800 nm). This print density will provide a good compromise between signal-to-noise ratio and frequency response.

Use cross-modulation test procedures to determine the density of the sound-track negative required to produce minimum cross-modulation distortion at the optimum print density.

Digital sound-on-film soundtracks (e.g., Dolby Digital and Sony SDDS) are dye only. Consult the system vendor for performance recommendations.

SPLICING

Use tape splices for this film. Since ESTAR Base is impervious to most solvents, cement splices will not work. Keep the knife on the tape splicer sharp and properly aligned with the splicer platen. As the knife is lowered to cut the film, slight leftward pressure will help ensure a tight mesh of the cutting edges to give a clean cut. Taping both sides of the film is recommended to minimize fold-up or stretching. An ultrasonic weld splicer (Metric splicer) also may be used.

You can use tape splices to intercut triacetate and ESTAR Base film. However, because ESTAR Base prints are 20 micrometres thinner, there may be a slight focus difference when projecting on a large screen. To assure compatibility, order the same type of film stock for all prints used in a production.

STANDARD PRODUCTS AVAILABLE

Format	Length in Feet (Metres)	Perforation Pitch
35 mm SP666	2000 (610)	KS-1870
35 mm SP779	4000 (1220)	KS-1870
35 mm SP789	6000 (1829)	KS-1870

Note: For availability of non-standard products, contact your Kodak location.

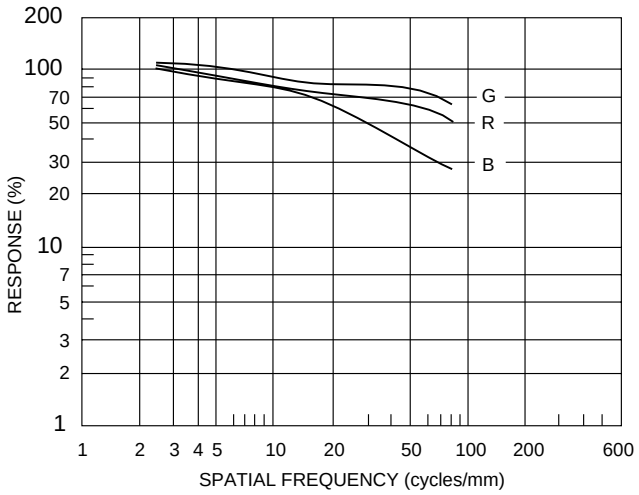
IMAGE STRUCTURE

This film's excellent sharpness captures the detail in the printing negative for projection onto the largest of theatre screens. Fine-grained emulsions, an ultra-thin layer structure, intragrain absorbing dyes, and superior halation protection contribute to its performance.

MODULATION-TRANSFER CURVE

This graph shows a measure of the visual sharpness of this film. The x-axis, "Spatial Frequency," refers to the number of sine waves per millimetre that can be resolved. The y-axis, "Response," corresponds to film sharpness. The longer and flatter the line, the more sine waves per millimetre that can be resolved with a high degree of sharpness — and, the sharper the film.

Modulation-Transfer Curves



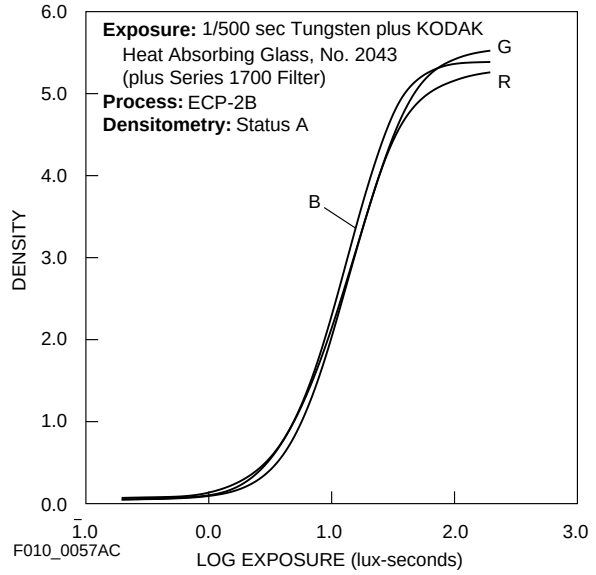
F010_0058AC

* You can omit the No. 2B Filter without affecting the sound quality. Using this filter is an operational convenience to conform with printer setup for other products that require it.

SENSITOMETRIC CURVES

The curves describe this film's response to red, green, and blue light. Sensitometric curves determine the change in density on the film for a given change in log exposure.

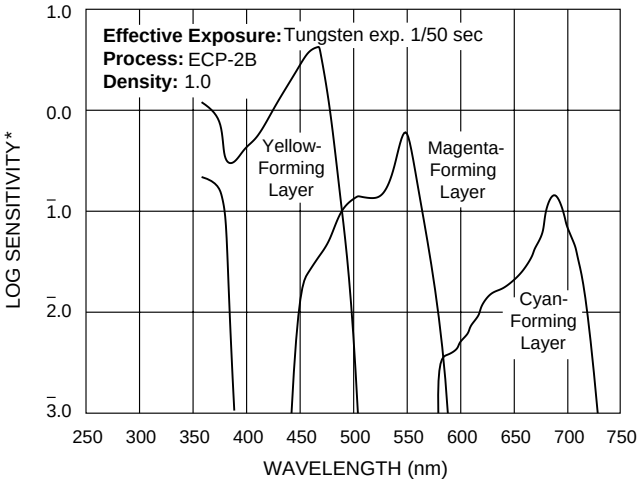
Sensitometric Curves



SPECTRAL-SENSITIVITY CURVES

These curves depict the sensitivity of this film to the spectrum of light. They are useful for adjusting optical printers and film recorders and for determining, modifying, and optimizing exposure.

Spectral-Sensitivity Curves



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

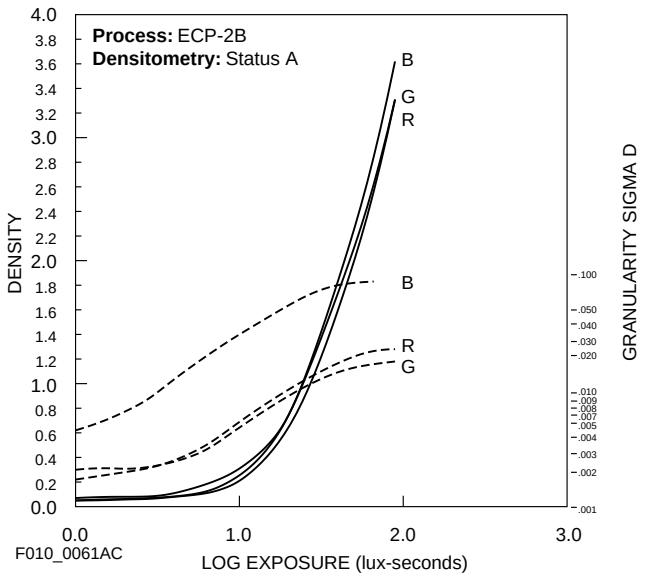
The spectral sensitivity of VISION Premier Color Print Film / 2393 more closely matches EASTMAN EXR Color Intermediate Film 5244, 2244. This gives a better match between direct prints and prints from a duplicate negative produced on EASTMAN EXR Color Intermediate Film.

DIFFUSE RMS GRANULARITY CURVES

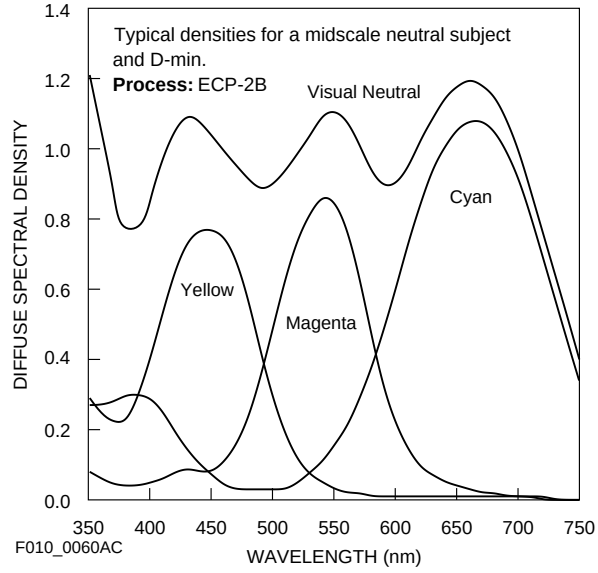
The emulsion granularity of this film is similar to Film 2386 / E / 3386 / E. VISION Premier Color Print Film / 2393 does have a higher level of very small matte. The matte particles may be visible at extremely close viewing distance to the screen, especially in clear (D-min) areas of the print.

To find the rms granularity value for a given density, find the density on the left vertical scale and follow horizontally to the sensitometric curve and then go vertically (up or down) to the granularity curve. At that point, follow horizontally to the Granularity Sigma D scale on the right. Read the number and multiply by 1000 for the rms value.

Diffuse RMS Granularity Curves



Spectral-Dye-Density Curves



ADDITIONAL INFORMATION

For assistance, call the Kodak Information Center in the U.S. at 1-800-242-2424 between 8 a.m. and 8 p.m. (Eastern time), Monday–Friday; or in Canada at 1-800-465-6325 between 8:30 a.m. and 5 p.m. (Eastern time).

KODAK LOCATIONS

FOR DIRECT ORDERING IN THE UNITED STATES:
1-800-621-FILM

ATLANTA, GEORGIA

4 Concourse Parkway
Suite 300
Atlanta, Georgia 30328-5379
Information: 800-800-8398

CHICAGO, ILLINOIS

815 West Van Buren, Suite 320
Chicago, Illinois 60607
Information: 312-492-1423

DALLAS, TEXAS

11337 Indian Trail
Dallas, Texas 75229
Information: 972-481-1150 or 312-492-1423

HOLLYWOOD, CALIFORNIA

6700 Santa Monica Boulevard
P. O. Box 38939
Hollywood, California 90038-1203
Information: 323-464-6131

NEW YORK, NEW YORK

360 West 31st Street
New York, New York 10001-2727
Information: 212-631-3450

LATIN AMERICAN REGIONAL OFFICE

8600 NW 17th Street, Suite 200
Miami, Florida 33126
Information: 305-507-5656

FOR DIRECT ORDERING IN CANADA:
1-800-621-FILM

MONTREAL, CANADA

Kodak Canada Inc.
4 Place du Commerce
Ile des Soeurs
Verdun, Quebec, H3E 1J4, Canada
Information: 514-761-3481

TORONTO, CANADA

Kodak Canada Inc.
3500 Eglinton Avenue West
Toronto, Ontario, M6M 1V3, Canada
Information: 416-766-8233

VANCOUVER, CANADA

Kodak Canada Inc.
4185 Still Creek Drive
Burnaby, British Columbia, V5C 6G9, Canada
Information: 604-320-1777

KODAK On Line At:
http://www.kodak.com/go/motion

Professional
Motion Imaging

KODAK VISION Premier Color Print Film / 2393™
KODAK Publication No. **H-1-2393t**
CAT 118 6618

Kodak, Vision, Estar, Eastman, EXR, 2244, 2386, 2393, 3386, 5244, Keykode, and Wratten are trademarks.

New 9-98
Printed in U.S.A.