KODAK PROFESSIONAL EKTAR 100 Film

Kodak

TECHNICAL DATA / **COLOR NEGATIVE FILM**

February 2010 • E-4046

KODAK PROFESSIONAL EKTAR 100 Film is the world's finest grain color negative film. With ISO 100 speed, high saturation and ultra-vivid color, this film offers the finest, smoothest grain of any color negative film available today. An ideal choice for commercial photographers and advanced amateurs, KODAK PROFESSIONAL EKTAR 100 Film is recommended for applications such as nature, travel and outdoor photography, as well as for fashion and product photography.

TECHNOLOGY	BENEFIT
• Incorporates Entertainment Imaging's KODAK VISION Film technology	• World's finest-grained color negative film
• Micro-Structure Optimized T-GRAIN® Emulsions	• Ideal for scanning
• Kodak's Proprietary Advanced Development Accelerators	• Extraordinary enlargement capability from a 35mm negative
• Optimized Emulsion Spectral Sensitivity and Image Modifier Chemistry	• Ultra-vivid color
• Kodak's Advanced Cubic Emulsions	• Optimized sharpness
• Kodak's Proprietary DIR couplers	• Distinct edges, fine detail
• Unified Emulsion Technology	• Printing compatible with other KODAK Films

SIZES AVAILABLE

Availability may differ from country to country. See your dealer who supplies KODAK PROFESSIONAL Products.

Size/Format	Code	Base
135	5110	0.13 mm (0.005 inch) acetate
120	6110	0.10 mm (0.004 inch) acetate
Sheets		0.19 mm (0.007 inch) ESTAR Thick

STORAGE AND HANDLING

Store unexposed film at 21° C (70° F) or lower in the original sealed package. For extended periods, store film at 13° C (55° F) to preserve consistency.

To avoid moisture condensation on film that has been refrigerated, allow the film to warm up to room temperature before opening the package. Typical warm-up times are given in the table below.

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)
135 magazine	1 1/2	1 1/4	1
120	1	3/4	1/2
10-sheet box	1 1/2	1	1

Load and unload roll-film cameras in subdued light. Total darkness is required when you load and unload sheet film holders.

Process film as soon as possible after exposure. Protect negatives from strong light, and store them in a cool, dry place. For long-term storage, keep negatives at a temperature between 2° C (35° F) and 13° C (55° F) and at a relative humidity between 30 and 35 percent.

DARKROOM RECOMMENDATIONS

Do not use a safelight. Handle unprocessed film in total darkness.

EXPOSURE

Film Speed

Use the speed numbers in the tables below with cameras or meters marked for ISO, ASA, or DIN speeds or exposure indexes (EIs). Do not change the film-speed setting when metering through a filter. Metering through filters may affect light meter accuracy; see your meter or camera manual for specific information. For critical work, make a series of test exposures.

Light Source	KODAK WRATTEN Gelatin Filter	ISO Speed
Daylight or Electronic Flash	None	100
Photolamp (3400 K)	No. 80B	32
Tungsten (3200 K)	No. 80A	25

* For best results without special printing.

Daylight

Use the exposures in the table below for average frontlit subjects from 2 hours after sunrise to 2 hours before sunset.

Lighting Conditions	Shutter Speed (second) and Lens Opening
Bright or Hazy Sun on Light Sand or Snow	1/125 *f*/16
Bright or Hazy Sun (Distinct Shadows)	1/125 *f*/11*
Weak, Hazy Sun (Soft Shadows)	1/125 *f*/8
Cloudy Bright (No Shadows)	1/125 *f*/5.6
Heavy Overcast or Open Shade‡	1/125 *f*/4

* Use f/5.6 for backlit close-up subjects.
† Use f/8 for backlit close-up subjects.
‡ Subject shaded from the sun but lighted by a large area of sky.

Adjustments for Long and Short Exposures

No filter correction or exposure compensation is required for exposures from 1/10,000 second to 1 second. For critical applications with longer exposure times, make tests under your conditions.

Electronic Flash

Use the appropriate guide number in the table below as starting-point recommendations for your equipment. Select the unit output closest to the number given by your flash manufacturer. Then find the guide number for feet or metres. To determine the lens opening, divide the guide number by the flash-to-subject distance. If negatives are consistently too dense (overexposed), use a higher guide number; if they are too thin (underexposed), use a lower number.

Unit Output (BCPS)*	Guide Number Distances in Feet/Metres
350	40/12
500	50/15
700	60/18
1000	70/21
1400	85/26
2000	100/30
2800	120/36
4000	140/42
5600	170/50
8000	200/60

* BCPS = beam candlepower seconds

Fluorescent and High-Intensity Discharge Lamps

Use the color-compensating filters and exposure adjustments in the tables below as starting points to expose KODAK PROFESSIONAL EKTAR 100 Film under fluorescent or high-intensity discharge lamps. For critical applications, make a series of test exposures under your actual conditions.

To avoid the brightness and color variations that occur during a single alternating-current cycle, use exposure times of 1/60 second or longer with fluorescent lamps; with high-intensity discharge lamps, use exposure times of 1/125 second or longer.

Type of Fluorescent Lamp	KODAK Color Compensating Filter(s)	Exposure Adjustment
Daylight	20R + 5M	+1 stop
White	40B + 5C	+1 2/3 stop
Warm White	40B + 40C	+2 stops
Warm White Deluxe	40B + 50C	+2 stops
Cool White	30B	+1 stop
Cool White Deluxe	40C + 10M	+1 stop

High-Intensity Discharge Lamp (CCT)	KODAK Color Compensating Filter(s)	Exposure Adjustment
High-Pressure Sodium Vapor	50B + 70C	+2 2/3 stops
Metal Halide	5C + 10M	+2/3 stop
Mercury Vapor with Phosphor	30B + 5C	+1 stop
Mercury Vapor without Phosphor	80R	+1 2/3 stop

PROCESSING

Process EKTAR 100 Film in KODAK FLEXICOLOR Chemicals for Process C-41 using the replenishment and wash rates in the tables below. Note that the developer replenishment rates are starting-point recommendations only and may vary due to the amount of exposure to the film, scene content, and the presence/absence of sprocket holes.

Replenishment and Wash Rates

Film Size	KODAK FLEXICOLOR Developer Replenisher	KODAK FLEXICOLOR Developer Replenisher LORR	KODAK FLEXICOLOR Bleach III, Fixer, and Stabilizer	Wash Water*
135	1012 mL/m^2 94 mL/ft^2	506 mL/m^2 47 mL/ft^2	861 mL/m^2 80 mL/ft^2	31 L/m^2 2.9 L/ft^2
120	1012 mL/m^2 94 mL/ft^2	506 mL/m^2 47 mL/ft^2	1023 mL/m^2 107 mL/ft^2	31 L/m^2 2.9 L/ft^2
4 x 5	1012 mL/m^2 94 mL/ft^2	506 mL/m^2 47 mL/ft^2	1023 mL/m^2 107 mL/ft^2	31 L/m^2 2.9 L/ft^2
8 x 10	1012 mL/m^2 94 mL/ft^2	506 mL/m^2 47 mL/ft^2	1023 mL/m^2 107 mL/ft^2	31 L/m^2 2.9 L/ft^2

* Rates are for first wash and a two-stage countercurrent final wash. Double these rates for a single stage final wash.

JUDGING NEGATIVE EXPOSURES

You can check the exposure level with a suitable electronic densitometer equipped with a filter such as a KODAK WRATTEN Gelatin Filter No. 92 or the red filter for Status M densitometry. Depending on the subject and the light source used for exposure, a normally exposed and processed color negative measured through the red filter should have the approximate densities listed below.

Because of the extreme range in skin color, use these red density values for a normally lit forehead only as a guide. For best results, use a *KODAK Gray Card* (gray side).

Area Measured	Density Reading
KODAK Gray Card (gray side) receiving same illumination as subject	0.77 to 0.87
Lightest step (darkest in the negative) of a *KODAK Paper Gray Scale* receiving same illumination as subject	1.13 to 1.23
Highest diffuse density on normally lighted forehead —light complexion —dark complexion	 1.08 to 1.18 0.93 to 1.03

RETOUCHING

You can retouch the 120 and sheet sizes on both the base side and the emulsion side. Retouch only the emulsion side of 135 size film.

For information on retouching equipment, supplies, and techniques, see KODAK Publication No. E-71, *Retouching Color Negatives*.

PRINTING NEGATIVES

This film is optimized for printing on KODAK PROFESSIONAL SUPRA ENDURA, SUPRA ENDURA VC Digital, ULTRA ENDURA, ULTRA ENDURA High Definition, and PRO IMAGE II Papers, and on KODAK PROFESSIONAL ENDURA Metallic VC Digital Paper.

Make color slides and transparencies by printing the negatives on KODAK PROFESSIONAL ENDURA Transparency Display Material or KODAK PROFESSIONAL ENDURA Clear Display Material.

Make black-and-white prints on any of the materials mentioned above using the recommendations in KODAK Publication CIS-274, *Printing Black-and-White Images Without KODAK Black-and-White Papers*.

Digital Files

You can scan your image to a file and print digitally to —

KODAK PROFESSIONAL ENDURA Metallic VC Digital Paper

KODAK PROFESSIONAL SUPRA ENDURA Paper

KODAK PROFESSIONAL SUPRA ENDURA VC Digital Paper

KODAK PROFESSIONAL ULTRA ENDURA Paper

KODAK PROFESSIONAL ULTRA ENDURA High Definition Paper

KODAK PROFESSIONAL PRO IMAGE II Paper

KODAK PROFESSIONAL ENDURA Transparency Display Material

KODAK PROFESSIONAL ENDURA Clear Display Material

SCANNING NEGATIVES

You can easily scan EKTAR 100 Film negatives with a variety of linear-array-CCD, area-array-CCD, and PMT film scanners. You can scan negatives on desktop scanners as well as high-end drum scanners.

Because no standards exist to define the colored filter sets that film scanners use to capture the red, green, and blue information of the film image, each manufacturer's scanner has its own characteristic output. The output depends on the scanner's sensitivity to the dyes in the film. This sensitivity is determined by the spectral distribution of the colored filter sets and/or the spectral sensitivity of the charge-coupled-device (CCD). In addition to these spectral specifications, scanner output depends on the look-up tables or matrices that the scanner uses to output information for CRT monitors, transmission, etc. These tables or matrices are part of either "plug-in" programs used with specific software packages designed for image manipulation, updateable ROMs included with the equipment, or fixed algorithms for calibrating and balancing, similar to those used in photographic color printing equipment.

The generic "color negative film" channel designation available with scanner software is only a starting point. You can adjust the final color balance and the scene-dependent contrast and brightness of an image by using the scanner's controls during pre-scan, or by using an image-manipulation software program or workstation after acquisition. Some scanners allow you to use "plug-in" programs to customize scanner setups.

For more information, visit the following Web sites.

To access	Go to
Film Terms for KODAK PHOTO CD Imaging Workstations	www.kodak.com/go/pcdFilmTerms
Drivers for KODAK Film Scanners	www.kodak.com/go/scannerDrivers

IMAGE STRUCTURE

Print Grain Index

The Print Grain Index number refers to a method of defining graininess in a print made with diffuse-printing illumination. It replaces rms granularity and has a different scale which cannot be compared to rms granularity.

- The method uses a uniform perceptual scale, with a change of four units equaling a *just noticeable difference* in graininess to 90 percent of observers.
- A Print Grain Index rating of 25 on the scale represents the approximate visual threshold for graininess. A higher number indicates an increase in the amount of graininess observed.
- The standardized inspection (print-to-viewer) distance for all print sizes is 14 inches, the typical viewing distance for a 4 x 6-inch print.
- In practice, larger prints will likely be viewed from distances greater than 14 inches, which reduces apparent graininess.
- Print Grain Index numbers may not represent graininess observed from more specular printing illuminants, such as condenser enlargers.

Negative Size: 24 x 36 mm (135)

Print Size in inches	4x6	8x10	16x20
Magnification	4.4X	8.8X	17.8X
Print Grain Index	less than 25*	38	66

* 25 is the visual threshold for perception of grain.

Negative Size: 6 x 6 cm (120)

Print Size in inches	4x6	8x10	16x20
Magnification	2.6X	4.4X	8.8X
Print Grain Index	less than 25	less than 25	38

Negative Size: 4 x 5 Inches (Sheets)

Print Size in inches	4x6	8x10	16x20
Magnification	1.2X	4X	8X
Print Grain Index	less than 25	less than 25	less than 25

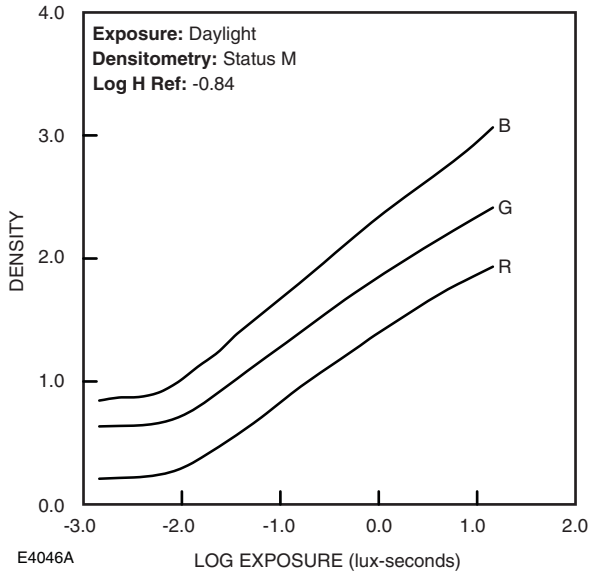
Negative Size: 8 x 10 Inches (Sheets)

Print Size in inches	4x6	8x10	16x20
Magnification	0.6X	1X	2X
Print Grain Index	less than 25	less than 25	less than 25

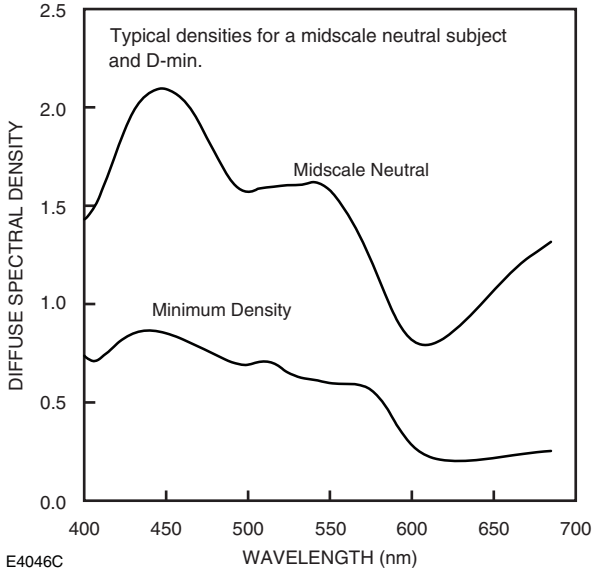
For more information, see KODAK Publication No. E-58, *Print Grain Index—An Assessment of Print Graininess from Color Negative Films.*

CURVES

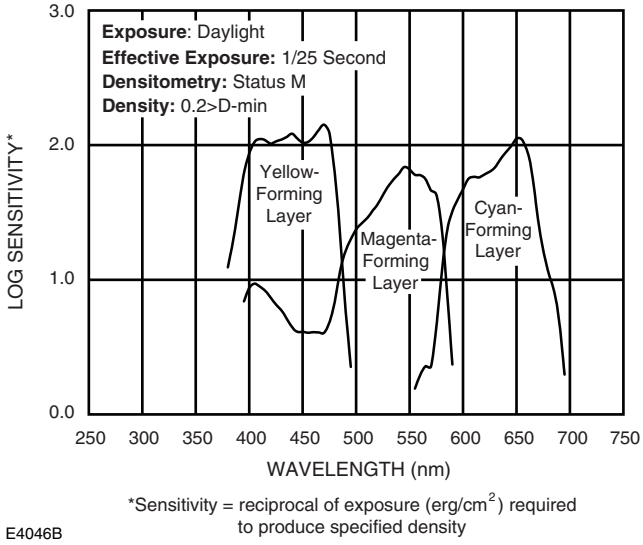
Characteristic Curves



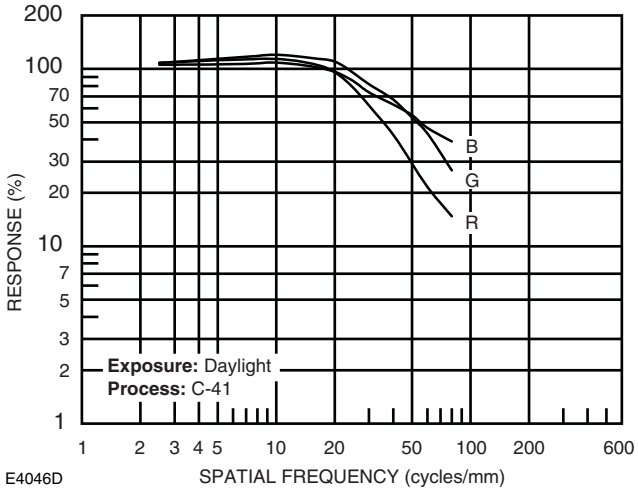
Spectral-Dye-Density Curves



Spectral-Sensitivity Curves



Modulation Transfer Function



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.

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

E-30	*Storage and Care of KODAK Photographic Materials—Before and After Processing*
E-58	*Print Grain Index*
E-71	*Retouching Color Negatives*
E-4021	*KODAK PROFESSIONAL SUPRA ENDURA Paper*
E-4020	*KODAK PROFESSIONAL ULTRA ENDURA Paper*
E-4038	*KODAK PROFESSIONAL ENDURA Transparency and Clear Display Materials*
E-4047	*KODAK PROFESSIONAL ENDURA Metallic VC Digital Paper*
E-4042	*KODAK PROFESSIONAL SUPRA ENDURA VC Digital Paper*
E-4044	*KODAK PROFESSIONAL ULTRA ENDURA High Definition Paper*
E-4002	*KODAK PROFESSIONAL PRO IMAGE II Paper*
E-4040	*KODAK PROFESSIONAL PORTRA Films*
J-38	*Using KODAK FLEXICOLOR Chemicals in Sink-Line, Bath, and Rotary-Tube Processors*
Z-131	*Using KODAK FLEXICOLOR 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 EKTAR 100 Film 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 • ROCHESTER, NY 14650

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