

# KODAK EKTACHROME 400X Professional Film



KODAK EKTACHROME 400X Professional Film is a high-speed color transparency film featuring fine grain and high sharpness. It has a warm color balance with bright, bold, saturated colors. It is ideal for photojournalism or general outdoor photography under variable and low-light conditions. Its high speed makes it an excellent choice for photographing fast action and using handheld telephoto lenses, or for situations that require small apertures for good depth of field. It is designed for normal E-6 processing.

This film is intended for exposure with daylight or electronic flash at exposure times of 1/10,000 second to 1 second. With exposure and filter corrections, you can make exposures as long as 10 seconds. Using proper filtration, expose it with photolamps (3400 K) or tungsten illumination (3200 K).

Use this film to produce color transparencies suitable for projection, direct viewing with 5000 K illumination, printing by photomechanical methods, or by photographic methods of direct duplication, direct reversal printing, or printing by internegatives.

FEATURES	BENEFITS
<ul style="list-style-type: none"> <li>High color saturation, warm color balance</li> </ul>	<ul style="list-style-type: none"> <li>Produces pleasing colors even in dim daylight conditions</li> </ul>
<ul style="list-style-type: none"> <li>Excellent color rendition</li> </ul>	<ul style="list-style-type: none"> <li>Produces pleasing flesh tones combined with enhanced colors</li> </ul>
<ul style="list-style-type: none"> <li>High speed of ISO 400</li> </ul>	<ul style="list-style-type: none"> <li>Permits the use of faster shutter speeds to stop action</li> <li>Extends the usable range of electronic flash</li> <li>Permits handheld use of longer telephoto lenses</li> </ul>

## SIZES AVAILABLE

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

Rolls	Code	Acetate Base
135-36	EPL	5-mil (0.13 mm)
35 mm x 100 ft (perf)		
120	EPL	3.9-mil (0.10 mm)

## STORAGE AND HANDLING

Load and unload film in subdued light.

Store unexposed film at 13°C (55°F), or lower, in the original sealed package. To avoid moisture condensation on film that has been refrigerated, allow the film to warm up to room temperature before opening the package.

Store exposed film in a cool, dry place, and process it promptly. Protect processed film from strong light, and store it in a cool, dry place. For more information, see KODAK Publication No. E-30, *Storage and Care of KODAK Films and Papers—Before and After Processing*.

## DARKROOM RECOMMENDATIONS

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

## EXPOSURE

### Speed and Filter

Use the exposure index (EI) numbers below with meters and cameras marked for ISO or ASA speeds or exposure indexes. 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	Exposure Index
Daylight or Electronic Flash	None	400
Photo lamp (3400 K)	80B	125
Tungsten (3200 K)	80A	100

### 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)	Lens Opening
Bright or hazy sun on light sand or snow	1/500	f/22
Bright or hazy sun, distinct shadows	1/500	f/16*
Weak, hazy sun, soft shadows	1/500	f/11
Cloudy bright, no shadows†	1/500	f/8
Heavy overcast, open shade	1/500	f/5.6

\* Use f/8 at 1/500 second for backlit close-up subjects.

† Subject shaded from the sun but lit by a large area of clear sky.

### Electronic Flash

Use the appropriate guide number below as a starting point for your equipment. To determine the lens opening, divide the guide number by the flash-to-subject distance. If transparencies are consistently too thin (overexposed), use a higher guide number; if they are too dense (underexposed), use a lower number.

Unit Output (BCPS)*	Guide Number	
	Distance in Feet	Distance in Metres
350	85	26
500	1000	30
700	120	36
1000	140	42
1400	170	50
2000	200	60
2800	240	70
4000	280	85
5600	340	105
8000	400	120

\*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 this 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.

Fluorescent Lamps	KODAK Color Compensating Filters	Exposure Adjustment
Daylight	50R	+1 stop
White	40M	+2/3 stop
Warm White	20C + 40M	+1 stop
Warm White Deluxe	30B + 30C	+1 1/3 stops
Cool White	40M + 10Y	+1 stop
Cool White Deluxe	20C + 10M	+2/3 stop
Unknown Fluorescent*	30M	+2/3 stop

\*When the type of fluorescent lamp is unknown, try this filter and exposure adjustment; color rendition may be less than optimum.

High-Intensity Discharge Lamps	KODAK Color Compensating Filters	Exposure Adjustment
General Electric Lucalox*	80B + 20C	+2 1/3 stops
General Electric Multi-Vapor	20R + 20M	+2/3 stop
Deluxe White Mercury	30R + 30M	+1 1/3 stops
Clear Mercury	70R	+1 1/3 stops

\*This is a high-pressure sodium-vapor lamp. The information in the table may not apply to other manufacturers' high-pressure sodium-vapor lamps due to differences in spectral characteristics.

**Note:** Consult the manufacturer of high-intensity lamps for ozone ventilation requirements and safety information on ultraviolet radiation.

Some primary color filters were used in the previous tables to reduce the number of filters and keep the exposure adjustment to a minimum. Red filters were substituted for equivalent filtration in magenta and yellow. Blue filters were substituted for equivalent filtration in cyan and magenta.

## Adjustments for Long and Short Exposures

No filter correction or exposure compensation is required for exposure times from 1/10,000 second to 1/10 second. For a 1-second exposure, increase the lens opening by  $\frac{1}{3}$  stop and add a CC05R filter. At an exposure of 10 seconds, increase the lens opening by  $\frac{1}{2}$  stop and use a CC10R filter.

**Note:** This information applies only when the film is exposed to daylight. The data are based on average emulsions and assume normal recommended processing. Use the data only as a guide. For critical applications, make tests under your conditions.

## PROCESSING

Process this film in KODAK Chemicals, Process E-6.

For consistent processing of these and all other EKTACHROME Films, use a lab that is a member of the KODAK Q-LAB Process Monitoring Service. To locate a member of Q-LAB service in your area, visit [www.kodak.com/go/qlab](http://www.kodak.com/go/qlab)

## RETOUCHING

All sizes (except 35 mm) of EKTACHROME Films can be chemically retouched on both the base side and the emulsion side. Only the emulsion side of 35 mm formats can be retouched. For information on retouching equipment, supplies, and techniques, see KODAK Publication E-68, *Retouching Color Transparencies on KODAK EKTACHROME Film*.

## PRINTING TRANSPARENCIES

You can reproduce images made on EKTACHROME 400X Professional Film by using a variety of Kodak materials.

### Duplicate Color Transparencies

For direct printing, use—

KODAK PROFESSIONAL EKTACHROME  
Duplicating Film EDUPE

### Color Prints

You can scan your image to a file and print digitally to—  
KODAK PROFESSIONAL PORTRA, SUPRA, and  
ULTRA ENDURA Papers

KODAK PROFESSIONAL ENDURA Clear Digital  
Display Material

KODAK PROFESSIONAL ENDURA Transparency  
Display Material

KODAK PROFESSIONAL ENDURA Metallic Paper

## **SCANNING TRANSPARENCIES**

### **For Graphic Arts Applications**

The KODAK EKTACHROME Film family is characterized by sets of image dyes which perform very similarly when scanned. The scanner operator can set up one basic tone scale and color-correction channel for all EKTACHROME Films, and then optimize the tone scale and gray balance for the requirements of individual images.

Use the KODAK Color Input Target / Q-60E1 (4 x 5-inch transparency) or Q-60E3 (35 mm slide) to establish the setup for KODAK EKTACHROME Films on all scanners. These targets are manufactured to ANSI standards and represent the dye sets of all EKTACHROME Films.

### **For Photo CD Applications**

Use the Universal E-6 Film Term to scan all KODAK EKTACHROME films for Photo CD Imaging Workstation applications.

For output to a Photo CD Player: Using the Universal E-6 Film Term should result in an image that closely matches your original transparency in density, tone scale, and overall color balance when viewed on a player.

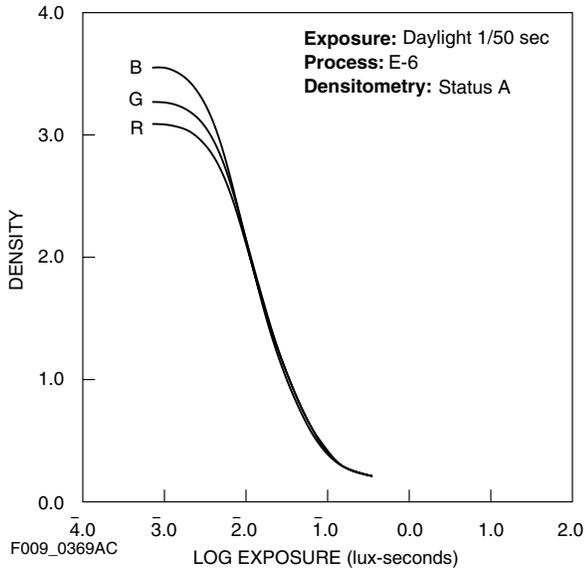
For output to Devices Other than Photo CD Players: The YCC data that results when using the Universal E-6 Film Term is capable of producing a high-quality duplicate of your original transparency in terms of density, tone scale, and color reproduction. Final quality of your reproduced image depends on the capabilities of your output device, the viewing environment, and the rendering path that is used.

# CURVES

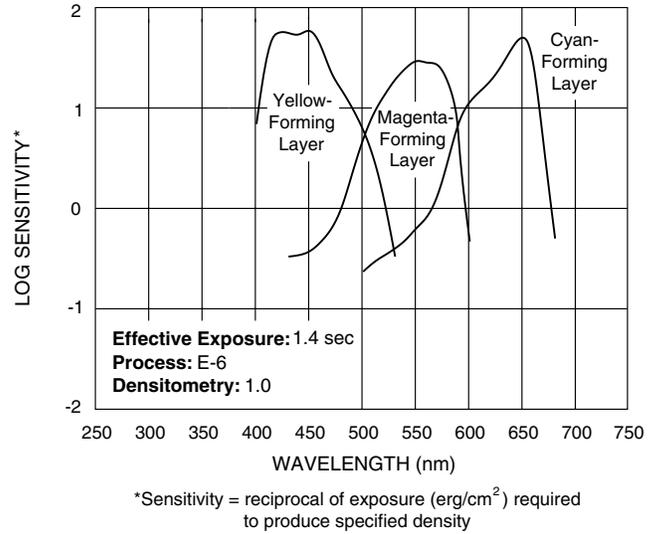
## Diffuse rms Granularity\* 19 (fine)

\*Read on a gross diffuse visual density of 1.0, using a 48-micrometre aperture, 12X magnification.

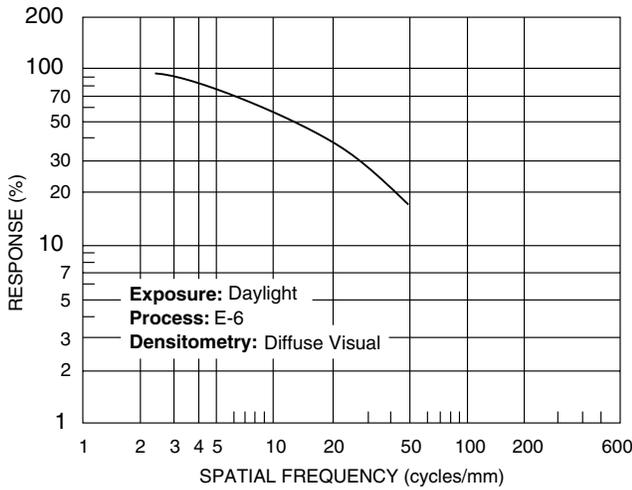
### Characteristic Curves



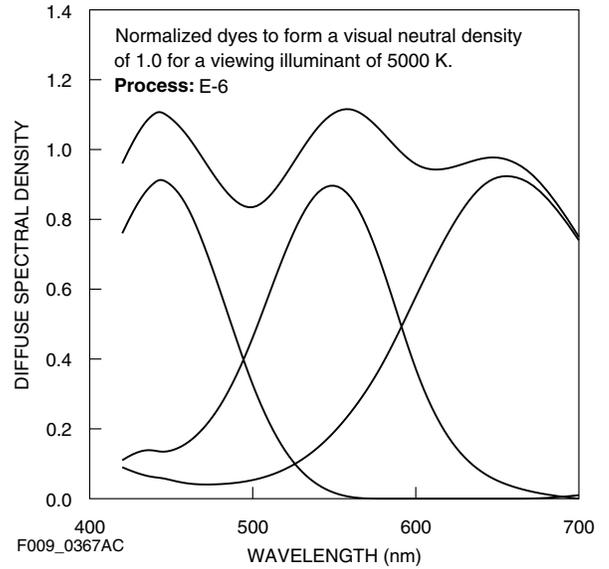
### Spectral-Sensitivity Curves



### Modulation-Transfer Curves



### Spectral-Dye-Density Curves



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## 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, from dealers who sell Kodak products, or you can contact Kodak in your country for more information.

- E-8      *KODAK EKTACHROME 64 Professional Film*
- E-27     *KODAK EKTACHROME 100 Professional Film*
- E-28     *KODAK PROFESSIONAL EKTACHROME Film E200*
- E-30     *Storage and Care of KODAK Photographic Materials—Before and After Processing*
- E-38     *KODAK EKTACHROME Duplicating Films*
- E103RF   *KODAK PROFESSIONAL Color Reversal Films*
- E-113    *KODAK EKTACHROME 100 Plus Professional Film*
- E-130    *KODAK EKTACHROME 64T Professional Film*
- E-144    *KODAK EKTACHROME 160T Professional Film*
- E-145    *KODAK EKTACHROME 320T Professional Film*
- E-147    *KODAK EKTACHROME P1600 Professional Film*
- E-163    *KODAK PROFESSIONAL EKTACHROME Film E100VS*
- E-4024   *KODAK PROFESSIONAL EKTACHROME Films E100G and E100GX*
- Z-119    *Using KODAK Chemicals, Process E-6*

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 EKTACHROME 400X Professional 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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**Kodak Professional**  
Imaging Solutions