

# KODAK ULTRA MAX 400 Film

Kodak alaris

## TECHNICAL DATA / COLOR NEGATIVE FILM

February 2016 • E-7023

KODAK ULTRA MAX 400 Film is a worry-free, easy-to-use high speed film designed for snapshotters. ULTRA MAX 400 Film gives you the flexibility you need to take consistently better pictures in more picture taking situations—better low-light picture quality with fewer underexposures, better results with zoom lenses, greater flash range, better "stop-action" photos, and reduced impact of camera shake.

Even when enlarged, ULTRA MAX 400 Film delivers excellent sharpness and fine grain for crisp, clear pictures. Optimized color precision technology provides consistently bright, vibrant colors with accurate skin-tone reproduction for natural-looking people pictures.

ULTRA MAX 400 Film is designed for processing in KODAK FLEXICOLOR Chemicals for Process C-41. It is printing compatible with KODAK GOLD Films.

FEATURES	ADVANTAGES	BENEFIT
<ul style="list-style-type: none"><li>Advanced KODAK T-GRAIN Emulsion technology</li><li>Antenna dye sensitization</li><li>Advanced development accelerators</li><li>Optimized color precision technology</li></ul>	<ul style="list-style-type: none"><li>Highest effective speed of any consumer 400 offering</li><li>Better underexposure protection</li><li>Long flash range</li><li>Fine grain and high sharpness</li><li>Great skin tones and superb color</li></ul>	<ul style="list-style-type: none"><li>Better pictures under more conditions (inside, outside, bad light, fast action)</li></ul>

## STORAGE AND HANDLING

Load and unload your camera in subdued light.

Store unexposed film at 21°C (70°F) or lower in the original sealed package. Always store film (exposed or unexposed) in a cool, dry place. Process film as soon as possible after exposure.

## DARKROOM RECOMMENDATIONS

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

## EXPOSURE

**Film Speed: ISO/DIN 400/27°**

Use these speed numbers in the table below with cameras or meters marked for ISO, ASA, or DIN speeds or exposure indexes. Do not change the film-speed setting when you use a filter if your camera has through-the-lens metering. For critical work, make a series of test exposures.

### 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 (seconds)	Lens Opening
Bright/Hazy Sun on Light Sand or Snow	1/500	f/16
Bright or Hazy Sun (Distinct Shadows)*	1/500	f/11
Weak, Hazy Sun (Soft Shadows)	1/500	f/8
Cloudy Bright (No Shadows)	1/500	f/5.6
Heavy Overcast, Open Shade†	1/500	f/4

\*Use f/5.6 for backlit close-up subjects.

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

### Electronic Flash:

Use the appropriate guide number in the table below as a starting point 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 too dark (overexposed), use a higher guide number; if they are too light (underexposed), use a lower number.

Unit Output (BCPS)*	Guide Number	
	Distance in Feet	Distance in Meters
350	85	26
500	100	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

**Automatic Flash Units:** Set ISO / ASA selector to 400.

### Fluorescent and High-Intensity Discharge Lights

For best results without special printing, use the color-correction filters in the table below as starting points when you expose these films under fluorescent and high-intensity discharge lamps. Use exposure times of 1/60 second or longer to avoid the brightness and color variations that occur during a single alternating-current cycle.

Though this film is tolerant of mixed-lighting situations, for best color results under uniform fluorescent or high-intensity discharge sources, use the exposure and filter recommendations given below. These recommendations are starting points.

Actual filtration may vary between lamps and lamp manufacturers. Depending on the specific source, additional filtration or special printing may be required to achieve best results.

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

**Note:** When you do not know the type of fluorescent lamps, try a 10C + 20M filter combination and increase exposure by 2/3 stop; color rendition may be less than optimum.

Type of High-Intensity Discharge Lamp	KODAK Color Compensating Filters	Exposure Adjustment
High Pressure Sodium Vapor	70B + 50C	+ 3 stops
Metal Halide	10R + 20M	+ 2/3 stop
Mercury Vapor with Phosphor	20R + 20M	+ 2/3 stop
Mercury Vapor without Phosphor	80R	+ 1 2/3 stops

**Note:** Some primary color filters were used in the tables above to reduce the number of filters and/or to 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

You do not need to make any exposure or filter adjustments for exposure times of 1/10,000 second to 1 second. Exposures longer than 1 second may require compensation and filtration.

## PROCESSING

Process in KODAK FLEXICOLOR Chemicals for Process C-41.

## JUDGING NEGATIVE EXPOSURES

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

### Densities of Properly Exposed and Processed Negatives

Area Measured on the Negative	Density Reading
The KODAK Gray Card* (gray side) receiving the same illumination as the subject	0.80 to 1.00
The lightest step (darkest in the negative) of a KODAK Paper Gray Scale receiving the same illumination as the subject	1.20 to 1.40
Normally lighted forehead of person with light complexion†	1.10 to 1.40
Normally lighted forehead of person with dark complexion†	0.85 to 1.25

\*KODAK Publication No. R-27

†Because of the extreme range in skin color, use these values only as a guide. For best results, use a KODAK Gray Card (gray side).

## PRINTING NEGATIVES

This film is optimized for printing on KODAK EDGE Paper, KODAK ROYAL Digital Paper, KODAK Photo Book Paper and KODAK PROFESSIONAL ENDURA Premier Paper.

## IMAGE STRUCTURE

### Print Grain Index Magnification Table:

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.

This method uses a uniform perceptual scale, with a change for four units equaling a *just noticeable difference* in graininess for 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.

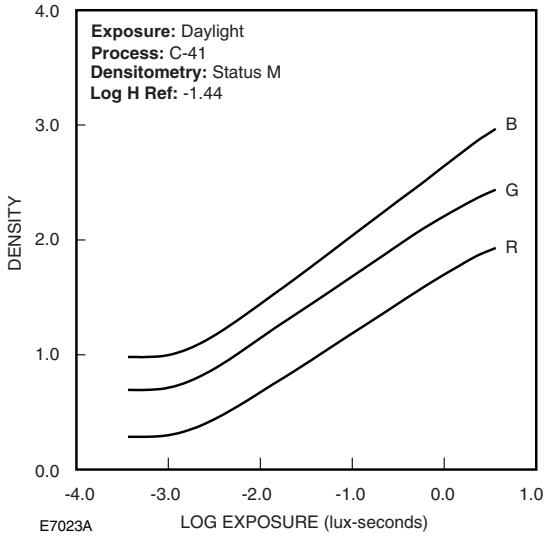
The Print Grain Index numbers listed in this publication apply to the following standards:

<b>Negative Size:</b>	24 x 36 mm (135-size standard format)
<b>Print Size:</b>	4 x 6 inches (10.2 x 15.2 cm)
<b>Magnification:</b>	4.4X
<b>Print Grain Index:</b>	46

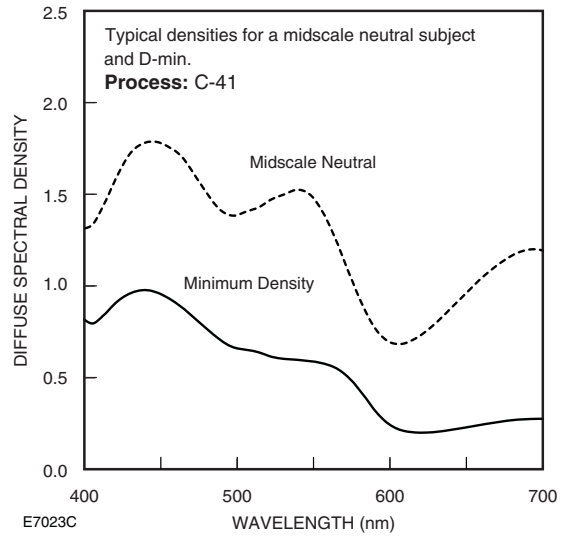
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## CURVES

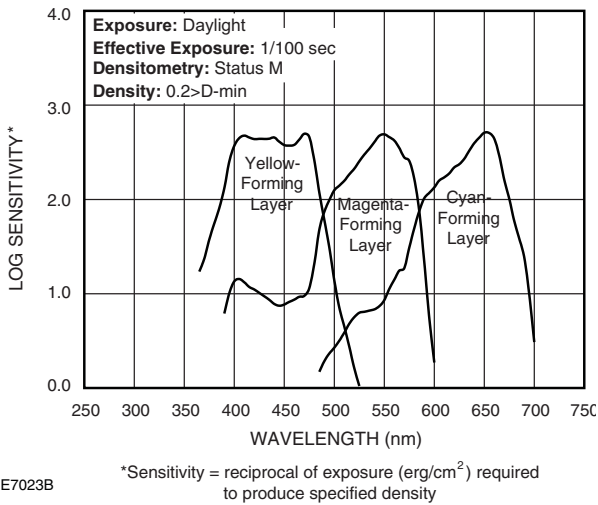
**Characteristic Curves**



**Spectral-Dye-Density Curves**



**Spectral-Sensitivity Curves**



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KODAK ALARIS • ROCHESTER, NY 14615

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