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EASTMAN EKTACHROME Film 5240/7240 (Tungsten)

1) Description

EASTMAN EKTACHROME Film 5240 (35 mm) and 7240 (16 mm) is high-speed, color reversal camera film that is intended for use in tungsten light and in daylight with an appropriate filter. It has high resolving power. The primary application is color news photography, but it can be used equally well for nighttime sporting events, for industrial photography with existing light, and for high-speed photography both by daylight and by artificial light. The processed original camera film is ready for projection, and because it is balanced for projection at 5400 K, it is suitable for television broadcast as well. Also, color duplicates can be made on EASTMAN EKTACHROME Print Film 5399 or 7399.

5240 and 7240 Film can be exposed at effective speeds ranging from 1/2 to 2 times the normal exposure indexes with little loss in quality. In situations where some loss in quality is acceptable, the normal exposure index can be increased by the equivalent of 2 or 3 camera stops. When the film is exposed at other than the normal exposure index, the processing laboratory should be informed so that compensations can be made in the processing.

2) Base

EASTMAN EKTACHROME Film 5240 and 7240 has a clear acetate safety base.

3) Darkroom Recommendations

Handle unprocessed film in total darkness until after the stop bath following first development. You can do the remaining operations in a normally lighted room. You can use a safelight with a KODAK Safelight Filter No. 3 / dark green to illuminate dials, meters, etc., during the first development, but do not shine the light directly on the film.

4) Storage

Store unexposed film at 13 C (55 F) or lower. For extended storage, store at -18 C (0 F) or lower. Process exposed film promptly. Store processed film according to the recommendations in NAPM IT9.11-1992: for medium-term storage (minimum of ten years), store at 10 C (50 F) or lower at a relative humidity of 20 to 30 percent; for extended-term storage (for preservation of material having permanent value), store at 2 C (35 F) or lower at a relative humidity of 20 to 30 percent.

For active use, store at 25 C (77 F) or lower, at a relative humidity of 50 +/- 5 percent. This relates to optimized film handling rather than preservation; static, dust-attraction and curl-related problems are generally minimized at the higher relative humidity. After usage, the film should be returned to the appropriate medium- or long-term storage conditions as soon as possible.

For more information about medium- and long-term storage, see NAPM IT9.11-1992, and KODAK Publications No. H-1, EASTMAN Professional Motion Picture Films (1992 Edition) and No. H-23, The Book of Film Care (1992 Edition).

5) Exposure Indexes

Tungsten (3200K) - 125/22 Daylight ¹ - 80/20

Use these indexes with incident- or reflected-light exposure meters and cameras marked for ISO or ASA speeds or exposure indexes. These indexes apply for meter readings of average subjects made from the camera position or for readings made from a gray card of 18-percent reflectance held close to and in front of the subject. For unusually light- or dark-colored subjects, decrease or increase the exposure indicated by the meter accordingly.

6) Color Balance

These films are balanced for exposure with tungsten illumination (3200K). For other light sources, use the correction filters in the table below.

¹With a KODAK WRATTEN Gelatin Filter No. 85B.

Light Source	KODAK Filters on Camera ¹	Exposure Index/DIN
Tungsten (3000 K)	WRATTEN Gelatin No. 82B	80/20
Tungsten (3200 K)	None	125/22
Tungsten photoflood (3400 K)	WRATTEN Gelatin No. 81A	100/21
Daylight (5500 K)	WRATTEN Gelatin No. 85B	80/20
White-Flame Arcs	WRATTEN Gelatin No. 85B	80/20
Yellow-Flame Arcs	None	125/22
Optima 32	None	125/22
Vitalite	WRATTEN Gelatin No. 85B	80/20
Fluorescent, Cool White ²	Color Compensating 60R + 10Y	32/16
Fluorescent, Deluxe Cool White ²	Color Compensating 20R + 20Y	64/19
Metal Halide	WRATTEN Gelatin No. 85B	80/20

¹ These are approximate corrections only. For critical work, tests should be made to determine optimum filtration.

² These are starting-point recommendations for trial exposures. If the kind of lamp is unknown, a KODAK Color Compensating Filter CC40R can be used with an exposure index (EI) of 64/19.

NOTE: Consult the manufacturer of high-intensity ultraviolet lamps for safety information on ultraviolet radiation and ozone generation.

When exposing in Super 8 cameras using KODAK WRATTEN Gelatin Filter No.85, the effective speed is reduced to 80 for Daylight. In automatic cameras, due to the cartridge speed and filter notching system, the film will be exposed as follows:

Daylight (with filter) 80

Tungsten (without filter) 125

Trial Exposure Settings for Existing Light Subjects (Tungsten) -

Sports Arenas:	30 to 40 footcandles of incident illumination; 1/50 second (24 fps) at f/2.
Work Areas/Plant Interiors:	60 to 80 footcandles of incident illumination; 1/50 second (24 fps) at f/2.8.

7) Exposure Table-Tungsten Light

At 24 frames per second (fps), 170-degree shutter opening:

Lens Aperture	f/1.4	f/2	f/2.8	f/4	f/5.6	f/8	f/11
Footcandles Required	20	40	80	160	320	640	1250

At 16 fps, use 2/3 and at 18 fps, use 3/4 of footcandle values.

Use this table for average subjects that contain a combination of light, medium, and dark colors. When a subject includes only pastels, use at least 1/2 stop less exposure; dark colors require 1/2 stop more exposure.

Lighting Contrast -

The recommended ratio of key-light-plus-fill-light to fill light is 2:1 or 3:1. However, you may use 4:1 or greater when a particular look is desired.

8) Reciprocity Characteristics

You do not need to make any filter corrections or exposure adjustments for exposure times from 1/10,000 to 1 second.

9) Processing

Most commercial motion-picture laboratories provide a processing service for these films. There are no packaged chemicals available for preparing the processing solutions. See KODAK Publications No. H-24, Manual for Processing EASTMAN Color Films, Process VNF-1 Specifications, Module 11, and Process RVNP Specifications, Module 13, for more information on the solution formulas and the procedures for machine processing these films. Forced processing beyond 2 stops is not recommended.

10) Identification

After processing, the product code numbers 5240 (35 mm) or 7240 (16 mm), emulsion and roll number identification, and KEYKODE numbers, are visible along the length of the film.

11) Laboratory Aim Density (LAD)

To maintain optimum quality and consistency in the final prints, the laboratory must carefully control the color timing, printing, and duplicating procedures. To aid in color timing and curve placement, negative originals should be timed relative to Laboratory Aim Density (LAD) Control Film supplied by Eastman Kodak Company.² The LAD Control Film provides both objective sensitometric control and subjective verification of the duplicating procedures used by the laboratory.

In the LAD Control Method,³ the electronic color analyzer used for color timing is set-up with the LAD Control Film to produce a gray video display of the LAD patch, corresponding to 1.0 neutral density (gray) on the print. The negative printing original is then scene-to-scene timed. There are specific LAD values for each type of print or duplicating film that the original can be printed on. For print films, the LAD patch is printed to a neutral gray of 1.0 visual density. For duplicating films, the specified aims are at the center of the usable straight-line portion of the sensitometric curve of the film.

12) Film-to-Video Transfers

When you transfer the film directly to video, you can set up the telecine using the negative Telecine Analysis Film (TAF) supplied by EASTMAN Kodak Company. The TAF consists of a neutral density scale and an eight-bar color test pattern with a LAD gray surround.

The TAF gray scale provides the telecine operator (colorist) with an effective way to adjust subcarrier balance and to center the telecine controls before timing and transferring a film. The TAF color bars provide the utility of electronic color bars, even though they do not precisely match the electronically generated color bars. Using the TAF will help obtain optimum quality and consistency in the film-to-video transfer. For more information regarding TAF, see KODAK Publication No.H-822, KODAK Telecine Analysis Film User's Guide.

13) Image Structure

The modulation-transfer curves, the diffuse rms granularity, and the resolving-power data were generated from samples of 5240 Film exposed with tungsten light and processed as recommended in Process VNF-1 chemicals. For more information on image-structure characteristics, see KODAK Publication No. H-1, EASTMAN Professional Motion Picture Films.

rms Granularity⁴

Granularity= 12

²Direct any inquiries to one of the regional sales offices.

³Use of the LAD Control Method is described in the paper, "A Simplified Motion-Picture Laboratory Control Method for Improved Color Duplication," by John P. Pytlak and Alfred W. Fleischer in the October 1976 SMPTE Journal. Also see KODAK Publication No.H-61, LAD-Laboratory Aim Density.

⁴Read with a microdensitometer, (red, green, blue) using a 48-micrometre aperture.

Resolving Power⁵

ISO RPL	40 lines/mm	(TOC 1.6:1)
ISO RP	100 lines/mm	(TOC 1000:1)

14) Available Roll Lengths

For information on film roll lengths, check Kodak's Professional Motion Imaging Price Catalog or see a Kodak sales representative in your country.

15) Graphs⁶

MTF

a) (4-83)

Note: These photographic modulation-transfer values were determined by using a method similar to the one described in ANSI Standard PH2.39-1977(R1990). The film was exposed with the specified illuminant to spatially varying sinusoidal test patterns having an aerial image modulation of a nominal 35 percent at the image plane, with processing as indicated. In most cases, the photographic modulation-transfer values are influenced by development-adjacency effects and are not equivalent to the true optical modulation-transfer curve of the emulsion layer in the particular photographic product.

Characteristic

b) (7-84)

Spectral Sensitivity

c) (11-83)

Spectral Dye Density

d) (7-75)

NOTE: The Kodak materials described in this publication for use with EASTMAN EKTACHROME Film 5240 and 7240 are available from dealers who supply Kodak products. You can use other materials, but you may not obtain similar results.

The contents of this publication are subject to change without notice.

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⁵Determined according to a method similar to the one described in ISO 6328-1982, Photography—Photographic Materials-Determination of ISO Resolving Power.

⁶NOTICE: While the data presented are typical of production coatings, they do not represent standards that must be met by Kodak. Varying storage, exposure, and processing conditions will affect results. The company reserves the right to change and improve product characteristics at any time.