



KODAK VISION Expression 500T Color Negative Film / 5284, 7284

1) Description

KODAK VISION Expression 500T Color Negative Film / 5284, 7284 is a high-speed tungsten-balanced color negative camera film with color saturation and low contrast similar to KODAK VISION 320T Color Negative Film / 5277, 7277. It features very wide under and over exposure latitude. It captures enhanced shadow detail while holding black color saturation. The curve shape of this film is very linear. This contributes to excellent overall neutrality and flesh-to-neutral tone reproduction. It delivers natural colors and a neutral tone scale across a wide range of exposures.

2) Base

KODAK VISION Expression 500T Color Negative Film / 5284, 7284 has an acetate safety base with rem-jet backing.

3) Darkroom Recommendations

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

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 ANSI/PIMA IT9.11-1998: 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 ANSI/PIMA IT9.11-1998, SMPTE RP131-1998, and KODAK Publications No. H-1, *KODAK Motion Picture Film* and No. H-23, *The Book of Film Care*.

5) Exposure Indexes

Tungsten (3200K) - 500 Daylight¹ - 320

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). You can also expose them with tungsten lamps that have slightly higher or lower color temperatures (+/- 150K) without correction filters, since final color balancing can be done in printing. For other light sources, use the correction filters in the table below.

¹With a KODAK WRATTEN Gelatin Filter No. 85.

Light Source	KODAK Filters on Camera ^[1]	Exposure Index
Tungsten (3000 K)	WRATTEN Gelatin No. 82B	320
Tungsten (3200 K)	None	500
Tungsten photoflood(3400 K)	None	500
Daylight (5500 K)	WRATTEN Gelatin No. 85	320
White-Flame Arcs	WRATTEN Gelatin No. 85B	200
Yellow-Flame Arcs	Color Compensating 20Y	320
Optima 32	None	500
Vitalite	WRATTEN Gelatin No. 85	320
Fluorescent, Cool White ^[2]	WRATTEN Gelatin No. 85 + 10M	200
Fluorescent, Deluxe Cool White ^[2]	WRATTEN Gelatin No. 85C + 10R	320
Metal Halide	WRATTEN Gelatin No. 85	320

^[1]These are approximate corrections only. Make final corrections during printing.

^[2]These are starting-point recommendations for trial exposures. If the kind of lamp is unknown, a KODAK Color Compensating Filter CC 40R can be used with an exposure index (EI) of 250.

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

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	f/16
Footcandles Required	5	10	20	40	80	160	320	640

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 1/1000 to 1 second. If your exposure is in the 10 second range, it is recommended that you increase your exposure 2/3 stop and use a KODAK Color Compensating Filter CC 10Y.

9) Processing

Most commercial motion-picture laboratories provide a processing service for these films. See KODAK Publication No. H-24.07, *Processing KODAK Color Negative Motion Picture Films, Module 7*, for more information on the solution formulas and the procedure for machine processing these films. There are also pre-packaged kits available for preparing the processing solutions. For more information on the EASTMAN ECN-2 Kit Chemicals, check Kodak's Motion Picture Films for Professional Use price catalog.

10) Identification

After processing, the product code numbers 5284 (35 mm) or 7284 (16 mm), emulsion and roll number identification, KEYKODE numbers, and internal product symbol (EG) 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-9, *TAF User's Guide*.

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.

13) Image Structure

The modulation-transfer curves, the diffuse rms granularity, and the resolving-power data were generated from samples of VISION Expression 500T Color Negative Film exposed with tungsten light and processed as recommended in Process ECN-2 chemicals. For more information on image-structure characteristics, see KODAK Publication No. H-1, *KODAK Motion Picture Film*.

MTF:

The "perceived" sharpness of any film depends on various components of the motion picture production system. The camera and projector lenses and film printers, among other factors, all play a role. But the specific sharpness of a film can be measured and charted in the Modulation Transfer Curve.

rms Granularity:

Refer to curve.

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

The "perception" of the graininess of any film is highly dependent on scene content, complexity, color, and density. Other factors, such as film age, processing, exposure conditions, and telecine transfer may also have significant effects. In VISION Expression 500T Color Negative Film, the measured granularity is very low.

14) Available Roll Lengths

For information on film roll lengths, check Kodak's Motion Picture Films product catalog or see a Kodak sales representative in your country.

15) Graphs⁴

Characteristic

A) (12-00)

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.

MTF

B) (12-00)

MTF curve - This graph shows a measure of the visual sharpness of the 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 high degree of sharpness, and the sharper the film is.

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 60 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.

⁴NOTICE: The 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 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.

rms Granularity

C) (12-00)

To find the rms Granularity value for a given density, find the density on the left vertical scale and follow horizontally to the characteristic 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. Note: This curve represents granularity based on modified measuring techniques.

Spectral Sensitivity

D) (12-00)

The spectral sensitivity 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 for blue- and green-screen special-effects work.

Spectral Dye Density

E) (12-00)

Processing exposed color film produces cyan, magenta, and yellow dye images in the three separate layers of the film. The spectral dye density curves indicate the total absorption by each color dye measured at a particular wavelength of light and the visual neutral density at (1.0) of the combined layers measured at the same wavelengths.

The wavelengths of light, expressed in nanometers (nm) are plotted on the x-axis, and the corresponding diffuse spectral densities are plotted on the y-axis.

Characteristic-Camera Stops

F) (12-00)

On the Characteristic-Camera Stop curve, the center point ("0") on the x-axis corresponds to a normal exposure of an 18-percent grey card in the red, green, and blue layers of this film. A white card is 2 1/3 stops higher than normal exposure. Anything more is overexposure latitude. A 3-percent black card is 2 2/3 stops below normal exposure. Anything less is underexposure latitude.

Note: The Kodak materials described in this publication for use with KODAK VISION Expression 500T Color Negative Film / 5284, 7284 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.

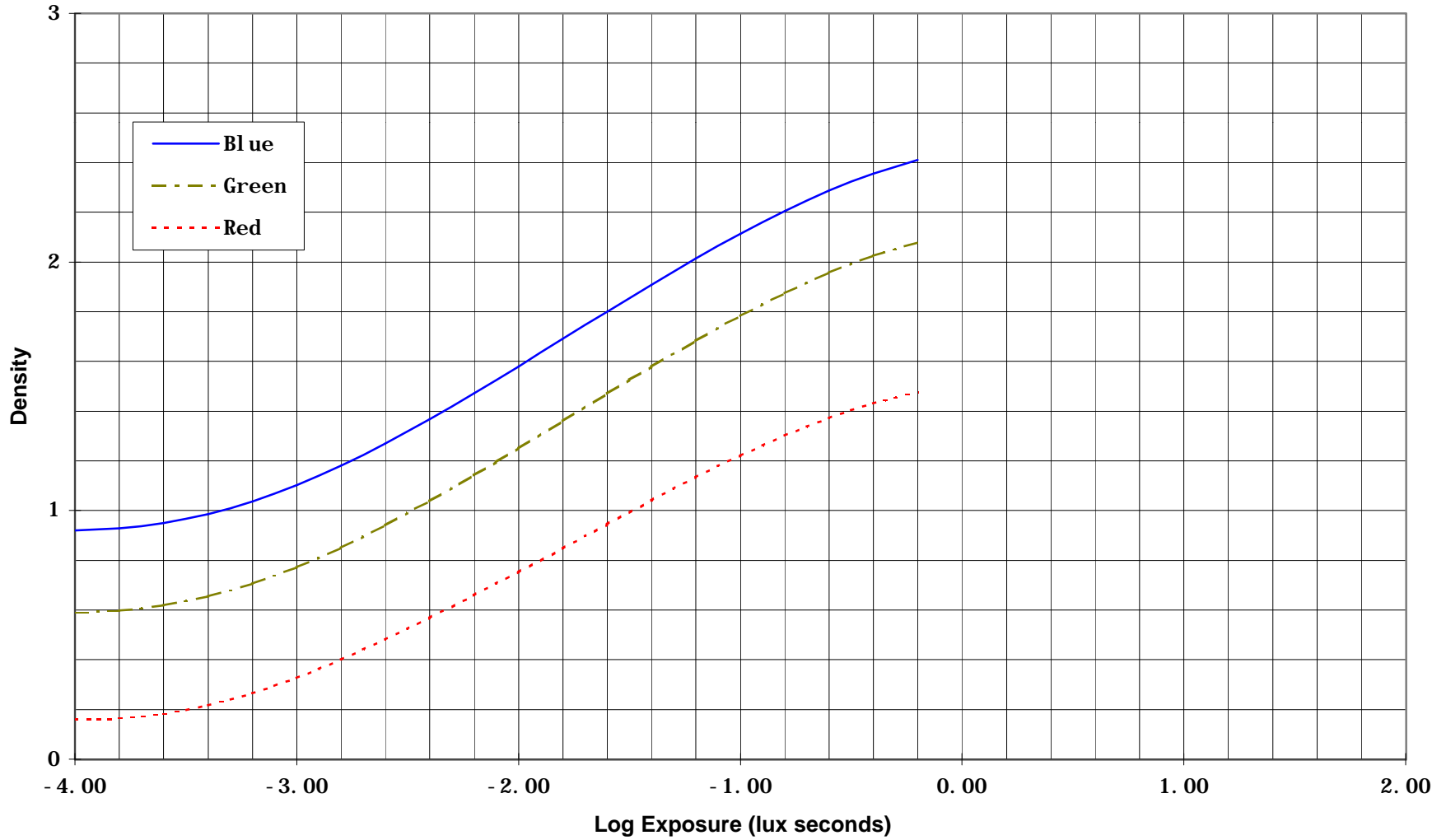
Kodak, Eastman, Keycode, Vision, and Wratten are trademarks.

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End of Data Sheet

TI2556A 12-00
CHARACTERISTIC, For Publication

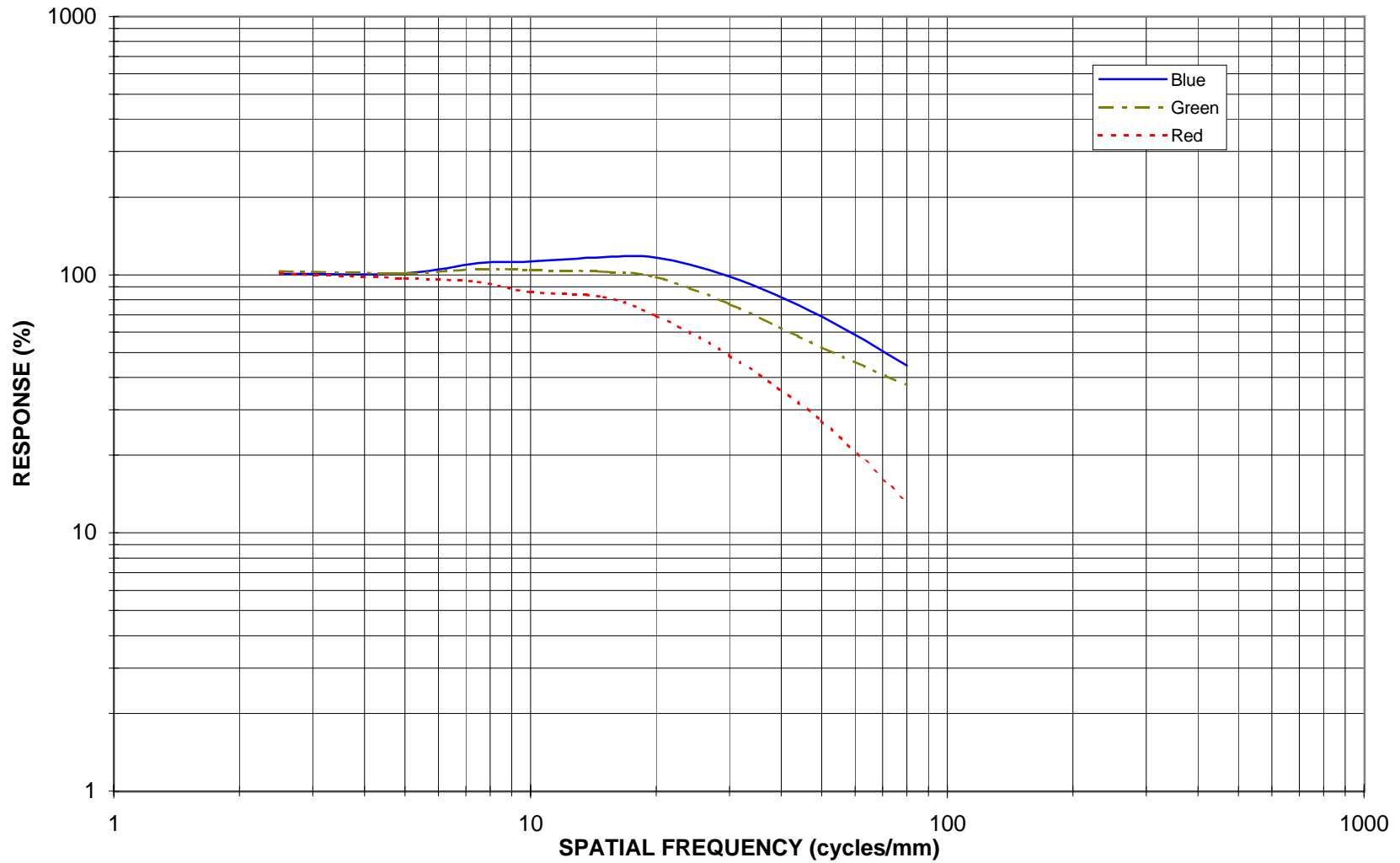
KODAK VISION Expression 500T Color Negative Film / 5284, 7284
3200 K Tungsten 1/50 sec; Process ECN-2; Status M;
LogRef= -1.8



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

TI2556B 12-00
MTF, For Publication

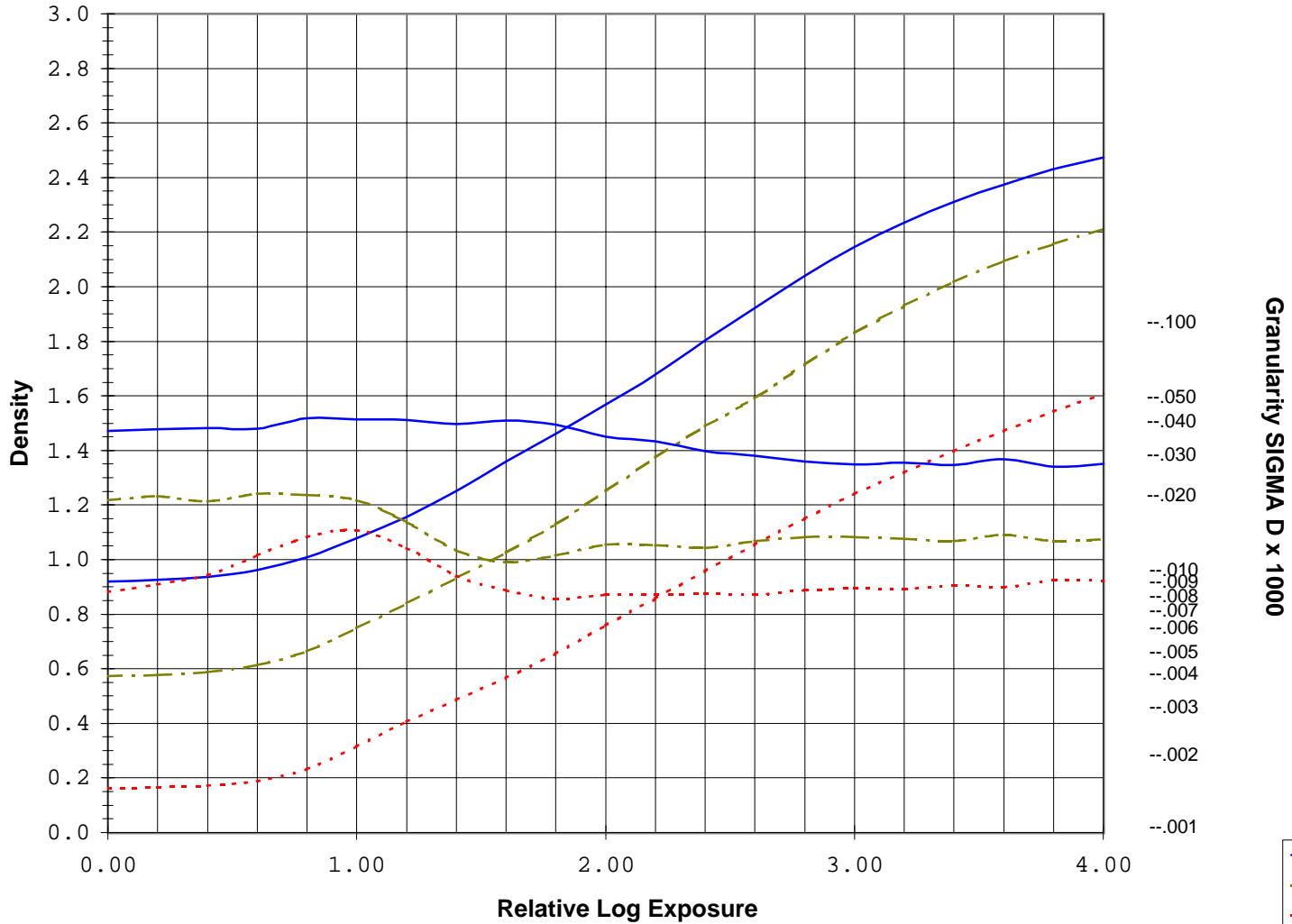
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Tungsten 3200 K; Process ECN-2; Status M



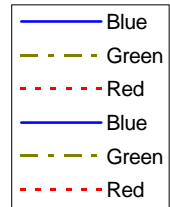
Notice: While the data presented are typical of production coatings, they do not represent standards which must be met by Eastman Kodak Company. Varying storage, exposure, and processing conditions will affect results. The company reserves the right to change and improve the product characteristics at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

TI2556C 12-00
DIFFUSE rms GRANULARITY, For Publication

KODAK VISION Expression 500T Color Negative Film / 5284, 7284
Granularity vs. Density (0-4 scale) .
Process ECN-2

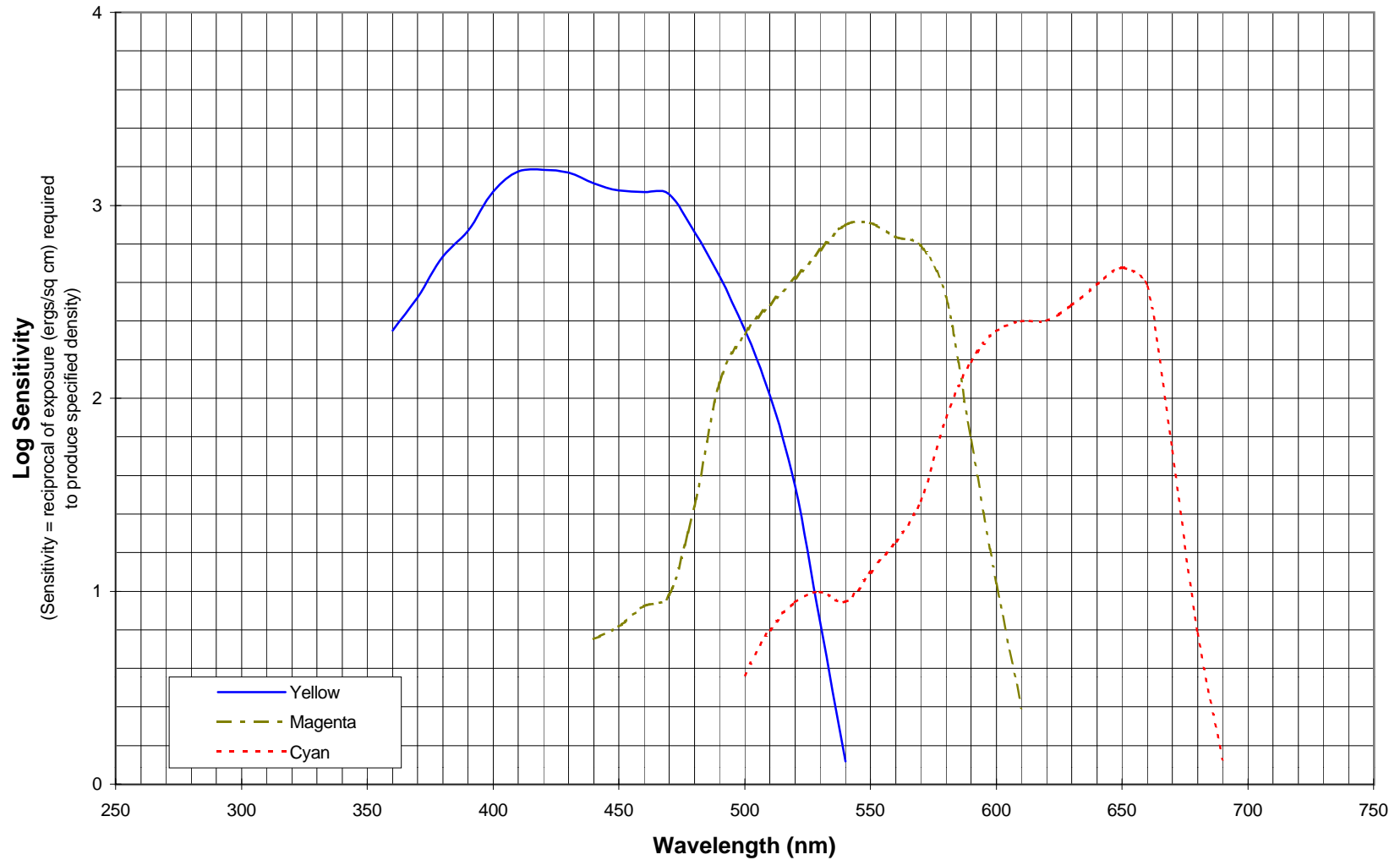


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TI2556D 12-00
SPECTRAL SENSITIVITY, For Publication

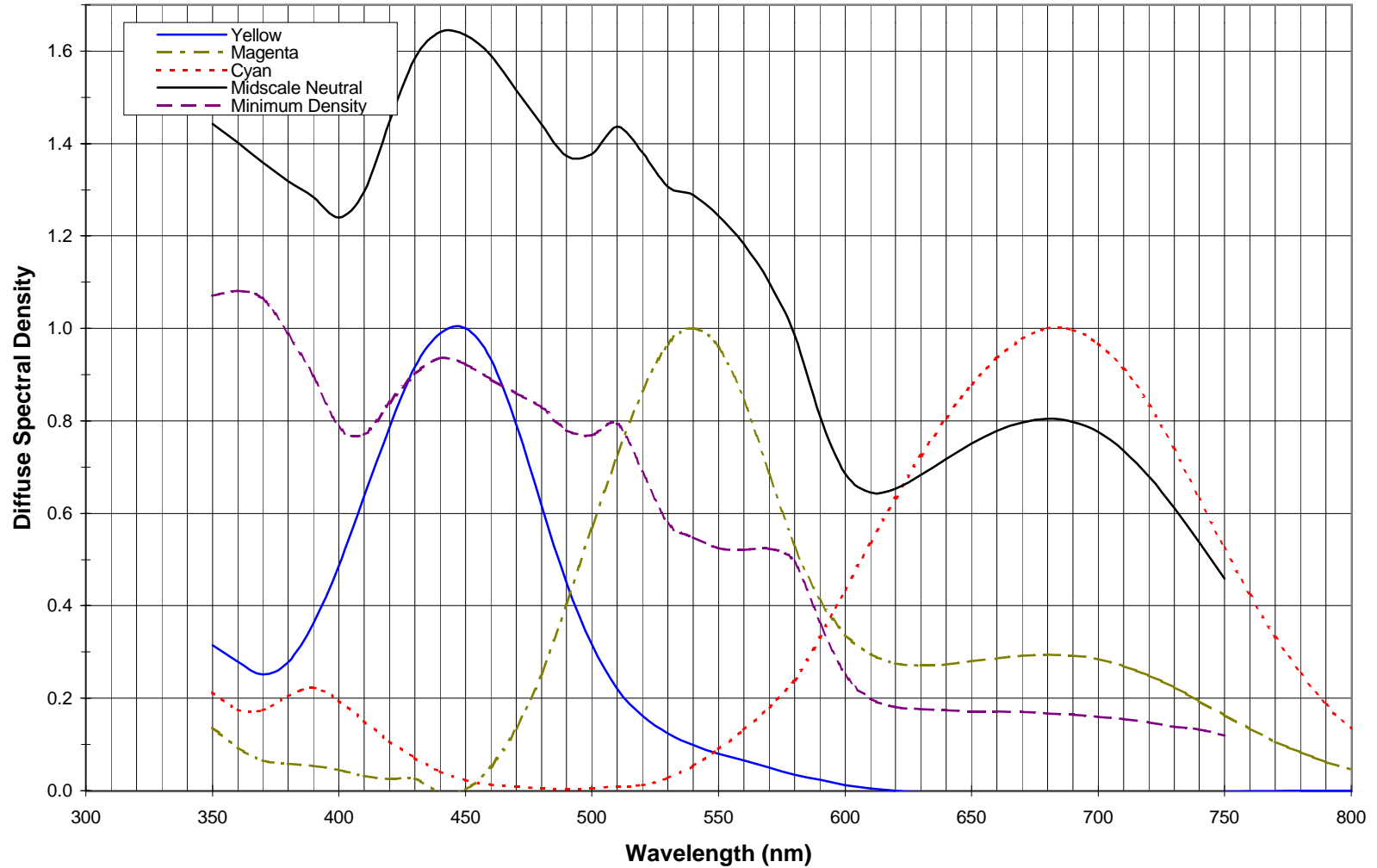
KODAK VISION Expression 500T Color Negative Film / 5284, 7284
Effective exp .013 sec; Process ECN-2; Status M; D=0.4>D-min



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

T12556E 12-00
SPECTRAL DYE DENSITY, For Publication

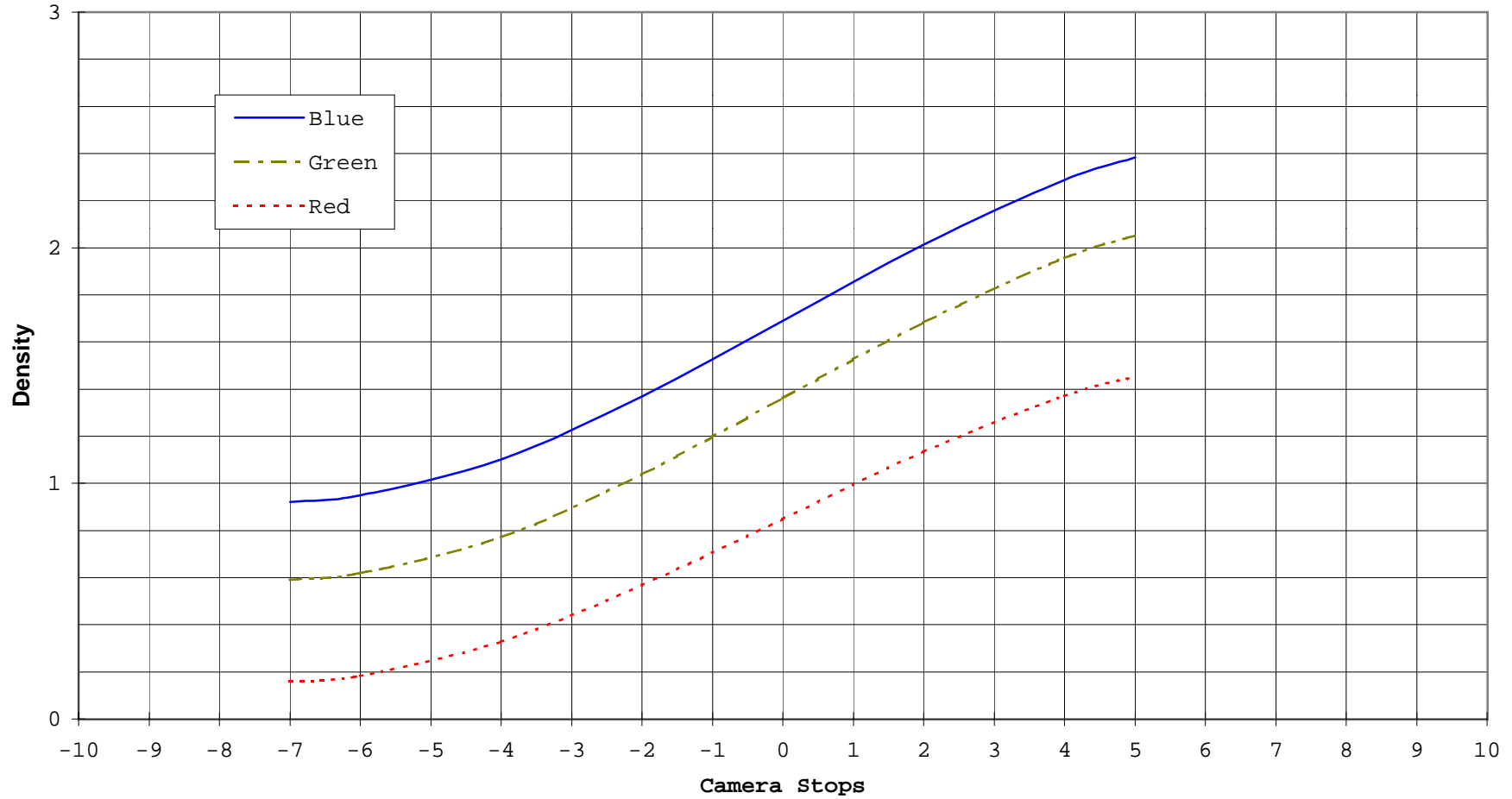
KODAK VISION Expression 500T Color Negative Film / 5284, 7284
Process ECN-2; D-mins subtracted



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

TI2556F 12-00
CHARACTERISTIC, For Publication

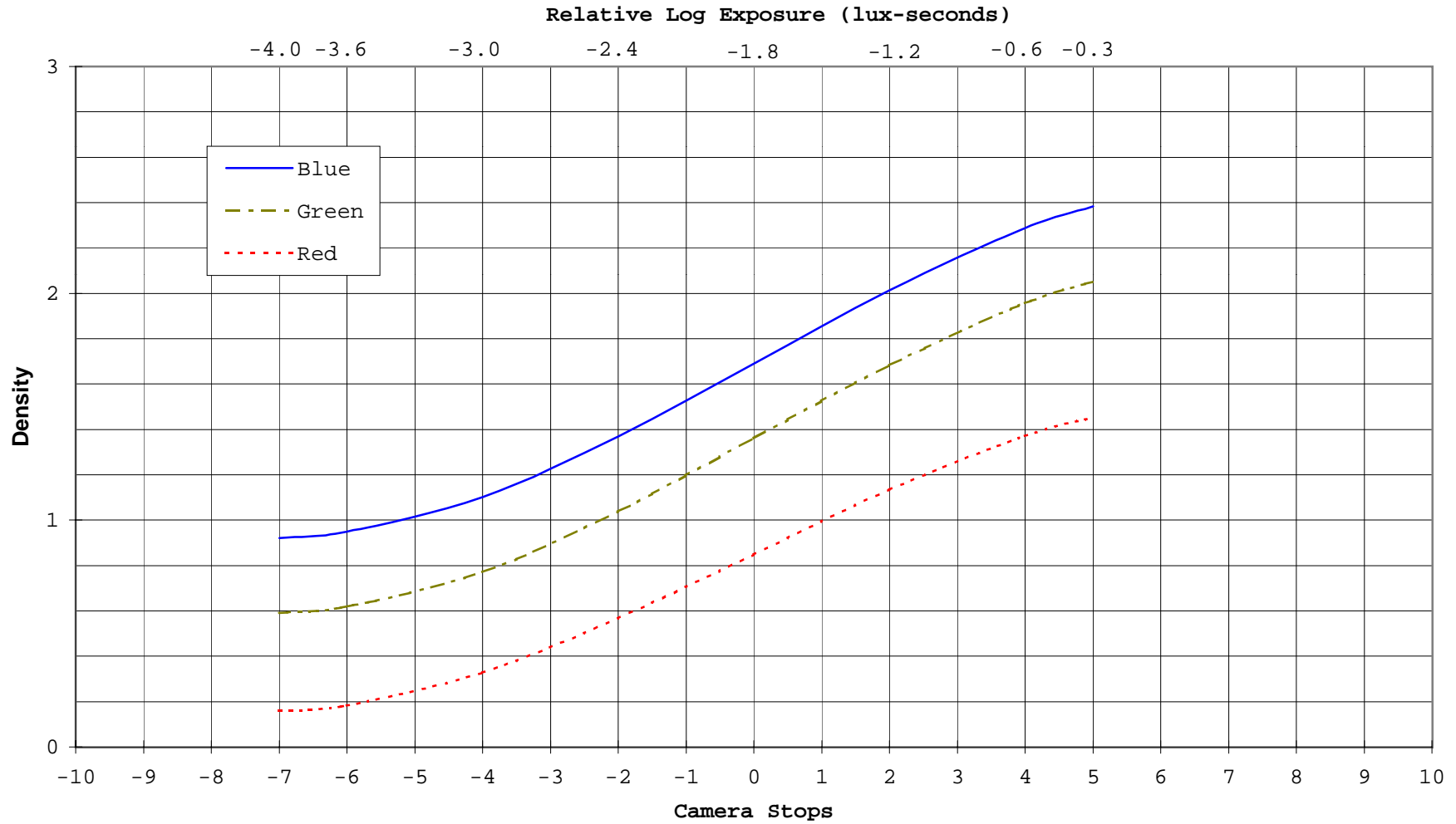
KODAK VISION Expression 500T Color Negative Film / 5284, 7284
3200 K Tungsten 1/50 sec; Process ECN-2; Status M;
Camera Stop 0 = Normal = Log Exposure (lux seconds) -1.8 .



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TI2556F 12-00
CHARACTERISTIC, For Publication

KODAK VISION Expression 500T Color Negative Film / 5284, 7284
3200 K Tungsten 1/50 sec; Process ECN-2; Status M;
Camera Stop 0 = Normal = Log Exposure (lux seconds) -1.8 .



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