KODAK VISION3 50D Color Negative Film 5203 / 7203

Kodak

TECHNICAL DATA / **COLOR NEGATIVE FILM**

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KODAK VISION3 50D Color Negative Film 5203/7203 is a low speed daylight-balanced addition to the VISION3 Film portfolio offering the world's finest grain to ensure a pristine, clean image that is full of color and detail.

Like other films in the VISON3 Film family, VISION3 50D Film features unrivaled highlight latitude, flexibility in postproduction, and proven archival stability. The expanded dynamic range allows for increased creative control in the extremes of exposure, especially high contrast daylight exteriors. Advances in grain and sharpness along with increased exposure latitude also make this film ideal for recorder output.

Experience the improved extreme exposure performance and consistent VISION3 Film family look along with unsurpassed image quality, real-world flexibility, and digital postproduction compatibility. Enjoy the benefits of the finest grain capture film with the color and tone reproduction of the VISION3 Film portfolio.

BASE

KODAK VISION3 50D Color Negative Films 5203 and 7203 have an acetate safety base with rem-jet backing.

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 ISO 18911:2010, *Imaging Materials - Processed Safety Photographic Films - Storage Practices*.

	Short Term (less than 6 months)	Long Term (more than 6 months)
Unexposed film in original, sealed package	13°C (55°F) RH below 60%	-18 to -23°C (0 to-10°F) RH below 50%
Exposed film, unprocessed	-18 to -23°C (0 to-10°F) RH below 20%	Not recommended. Process film promptly.
Processed film	21°C (70°F) RH 20 to 50%	2°C (36°F) RH 20 to 30%

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.

Warm-upTimes

To prevent film telescoping, moisture condensation, and spotting, allow your film to warm to room temperature before use:

Film Package	Typical Warm-up Time (Hours)	
	14°C (25°F) Rise	55°C (100°F) Rise
16 mm	1	1 1/2
35 mm	3	5

For more information about film storage and handling, see ANSI/PIMA ISO-18911, SMPTE RP131-2002, and KODAK Publicatio No. H-845, *The Essential Reference Guide for Filmmakers*, available online at www.kodak.com/go/referenceguide.

DARKROOM RECOMMENDATIONS

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

EXPOSURE

Exposure Indexes

Daylight (5500K): 50
Tungsten (3200K): 12 (with 80A filter)

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.

Color Balance

These films are balanced for exposure with daylight illumination (5500K). For other light sources, use the correction filters in the table below.

Light Source	KODAK Filters on Camera *	Exposure Index
Daylight (5500 K)	None	50
Metal Halide	None	50
H.M.I.	None	50
KINO FLO 55	None	50
Tungsten (3000 K)	WRATTEN 2 Optical Filter / 80A	12
Tungsten (3200 K)	WRATTEN 2 Optical Filter / 80A	12
KINO FLO 29 KINO FLO 32	WRATTEN 2 Optical Filter / 80A	12
Fluorescent, Warm White †	Color Compensating CC20M + CC05R	25
Fluorescent, Cool White †	Color Compensating CC40B	20

* These are approximate corrections only. Make final corrections during printing.

† These are starting-point recommendations for trial exposures. If the kind of lamp is unknown, a KODAK Color Compensating Filter CC20M + CC10B can be used with an exposure index (EI) of 25.

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

Exposure Table—Daylight

At 24 frames per second (fps), 180-degree shutter opening, use this table for average subjects that contain a combination of light, medium, and dark colors:

Lens Aperture	*f*/1.4	*f*/2	*f*/2.8	*f*/4	*f*/5.6	*f*/8	*f*/11	*f*/16
Footcandles Required	50	100	200	400	800	1600	3200	6400

Reciprocity Characteristics

You do not need to make any filter corrections or exposure adjustments for exposure times from 1/1000 of a second to 1 second.

PROCESSING

Process in Process ECN-2.

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* available online at www.kodak.com/go/h24, 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 KODAK ECN-2 Kit Chemicals, check *Kodak's Motion Picture Films for Professional Use* price catalog, also available online at www.kodak.com/go/motion.

IDENTIFICATION

After processing, the product code numbers 5203 (35 and 65 mm) or 7203 (16 mm), emulsion, roll, and strip number identification, KEYKODE Numbers, and manufacturer/film identification code (ER) are visible along the length of the film.

POST PRODUCTION

Scanning

The wider exposure latitude in KODAK VISION3 Films differentiate film capture from the limited dynamic range of digital capture. Digital "dodging and burning," a very powerful tool in the colorists' toolkit, is now even more powerful—up to two stops more image information can be extracted from scene highlights in VISION3 Films.

If traditional 10-bit scanner data encoding schemes are used to digitize films having this extended density range, highlight information captured on these film could be lost. Kodak has recommendations for extracting the full density range stored on high dynamic range films in a technical document titled *Scanning Recommendations for Extended Dynamic Range Camera Films*, available online at www.kodak.com/go/scanning.

Laboratory Aim Densities (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. 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, 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.

Due to normal variations in exposure and processing of color negative films, particular scenes may not print exactly at the same printer lights as the LAD Control Film. The LAD Control Film is intended as a set-up tool for electronic color analyzers and printers. It is NOT a reference that every scene must match. Normal film-to-film and scene-to-scene exposure variability is accommodated by the color timing (grading) process, on an electronic color analyzer set up with the LAD Control Film. Normally exposed and processed color negatives will typically print well within the range of an additive printer setup with the LAD Control Film, although SIGNIFICANT or UNEXPECTED departures from this center point balance may indicate an exposure/filtration problem with the cinematography or with the process control. Some specialized films and/or specialized negative processing techniques (push-processing, pull-processing, "skip-bleach" processing, etc.) may require more extreme adjustment from the LAD printing condition to attain desired results.

More information is contained in KODAK Publication H-61, *Laboratory Aim Density*, available online at www.kodak.com/go/lad.

Film-to-Tape Transfers

When you transfer the film directly to tape, you can set up the telecine using KODAK 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-tape transfer. For more information regarding TAF, see KODAK Publication No. H-606, *KODAK Telecine Tool Kit and Reference Manual*, available online at www.kodak.com/go/telecine.

IMAGE STRUCTURE

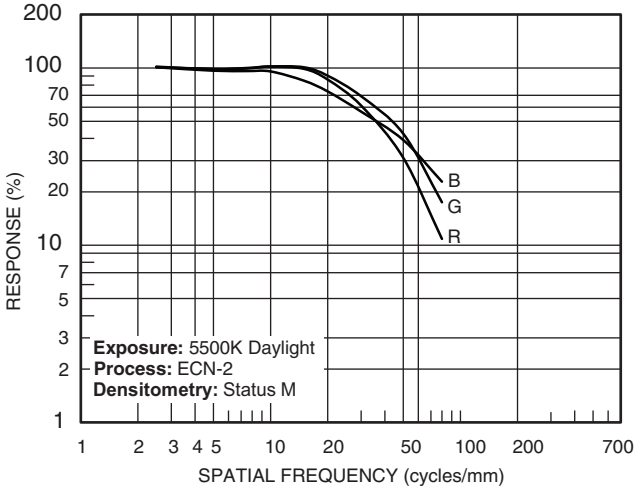
For more information on image-structure characteristics, see KODAK Publication No. H-845, *The Essential Reference Guide for Filmmakers* available online at www.kodak.com/go/referenceguide.

Note: 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.

Modulation Transfer Function

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 is charted in the Modulation Transfer Function Curve.

Modulation-Transfer Function Curves



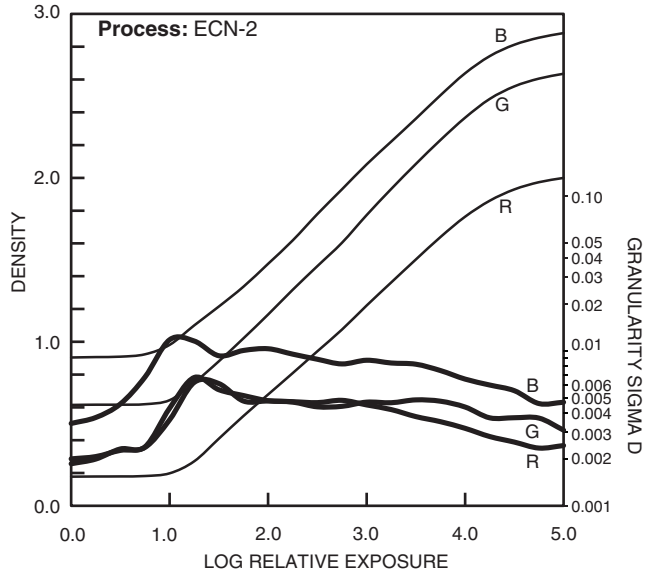
This graph shows a measure of the visual sharpness of this film. The x-axis, "Spatial Frequency," refers to the number of sine waves per millimeter that can be resolved. The y-axis, "Response," corresponds to film sharpness. The longer and flatter the line, the more sine waves per millimeter that can be resolved with a high degree of sharpness—and, the sharper the film.

rms Granularity

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

Diffuse rms Granularity Curves



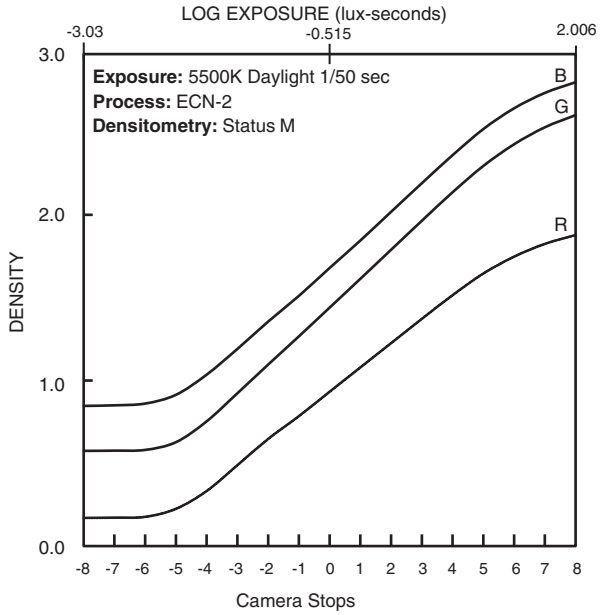
To find the rms Granularity value for a given density, find the density on the left vertical scale and follow horizontally to the characteristic curve and then go vertically (up or down) to the granularity curve. At that point, follow horizontally to the Granularity Sigma D scale on the right. Read the number and multiply by 1000 for the rms value.

Note: This curve represents granularity based on modified measuring techniques. Sensitometric and Diffuse RMS Granularity curves are produced on different equipment. A slight variation in curve shape may be noticed.

Sensitometry

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.

Sensitometric Curves

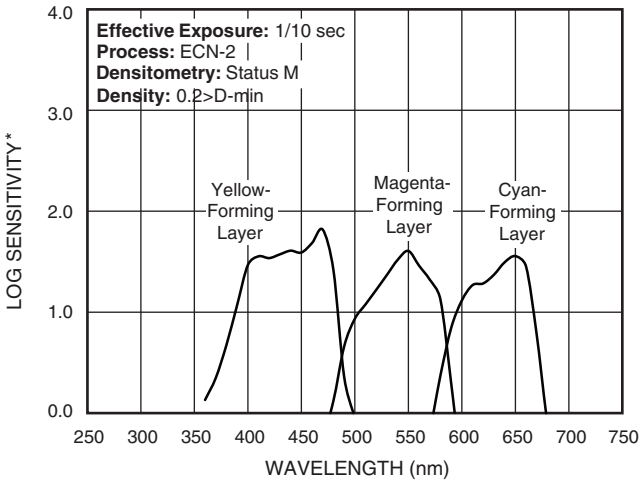


Note: The exposure scale for VISION3 5203 / 7203 Film is longer than previous VISION and VISON2 Films. Because of the extended highlight latitude we have expanded the exposure scale from a 0-4 increment to a 0-5 scale. In addition to the longer exposure scale, we are plotting 21 steps instead of 20.

Spectral Sensitivity

These curves depict the sensitivity of this film to the spectrum of light. They are useful for determining, modifying, and optimizing exposure for blue- and green-screen special-effects work.

Spectral Sensitivity Curves

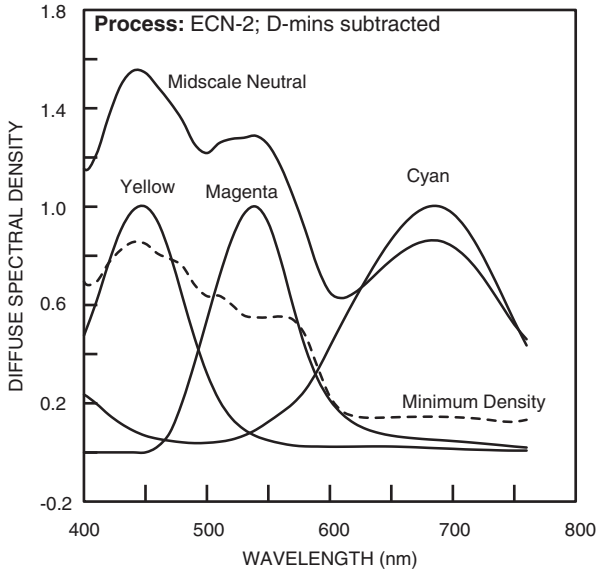


*Sensitivity = reciprocal of exposure (erg/cm^2) required to produce specified density

Spectral Dye Density

These curves depict the spectral absorptions of the dyes formed when the film is processed. They are useful for adjusting or optimizing any device that scans or prints the film.

Spectral Dye Density Curves



Note: Cyan, Magenta, and Yellow Dye Curves are peak-normalized.

MORE INFORMATION

Outside the United States and Canada, please contact your Kodak representative. You can also visit our web site at www.kodak.com/go/motion for further information. You may want to bookmark our location so you can find us easily the next time.

H-2	*Cinematographer's Field Guide*
H-845	*The Essential Reference Guide for Filmmakers*
H-24	*Manual for Processing KODAK Motion Picture Films, Process ECN-2 Specifications, Module 7*
H-61	*LAD—Laboratory Aim Density*
H-606	*KODAK Telecine Tool Kit and Reference Manual*

SIZES AVAILABLE

Standard Products Available

Identification No.	Length in Metres (Feet)	Core	Description	Perforations
65 mm SP332	305 (1000)	P	Emulsion In	KS-4740 (KS-1866)
35 mm SP718	122 (400)	U		BH-4740 (BH-1866)
35 mm SP718	305 (1000)	U		BH-4740 (BH-1866)
16 mm SP455	30 (100)	R-90	Winding B	1R-7605 (1R-2994)
16 mm SP457	122 (400)	T	Winding B	1R-7605 (1R-2994)

*for AATON A-MINIMA Cameras

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