KODAK VISION3 200T

COLOR NEGATIVE FILM 5213 / 7213

TECHNICAL DATA / COLOR NEGATIVE FILM

MARCH 2022 H-1-5213

KODAK VISION3 200T Color Negative Film 5213/7213 is a 200-speed tungsten film that provides the image structure of a 100-speed film with the versatility of a 200 speed product—offering you the benefits of two films in one.

Like other films in the KODAK VISION3 Film family, VISION3 200T Film features unrivaled highlight latitude, reduced grain in shadows, flexibility in post, and, of course, proven archival stability. Additionally, you'll find that this film performs superbly in both controlled interiors and in challenging high-contrast exteriors

Base

KODAK VISION3 200T Color Negative Films 5213 and 7213 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 C (0 F) RH below 50%
Exposed film, unprocessed	-18 C (0 F) RH below 20%	Not recommended. Process film promptly.
Process 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-up Times

To prevent film telescoping, moisture condensation, and spotting, allow your film to warm to room temperature (21C/70F) before use:

	Recommended Warm-up Time (Hours)	
Film Package	8 C (15 F) Rise	39 C (70 F) Rise
8 mm	1	1 ½
16 mm	1	1 ½
35 mm	3	5

For more information about film storage and handling, see ANSI/PIMA ISO-18911, SMPTE RP131-2002, and KODAK Publication 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

Tungsten (3200K) - 200
Daylight- 125 (with 85 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 exposureindicated by the meter accordingly.

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 (+/- 200K) without correction filters since final color balancing can be done in post-production.

Light Source	KODAK Filters on Camera*	Exposure Index
Tungsten (3000 K)	None	200
Tungsten (3200 K)	None	200
KINO FLO 29 KINO FLO 32	None	200
Daylight (5500 K)	WRATTEN 2 Optical Filter / 85	125
Metal Halide	WRATTEN 2 Optical Filter / 85	125
H.M.I.	WRATTEN 2 Optical Filter / 85	125
KINO FLO 55	WRATTEN 2 Optical Filter / 85	125
Fluorescent, Warm White †	CC30R + CC05M	125
Fluorescent, Cool White †	CC40R	64

* 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 WRATTEN2 Color Compensating Filter CC30R + CC20Y can be used with an exposure index (EI) of 100.

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

Exposure Table-Tungsten Illumination

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:

EXPOSURE TABLE FOR TUNGSTEN LIGHT								
Lens Aperture	f/1.4	f/2	f/2.8	f/4	f/5.6	f/8	f/11	f/16
Footcandles Required	12.5	25	50	100	200	400	800	1600

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 Using KODAK Kit Chemicals in Motion Picture Film Laboratories KODAK Publication No. H-333, available online at www.kodak.com/go/h333

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Identification

After processing, the product code numbers 5213, or 7213 emulsion, roll, and strip number identification, KEYKODE Numbers, and manufacturer/film identification code (EO) 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 films 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)

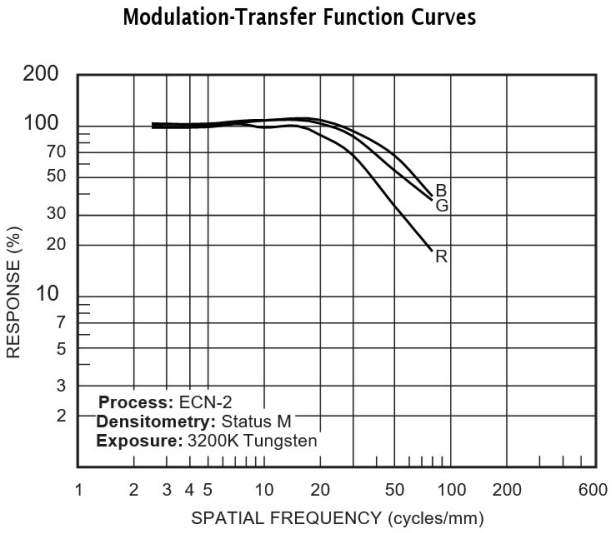
To maintain optimum quality and consistency in the final prints, the laboratory must carefully control the color timing, printing, and duplicating procedures. To aid in colortiming and curve placement, negative originals should betimed relative to Laboratory Aim Density (LAD) Control Film. The LAD Control Film provides both objective sensitometric controland 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.

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.

Modulation Transfer Function

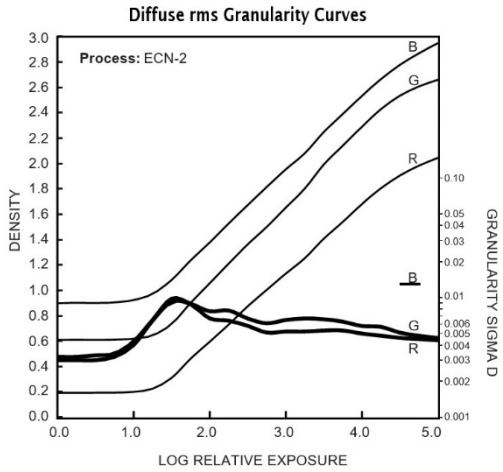
The "perceived" sharpness of any film depends on various components of the motion picture production system. The camera and projector lenses and film printers, among other factors, all play a role. But the specific sharpness of a film can be measured and is charted in the Modulation Transfer Function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



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

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.



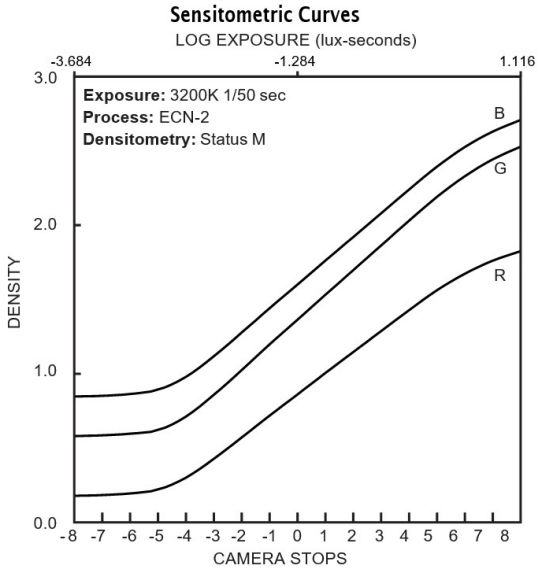
Read with a microdensitometer, using a 48-micrometre aperture.

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.

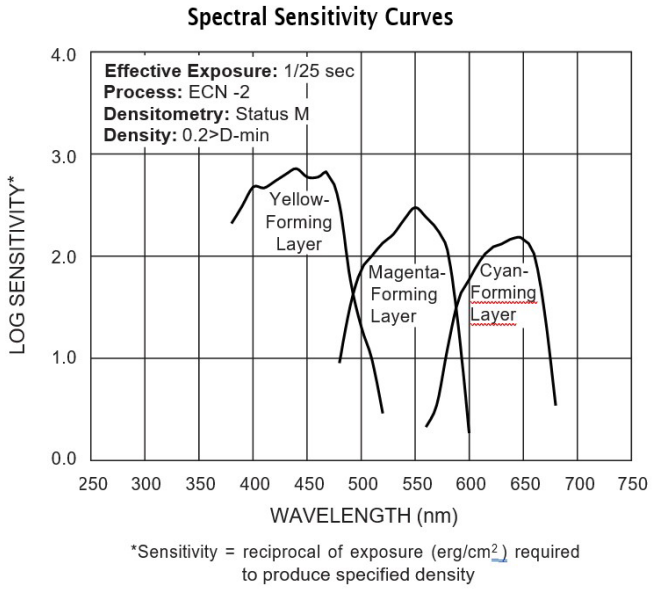
Sensitometry

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.



Spectral Sensitivity

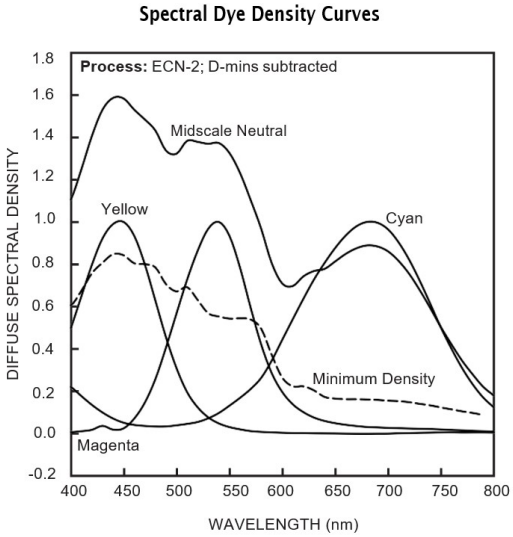
These curves depict the sensitivity of this film to the spectrum of light. They are useful for determining, modifying, and optimizing exposure for blue- and green-screen special-effects work.



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

Spectral Dye-Density Curves

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



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

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.

Available Roll Lengths and Formats

See Kodak Motion Picture Products Catalog at www.kodak.com/go/mpcatalog
To order film in the United States and Canada, call 1- 800-356-3259, prompt 3.
Worldwide customers can find the nearest sales office at www.kodak.com/go/salesoffices

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