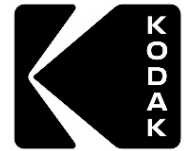


# KODAK VISION3

## Digital Separation Film 2237



### TECHNICAL DATA / DIGITAL SEPARATION FILM

MARCH 2022 • H-1-2237

KODAK VISION3 Digital Separation Film 2237 is designed for the digital postproduction suite and results in black-and-white separation elements that offer centuries of image stability. This black-and-white recorder film is intended for making archival separations from color digital masters. This film offers exceptional image quality: fine detail, tight grain, optimal resolution, and excellent flare characteristics.

By optimizing the spectral sensitivity for exposure on modern digital recorders, 2237 Film provides improved image structure (sharpness and grain), extended latitude and excellent linear tone scale. Improvements in latent image keeping allows for more consistent results in recorder applications. This film is offered on ESTAR Base, offering premier physical performance and long-term stability.

FEATURES	BENEFITS
Improved spectral sensitivity	• Optimized for all modern digital recorders
Exceptional grain	• Vs. KODAK Panchromatic Separation Film 2238 in both D-96 and D-97 processes • Better image quality
Processing versatility	• Can be processed in either D-96 or D-97 processes • Ease of use—customers can choose process based on
Improved process sensitivity	• Less sensitive to process variability vs. 2238 Film
Outstanding sharpness	• High quality images that replicate original image characteristics
Improved latent image keeping	• Improved product consistency • Less rework due to mismatch from beginning to end of roll
Silver images on ESTAR Base support	• Excellent image permanence • Stable physical performance

### DARKROOM RECOMMENDATIONS

It is always best to handle photographic film in total darkness. If general darkroom illumination is needed, you can use Light Emitting Diodes (LEDs) with 590nm peak wavelength. Safelights should have a maximum intensity of 0.02 Lux and be kept at a minimum of four feet away from the film plane. 590nm LEDs are also appropriate for track lighting where needed.

### STORAGE AND HANDLING

#### Unprocessed Film

Unexposed film is not adversely affected by short-term storage at room temperature (less than 25°C (77°F)). Store unexposed film at 13°C (55°F) or lower when storage exceeds one month. If refrigerated, allow the sealed can or foil bag to equilibrate to room temperature before opening to avoid condensation. Rebag unused raw stock and seal it in film cans before returning it to refrigeration.

Process exposed film promptly. This film exhibits excellent latent image keeping. When exposed film must be kept several days before processing, the tone scale of KODAK VISION3 Digital Separation Film shows little change. You can slow changes in latent image by storing exposed film at lower temperatures. For critical applications, such as sensitometric exposures used for process control, keep exposed film strips at 0°C (32°F) or lower.

#### Processed Film

Store processed film according to the recommendations in ISO 18911:2010, *Imaging Materials - Processed Safety Photographic Films - Storage Practices*.

For short-term “active” storage, store at room temperature of 20 to 25°C (68 to 77°F) at 50 to 60 percent relative humidity. Avoid prolonged unconditioned storage at high temperatures or excessive humidity. For medium-term storage, 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 (36°F) or lower, at a relative humidity of 20 to 30 percent. Molecular Sieves<sup>1</sup> in a sealed can will provide additional benefit. All three separations should be kept under the same conditions. After usage, the film should be returned to the appropriate medium- or extended-term storage condition as soon as possible. For more information on long-term storage, see KODAK Publication No. H-845, *The Essential Reference Guide for Filmmakers*, available online at: [www.kodak.com/go/referenceguide](http://www.kodak.com/go/referenceguide)

## RECORDER CALIBRATION

As the 2237 Film is green sensitized, the green light source of the recorder should be used to expose the film. The recorder setup and "aim" should have a linear code value to density relationship as follows (densities are measured above D-min):

Input Code Value	Visual StM Density
0	0
1023	2.046

If there isn't a need to optically recombine the resulting black-and-white separations for final viewing, it is recommended that the same recorder calibration be utilized for all three color records of the image data, essentially giving all three color channels the same density aim. Otherwise, utilize your protocol for creating separations for optical recombination.

## PROCESSING

This film can be processed in either KODAK D-96 or D-97 Developer. For details on the processes, see [KODAK Publication H-24, Manual for Processing KODAK Motion Picture Films, Module 15](#). For reference, also see the developer time series D-Log H curves provided in this document.

The recommended process time to achieve a gamma of 1.0 is 8 minutes in D-96 Developer and 3 minutes in D-97 Developer. However, processing time can be adjusted to achieve desired gamma and/or density range.

If the processed film is to be used for extended-term storage, adequate washing must be provided to reduce the retained thiosulfate level. Testing for retained thiosulfate should be performed in accordance with and adhering to the limits specified in ANSI/PIMA IT9.1-1996.

## IDENTIFICATION

After processing, the product code numbers 2237; emulsion and roll number identification; KEYCODE numbers; and internal product symbol VP are visible along the length of the film.

## LATENT-IMAGE KEEPING

The new film offers extremely stable latent image keeping, ensuring that photographic characteristics such as speed, contrast, and fog levels do not change.

## SPLICING

KODAK VISION3 Digital Separation Film 2237 is manufactured on ESTAR Base. Since ESTAR Base is impervious to most solvents, solvent-based "cement" splicing CANNOT be used.

Thermal-weld ultrasonic splicers may be used on both raw stock and processed film. After cutting, the two pieces of film are overlapped slightly and brought into contact with a horn that focuses acoustic energy from an ultrasonic transducer to the film overlap. A pressure roller brings the film into intimate contact with the horn, causing a localized heating and fusion of the polyester support, creating a strong weld and reliable splice. Key splicing parameters are the acoustic frequency and power output, roller pressure, and roller transit time. Although the emulsion and back-side layers become part of the polyester weld, there is usually no need to scrape them off prior to ultrasonic splicing.

Adhesive tape splicing is often used in splicing rolls of exposed raw stock prior to processing. Current splicing procedures using high-quality splicing tapes will work equally well on 2237 Film.

## 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](http://www.kodak.com/go/referenceguide)

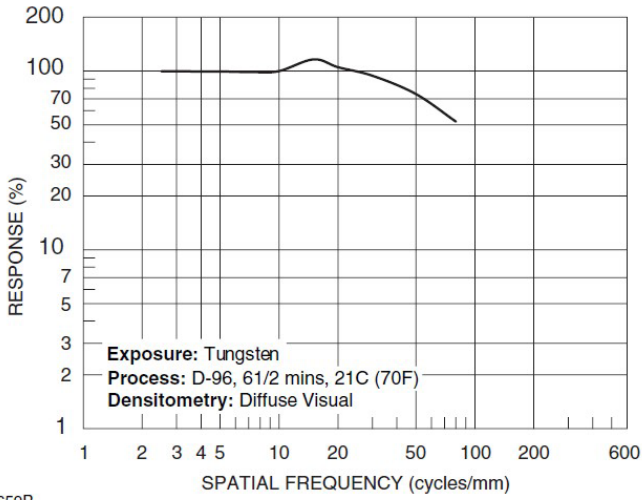
### Sharpness

The "perceived" sharpness of any film depends on various components of the motion picture production system. The recorder and scanner optics, 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, resulting in a sharper film

**Modulation-Transfer Function Curves**

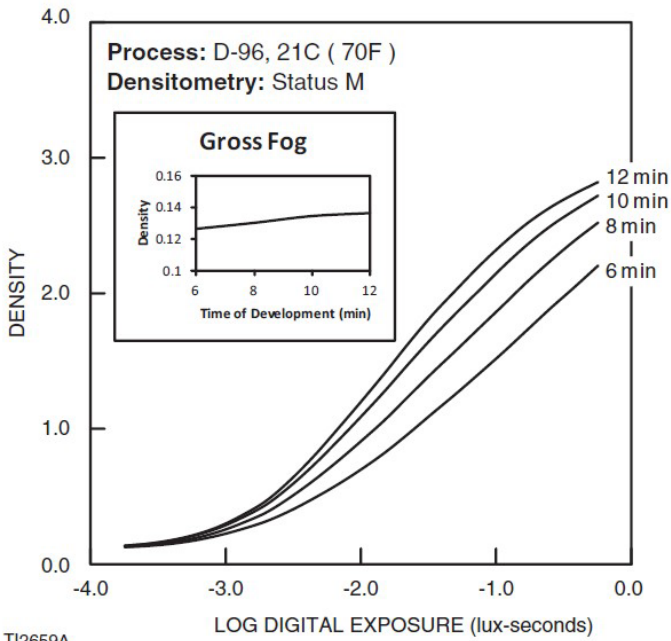


TI2659B

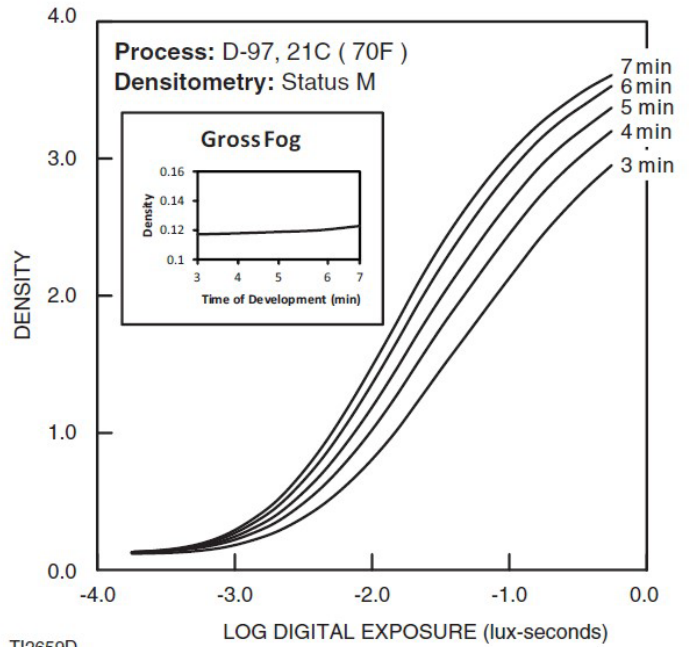
**Sensitometry**

The curves describe this film's response to green ARRILASER<sup>[1]</sup> exposure. Sensitometric curves determine the change in density on the film for a given change in log exposure.

**Sensitometric Curves**



TI2659A

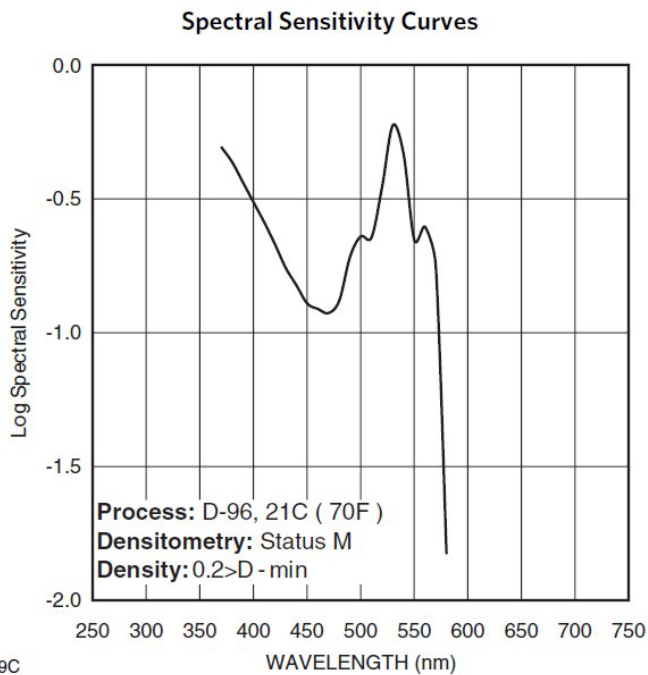


TI2659D

[1] ARRI is a registered trademark of Arnold & Richter Cine Technik GmbH & Co.

## Spectral Sensitivity

These curves depict the sensitivity of this film to the spectrum of light.



NOTICE: 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.

## Available Roll Lengths and Formats

See Kodak Motion Picture Products Catalog at [www.kodak.com/go/mpcatalog](http://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](http://www.kodak.com/go/salesoffices)

