EASTMAN Fine Grain Release Positive Film 5302 / 7302

Kodak

TECHNICAL DATA / **BLACK-AND-WHITE PRINT FILM**

November 2008 • H-1-5302

EASTMAN Fine Grain Release Positive Film 5302 (35 mm) and 7302 (16 mm) is a low speed, high-resolution print film. This blue-sensitive black-and-white film is designed for general release printing. It is also useful for making both positive and negative titles, and for dubbing prints for sound.

BASE

This film has a clear acetate safety base with an anti-static protective layer. The base thickness is 5.6 mils. In addition, 7302 Film has an anti-curl layer applied to the base.

DARKROOM RECOMMENDATIONS

Use a KODAK OC Safelight Filter / greenish-yellow, with a 15-watt bulb, no closer to the film than 1.2 metres (4 feet).

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 25° C (77° F) or lower at a relative humidity of 20 to 50 percent; for extended-term storage (for preservation of material having permanent value), store at 21° C (70° 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* and No. H-23, *The Book of Film Care*.

PRINTER CONDITIONS

You can make satisfactory prints using negatives of average density if run on a continuous additive printer (such as the Bell & Howell Model C) run at 180 ft/min, and equipped with a 1000-watt lamp operated at 80 volts (85 volts for 35 mm), and a ground glass in the beam. Typical starting-point printer settings are as follows:

Beam	Trim Setting		Tape Setting	
	16 mm	35 mm	16 mm	35 mm
Red	17	21	32	24
Green	17	21	32	24
Blue	17	21	32	24

For laboratories with subtractive printers, such as a Bell & Howell Model J Printer, the following recommendations should be helpful as a starting point: 1000-watt lamp at 55 volts and a printer speed of 62 feet per minute for 16 mm film. For 35 mm film, using a Bell & Howell Model D Printer: 500-watt lamp at 75 volts and 90 feet per minute. For both 16 and 35 mm setups use a neutral density filter (such as the KODAK WRATTEN Neutral Density Filter, No.96) with a density of 0.50 in the beam and a diaphragm setting of 13.

SOUND TRACK PRINTING

A variable-area positive silver sound track can be printed on 5302/7302 Film from a negative sound record on EASTMAN EXR Sound Recording Film 2378/3378. The optimum variable-area sound track density for the print lies between 1.2 and 1.4, measured visually for both 16 and 35 mm films. This print density is chosen to provide a good compromise between signal-to-noise ratio and frequency response. The densities of the sound-track negatives required to produce optimal print densities are determined by using recognized cross-modulation test procedures.

PROCESSING

The following process recommendations should be used as starting points for a typical continuous-immersion processing machine using formulas presented in KODAK Publication No.H-24, *Manual for Processing EASTMAN Motion Picture Films*, Module 15. The processing times may require modification for a particular machine.

Notice: Observe precautionary information on product labels and on the Material Safety Data Sheets.

Processing Step	Temperature	Time	Replenishment Rate (mL per 100 ft)	
			35 mm	16 mm
KODAK Developer D-97*	70 ±1/2 °F (21 ±0.3 °C)	†	650 (D-97R)	325 (D-97R)
Stop Rinse ‡	70 ±2 F° (21 ±1 °C)	50 sec	12,000	6,000
KODAK Fixing Bath F-5*	70 ±2 °F (21 ±1 °C)	9 min	600	300
Wash (counter-current)	70 ±2 °F (21 ±1 °C)	10 min	12,000	6,000
Dry	95° F (35° C)	§	—	—

* Agitation in the developer and fixing bath should be by recirculation through submerged spray jets that impinge on the film strands.
† Develop to recommended control gamma of 2.4 to 2.6 (Status A).
‡ Countercurrent flow of fixer-laden water overflow from the wash tank, pH about 6.
§ Many factors affect the drying: air temperature, relative humidity (RH); volume, rate and distribution of the air flow; final squeegeeing, etc. In a conventional convection-type drying cabinet with air at about 95° F (35° C) and 40 to 50 percent RH, drying will take 15 to 20 minutes. With an impingement-type drying cabinet, however, with a higher temperature and lower RH, drying time is greatly reduced. With either type of dryer, the film should be dry without tackiness 1/2 to 2/3 of the way through. Upon cooling to room temperature after leaving the dryer, the film should be in equilibrium with the room air at approximately 50 percent RH.

LUBRICATION

All films destined for projection require some lubrication to prevent problems during early projection life. Edge waxing with a paraffin wax solvent solution provides a simple, inexpensive, and adequate lubrication for 35 and 70 mm projection prints. For 8 and 16 mm prints, an overall lubricant may be required.

IMAGE STRUCTURE

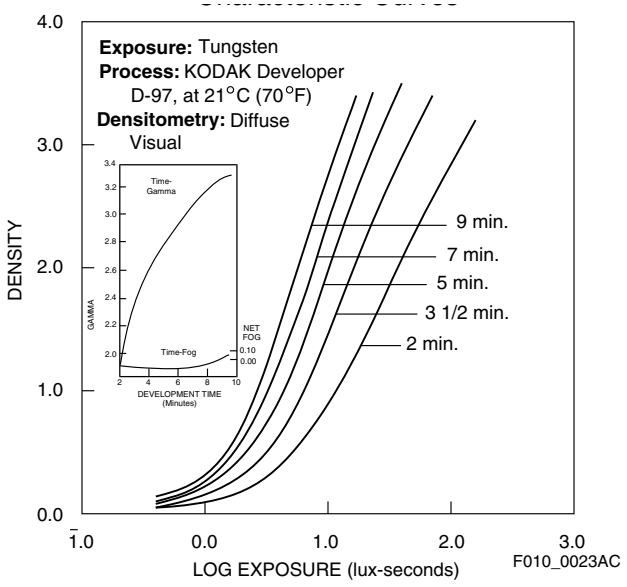
The modulation-transfer curves, the diffuse rms granularity, and the resolving-power data were generated from samples of 5302 Film exposed with tungsten light and processed as recommended in KODAK Developer D-97 at 70 F (21 C) to the recommended control gamma. For more information on image-structure characteristics, see KODAK Publication No H-1, EASTMAN Professional Motion Picture Films.

Diffuse rms Granularity*		8
Resolving Power†	63 lines/mm	(TOC 1.6:1)
	125 lines/mm	(TOC 1000:1)

* Read at a net diffuse visual density of 1.0, using a 48-micrometre aperture.
† Determined according to a method similar to the one described in ISO 6328-1982, Photography — Photographic Materials — Determination of ISO Resolving Power.

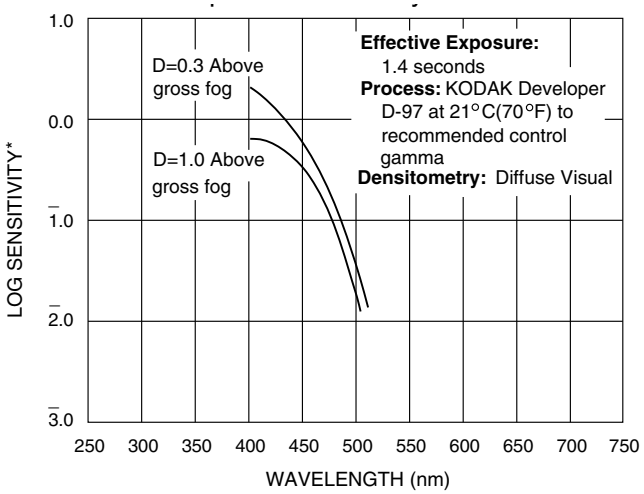
CURVES

Characteristic Curves



NOTICE: 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

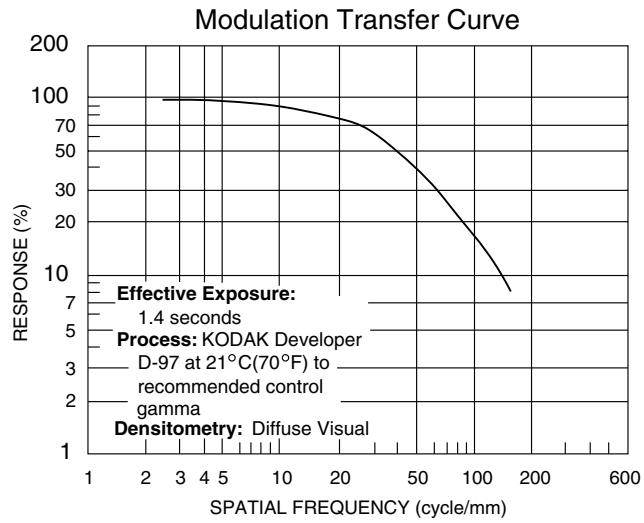
Spectral-Sensitivity Curves



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

F010_0024AC

Modulation-Transfer-Function Curve



F010_0025AC

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

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.

Films	*Film for the Cinematographer* KODAK Publication No. H-5
Image Structure	*KODAK Motion Picture Film* KODAK Publication No. H-1
Storage	*KODAK Motion Picture Film* KODAK Publication No. H-1 *The Book of Film Care* KODAK Publication No. H-23
Processing	*Manual for Processing KODAK Motion Picture Films, Process ECN-2 Specifications, Module 15* KODAK Publication No. H-24.07
LAD	*LAD—Laboratory Aim Density* KODAK Publication No. H-61
Transfer	*KODAK Telecine Analysis Film User's Guide* KODAK Publication No. H-822 *KODAK Telecine Exposure Calibration Film User's Guide* KODAK Publication No. H-807

EASTMAN Fine Grain Release Positive Film 5302 / 7302

FOR DIRECT ORDERING IN THE UNITED STATES AND CANADA: 1-800-621-FILM

KODAK SHOOTSAVER Film Delivery Service (U.S. only) 1-800-404-2016

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