



# Kodak RR7M Recording 2000 Film

## Kodak RLE Recording 2000 Film

## Kodak RIR Recording 2000 Film

## Kodak RAI7, RAIM, & RA7M Recording 2000 Film

Technical Information Instruction Sheet - TI2395  
August 2006

### Features / Customer Product Specifications

**Kodak** Recording 2000 films produce extremely hard dots with a high degree of linearity. They are designed for electronic recording graphic arts applications. All are very high contrast and, in most applications, deliver a D-max in excess of 4.5.

These products will achieve optimum results in **Kodak** RA 2000 developer and replenisher (diluted 1:2). It may be possible to achieve satisfactory results in other rapid-access type developers that are indicated as Hard-Dot capable, such as **Polychrome** Millennium 4000 MD-451 developer.

Recording 2000 films are coated on a dimensionally stable **Estar** base with antistatic and surface properties to ensure dependable transport and handling behavior.

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RR7M	<ul style="list-style-type: none"><li>• Broadband red-sensitive films suitable for use on helium-neon laser (HN; 633 nm) or red laser diode (RLD; 630 to 670 nm) recording devices.</li><li>• RRD: 4-mil/0.1 mm clear; RRD7: 7-mil/0.18mm clear</li><li>• RRDM and RR7M (matte versions of RRD and RRD7) feature a special matte surface that provides rapid, uniform drawdown for exposure of films on flexographic or smooth-surface plates.</li></ul>
RLE	<ul style="list-style-type: none"><li>• A 4-mil/0.1 mm clear film with far red sensitivity suitable for use on red-light emitting diode (LED, 660 to 680 nm) recording devices.</li><li>• Although sensitized at the correct wavelength, this film is NOT suitable for use in recorders using red laser diodes (RLD) as a light source because it is too fast. Use RRD film (listed above).</li></ul>
RIR	<ul style="list-style-type: none"><li>• A 4-mil/0.1 mm clear film with far red sensitivity suitable for use on infrared laser diode (780 nm) recording devices.</li></ul>

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| RAI, RAI7, RAIM, RA7M | <ul style="list-style-type: none"><li>• Blue-sensitive films suitable for use on Argon-Ion (488 nm) recording devices.</li><li>• RAI: 4-mil/0.1 mm clear; RAI7: 7-mil/0.18 mm clear</li><li>• RAIM and RA7M (matte versions of RAI and RAI7) are suitable for use on flexographic or smooth-surface printing plates.</li></ul> |
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## Safelight Recommendations

### Kodak Recording RR7M and RIR 2000 Films

Use an **EncapSulite** T20/ND.75 safelight, available from EncapSulite International Ltd. (European Office Frau Karia Hoppe, EncapSulite Sales, Postfach 900-328, 5 Köln 90 Germany), or equivalent. Keep the film at least 1.2 metres (4 feet) from the safelight. Do not expose the film to safelight illumination for longer than two minutes.

### Kodak Recording RLE 2000 Film

An **EncapSulite** T30/ND 1.5 safelight or equivalent can be used. Keep the film at least 1.2 metres (4 feet) from the safelight. Do not expose the film to safelight illumination for longer than 5 minutes. If an EncapSulite T20/ND 0.75 safelight or equivalent is already in use, then exposures only up to 1 minute can be tolerated.

### Kodak Recording 2000 RAI, RAI7, RAIM, RA7M Films

This film can be handled under amber or orange-yellow safelight illumination produced by the following sources:

Deluxe cool-white fluorescent tubes filtered with dark amber safelight sleeves, such as the No. M58V19.055 (55 wall) sleeve available from Illumination Technology, Inc.

**EncapSulite** KY safelight or equivalent safelight.

A 15-watt tungsten bulb filtered with **Rohm and Haas** plexiglas amber 2422 material. This material can also be used to filter tungsten light that enters the work area through the windows.

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***NOTE:** Plexiglas amber 2422 material is not recommended for use with fluorescent tubes when **Kodak Recording 2000 Films RAI** are used.*

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Can also be handled under most orange or red safelight illumination sources. Keep the film at least 4 feet (1.2 metres) from the safelight.



## Storage

Keep unexposed film and processed film in a cool, dry place, preferably at a temperature of 70°F (21°C) or lower and 50% RH. Process film as soon as possible after exposure.

## Exposure

Following are the intended uses for **Kodak** Recording 2000 films. Follow exposure procedures recommended by the equipment manufacturer.

RR7M	Film recorders and imagesetters that use a helium-neon laser (HN, 633 nm) or a red laser diode (RLD, 630 to 670 nm) as the exposing source.
RLE	Film recorders and imagesetters that use red light-emitting diodes (LED, 660 to 680 nm) as the exposing source.
RIR	Film recorders and imagesetters that use infrared laser diodes (IR, 780 nm) as the exposing source.
RAI, RAI7, RAIM, RA7M	Film recorders and imagesetters that use an argon-ion laser (AI, 488 nm) as the exposing source.

## Mechanized Processing

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

The recommended starting points for development and replenishment, using **Kodak** RA 2000 developer and replenisher (1:2), **Kodak** RA 2001 developer, or **Kodak** dry powder developer and replenisher (sold only in Europe, Asia and the Middle East) are:

### Rapid Access Processors, 30 to 40 seconds at 95°F (35°C)

Tank Turnovers per Week	Percent Exposed Area	Basic Replenishment Rates <sup>1</sup>
Minimum of 1	50%	0.30 mL/sq in (465 mL/ sq m)
Minimum of 1	90%	0.60 mL/sq in (930 mL/sq m)

<sup>1</sup> If using **Kodak** RA 2050 developer replenisher, the rate is approximately 50% of the rate used with **Kodak** RA 2000 developer and replenisher.



# Kodak RR7M Recording 2000 Film

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# Kodak RA17, RAIM, & RA7M Recording 2000 Film

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## 1. Support

### Dimensionally Stable Support

RLE, RIR, RAI and RAIM	4 mil (0.004 in., 0.10mm)	<b>Estar</b> base
RR7M, RA17 and RA7M	7 mil (0.007 in., 0.18mm)	<b>Estar</b> thick base

## 2. Dimensional Stability

Dimensional stability is an all-inclusive term. In photography, it applies to size changes caused by changes in humidity and in temperature, and by processing and aging. The dimensional properties of the **Estar** base may vary slightly in different directions within a sheet; the differences that may exist, however, are not always aligned with the length and width directions:

Data for the 4 mil products (RLE, RIR, RAI, RAIM):

### Thermal Coefficient of Linear Expansion

Unprocessed or Processed	0.001% per ° F (0.0018% per ° C)
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### Humidity Coefficient of Linear Expansion

Unprocessed	0.0017% per % RH
Processed	0.0016% per % RH

### Processing Dimensional Change

Dependent on drying conditions



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### 3. Reciprocity

With recommended processing, the reciprocity speed change is negligible within exposure range of 1/1000 second to 1 billionth second; there is no change in contrast.

### 4. Graphs<sup>1</sup>

Using **Kodak** RA 2000 developer and replenisher (1:2)

#### Characteristic

- A. **Kodak** Recording 2000 film RRD, RRD7, RRDM, RR7M (11-97)
- B. **Kodak** Recording 2000 film RLE (6-95)
- C. **Kodak** Recording 2000 film RIR (10-97)
- D. **Kodak** Recording 2000 film RAI, RAI7, RAIM, RA7M (6-92)

#### Spectral Sensitivity

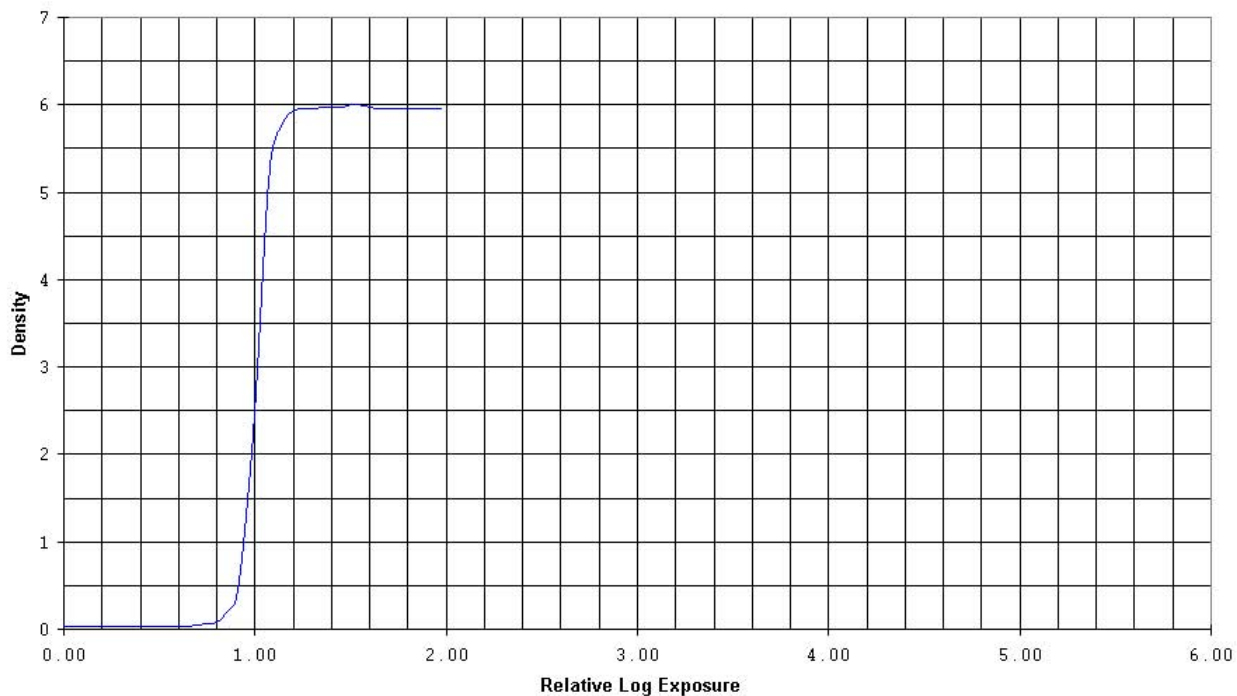
- E. **Kodak** Recording 2000 film RRD, RRD7, RRDM, RR7M (11-97)
- F. **Kodak** Recording 2000 film RLE (6-95)
- G. **Kodak** Recording 2000 film RIR (10-97)
- H. **Kodak** Recording 2000 film RAI, RAI7, RAIM, RA7M (6-92)

<sup>1</sup> 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.



**T12395A 12-97**  
CHARACTERISTIC, For Publication

KODAK Recording 2000 Film RRD, RRD7, RRD8, RR7M  
Exp: 637 nm, 1 microsec;  
KODAK RA 2000 Developer and Replenisher (1:2)  
Developer, KODAK KODAMATIC 710 Processor, 30 sec at 95F (35C)

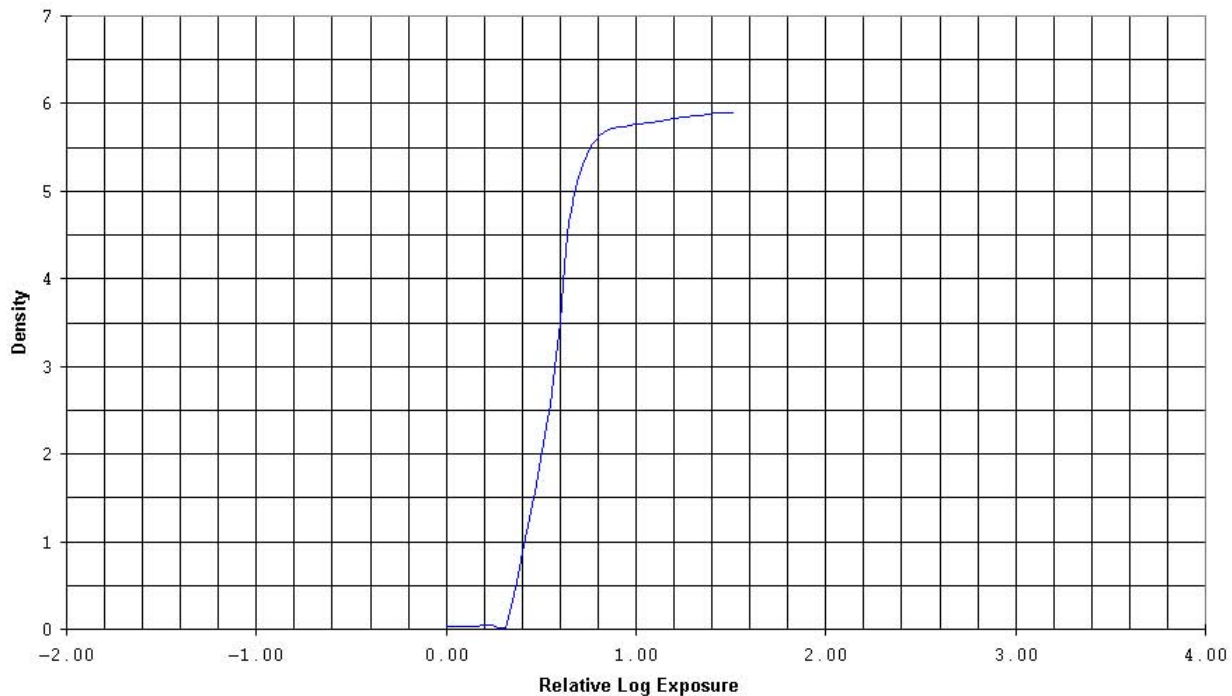


Notice: While the data presented are typical of production coatings, they do not represent standards which must be met by Eastman Kodak Company. Varying storage, exposure, and processing conditions will affect results. The company reserves the right to change and improve the product characteristics at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



**T112395B 7-95**  
CHARACTERISTIC, For Publication

KODAK Recording 2000 Film RLE / 2614  
Laser Diode Exposure; KODAK RA 2000 Developer and Replenisher (1:2)  
KODAMATIC 710 Processor, 30 sec at 95F(35C); Diffuse visual

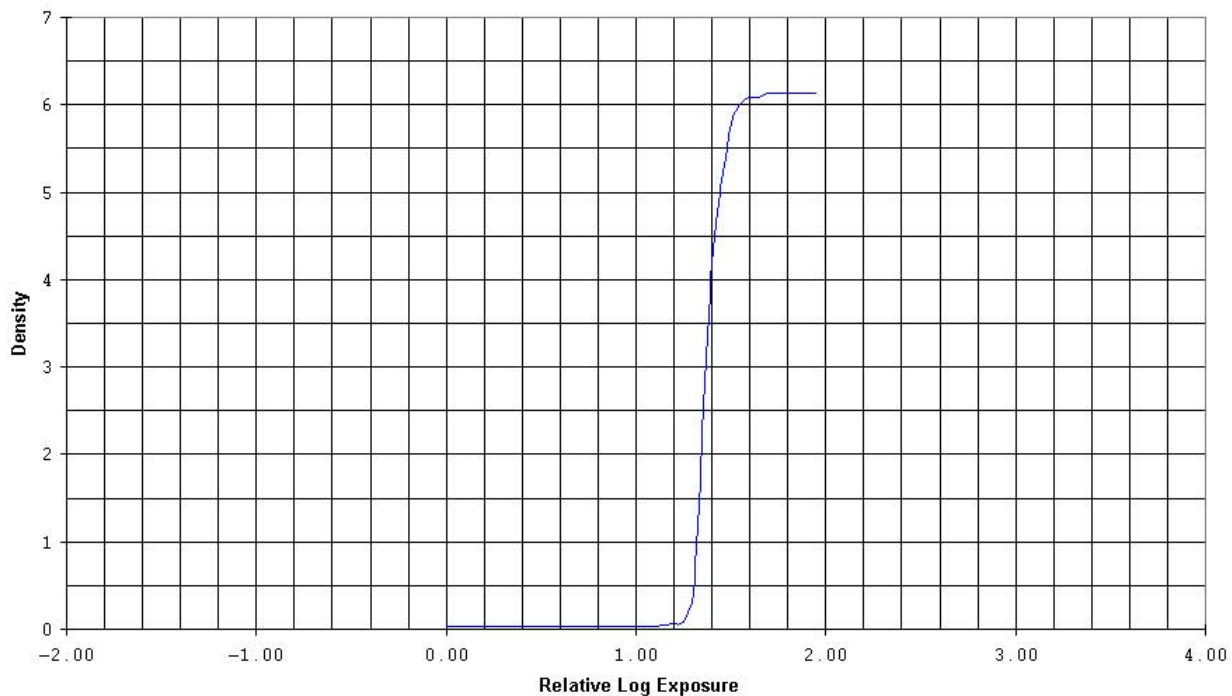


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**T12395C 12-97**  
CHARACTERISTIC, For Publication

KODAK Recording 2000 Film RIR IR Laser-Diode Exposure;  
KODAK RA 2000 Developer and  
Replenisher (1:2), 30 sec, 35 C (95 F); Diffuse visual

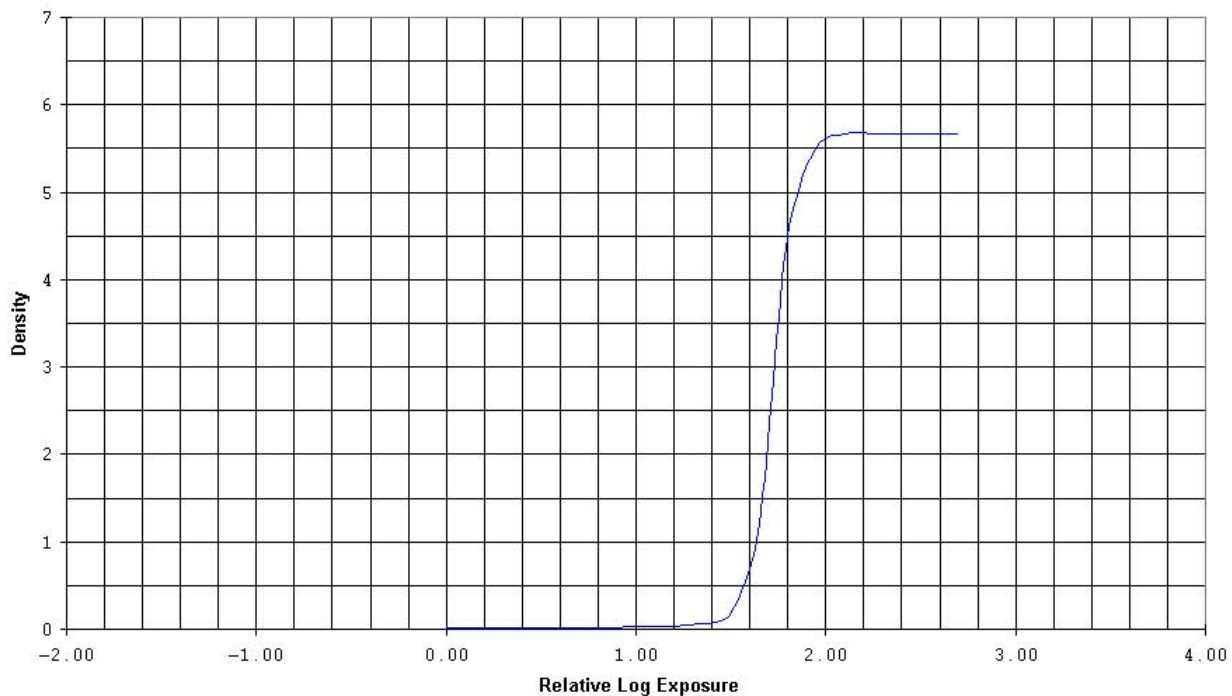


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**TI2395D 6-92**  
CHARACTERISTIC, For Publication

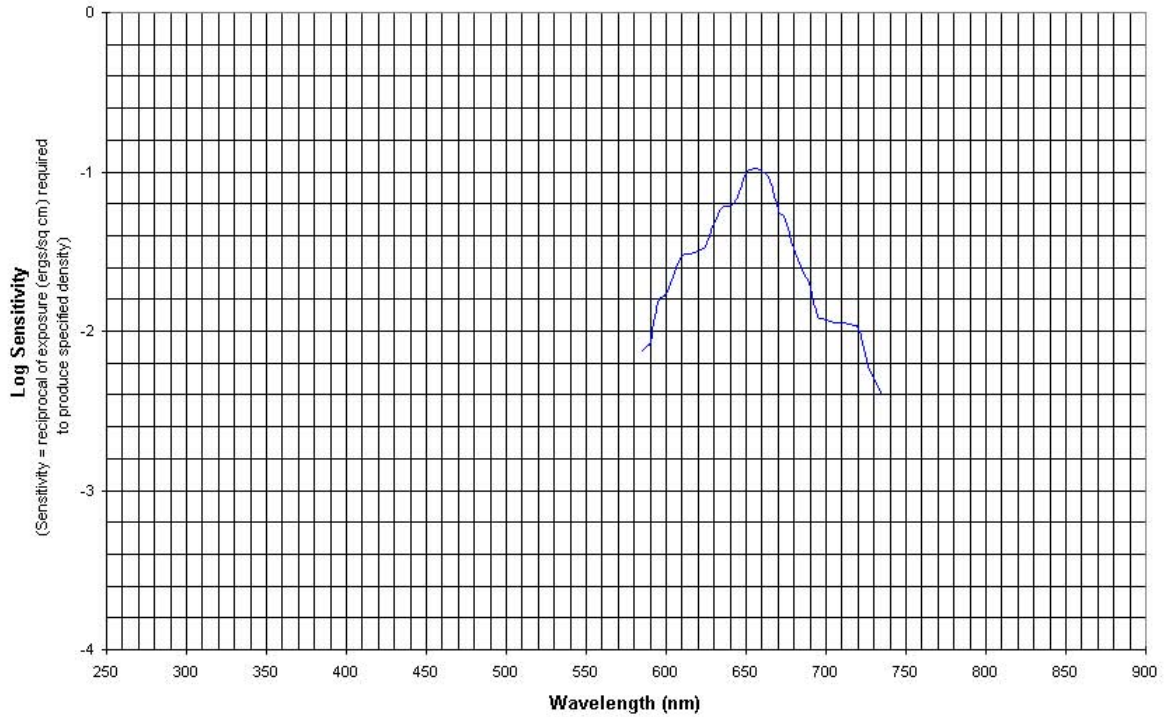
KODAK Recording 2000 Films RAI RAI7 RAIM RA7M / 2612 4612 1612 7612  
Xenon Flash 85 microseconds;  
KODAK RA 2000 Developer and Replenisher (1:2), 95F, 30sec; Diffuse visual



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**T12395E 12-97**  
SPECTRAL SENSITIVITY, For Publication  
KODAK Recording 2000 Film RRD, RRD7, RRDM, RR7M  
Exposure: 1.4 sec; KODAK RA 2000 Developer and  
Replenisher (1:2), diffuse visual; D=0.6=D-min



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**TI2396F 7-95**

SPECTRAL SENSITIVITY, For Publication

KODAK Recording 2000 Film RLE / 2614

Exposure: 1 sec; KODAK RA 2000 Developer and Replenisher (1:2), Diffuse visual, For Publication

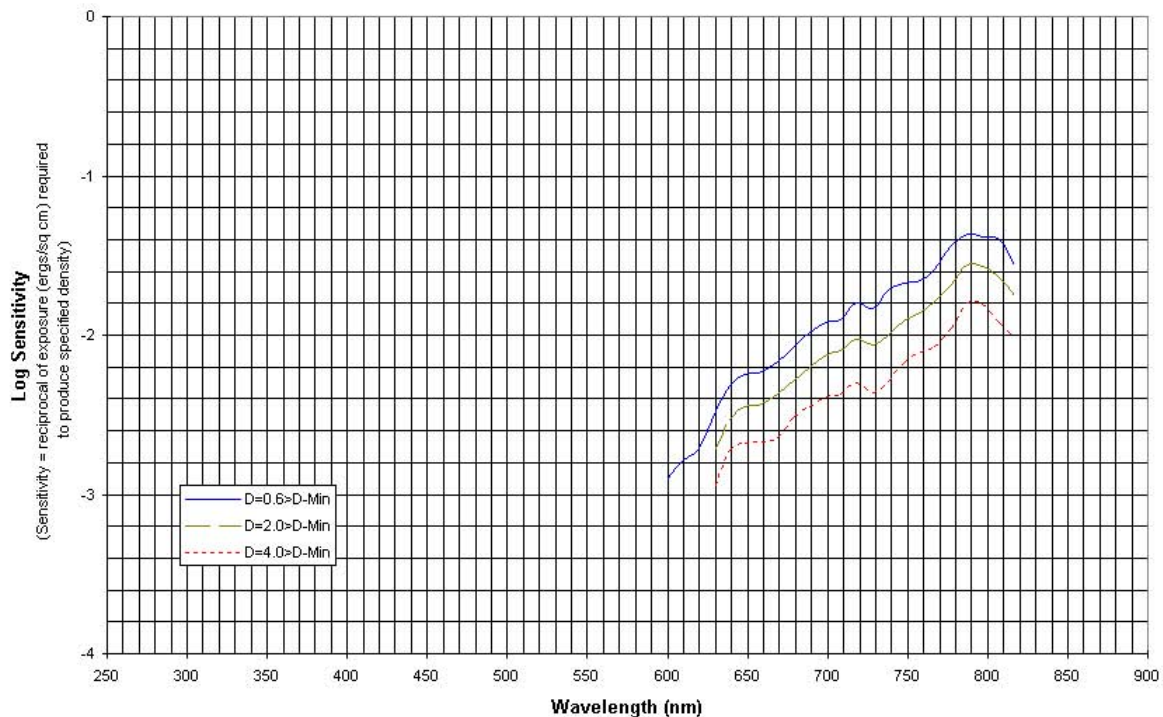


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**T12395G 12-97**  
SPECTRAL SENSITIVITY, For Publication

KODAK Recording 2000 Film RIR  
5 sec exposure; KODAK RA 2000 Developer  
and Replenisher (1:2), 30 sec, 35 C (95 F)



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**T12395H 6-92**  
SPECTRAL SENSITIVITY, For Publication

KODAK Recording 2000 Films RAI RAI7 RAIM RA7M / 2612 4612 1612 7612  
Effective exp 7 sec; KODAK RA 2000 Developer and Replenisher (1:2),  
Diffuse visual; Density=0.60



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