

**KODAK MIN-R G Film / 4717  
KODAK MIN-R DG Film / 4717 / Germany**

**Data Sheet  
(For Customer Use)**

**1) Description**

KODAK MIN-R G Film / 4717 and KODAK MIN-R DG Film / 4717 (Germany) is a high-speed, high definition, single coated, ortho-sensitive medical x-ray film for mammographic use with green emitting intensifying screens. It is coated on a blue, 7-mil ESTAR Base support that has a base density of approximately 0.18, with a dyed pelloid backing which affords anti-halation protection. 4717 Film exhibits similar contrast and is 25 percent faster in speed when used with KODAK MIN-R Regular Screens and KODAK MIN-R Medium Screens compared to KODAK MIN-R M Film / 4515, or KODAK MIN-R DM Film / 9515. In order to orient the film properly, the film is emulsion side up when the notch is at the right-hand side of the top edge of the film. The triple V notch is used. It is processable in existing automated processing cycles.

**2) Safelight**

Use a KODAK GBX-2 Safelight Filter with a frosted 15-watt bulb located at least 1.2 metres (4 feet) from the film.

Latensification: Safelight exposure after primary x-ray exposure.

Hypersensitization: Safelight exposure before primary x-ray exposure.

**3) Storage and Handling**

**Handling -**

Single emulsion film is extremely sensitive and prone to handling artifacts. Hands must be clean, dry and free of lotions, etc. Film should be handled carefully by the edges to avoid physical strains such as pressure, creasing, or buckling.

**Storage -**

Store unexposed film at 10 to 20 C (50 to 70 F), at 30 to 50 percent RH, and properly shielded from x-rays, gamma rays, or other penetrating radiation. Keep exposed film in a cool, dry place that is properly shielded from penetrating radiation. Process as soon as possible after exposure. Processed film should be stored at 16 to 27 C (60 to 80 F), at 30 to 50 percent RH.

**4) Relative Film Systems Speed**

Screen	Film	Relative Speed	Recommended Application
MIN-R	MIN-R G	125	Routine Mammography
MIN-R Medium	MIN-R DG	225	Routine Mammography

### 5) Sensitometric Parameters

Relative Speed:	Measured at a density of 1.00 above gross fog.
Contrast:	Measured as slope of the line between densities of 0.25 and 2.00 above gross fog.
Gross Fog:	Density of film base plus processing fog.

### 6) Process Variations

Changes to speed, contrast, and fog as a result of temperature variation from normal are included in GRAPH5 Section.

### 7) Intermix

This film can be processed with intermixes of common medical x-ray films.

Variations of bromide and iodide ions in KODAK RP X-OMAT Developer cause sensitometric speed effects that are significantly different for T-MAT Films than for conventional films; included in GRAPH Section.

### 8) Automated Processing

KODAK MIN-R G/DG Film/4717 can be processed in KODAK Processors using KODAK RP X-OMAT Chemicals.

#### Replenishment-

The values are given for processors using MIN-R G Film only. For about 100 sheets (size 18 x 24 cm or 24 x 30 cm) per day the rates are:

- a. X-OMAT ME-1 Processor = 75/90 mL Developer and Fixer (Volumes corresponding to a pump cycle.)
- b. X-OMAT M8 and M35A-M = 50/60 mL Developer and Fixer (Volumes corresponding to a pump cycle.)
- c. ME-10 = Switch on position 2
- d. X-OMAT M6 Series Processors = 30/25 mL Developer and Fixer
- e. Other Processors = 35 mL Developer and 40 mL Fixer

The rates depend upon the number of films processed per day. For 50 films and less, increase the rate (by about 15%); for 200 films and more, decrease the rate (by about 20%).

### 9) Emergency Manual Processing

(Not recommended for regular use, but can be used when automated processor fails)

Solution/Step	Temperature	Time	Agitation
KODAK RP X-OMAT Developer	80 F (26.5 C)	1 min	No agitation. Tap hanger immediately after working solution immersion to remove film surface air bubbles.
KODAK Indicator	80 F (26.5 C)	20 sec	Continuous, moderate Stop Bath OR Running Water Rinse
KODAK RP X-OMAT	80 F (26.5 C)	1 min	Vigorous at start X-OMAT Fixer and Replenisher
Running water wash <sup>1</sup> (8 volume changes/hour)	80 F (26.5 C)	5 min	—
Dry	120 F (49 C)	—	—

<sup>1</sup> KODAK PHOTO-FLO Solution may be used after washing to minimize water spots and drying marks.

**NOTICE!** Observe precautionary information on product labels and on the Material Safety Data Sheets.

## 10) Emergency Manual Processing-Rack and Tank

Solution/Step	Temperature	Time	Agitation
KODAK GBX Developer and Replenisher	68 F (20 C) 72 F (22 C) 76 F (24.5 C) 80 F (26.5 C)	5 min 4 min 3 min 2 min	Tap sheet film hangers lightly on side of tank immediately after immersion to dislodge air bubbles.
NOTE: DO NOT agitate films during remainder of development step. Remove film and hanger 5 seconds before end of development. DO NOT allow films to drain excess developer back into the developer tank.			
KODAK Indicator Stop Bath OR Running Water Rinse	60 to 85 F (16 to 30 C)	30 sec	Immerse hanger rapidly; agitate continuously
KODAK GBX Fixer and Replenisher OR KODAK RP X-OMAT Fixer and Replenisher	60 to 85 F (16 to 30 C)	2 to 4 min	Intermittent, 5 sec every 30 sec.
Running Water Wash <sup>1</sup> (about 8 volume changes/hour)	60 to 85 F (16 to 30 C)	5 min	—
Dry in a dust-free area at room temperature or a suitable drying cabinet. Temperature not to exceed 120 F (49 C).			

<sup>1</sup> KODAK PHOTO-FLO Solution may be used after washing to minimize water spots and drying marks.

## 11) Image Structure

Diffuse rms Granularity -  
GRAPH included; read at net diffuse visual densities from 0.5 to 1.5, 48-micrometre aperture.

## 12) Graphs<sup>1</sup>

### Characteristic:

- A) 1/2 second Simulated Green Screen exposure (1-96)
- B) Philips "Mammo Diagnost U-M" exposure (1-96)

### Reciprocity:

- C) (1-96)

### Process Variations from Normal Processing Temperature:

- D) Speed (1-96)
- E) Contrast (1-96)

### rms Granularity:

- F) (1-96)

<sup>1</sup>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.

**Safelight Sensitivity:**

G) (1-96)

**Spectral Sensitivity:**

H) (1-96)

**MTF:**

I) (1-96)

**Bromide Effects(-50% replenishment variation):**

J) (1-96)

**NOTE:** The Kodak materials described in this publication for use with KODAK MIN-R G Film / 4717 and KODAK MIN-R DG Film / 4717 / Germany are available from dealers who supply Kodak products. You can use other materials, but you may not obtain similar results.

The contents of this publication are subject to change without notice.

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Health Imaging  
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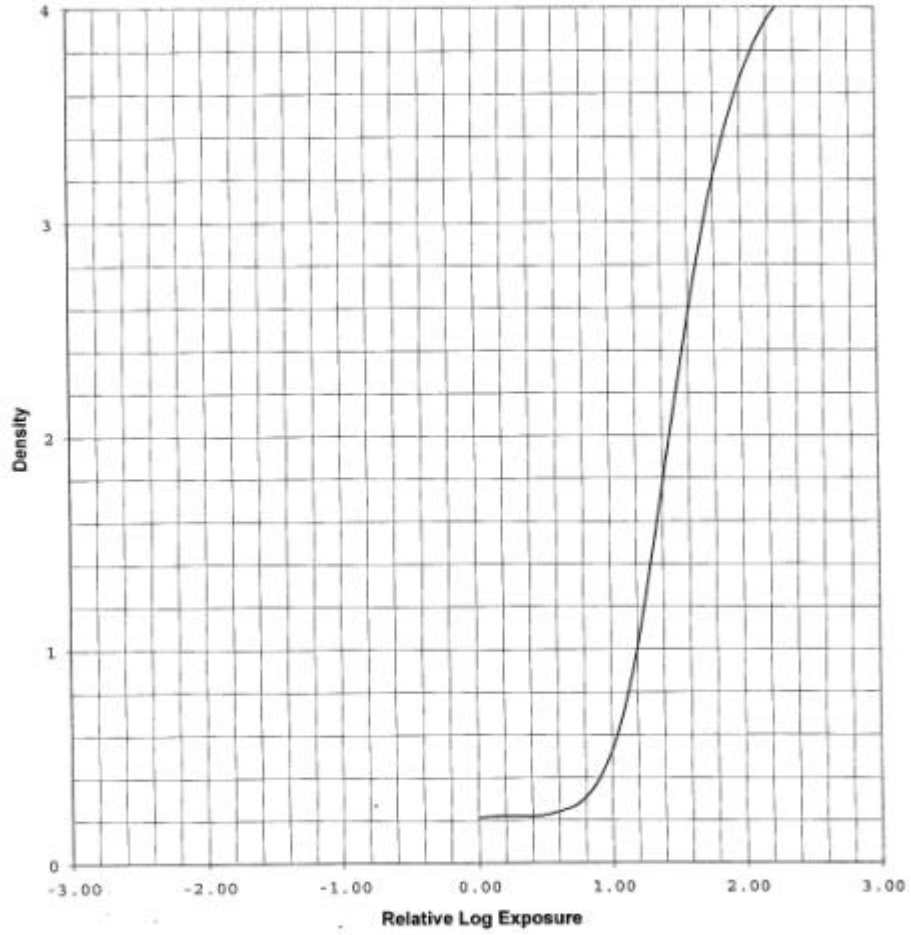
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End of Data Sheet

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CHARACTERISTIC, For Publication

KODAK MIN-R G Film/4717 and KODAK MIN-R DG Film/4717 (Germany)  
1/2 Second Simulated Green Screen Exposure  
KODAK RP X-OMAT Chemicals, 95 F (35 C)  
KODAK RP X-OMAT Processor, Diffuse Visual Densitometry



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