TI2157 Issued 3-95

KODAK RA Duplicating Film / 4429
KODAK C/RA Duplicating Film / 4423

1) Description

KODAK RA Duplicating Film / 4429 and KODAK C/RA Duplicating Film / 4423 provide superior image quality and more accurate information than their predecessors due to their sensitometric curve shape. KODAK RA Duplicating Film is slower by design for enhanced image quality and film stability.

The direct reversal photographic emulsion used in both these films is coated on one side of the polyester support. The support is blue-tinted for 4429 Film and is clear for 4423 Film. The finished sheets have a triple V notch and rounded corners to facilitate handling. Both products have an anti-curl, anti-halation, gloss-reduction coating on the side opposite the emulsion. The films are to be viewed through the pelloid (the pelloid side faces the viewer).

These films are designed to be processed with standard, rapid, or extended processing cycles using KODAK RP X-OMAT chemicals, or KWIK/RA processing cycles with KODAK X-OMAT RA/30 chemicals.

It may be necessary to make adjustments and/or changes to the duplicators and printers that will be using this new product to optimize results. Changes include: changing the bulb(s), increasing/decreasing exposure time, and on some units, changing the slot width. These changes can be made in the darkroom or office. Please follow the manufacturer's recommendations for all changes. Detailed instructions for each type of printer as well as starting points for exposure/intensity settings are found in Kodak Publication - "Printer Optimization Service Manual"(M3-756).

2) Safelight

Use a KODAK GBX-2 Safelight Filter, a KODAK 6B Safelight Filter / brown[1] , or a KODAK OA Safelight Filter / greenish yellow, with a 15-watt bulb located at least 4 feet from the film.

3) Storage and Handling

Handling -
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 50 to 70 F (10 to 20 C), 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 60 to 80 F (16 to 27 C), at 30 to 50 percent RH.

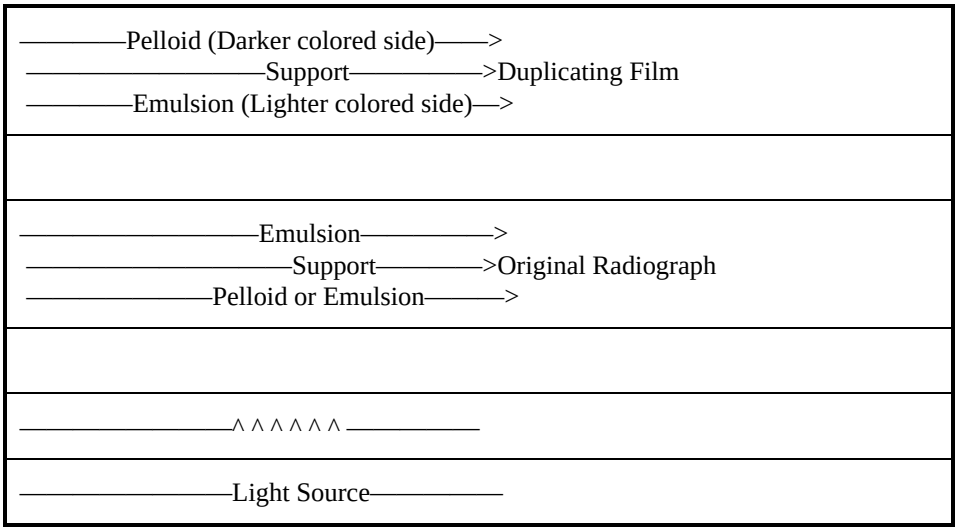
4) Exposure Guidelines

1. Orientation for Exposure:

   The emulsion side of the radiograph to be duplicated (the original) must be placed in intimate contact with the emulsion side of the duplicating film. (The emulsion side is face-up when the notch is in the upper right corner of the sheet or when the lighter colored side of the film, identified under safelight conditions, is up.) This "sandwich"

[1]For European use only.

must be oriented so that the original is closest to the light source and the emulsion side of the duplicating film faces the exposing light. Maintain intimate contact between the original radiograph and the duplicating film through use of a printing frame, a contact printer, or a similar device.



2. Recommended Exposing Devices and Light Sources:

   These films are designed for use with an ultraviolet exposure source and designed to function properly at an optimum exposure setting. Once this setting is found for a typical, commonly used original type, the exposing equipment can generally be left at that setting for subsequent films. The density of a duplicate can be increased (made darker) by reducing the exposure setting and it can be decreased (made lighter) by increasing the exposure setting. Factors that can cause variation in the exposure of the duplicate even if the device setting is kept constant are: bulb age, amount of bulb warm-up time, bulb drift, timer drift, calibration, inconsistent slit width, etc.

   An optimum exposure setting is defined as one which results in the same density being produced on a duplicate at a specific point as occurs on the original at that same point. It is recommended to pick a point around a density of 1.1 to 1.2 on the original and vary the exposure setting on the exposing device until that same density is matched on the duplicate. While this should give the most accurate duplicate, some customers may prefer darker or lighter films and the exposure setting can be adjusted according to individual customer preference.

3. The following examples are suggested starting points for making duplicates of medical radiographs. Individual devices should be optimized and adjusted according to the guidelines given.

BLU-RAY DUPLICATOR:

	MarkII	**MarkIV**	**MarkV**
Bulb Type	GE BLB	GE BLB	GE BLB
Filter Wrap	None	None	None[1]
Slot Width	0.15 in.	0.25	0.15
Intensity/Speed	8	7	77 in/min[2]
Time Units	—-	—-	9-10 seconds

[1] Filter must be removed.

[2] It should take 9.4 seconds for a film sheet to travel 12 inches. Since the film is slower, it is advisable to make several one time only changes to the duplicators. These include changing the bulb, exposing time, and/or slit width. We recommend following the manufacturers instructions for changing the bulb and slit width.

DUPONT DUPLICATOR:

	Cronex
Bulb Type	(2)GE BLB
Filter Wrap	None
Slit Width	N/A
Intensity/Speed	N/A
Time Units	3.6

BYERS DUPLICATOR:

	Lab 315A	**Lab 355A**
Bulb Type	(2)GE BLB	GE BLB
Filter Wrap	None	10% Filter
Slit Width	N/A	N/A
Intensity/Speed	N/A	N/A
Time Units	39 Units	37 Units

TECHNO-AIDE DUPLICATOR:

	195D	**360D**	**450D**	**2500D/S**
Bulb Type	GE BLB	GE BLB	GE BLB	(2) GE BLB
Filter Wrap	1/4 in.	1/8 in.	1/8 in.	1/8 in.
Slot Width	N/A	N/A	N/A	N/A
Intensity/Speed	N/A	N/A	N/A	N/A
Time Units	3 secs.	8 secs.	3 secs.	3.2 secs.

Since following conditions and BLB light intensity vary, it may be necessary to make further minor adjustments to the exposure/intensity settings.

5) Automated Processing

The films are designed to be processed with standard, rapid or extended processing cycles using KODAK RP X-OMAT chemicals, or KWIK/RA processing cycles with KODAK X-OMAT RA/30 chemicals. Optimum results will be obtained when using Kodak Processors with Kodak chemistry. To minimize processing defects, insert the film into the processor emulsion side up (lighter colored side).

6) Graphs[2]

Characteristic:

A) Standard, Rapid, and KWIK processes and Extended Cycle (3-95)

Safelight Data:

B) Percent Speed Change (3-95)
C) Percent Gamma Change (3-95)
D) Percent D-Max Change (3-95)

NOTE: The Kodak materials described in this publication for use with KODAK RA Duplicating Film / 4429 and KODAK C/RA Duplicating Film / 4423 are available from dealers who supply Kodak products. You can use other materials, but you may not obtain similar results.

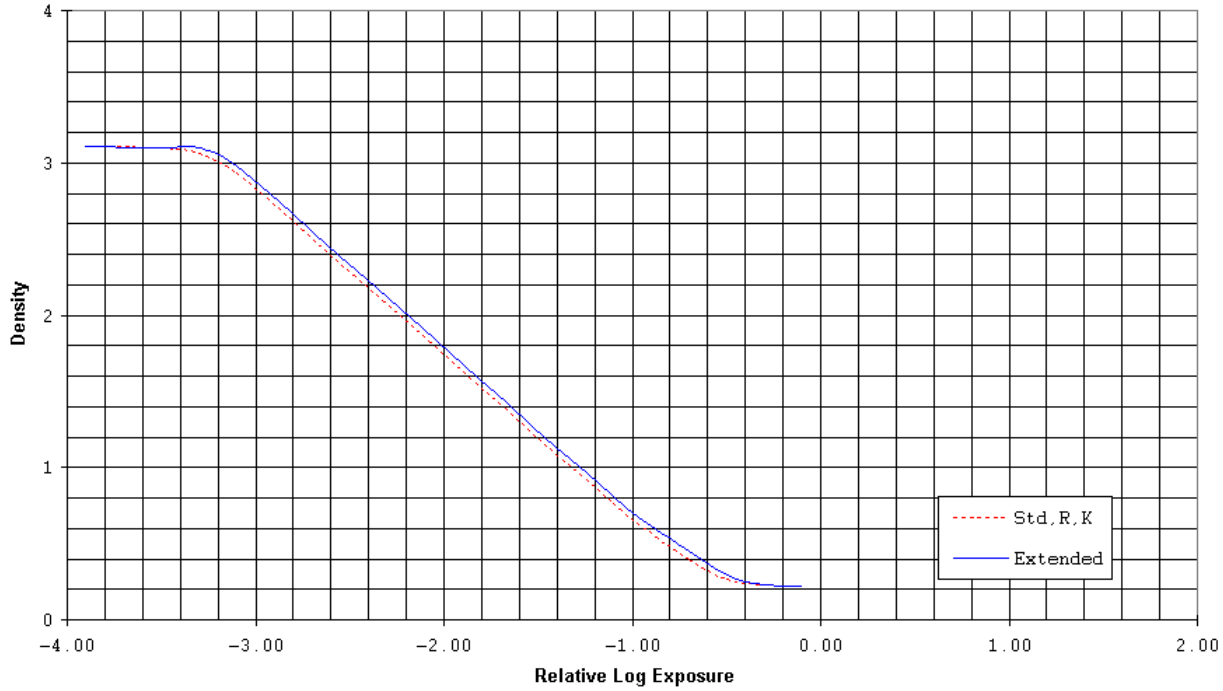
Health Imaging
EASTMAN KODAK COMPANY - Rochester, NY 14650

End of Data Sheet

[2]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.

TI2157A 3-95
CHARACTERISTIC, For Publication

KODAK RA Duplicating Film/4429
KODAK C/RA Duplicating Film/4423
Standard (Std), Rapid (R) and KWIK (K),and Extended Cycles
Using Kodak Chemicals,and Processors;Diffuse visual



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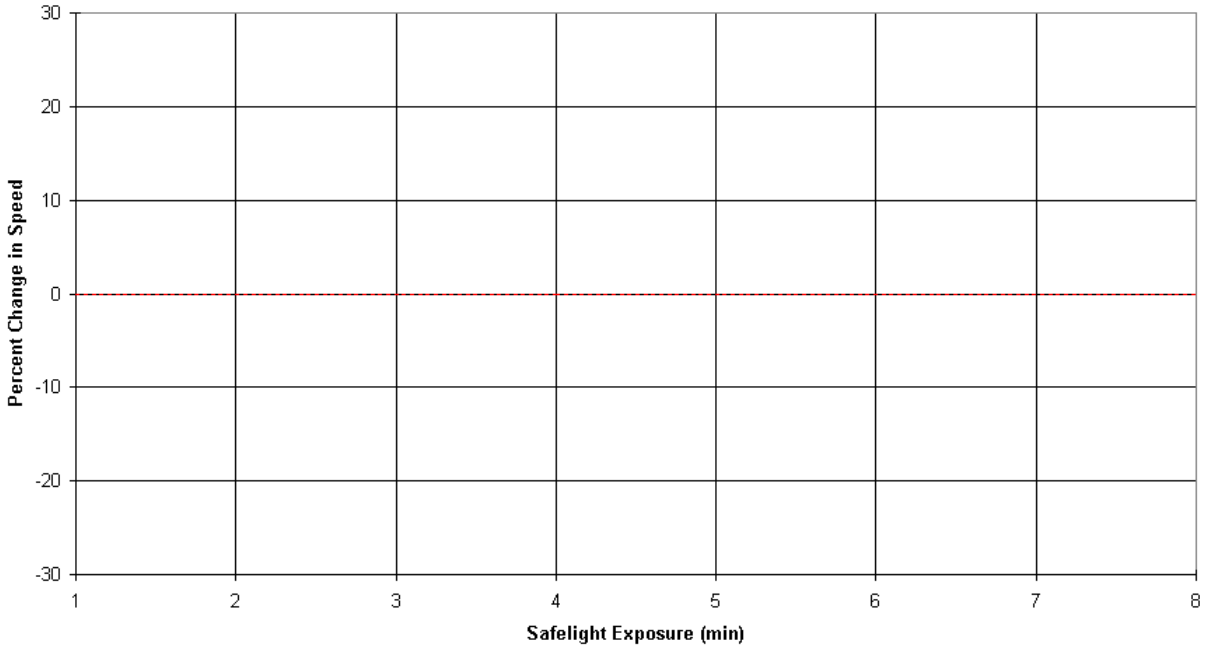
TI2157B 3-95
PERCENT SPEED CHANGE, For Publication

KODAK RA Duplicating Film/4429
KODAK C/RA Duplicating Film/4423
KODAK RP X-OMAT Chemicals, KODAK RP X-OMAT Processor;
KODAK GBX-2 Safelight Filter



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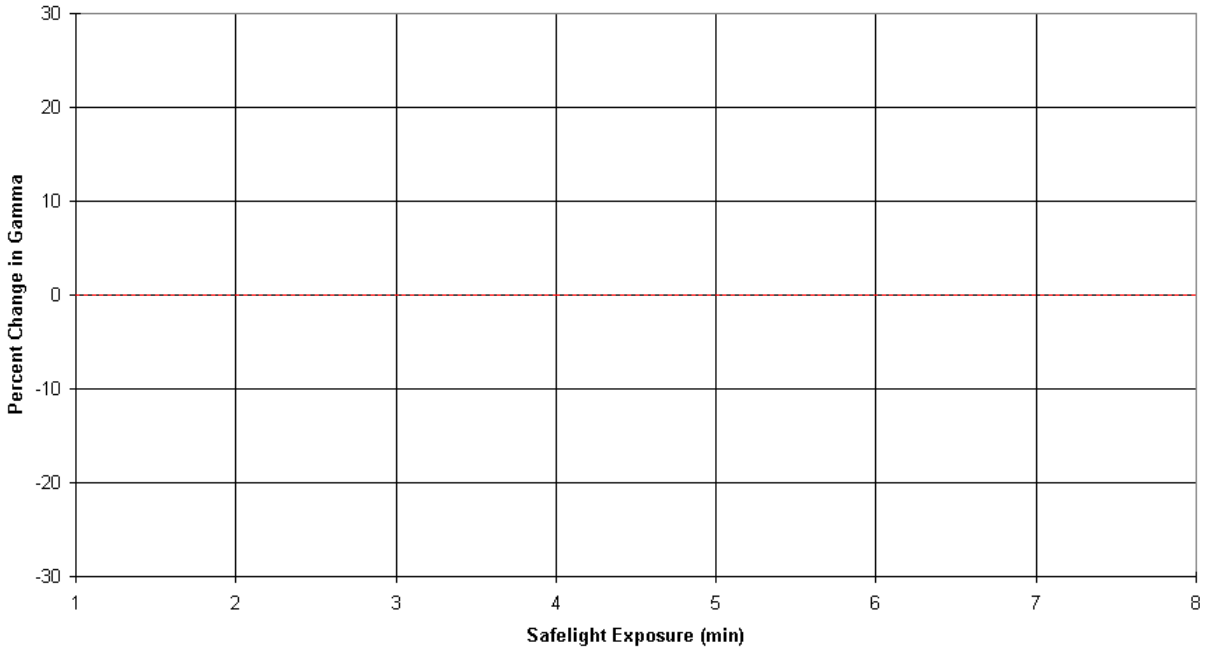
TI2157C 3-95
PERCENT GAMMA CHANGE, For Publication

KODAK RA Duplicating Film/4429
KODAK C/RA Duplicating Film/4423
KODAK RP X-OMAT Chemicals, KODAK RP X-OMAT Processor;
KODAK GBX-2 Safelight Filter



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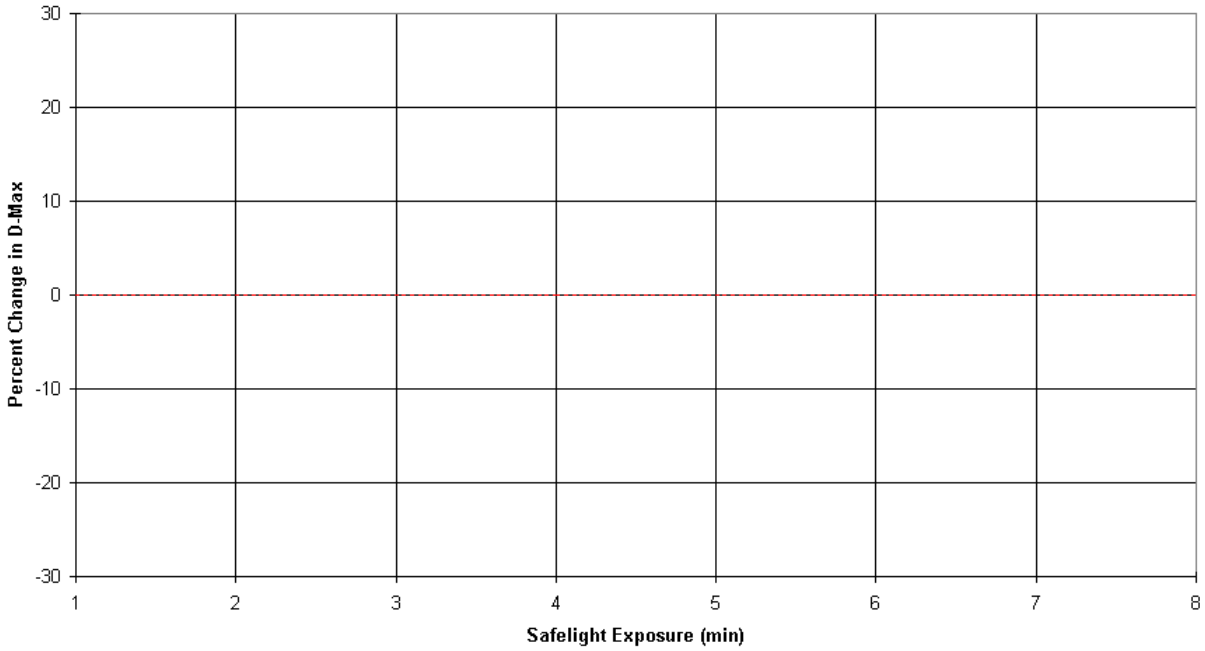
TI2157D 3-95
PERCENT D-MAX CHANGE, For Publication

KODAK RA Duplicating Film/4429
KODAK C/RA Duplicating Film/4423
KODAK RP X-OMAT Chemicals, KODAK RP X-OMAT Processor;
KODAK GBX-2 Safelight Filter



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