Carestream

Technical Data Sheet

Issued 2014-02

RA Duplicating Film

RA Duplicating Film provides excellent image quality and accurate information due to its sensitometric curve shape.

The direct reversal photographic emulsion used in this film is coated on one side of the approximately 0.2 mm (7-mil) polyester support. The support is blue-tinted. The finished sheet has a triple V notch and rounded corners to facilitate handling. It has an anti-curl, anti-halation, gloss-reduction coating on the side opposite the emulsion. The film is to be viewed through the anti-halation side (the anti-halation side faces the viewer).

This film is designed to be processed with standard or rapid processing cycles using RP X-OMAT, X-OMAT EX II or X-0MAT MX chemicals.

It may be necessary to make adjustments and/or changes to the duplicators and printers that will be using this 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. .

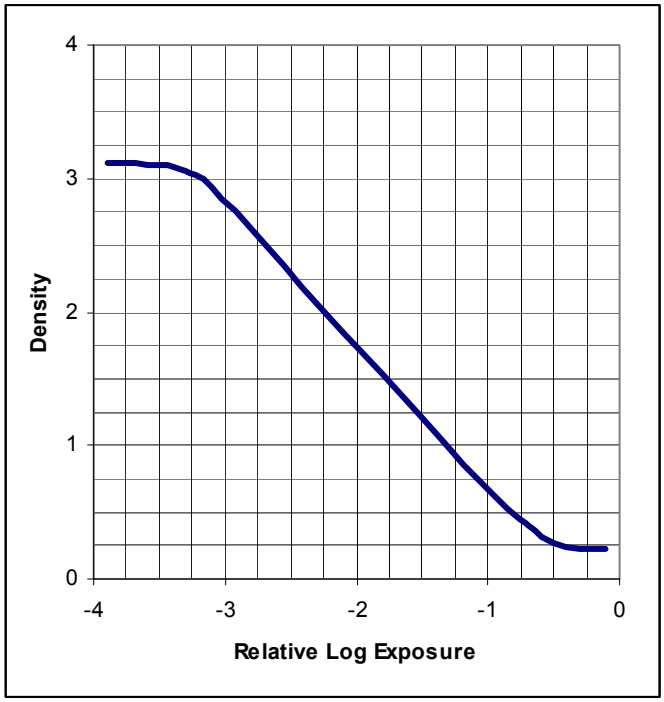
Sensitometric Properties:

Speed	Measured at 1.0 OD above Gross Fog
Contrast	Measured as slope of the straight line portion of the sensitometric curve, and computed as the value for the rise for any three consecutive steps.
Gross Fog	Density of film base plus processing fog.

Recommended Starter Volumes

Developer	Starter (Added to processor developer tank
RP, EX II, X-OMAT MX	89 ml (3 fl. Oz.) per 3.78 Litres (1 gallon)

RA Duplicating Film
X-OMAT 5000 RA Processor; RP X-OMAT Chemicals; 90 Second Cycle;
Diffuse Visual Densitometry



Notice: The 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 to a particular box or roll of photographic material. They do not represent standards or specifications that must be met by Carestream Health, Inc. The company reserves the right to change and improve product characteristics at any time.

Automatic Processing Recommendations:
In general, processing is recommended in X-OMAT, RP X-OMAT and MIN-R Mammography Processors using RP X-OMAT, X-OMAT EX II or X-OMAT MX Developer and Replenisher and RP X-OMAT LO or X-OMAT MX Fixer and Replenisher. To minimize processing defects, insert the film into the processor emulsion side up (lighter colored side).

Influence of developer temperature in case of automatic processing

-2 ºC	Ref	+2 ºC
0	Base fog	0
0	Sensitivity	0
0	Contrast	0

Replenishment Rate Recommendations for X-OMAT, RP X-OMAT and MIN-R Mammography Processors (Replenishment by length)

Film Size Processed	Use Condition	Average Number of Films per 8 hours processor operation	Replenishment Rates (ml per 35 x 43 cm)	
			Developer	Fixer
35 x 35 cm (only)	High	90 sheets or more	50	70
	Medium	30 – 90 sheets	65	85
	Low	30 sheets or less*	80	100
Average size intermix	High	115 sheets or more	50	70
	Medium	40 – 115 sheets	65	85
	Low	40 sheets or less*	80	100
35 x 43 cm (only)	High	75 sheets or more	60	85
	Medium	25 – 75 sheets	80	100
	Low	25 sheets or less*	100	120
*If sensitometry does not stay within control limits, flooded replenishment may be needed.				

Please refer to Service Bulletin No. 30, available on the Carestream website or upon request, for additional processing recommendations.

Exposure Guidelines

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" 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.

Recommended Exposing Devices and Light Sources

This film is designed for use with an ultraviolet exposure source and 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 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. The recommendation is 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.

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	0.381 cm (0.15 inches)	0.635 cm (0.25 inches)	0.381 cm (0.15 inches)
Intensity/Speed	8	7	195.6 cm/min[2] (77 inches/min)
Time Units	---	---	9-10 seconds

[1] Filter must be removed.

[2] It should take 9.4 seconds for a film sheet to travel 30.5 cm (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:

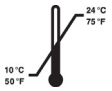
	195D	360D	450D	2500D/S
Bulb Type	GE BLB	GE BLB	GE BLB	(2) GE BLB
Filter Wrap	0.635 cm (1/4 inch)	0.175 cm (1/8 inch)	0.175 cm (1/8 inch)	0.175 cm (1/8 inch)
Slot Width	N/A	N/A	N/A	N/A
Intensity/Speed	N/A	N/A	N/A	N/A
Time Units	3 seconds	8 seconds	3 seconds	3.2 seconds

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

Storage and Handling

Storage -

Unexposed:



10–24 °C (50–75 °F)

Do not refrigerate or freeze as this can cause condensation to occur.

30–50 %RH

Protect from heat and radioactive sources. Film is to be properly shielded from x-rays, gamma rays, or penetrating radiation.

Exposed: Keep cool, dry, and properly shielded from penetrating radiation. Process as soon as possible.

Processed: 16–27 °C (60–80 °F), 30–50 %RH

The film should be used before the expiration date  indicated on the box with the lot (emulsion) number LOT.

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. Luminous watches, cell phone and darkroom light leaks should be avoided.

Do not re-use. Film is a single use medical device.

Safelight Filter

Use a safelight filter such as a GBX-2 Safelight Filter / ruby red, a 6B Safelight Filter / brown (for European use only), or a OA Safelight Filter / greenish yellow, with a 15-watt bulb located at least 1.22 metres (48 inches) from the film.

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