FUJIFILM

Processing Recommendations
Fuji *UM-MA* and *AD-M* Mammography Films

Image quality and the quantity of exposure required to produce proper film density (blackening) are affected by film processing. Inappropriate film processing can result in less than optimum image quality or require higher exposure. The following recommendations are provided to guide you in obtaining the optimum results from Fuji *UM-MA* and *AD-M* mammography films:

1. Process Fuji *UM-MA* and *AD-M* mammography films in fresh, Fuji recommended developer (see Table 2) for optimum speed and contrast with low fog. a Developer temperature should be set at 35°C (95°F). Verify that the proper volume of starter is added at each developer tank change (approx. 3 oz. per gal. of developer).

2. Process Fuji *UM-MA* and *AD-M* mammography films in an automatic, roller-transport processor with a development time[1] of at least 24 seconds. Most "90-second cycle" processors provide this minimum time. Fuji *UM-MA* and *AD-M* mammography films are processed using recommended conditions typically exhibits an average gradient[2] of 3.2 or higher for *UM-MA* film and 3.6or higher for *AD-M* film (See Tables 1a. & 1b.)

   Although developing Fuji *UM-MA* and *AD-M* films for longer than the standard processor cycle time will increase speed and may increase contrast, extended development time may increase fog and quantum and screen structure mottle. Consult your Fuji representative for advice on extended processing in for your facility.

3. Maintain optimum sensitometric characteristics by replenishing developer and fixer using the recommendations of the chemical manufacturer as a guide (recommended replenishment rates should be no less than 60cc's for developer and 80cc's for fixer per 14'x17' film - rates may vary slightly for different chemistries). With Fuji *UM-MA* and *AD-M* films, employ a processor quality assurance program to monitor processor activity and optimize replenishment rates.

4. Assure adequate fixing and image archival permanence by maintaining the fixer at 26°C (79°F) or higher. Maintain wash water temperature and flow rate as recommended by the processor manufacturer. Measure the concentration of retained hypo (fixer) initially and then quarterly. Investigate and correct excessive retained hypo.

5. Avoid excessively high dryer temperatures that can cause water spots on finished mammograms. Maintain the processor dryer temperature 5°C (9°F) above that which results in slightly damp films.

[1]Development time is measured as the time elapsed between the leading edge of the film entering the developer solution and the leading edge entering the fixer solution.

[2]The average gradient is the slope of a line connecting net densities of 0.25 and 2.00 on the characteristic curve.

Table 1a. Fuji *UM-MA* Film - Typical Sensitometric Characteristics* for Fuji Processors (or equivalent) and High Quality Developers at 35°C (95°F)

			Fuji *UM-MA* Film		
Fuji Processor	Cycle Time	Development Time	Relative Speed	Average Gradient	Gross Fog
FPM6000	90s (standard)	25 s	100	3.40	0.18
FPM9000	90s (standard)	26s	100	3.40	0.18
FPM4200	90s (standard)	24s	100	3.40	0.18
FPM3800	90s (standard)	24s	100	3.40	0.18
FPM2800	100s (standard)	30s	100	3.40	0.18
FPM4200	3 min. 30s (extended)	58s	140	3.45	0.19
FPM3800	2 min. (extended)	32s	140	3.45	0.19
FPM2800	3 min. (extended)	54s	140	3.45	0.19

*Variation of sensitometric test equipment may result in variation from the above values of ± 10%

Table 1b. Fuji *AD-M* Film - Typical Sensitometric Characteristics* for Fuji Processors (or equivalent) and High Quality Developers at 35°C (95°F)

			Fuji *AD-M* Film		
Fuji Processor	Cycle Time	Development Time	Relative Speed	Average Gradient	Gross Fog
FPM6000	90s (standard)	24 s	100	3.60	0.21
FPM9000	90s (standard)	26s	100	3.60	0.21
FPM4200	90s (standard)	24s	100	3.60	0.21
FPM3800	90s (standard)	24s	100	3.60	0.21
FPM2800	100s (standard)	30s	100	3.60	0.21
FPM4200	3 min. 30s (extended)	58s	140	3.65	0.21
FPM3800	2 min. (extended)	32s	140	3.65	0.21
FPM2800	3 min. (extended)	54s	140	3.65	0.21

*Variation of sensitometric test equipment may result in variation from the above values of ± 10%

Table 2. Fuji recommended developers providing the sensitometric characteristics shown in Table 1a. & 1b. Mammography specific developers are formulated to yield elevated performance and typically produce average gradient values higher than indicated. *Note: It is not the intent of FUJIFILM to include or exclude chemistry products listed below. Those chemistries most commonly used by our customers have been listed. For additional information, contact your local Fuji Account Manager.*

Manufacturer	Mammography Specific Developer	General Radiography Developer
Agfa	**HD, MR**	**GP**
Allied Chemicals	**Autex A2, A2HC+**	**Autex SE, RP and KE**
Eastman Kodak	**EXII**	**RP**
HR Simon	**SEF 2, UHC,**	**CKE, Chemblend, Chemblend 2**
SourceOne	**Mammo Plus, 3-7-90 Type M**	**3-7-90 Type S, SourceOne Spectra**
White Mountain	**T2ADM, MV, UM, AG, EX**	**T2**

Raytech Diagnostics
https://raytechdiagnostics.com/
613-799-4171
sales@raytechdiagnostics.com

REV: 11/03