TI2536 Revised 01-03

KODAK Concentrate and Ready-to-Use Developers and Fixers

1) Mechanize Processing Information (Rapid Access Processors)

All developers and fixers

Developer Temperature :	35°C ± 3 (95°F ± 5)
Fixer Temperature:	33°C ± 3 (91°F ± 5)

Development Time: 15 to 45 seconds (processor and product dependent)*

Film/Paper	Developer Time
PREMIER Recording Films	25 - 40 seconds
Contact 2000 Films	20 - 40 seconds
Camera 2000 films	20 - 40 seconds
Gen 5 Films	20 - 30 seconds
Other Graphic Arts films	20 - 40 seconds
PAGI-SET Papers	20 - 45 seconds

*Note: This is a guide to development time. Please see product TI for specific times

Important Processing Notes

The starting-point recommendations provide a range of acceptable development times and temperatures. Generally, times and temperatures near the center of the specified ranges provide the best margin for error in most processors, and will produce optimum results for the full range of Kodak graphics films and papers. However, criteria other than development time may dictate the acceptable processing speed for any particular processor.

Within the acceptable ranges shown above, a development time should be selected that will provide sufficient fixing, washing and drying of films and papers. Insufficient fixing or washing, for example, can result in background stain. *Fixing* efficiency can be improved by raising the temperature of the fixer or by reducing the speed of the processor. Likewise, *washing* efficiency can be improved by using a higher wash temperature or a lower machine speed (a mixer tap may be required to raise wash water temperature).

When making time and/or temperature adjustments, check the recommendations above to make sure that the development time does not fall outside the acceptable range.

Hard Dot & Premier Films

The minimum tank turnover required per week is one tank turnover for Hard Dot films and half tank turnover for Premier film in Premier 7000 developer.

KODAK RA 2050 Developer Replenisher

To determine if you can use KODAK RA 2050 Developer Replenisher in place of KODAK RA 2000 Developer and Replenisher, calculate your Film Area Factor (FAF). Divide the average area of product used in one week by the processor developer tank volume. If a single replenisher tank is used to feed solution to more than one processor, calculate the FAF for each processor. For 12 hours/day, 5 days/week operation:

For 20% average D-max (Positive): minimum FAF acceptable 3 m^2 per litre

For 80% average D-max (Negative): minimum FAF acceptable 2 m^2 per litre

Note: RA 2000 is used as the tank fill solution when using RA 2050 Replenisher. RA 2050 should not be used for anti-ox replenishment. In processing equipment with anti-ox replenishment, this feature must be switched off. If anti-ox replenishment is necessary, use KODAK RA 2000 Developer and Replenisher.

Process Control

Process control strips are not required with Kodak developers. However the process can be monitored by plotting D-max and dot size from a calibration wedge output from an imagesetter. This will be a monitor of the "total system."

If a daily trend is noted in the direction of lower D-max with no change in exposure, it may indicate under-replenishment. If this occurs, increase the replenishment.

If the D-max level is too low, partially or fully renew the developer in the processor. Check the D-max level and if it is back to normal, increase the replenishment rate.

Process control for batch processing consists of keeping records of the duration of solution usage and replacement of the chemical when its development capacity has reached an unacceptable level.

Solution Life

Drain, clean and refill the processing tank as per processor manufacturer recommendations. For rapid-access processors, the recommended interval is every 3 months for single shift, 2 months for 2 shift and 1 month for 3 shift working.

Mixed developer replenisher should be kept no longer than 2 weeks in a tank with floating lid.

Mixed fixer replenisher should be kept no longer than 4 weeks.

For RA 2001 batch processing, replace after processing 100 square metres per litre of film and/or paper, after 40 operating hours (composed of "standby" or "on" operation), or after 5 days since the developer was installed, whichever occurs first.

Cleaner Working

RA 2000 Developer & Replenisher sold in the US&C and RA 2000 P Dry Developer & Replenisher are cleaner working developers. This may result in a slight yellow precipitate, most of which is removed by the developer filter in the processor. It may also be noticed at the bottom of the developer tank when drained.

Fixer Hardener

If required, KODAK RA 3000 Part B may be added at a rate of 3 parts in 100 of diluted part A, with continual stirring.

Product Availability

Please note that not all products listed in the replenishment tables are available in all regions.

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2) **Replenishment Rates -** For the recommended starting replenishment rates for concentrate and ready-to-use developers and fixers, see below.

KODAK Developer	Camera/Recording 2000 films [2]				Premier PRD Film				Gen 5 GRD and GLE Films				RA Films				Notes
	Diln	Rep rate / mL/m² [1]			Diln	Rep Rate / mL/m² [1]			Diln[3]	Rep Rate / mL/m² [1]			Diln[3]	Rep Rate / mL/m² [1]			
		15%	50%	80%		15%	50%	80%		15%	50%	80%		15%	50%	80%	
Concentrate Developer & Replenishers																	
RA 2000/HX-161 Developer and Replenisher	1+2	350	465	600	1+2	350	465	600	1+2	200	350	500	1+4	350	465	600	
RA 6000 Developer & Replenisher	n/a	-	-	-	-	-	-	-	1+2	200	250	300	1+2	300	350	400	Hydroquinone free developer (sold in Europe only)
Premier 7000 Developer & Replenisher	1+2	350	465	600	1+2	250	350	450	1+2	200	300	400	1+2	300	350	400	
MX-1840 Developer & Replenisher	1+2	350	465	600	1+2	250	350	450	1+2	200	300	400	1+2	300	350	400	Sold in Europe Only
HX-138 Developer & Replenisher	n/a	-	-	-	n/a	-	-	-	1+2	250	350	450	1+4	200	350	450	Sold in Europe Only
RAP Developer & Replenisher	n/a	-	-	-	n/a	-	-	-	1+3	200	350	500	1+3	350	460	600	Sold in selected regions - RA films only
Ready-to-use Developer & Replenisher																	
RA 2001 Developer & Replenisher	rtu	350	465	600	rtu	350	465	600	rtu	200	350	500	rtu	200	350	500	Equivalent to RA 2000 at 1+2
Dry Developer & Replenishers																	
Dry Powder Developer	dry	350	465	600	dry	350	465	600	dry	200	300	400	dry	250	350	450	Sold in Europe Only
RA 2000P Developer & Replenisher	dry	350	465	600	dry	350	465	600	dry	200	300	400	dry	350	465	600	
Premier 7000P Dry Developer & Replenisher	dry	350	465	600	dry	250	350	450	dry	200	300	400	Dry	300	350	400	Sold in Japan Only
Concentrate Replenisher																	
RA 2050 Replenisher	1+2	160	235	300	1+2	160	235	300	1+2	100	175	250	1+4	160	235	300	Requires RA 2000 as tank fill solution - cannot be used for Anti-ox
System chemicals																	
RA 2010 Developer	rtu	n/a	n/a	n/a	n/a	-	-	-	n/a	-	-	-	n/a	-	-	-	Tank fill solution for ADVANTAGE & EZ systems
RA 2011 Developer Replenisher	rtu	controlled by machine			n/a	-	-	-	n/a	-	-	-	n/a	-	-	-	Dev rep for plumbless ADVANTAGE & EZ Systems
RA 2012 Developer Replenisher	1+2	controlled by machine			n/a	-	-	-	n/a	-	-	-	n/a	-	-	-	Dev rep for plumbed ADVANTAGE & EZ systems

RA 2051 Developer Replenisher	N/a	-	-	-	n/a	-	-	-	n/a	100	175	250	rtu	100	175	250	Sold in Europe only For use with “PolyCare” systems only. Use RA 2000 (1+2) as tank fill solution

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[1]To convert to cc/sq inch use 150 ml/m^2 = 0.1 cc/in^2. It is recognized that some countries (e.g. US) recommend generally higher rates whilst others (e.g. Japan) will aim for the lowest rate possible. The figures quoted here should be used as a guide for starting up and should be modified based on the usual factors such as film throughput, tank size, customer concerns etc. 15%, 50% and 80% figures for rep rates refer to % black film - 15% is the level typically used for "mostly positive working" and 80% is "mostly negative working" with 50% representing a mixture.

[2]Includes CONTACT 2000, PAGI-SET, IMAGELITE, VERSALITE, Gen 5 GIR & GAI product families and any film not included in the Recording or Camera 2000 families, with the exception of lith films (see below). No replenishment rates are quoted for papers. In general photocomposition papers should use approximately 70% of the figure quoted of RA films or the same figure at higher dilutions (e.g. 1+7 for RA 2000)

[3]Gen 5 GRD & GLE films can also be processed in RA 2000 and RA 2050 diluted 1+4, using RA replenishment rates, but optimum results are obtained at 1+2.

For intermix of Hard Dot and RA films, RA 2000 Developer and Replenisher, 1+2, and replenishment rates for the HD system must be used for stability. The intermix of HD and RA films with Premier film, in Premier 7000 developer may require replenishment rates for HD films, dependant on the intermix ratio.

Film and Paper Developers (cont'd)

KODALITH Developer	Lith Films			
	Diln	Rep rate / mL/m^2 [1]		
		15%	50%	80%
Liquid Developer	1+3 (A and B)[2]	Tray only		
Super RT Dev	pwd	Tank fill solution		
Super RT Dev Rep	pwd	185	400	620

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[2]Mix equal amounts of diluted Parts A and B for use. Discard immediately after use.

Product Name	Diln	Rep Rate / mL/m^2 for 50% black[1]			Notes
		2000 Series, Premier, Camera, CONTACT & Other RA Films	Gen 5 GRD and GLE Films	Imagesetting Papers only[2]	
Concentrate Fixer & Replenishers					
RA3000 Fixer and Replenisher Part A[3]	1+3	540	410	185	
Premier 3040 Fixer and Replenisher	1+2	220	200	100	Sold in Japan only
MX-1825 Fixer and Replenisher	1+2	220	200	100	Sold in selected regions
RA 3050 Fixer and Replenisher	1+3	275	200	100	Separate hardener must NOT be used with this fixer
RAP Fixer and Replenisher	1+4	600	530	250	Sold in selected regions—RA films only
Ready to use Fixer & Replenisher					
RA 3001 Fixer and Replenisher	rtu	540	410	185	Not suitable for use with in-line silver recovery equipment
Dry Fixer & Replenishers					
Dry Powder Fixer	dry	540	410	185	
RA 3000P Fixer and Replenisher	dry	540	410	185	
Premier 3040P Fixer and Replenisher	dry	220	200	100	Sold in Japan Only
System chemicals					
RA 3010 Fixer and Replenisher	controlled by machine		n/a	n/a	Fixer solution for ADVANTAGE & EZ systems
RA 3051 Fixer and Replenisher	rtu	n/a	150	100	For use with "PolyCare" system only

[1]To convert to cc/sq inch use 150 ml/m^2 = 0.1 cc/in^2. It is recognized that some countries (e.g. US) recommend generally higher rates whilst others (e.g. Japan) will aim for the lowest rate possible. The figures quoted here should be used as a guide for starting up and should be modified based on the usual factors such as slight increase for all positive films, or a slight reduction for mostly negative users. If an in-line silver recovery unit is being used then the rep rates should be reduced by a factor of 2-3.

[2]For imagesetting papers only higher dilutions may be used, (e.g. RA3000 at 1+7, and rep rates should be increased accordingly). Other papers should use the same dilution and rep rates as Gen 5 Films.

[3]For RA 3000 Part A there is a hardener, RA 3000 Part B, which may also be used. This should be added at rate of 3 parts in 100 of diluted part A, with continual stirring.

[4]For KODALITH fixer an additive may be used which provides a slight etching effect resulting in a lower D-min. In general, KODALITH fixer is only used with lith films when this additive is required. Otherwise RA 3000 is normally used.

Lith Films

	Diln	**Rep Rate / mL/m^2[1]**
KODALITH Fixer and Replenisher	1+3	410

[1]To convert to cc/sq inch use 150 ml/m^2 = 0.1 cc/in^2. It is recognized that some countries (e.g. US) recommend generally higher rates whilst others (e.g. Japan) will aim for the lowest rate possible. The figures quoted here should be used as a guide for starting up and should be modified based on the usual factors such as slight increase for all positive films, or a slight reduction for mostly negative users. If an in-line silver recovery unit is being used then the rep rates should be reduced by a factor of 50%

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