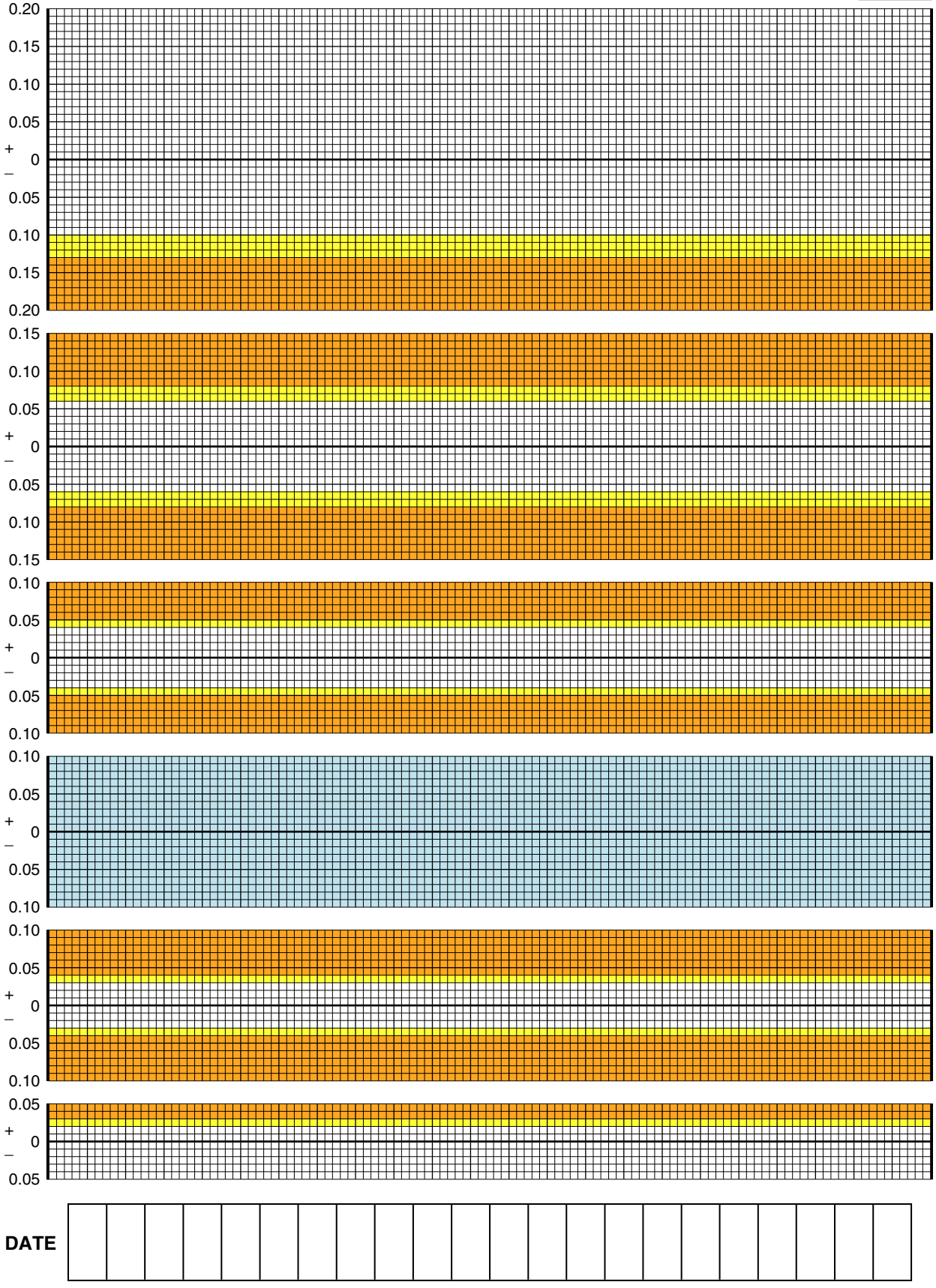
KODAK PLOTTING FORM FOR PROCESS E-6

Y-33

CODE NO. _____



MACHINE _____

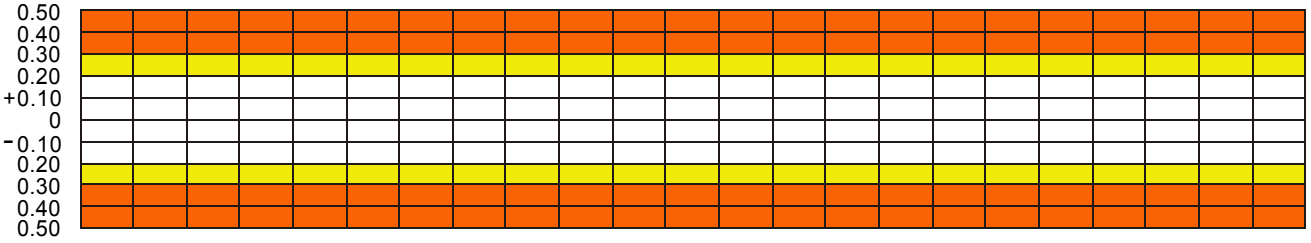
Consumer & Professional Imaging
EASTMAN KODAK COMPANY • ROCHESTER, NY 14650

Revision 9-2003
KODAK Publication No. **Y-33**

KODAK PROFESSIONAL FIRST DEVELOPER PLOTTING FORM FOR PROCESS E-6

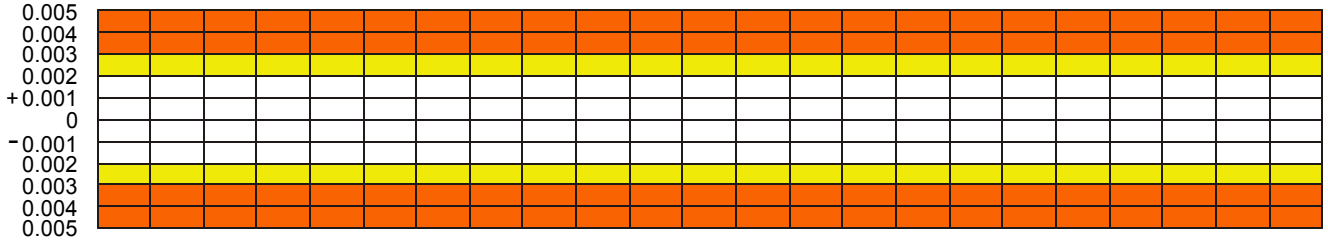
TANK TEMPERATURE (°C/°F)

AIM _____



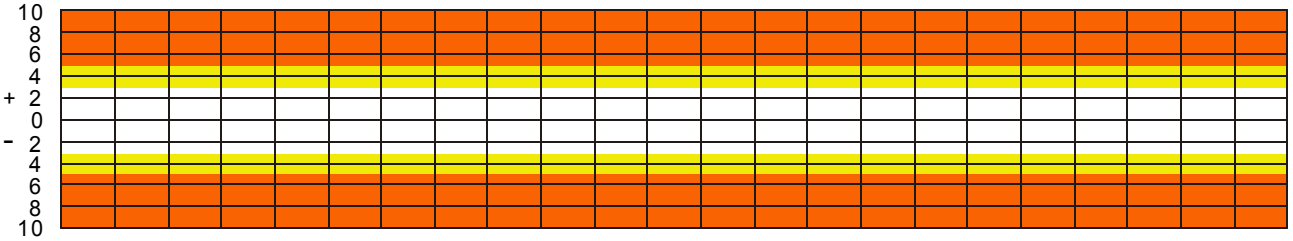
SPECIFIC GRAVITY/SAMPLE TEMPERATURE _____

AIM _____



TIME (seconds)

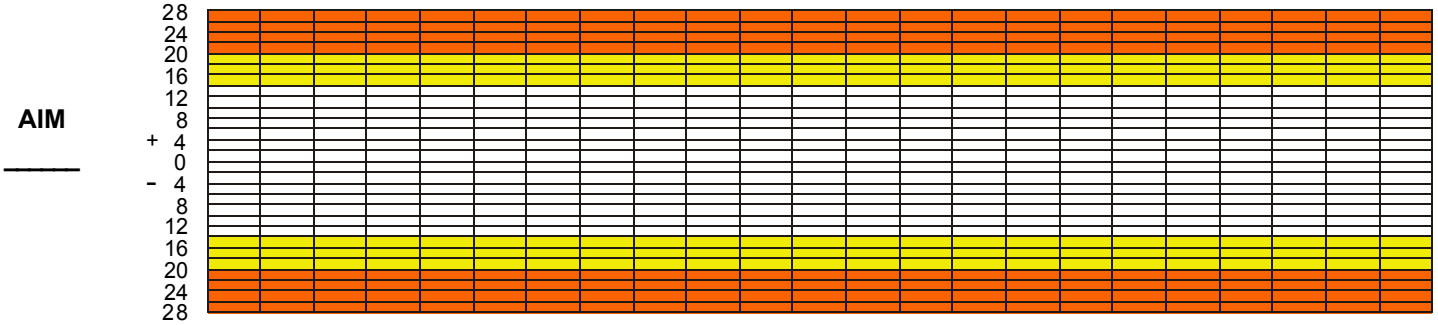
AIM _____



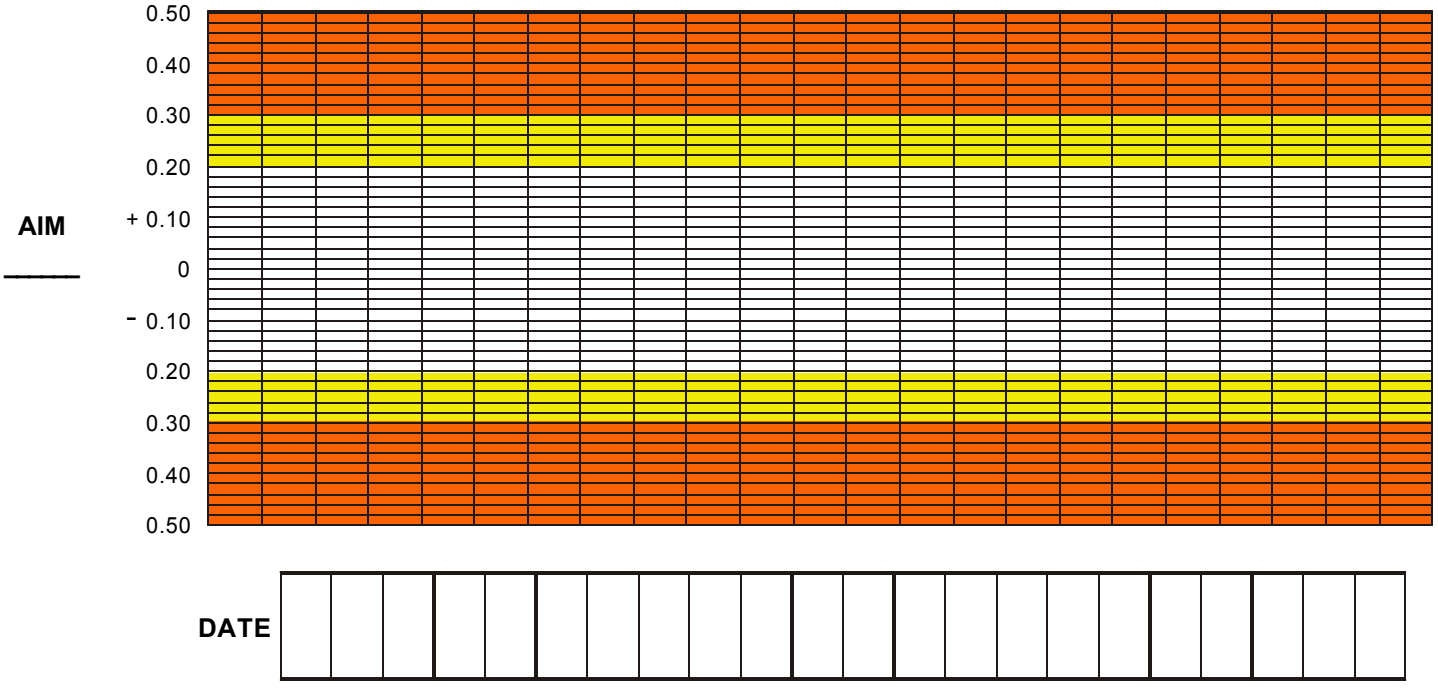
DATE

MACHINE_____

REPLENISHMENT RATE (mL/ft^2)



BROMIDE CONCENTRATION (g/L)



DATE

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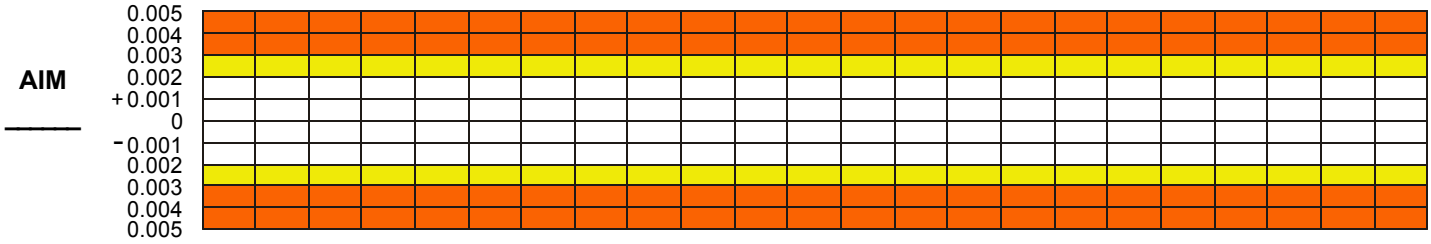
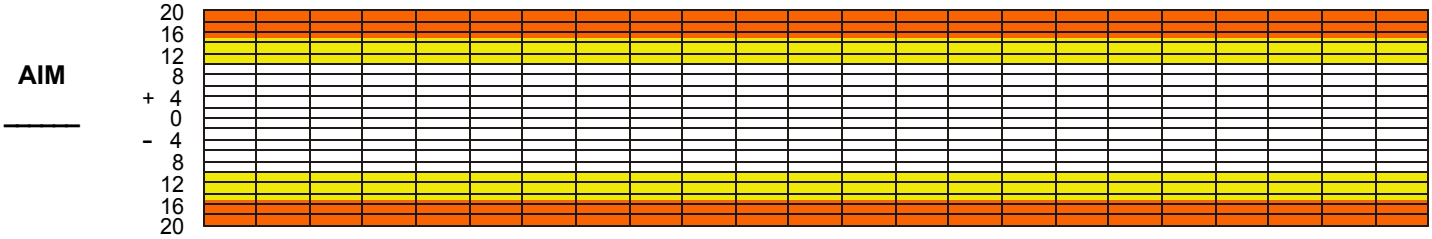
Revision 9-2003
KODAK Publication No. **Y-34**

KODAK PROFESSIONAL REVERSAL BATH PLOTTING FORM FOR PROCESS E-6

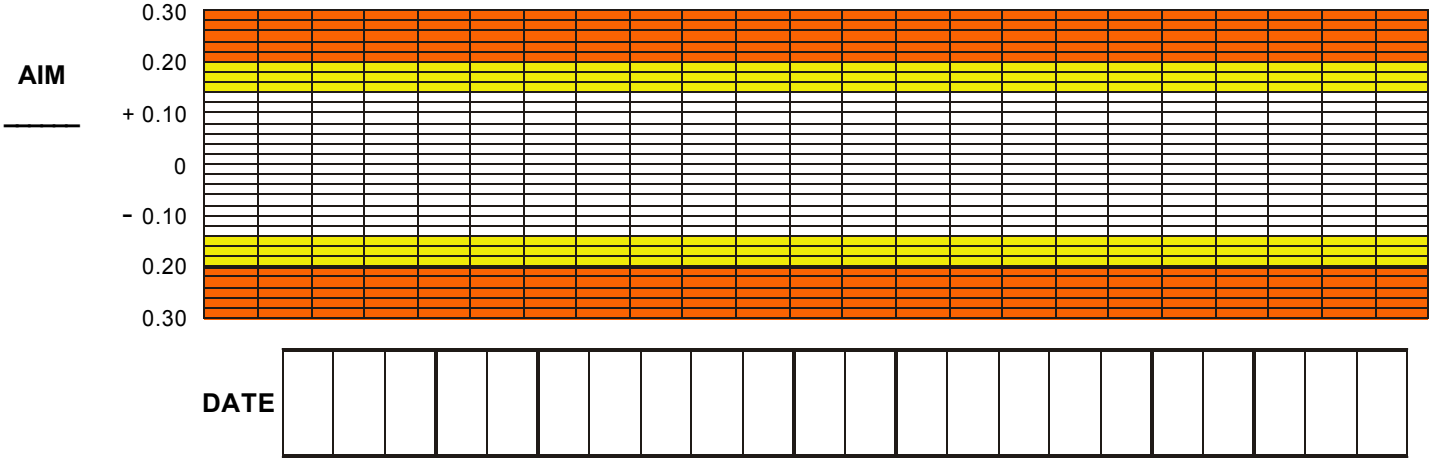
SPECIFIC GRAVITY/SAMPLE TEMPERATURE _____



REPLENISHMENT RATE (mL/ft²)



REVERSAL AGENT (g/L)



MACHINE_____

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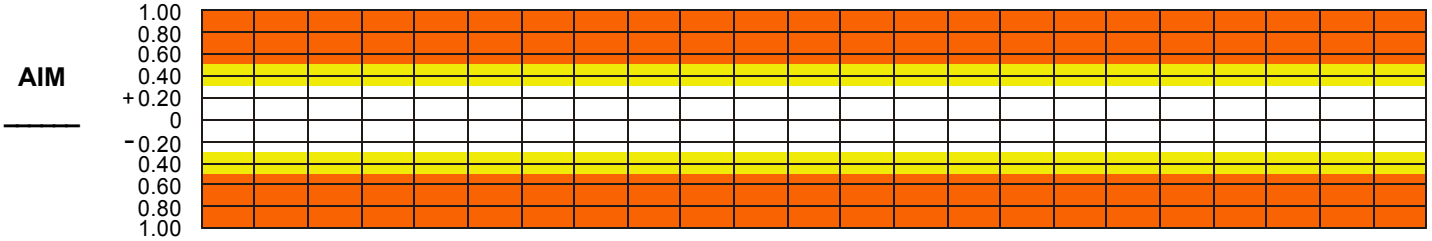
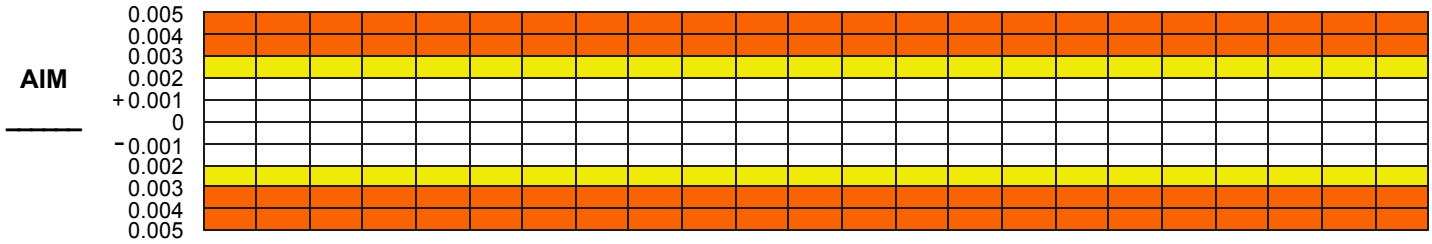
Revision 9-2003
KODAK Publication No. **Y-35**

KODAK PROFESSIONAL COLOR DEVELOPER PLOTTING FOR PROCESS E-6

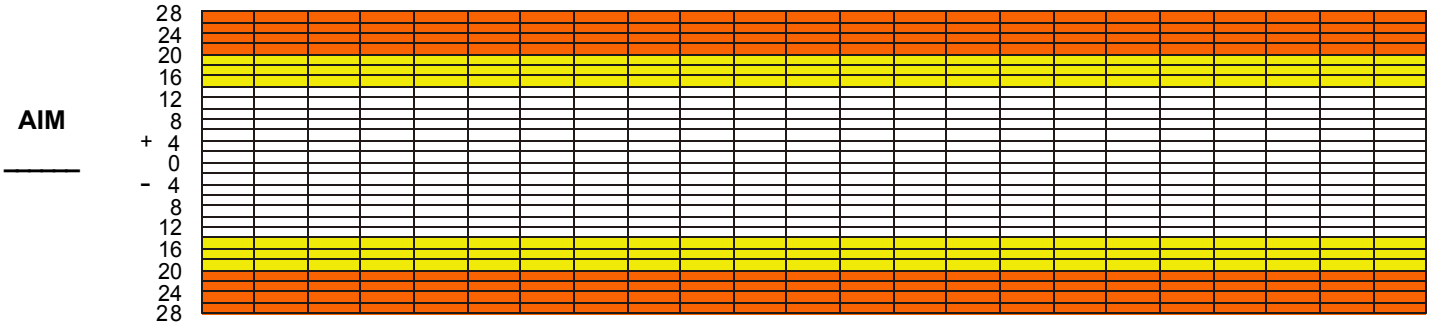
TANK TEMPERATURE (°C/°F)



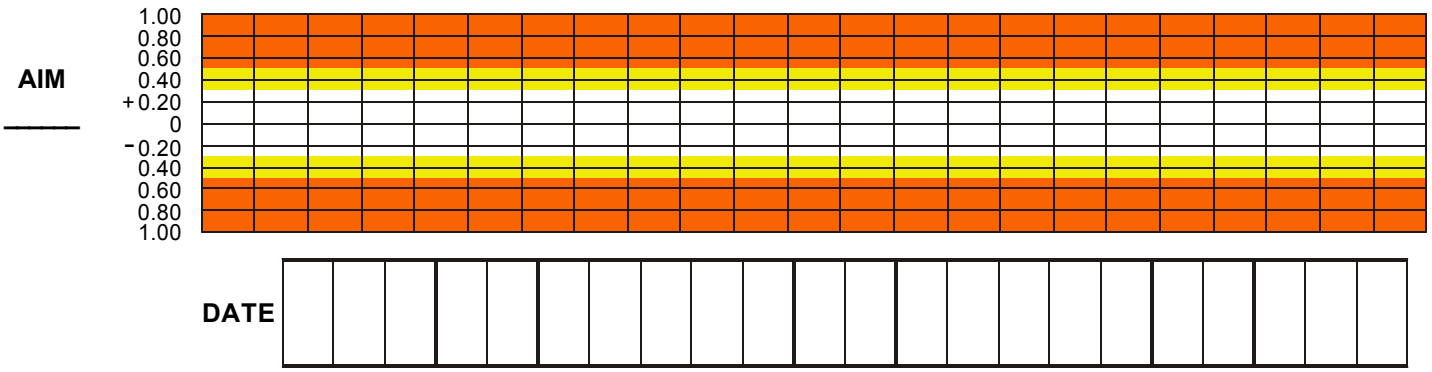
SPECIFIC GRAVITY/SAMPLE TEMPERATURE _____



REPLENISHMENT RATE (mL/ft²)



SULFITE CONCENTRATION (g/L)



MACHINE_____

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Revision 9-2003
KODAK Publication No. **Y-36**

WORKSHEET 1 **Revised 7/04**

CALCULATION OF REPLENISHMENT RATES FOR PRE-MIXED SOLUTIONS

To calculate the replenishment rate of each solution, determine the amount of replenisher used **and** the amount of film processed. Use the formula:

$$\text{Replenishment rate} = \frac{\text{amount of replenisher used (mL)}}{\text{amount of film processed (sq ft)}}$$

1. Volume of replenisher at start-up: _____ mL
2. Volume of replenisher at shutdown: _____ mL
3. Volume of replenisher used (1 – 2): _____ mL
4. Volume used for pump calibrations/waste: _____ mL
5. Volume of replenisher used to process film (3 – 4): _____ mL
6. Total film processed*: _____ mL
7. Replenishment rate (5 ÷ 6): _____ mL/sq ft

* If you push process film, the film area for pushed film must be increased by the same percentage as the increase in replenisher rate. Example: If 1.1 square feet of film is processed at push one and the push one replenishment rate is 1.5x normal, the 1.1 sq ft of film should be accounted for as 1.65 sq ft (1.5 x 1.1=1.65)

Example:

$$\text{Replenishment rate} = \frac{19{,}000 \text{ mL}}{93.38 \text{ sq ft}} = 203.47 \text{ mL/sq ft}$$

(rounded to 203 mL/sq ft)

STANDARD REPLENISHMENT RATES

Solution	STANDARD REPLENISHMENT RATES (mL/sq ft)
First developer	200
Reversal bath	100
Color developer	200
Pre-bleach	100
Bleach	Depends on machine type
Fixer	100
Final rinse	100

EQUIVALENTS IN SQUARE FEET FOR FILM FORMATS

Film Size	Area Per Sheet or Roll (Square Feet))
4 x 5-in sheets	0.134
5 x 7-in sheets	0.238
8 x 10-in sheets	0.549
11 x 14-in sheets	1.064
135-24	0.395
135-36	0.556
120	0.550
220	1.090

WORKSHEET 2

CALCULATION OF REPLENISHMENT RATES FOR IN-LINE DILUTION/BLENDER SYSTEMS

Calculate replenishment rates based on the ***total volume*** of each flexible container of concentrate used. Keep a careful record of pump calibrations and any concentrate that is wasted (i.e., concentrate that is not added to the tank).

Solution: _____ **Batch No.**: _____

1. Record the amount of film processed daily.
2. Record the amount of concentrate removed from the container for daily pump calibrations/waste.

Date	① Film Processed (sq ft)	② Amount of Concentrate Used for Pump Calibrations/ Waste (mL)	Comments

3. Total the amounts of concentrate recorded in step 2. _____mL
4. Subtract the total amount of concentrate used for pump calibrations/ waste (step 3) from the original volume of concentrate in the container.

   19,000 – _____mL = _____mL
5. Total the amounts of film recorded in step 1. _____sq ft
6. Divide the amount of concentrate used to process film (step 4) by the amount of film processed (step 5). _____mL/sq ft
7. To determine the replenishment rate, add the amount of water used per square foot of film (use the amount from the table on the reverse side) to the amount of concentrate used (step 6).

   _____mL/sq ft + _____mL/sq ft = _____mL/sq ft

Solution	Standard Replenishment Rate (mL/sq ft)	Volume of Water Used* per Sq Ft of Fim Processed	Water to Concentrate Ratio
First developer	200	160	4 to 1
Reversal bath	100	95	19 to 1
Color developer	200	120	3 to 1 to 1
Pre-bleach	100	80	4 to 1
Bleach†	Depends on machine type	0	—
Fixer‡	100	90	9 to 1
Final rinse	100	98.5	63 to 1

*Based on pump calibrations that indicate the proper ratio of water to concentrate. If you are compensating for evaporation, use the modified value for your water pump.

†Based on a 6-minute bleach time.

‡Based on a 4-minute fixer time.

EQUIVALENTS IN SQUARE FEET FOR FILM FORMATS

Film Size	Area per Sheet or Roll (Square Feet)
4 x 5-in. sheets	0.134
5 x 7-in. sheets	0.238
8 x 10-in. sheets	0.549
11 x 14-in. sheets	1.064
135-24	0.395
135-36	0.556
120	0.550
220	1.090

INSTRUCTIONS FOR WORKSHEET 3

ESTABLISHING CONTROL-STRIP AIMS (Method 1)

To establish aims for a new batch of control strips, follow the procedure below and fill in the attached sheets. (For a complete explanation of these procedure, see page 5-3.)

1. In the same run, process 2 audit strips and 2 control strips from the **new** batch per day for 4 days.
2. Calibrate and zero your densitometer.
3. To determine your audit-strip aims, complete Section A.
   - Measure the red, green, and blue Status A densities of your KODAK Q-LAB Densitometer Correlation Strip in the center of each step **twice**. Record the readings in the blanks, and then average the readings.
   - Record the Status A densities given in the instruction sheet for your densitometer correlation strip in the appropriate blanks. Then subtract the densities from your average densities to determine your *densitometer correlation factors*.
   - Compare your densitometer correlation factors with the tolerances on Section A for each step.
     If your correlation factors are within the tolerances on Section A, continue with the procedure. If your factors are not within the tolerances, check or service your densitometer; then repeat step 3.
   - Record the audit-strip aims listed on your most recent "Audit-Strip Summary" (use the numbers below the parameter name at the left side of each grid*) in the appropriate blanks. To calculate **your** *audit-strip aims*, add your densitometer correlation factors and the audit-strip aims.
4. To determine your process correction factors, complete Section B.
   - Measure the red, green, and blue Status A densities of your 8 processed audit strips in the center of the D-min, TD, LD, HD, and D-max steps, and record the readings in the blanks. Average the readings for each step. Compare the densities of each audit strip with the average of your 8 strips. The densities of each strip should be within 10 percent of the average.†
   - Subtract your average audit-strip densities from the audit-strip aims (from Section A) to determine your *process correction factors*.
5. To determine your control-strip aims, complete Section C.
   - Measure the red, green, and blue Status A densities of your 8 processed control strips in the center of the D-min, TD, LD, HD, and D-max steps, and record the readings in the blanks. Average the readings for each step. Compare the densities of each control strip with the average of your 8 strips. The densities of each strip should be within 10 percent of the average.‡
   - Add your process correction factors (from Section B) and your average control-strip densities to determine your *control-strip aims*. Record these aims on Form Y-33. The aim for LD spread is always zero (0).

*If you are a new member of Q-LAB Service, contact your TSR for audit-strip aims.

†If the density (or densities) of any single audit strip differs from the average by 10 percent or more, disregard the densities for that strip, and recalculate your average. **Or**, if the density (or densities) of any pair of audit strips from the same process run differs from the average by 10 percent or more, discard the audit strips and the control strips from the same run. Process an additional pair of audit strips and control strips. Then use the readings from the new strips to recalculate your average.

‡If the density (or densities) of any single control strip differs from the average by 10 percent or more, disregard the densities for that strip, and recalculate your average. **Or**, if the density (or densities) of any pair of control strips from the same process run differs from the average of 10 percent or more, discard the control strips and the audit strips from the same run. Process an additional pair of control strips and audit strips. Then use the readings from the new strips to recalculate your average.

WORKSHEET 3

A

Section A

Use this section to record **your** density readings of the densitometer correlation strip, to average the readings, and to compare them to the densities from the instruction sheet. You will also use this section to calculate **your** audit-strip aims.

	D-min			TD			LD			HD			D-max		
	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B
Densitometer Correlation Strip															
Reading #1															
Reading #2															
Average densities															
Densities (from instruction sheet)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Densitometer Correlation Factors															
	(Tolerance = ± 0.02)			(Tolerance = ± 0.03)			(Tolerance = ± 0.05)			(Tolerance = ± 0.12)			(Tolerance = ± 0.15)		
Audit-strip aims (from status report)	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Your audit-strip aims															

WORKSHEET 3 (page 2)

B

Section B

Use this section to record the density readings of your processed audit strips and to average the readings. You will also use it in conjunction with Section A to calculate your process correction factors.

	D-min			TD			LD			HD			D-max		
	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B
Processed Audit Strips															
Strip #1															
Strip #2															
Strip #3															
Strip #4															
Strip #5															
Strip #6															
Strip #7															
Strip #8															
Average Audit-Strip Densities															
Process Correction Factors															

WORKSHEET 3 (page 3)

C

Section C

Use this section to record the density readings of your processed control strips and to average the readings. You will also use it in conjunction with Section B to calculate your control-strip aims.

	D-min			TD			LD			HD			D-max		
	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B
Processed Control Strips															
Strip #1															
Strip #2															
Strip #3															
Strip #4															
Strip #5															
Strip #6															
Strip #7															
Strip #8															
Average Control-Strip Densities	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Your Control-Strip Aims															

Revised 2/92

Daily Checklist

Solution/ Step	Measurement/Task	DATE X	DATE X	DATE X	DATE X	DATE X	DATE X
First Developer	Measure tank temperature and plot variation from aim.						
	Measure specific gravity and plot variation from aim.						
	Measure time and plot variation from aim.						
	Measure bromide concentration and plot variation from aim.						
	Measure replenishment rate and plot variation from aim.*						
	Check pump calibration.*						
	Check agitation.						
First Wash	Measure temperature.						
	Check agitation.						
Reversal Bath	Measure specific gravity and plot variation from aim.						
	Measure reversal-agent concentration and plot variation from aim.						
	Measure replenishment rate and plot variation from aim.*						
	Check pump calibration.*						
Color Developer	Measure tank temperature and plot variation from aim.						
	Measure specific gravity and plot variation from aim.						
	Measure sulfite concentration and plot variation from aim.						
	Measure replenishment rate and plot variation from aim.*						
	Check pump calibration.*						
	Check agitation.						
Bleach	Check agitation and aeration.						
Fixer	Check agitation and aeration.†						
Final Wash	Check agitation.						
Final Rinse	Check solution cleanliness; drain tank solution as needed for cleanliness.						
Dry	Measure temperature.						
General							
Compensate for overnight evaporation (if necessary).							
Process control strips and plot differences from aim; process at least 3 strips per day.							
Record amount of film processed.							
Record volume of replenisher used for each solution.							
Drain wash tanks at shutdown; leave tanks empty overnight (if possible).							

*** Daily,** if possible, but at least once a week.
†Aerate **only** while film is in the fixer; **do not** overaerate the fixer.

Revised 2/92

Weekly Checklist

Solution/Step	Measurement/Task	DATE X	DATE X	DATE X	DATE X	DATE X
First Wash	Measure flow rate.					
Reversal Bath	Check solution cleanliness.					
Pre-Bleach	Measure replenishment rate.					
	Measure specific gravity.					
	Check solution cleanliness.					
Bleach	Measure replenishment rate.					
	Measure specific gravity.					
Fixer	Measure replenishment rate.					
	Measure specific gravity.					
Final Wash	Measure flow rate.					
Final Rinse	Measure replenishment rate.					

Revised 2/92

Biweekly Checklist

(EVERY OTHER WEEK)

Solution/Step	Measurement/Task	DATE X	DATE X	DATE X	DATE X	DATE X
First Developer	Change filters.					
First Wash	Change filters.					
Reversal Bath	Change filters.*					
Color Developer	Change filters.					
Pre-Bleach	Change filters.*					
Bleach	Change filters.					
Fixer	Change filters.					
Final Wash	Change filters.					
Final Rinse	Change filters.*					
General						
Make the required solution measurements and fill in process information on data sleeve. Then process 2 audit strips (according to the schedule provided by your Regional Quality Center). Mail audit strips and data sleeve **promptly** to your RQC.						

* We do not recommend that you recirculate this solution. However, if your machine is equipped with a recirculation system for this solution, we recommend that you recirculate the solution for only the first 15 minutes of the day and change the filters every other week.

Revised 2/92

Monthly Checklist

Solution/Step	Measurement/Task	DATE X	DATE X	DATE X	DATE X	DATE X	DATE X
First Wash	Measure time.						
Reversal Bath	Measure time.						
Color Developer	Measure time.						
Pre-Bleach	Drain and flush tank with hot water; replace solution.						
	Measure time.						
Bleach	Measure time.						
Fixer	Measure time.						
Final Wash	Measure time.						
Final Rinse	Measure time.						

Bimonthly Checklist

(EVERY OTHER MONTH)

Solution/Step	Measurement/Task	DATE X	DATE X	DATE X	DATE X	DATE X	DATE X
Reversal Bath	Drain and flush tank with hot water; replace solution.						