

# 5 CORRECTIVE ACTIONS FOR PROCESSING SOLUTIONS

## OVERVIEW

It may be possible to correct some improperly mixed or treated KODAK Chemicals, Process E-6, by using the corrective actions given in this section. This section also provides a procedure for compensating for low utilization.

Use the corrective actions only when you have determined the cause of the problem. *These corrective actions will work only in some cases.* Use any method that involves “doctoring” the solutions at your own risk; there is no guarantee that a corrective action will correct the problem. Apply these corrective actions only to remedy an out-of-control condition.

## CORRECTIVE ACTIONS FOR MIXING ERRORS

**First or Color Developer Too Dilute:** Add concentrate until the specific gravity is correct; see Tables 3-8 and 3-10 in section 3, “Monitoring and Controlling Processing Solutions.” With KODAK Color Developer Replenisher, Process E-6AR, use equal volumes of Parts A and B. **Do not** mix Parts A and B together directly; a precipitate will form. If the solution is a fresh tank, be sure that you added the correct amount of starter.

**First or Color Developer Too Concentrated:** Try to determine the amount of overconcentration by reviewing the mixing procedures; then dilute the solution with water until the specific gravity is correct. See Tables 3-7 and 3-9 in section 3, “Monitoring and Controlling Processing Solutions.”

**First or Color Developer—Too Much Starter Added:** Process a control strip to check the process. If it is in control, allow it to return to aim during normal operation. If it is not in control, replace the solution.

**First or Color Developer—Too Little Starter Added:** If you can determine how much starter was omitted from the fresh tank mix, add that amount to the tank. .

**Color Developer Starter in the First Developer:** If color developer starter was mixed with the first developer, replace the tank solution.

**First Developer Starter in the Color Developer:** If 5 mL/L of first developer starter is mixed with the color developer, process a control strip to check the process. If it is in control, allow it to return to aim during normal operation. If it is not in control, replace the solution..

**Substitute for Color Developer Starter:** If color developer starter is temporarily unavailable, you can use 3 mL/L of first developer starter and 6 mL/L of 5N H<sub>2</sub>SO<sub>4</sub> or 28% acetic acid in place of the color developer starter.

**Color Developer Replenisher—Part A Omitted:** Determine how much Part A was left out of the mix, and add that amount to the solution. If you can’t determine the amount omitted, replace the color developer.

**Color Developer Replenisher—Part B Omitted:** Determine how much Part B was left out of the mix, and add that amount to the solution. If you can’t determine the amount omitted, replace the color developer.

## CORRECTIVE ACTIONS FOR TANK SOLUTIONS

**First or Color Developer Underreplenished:** Replace approximately 10 percent of the tank volume with replenisher. Process and evaluate a control strip. If the problem persists, make one more 10-percent replacement. If this does not correct the condition, replace the solution.

**Alternate Procedure—**If you can determine the amount of replenisher that should have been added, replace that volume of tank solution with replenisher.

**First Developer Overreplenished:** Turn off replenishment for about 5 square feet of film processed per gallon of tank solution. Monitor the change with control strips. You will need to wait and tolerate the results or replace the solution. It is difficult to guess the amount of overreplenishment by using control strips; therefore, no exact guidelines exist.

**Sulfurized Fixer:** Replace the solution.

**Underreplenished Bleach:** You can salvage an underreplenished bleach by determining the amount of replenisher left out of the tank solution, and replacing that amount of tank solution with replenisher.

**Overreplenished Bleach:** While an overreplenished bleach solution does not adversely affect the process, it is costly and increases the amount of chemicals discharged to the sewer. See “Overconcentrated Bleach” below.

To compensate for overconcentration due to evaporation, use a replenisher made from 2 parts KODAK Bleach Replenisher, Process E-6AR, and 1 part water.

**Overconcentrated Bleach:** A high specific gravity of the bleach solution indicates excessive overreplenishment or evaporation. If the specific gravity of your bleach solution exceeds 1.260, replace approximately one-third of the bleach-tank solution with fresh tank solution or with replenisher that is diluted 2:1. Keep the specific gravity below 1.260 to help prevent crystals from forming. **Do not** add water directly to a seasoned bleach; it will produce a precipitate of silver bromide.

## COMPENSATING FOR LOW UTILIZATION

You can compensate for low utilization by following the procedure described below; the procedure is based on the theory that you must complete one first-developer tank turnover every three weeks for efficient process operation.

Before starting this procedure, set your replenishment rates according to the specifications given in the table in the section for your processor type. This procedure establishes a *minimum daily square footage requirement* for the amount of film processed. You can follow the procedure for any processor type that uses replenishment.

1. To determine the minimum daily square footage requirement, multiply the first-developer tank volume (in litres) by 5; then divide by the number of days the processor is operated during a three-week period.

For example, a processor with a first-developer tank volume of 70 litres operated for 15 days over a three-week period would have a minimum daily square footage requirement of 23 ( $[70 \times 5] \div 15 = 23$ ).

2. Throughout the day, record the amount of film you process.
3. At the end of each day, compare the amount of film processed (in square feet) to the minimum daily square footage requirement.
  - If the amount of film processed meets or exceeds the minimum daily square footage requirement, no additional replenishment is required.
  - If the amount of film processed is less than the minimum requirement, replenish all of your tank solutions for the difference in square footage. You will also need to add 1 mL of first developer starter to your first-developer tank solution for every square foot of film processed below the minimum daily requirement. **Do not** add color developer starter to the color-developer tank; additional starter will lower color-developer activity. The first time you use this procedure, you may have to reoptimize your process by adjusting the activity of the color developer replenisher as described under “Optimizing Your Process” on page 4-1.

**Example**—Your minimum daily square footage requirement is 23 ft<sup>2</sup>, but you only processed 18 ft<sup>2</sup> of film. The difference between the minimum requirement and the amount of film processed is 5 ft<sup>2</sup>. Based on a replenishment rate of 200 mL/ft<sup>2</sup>, you need to add an additional 1,000 mL (5 x 200 mL) of first developer replenisher to your first-developer tank solution and 1,000 mL of color developer replenisher to your color-developer tank solution. For processors that have a 1 ft<sup>2</sup> replenishment cycle, you need an additional 5 replenishment cycles. You also need to add 1 mL/ft<sup>2</sup> (1 mL/cycle) or 5 mL of first developer starter to the first-developer tank solution. Replenish all other solutions for the difference between the minimum requirement and the amount of film processed.

**Note:** If your processor has very low utilization, you may want to divide your minimum daily square footage requirement in half, and compare the amount of film processed with the minimum requirement twice during the day (i.e., at midday and at shutdown), and make any adjustments required.