



# Using KODAK EKTACOLOR Chemicals in the System 89 DLS Digital Minilab with European, African, and Middle Eastern Products

The processing chemicals that you use in a particular minilab system depend on the type of processor the system incorporates and its process cycle. This publication describes the use of KODAK EKTACOLOR Chemicals to process KODAK EKTACOLOR EDGE and ROYAL Papers in the System 89 DLS Digital Minilab.

**Note:** The information in this publication is specifically for the System 89 DLS Digital Minilab that operates with a developer time of 30 seconds. If you have purchased a System 89 DLS Digital Minilab with the new rapid process cycle, Process RA-RC, or have converted your System 89 Digital Minilab to the new rapid process cycle, you will need to use KODAK EKTACOLOR Rapide Chemicals as described in KODAK Publication No. CIS-250, *Using New KODAK EKTACOLOR Rapide Chemicals in the System 89 Digital Minilab*.

Kodak packages EKTACOLOR Chemicals in sizes specially designed for minilabs. For more information on these chemicals, see KODAK Publication No. Z-130, *Using KODAK EKTACOLOR Chemicals*, Section 3, or KODAK Publication No. Z-100, *Using KODAK Chemicals in Minilabs*. These publications are available on the Kodak website at [www.Kodak.com/go/photochemicals](http://www.Kodak.com/go/photochemicals); select the link for "Processing Manuals." The latest versions of Current Information Summaries are available at the link for "Technical Information."

## RECOMMENDED KODAK CHEMICALS

For the System 89 DLS Digital Minilab, use the following KODAK EKTACOLOR Chemicals. They offer convenience, cost savings, and a minimum of solution waste.

EKTACOLOR PRIME SP Developer Replenisher LORR, CAT No. 527 0966, offers the advantages of a single-part concentrate for convenient handling and a low replenishment rate. In addition to the developer, you will need EKTACOLOR Rapide Bleach-Fix and Replenisher, CAT No. 680 1534. You will also need EKTACOLOR PRIME Stabilizer and Replenisher LORR, CAT No. 527 0863.

**Note:** KODAK EKTACOLOR PRIME Chemicals are currently being replaced by KODAK EKTACOLOR PRIME LORR Chemicals. The conversion will be completed in early 2004. This publication describes the current recommended chemical options.

Table 1 lists the capacities of the bottles of concentrate.

**Table 1**  
**Processing Capacities**

| KODAK EKTACOLOR Chemical              | Processing Capacity with EKTACOLOR EDGE and ROYAL Papers  |
|---------------------------------------|---|
| PRIME SP Developer Replenisher LORR   | One bottle of concentrate: 85.0 m <sup>2</sup>  |
| Rapide Bleach-Fix and Replenisher     | One bottle of Part A and one bottle of Part B: 129 m <sup>2</sup>   |
| PRIME Stabilizer and Replenisher LORR | One bottle (prepares a total of 100 litres of replenisher and may be mixed 10 litres at a time): 259 m <sup>2</sup> |

The System 89 DLS Digital Minilab automatically delivers the developer and bleach-fix concentrates directly to the tanks in the processor. You do not need to mix replenisher solutions for these chemicals. The bottles of developer and bleach-fix concentrates attach to plumbing connections. The processor automatically determines the amount of paper processed and delivers the necessary amounts of concentrate and water directly to the processor tanks.

You will need to mix EKTACOLOR PRIME Stabilizer and Replenisher LORR in a replenisher tank by adding water to the concentrate. Then the minilab will deliver the mixed replenisher to the stabilizer tanks automatically.

## PROCESS SPECIFICATIONS

The specifications for using EKTACOLOR Chemicals in the System 89 DLS Digital Minilab are given in Table 2.

**Table 2**  
**Processing Steps and Conditions for System 89 DLS Digital Minilab**

| Solution/ Step | Time (seconds) | Temperature °C (°F)         | Starting-Point Replenishment Rate (mL/m <sup>2</sup> ) | Starting-Point Chimie-Screen Ratios (%)                            |
|----------------|----------------|-----------------------------|--|--|
| Developer      | 30             | 40.0 ± 0.3<br>(104.0 ± 0.5) | 108  | Concentrate: 0.142<br>Water: 0.858                                 |
| Bleach-Fix     | 30             | 35 to 40<br>(95 to 104)     | 108  | Part A Concentrate: 0.18<br>Part B Concentrate: 0.18<br>Water 0.64 |
| Stabilizer     | 75             | 34 to 40<br>(93 to 104)     | 388  | Replenisher 1.00   |
| Dry            | As needed      | Not over 96<br>(205)        | —  | —  |

### Replenishment Rates

The replenishment rates in Table 2 are starting-point recommendations. The actual rates will depend on specific processing conditions such as the amount of paper processed and the proportion of high- or low-density prints.

The bleach-fix replenishment rates assume minimum developer carryover. If carryover is greater than normal, increase the bleach-fix replenishment rate to maintain the bleach-fix chemical balance and pH level. Otherwise, problems such as retained silver may occur. Retained silver will cause print colors to look desaturated. See the equipment manual for specifications and adjustments for squeegees or squeegee rollers.

### Agitation

Good agitation is important during the first few seconds of the developer and bleach-fix steps. If initial agitation is poor in the developer, development may be uneven. Poor initial agitation in the bleach-fix may not stop development uniformly, which can cause magenta streaks and non-uniformity.

### Filtration

Processing solutions and wash water may contain insoluble materials. If you don't filter out these materials, they may stick to the paper, tank walls, rollers, and lines, and can damage the paper. It is also important to replace solution filters periodically so that a blocked filter does not reduce solution flow. Use the filters designed for the processor and recommended in the equipment manual.

## Drying

The maximum drying temperature for KODAK EKTACOLOR Papers is 96°C (205°F).

## Low Utilization

The number of prints that you produce each week determines the processor utilization. If your processor utilization is low, oxidation and evaporation will affect the activity of your processing solutions and may increase the D-min of the paper.

During periods of low utilization, be sure to turn off the processor when it's not in use to avoid oxidation and evaporation. In extreme cases of low utilization, you may need to discard the chemicals in the processor and replace them with fresh tank solutions. You can often reduce high D-min in prints by replacing the stabilizer with fresh solution.

## SAFE HANDLING OF PHOTOGRAPHIC CHEMICALS

Handle all chemicals carefully. When you mix solutions, wear goggles or a face shield, a protective apron, and protective gloves made from neoprene or nitrile rubber. Clean protective clothing after use to remove any chemical residue that can cause contamination. For more information about potential health hazards and safe handling of specific Kodak chemicals, see the chemical labels and the Material Safety Data Sheets (MSDSs) for the chemicals. MSDSs also provide regional contact information. MSDSs are available on the Kodak website at [www.Kodak.com/go/photochemicals](http://www.Kodak.com/go/photochemicals).

## PREPARING FRESH TANK SOLUTIONS

Follow these instructions to prepare working tank solutions for the System 89 DLS Digital Minilab from EKTACOLOR Chemical concentrates. Observe all safe-handling precautions on the chemical labels and in the MSDS for each product.

### Preliminary Steps for Fresh-Tank Mix

The following section provides details for the chemical mixes. Use the following concentrates to prepare developer, bleach-fix, and stabilizer working tank solutions:

| KODAK EKTACOLOR Chemical Concentrate  | Amount Needed  |
|---------------------------------------|--|
| PRIME SP Developer Replenisher LORR   | Partial bottle   |
| Rapide Bleach-Fix and Replenisher     | Partial bottles each of Part A and Part B                                    |
| PRIME Stabilizer and Replenisher LORR | One bottle of replenisher concentrate, using 180 mL for each of three tanks; |

For the developer, you will also need KODAK EKTACOLOR RA Developer Starter, CAT No. 527 8957.

You will need a device for measuring solution volumes up to 1.02 litres, such as a graduated cylinder. You will also need to measure up to 10 litres of water.

For convenience, the following instructions assume that you will mix the fresh working tank solutions directly in the processor tanks. You can also mix them in separate mixing vessels.

Remove the racks from the processor tanks and rinse the racks and tanks with water. Be sure to drain all rinse water from the tanks and to close the drain valve before adding the solutions.

### Stabilizer–Fresh Tank

Use the partial contents of one bottle of EKTACOLOR PRIME Stabilizer and Replenisher LORR concentrate to mix the working tank solution in *each* of the three stabilizer tanks.

| For Each Stabilizer Tank  | Volume with PRIME Stabilizer LORR |
|---|-----------------------------------|
| Add water to each tank  | 9.80 litres                       |
| Release bottle cap and squeeze bottle to fill to the –A– line of the dispenser bottle | Two additions to the –A– line     |
| Total volume per tank   | 10 litres                         |

### Bleach-Fix–Fresh Tank

You can mix the bleach-fix tank solution directly from the two-part concentrates. **Be very careful to avoid contamination of the developer with bleach-fix.**

| For Bleach-Fix Tank                                      | Volume     |
|--|------------|
| Add part of one bottle of bleach-fix concentrate, Part A | 1.6 litres |
| Add part of one bottle of bleach-fix concentrate, Part B | 1.6 litres |
| Add water to bleach-fix tank                             | 5.8 litres |
| Total tank volume  | 9.0 litres |

**Note:** You will have a portion of the contents left in each of the two concentrate bottles after mixing the solution. You can install the partially used bottles in the processor to replenish the bleach-fix tank.

### Developer–Fresh Tank

To ensure good performance, take special care in mixing the developer tank solution.

| For Developer Tank                                    | Volume      |
|---|-------------|
| Add water to developer tank                           | 7.78 litres |
| Add portion of one bottle of developer concentrate    | 860 mL      |
| Add EKTACOLOR RA Developer Starter (CAT No. 527 8957) | 360 mL      |
| Total tank volume                                     | 9.0 litres  |

**Note:** you will have approximately 400 millilitres of developer concentrate left in the concentrate bottle after mixing the solution. You can install the partially used bottle in the processor to replenish the developer tank.

### Reinstalling the Racks and Bringing the Tank Solutions to Temperature

The tanks will appear only partially filled after you have added the solutions. When you reinstall the racks in the tanks, the racks will displace more solution volume to fill the tanks.

Install the racks by slowly lowering them into the tanks. When you have reinstalled all the racks and have verified that all the tanks are filled with solution, turn on the recirculation and heater system and bring the solutions up to operating temperature.

## USING CONTROL STRIPS TO MONITOR THE PROCESS

Use KODAK Control Strips, Process RA-4 (box of 50, CAT No. 828 2170), to monitor process performance. For instructions on processing control strips, see the operator's manual for the System 89 DLS Digital Minilab. For information on the use and diagnostic features of the control strips, see KODAK Publication No. Z-130, *Using KODAK EKTACOLOR Chemicals, Section 7, Process Monitoring and Troubleshooting with KODAK Control Strips, Process RA-4*. Kodak publications are described and available on the Kodak website at [www.Kodak.com/go/photochemicals](http://www.Kodak.com/go/photochemicals).

To calculate control-strip aim values for process monitoring, you will need to apply process adjustment factors. Use the adjustment factors in addition to the correction factors that are supplied with the control strips.

After reading the densities of the supplied reference strip on your densitometer, first apply the correction factors packaged with the reference strip. Then add the values from the following table. The corrected density values are the aim values for your batch of control strips. You will need to apply the adjustment factors each time you switch to a new batch of control strips.

**Table 3**

**Process Adjustment Factors with KODAK Controls Strip, Process RA-4 (CAT No. 828 2170)**

| Measurement | R  | G  | B  |
|-------------|----|----|----|
| Black (BP)  | 0  | +1 | -3 |
| High (HD)   | +2 | +4 | -3 |
| Low (LD)    | +5 | +5 | -2 |
| D-min       | 0  | 0  | 0  |

## SILVER RECOVERY

The overflows from the bleach-fix and stabilizer tanks are collected in separate effluent tanks in the System 89 DLS Digital Minilab. When an effluent tank is full, the processor alerts you to drain the tank.

Typically, silver concentration in the bleach-fix effluent tank will be 4 to 8 g/L; silver concentration in the stabilizer effluent tank will be 0.2 to 0.6 g/L.

You can effectively use common silver-recovery methods with the combined effluents from both effluent tanks. If your lab has other processors, you can combine the effluent from the System 89 DLS Minilab with the other effluent solutions and use your current silver-recovery methods.

Publications on silver management that include recommendations and descriptions of silver-recovery options are available in the Silver Management section of the Kodak Environmental Services Publications Center at [www.Kodak.com/go/KES](http://www.Kodak.com/go/KES).

## Disposal and Recycling of Bottles

You can help minimize solid waste by participating in your local community recycling program. The following information will help you to prepare the empty plastic bottles for disposal or recycling.

1. When handling the bottle and solutions, follow the recommendations for **personal protection and ventilation**, as described in the product Material Safety Data Sheet (MSDS).
2. When processor signals that a bottle is empty and needs replacing, open a new bottle of concentrate. Remove the empty bottle from the processor.
3. Over a sink, pour any remaining solution from the used bottle into the new bottle of replenisher concentrate. It may take several moments for the solution to drain. This will minimize the residual concentrate solution in the discarded bottle.
4. Wipe the outside of the new bottle to remove any chemical residue, and install it in the processor.
5. Slowly rinse the cap and empty container with **cold** water to minimize splattering and respiratory exposure. Dispose of the rinse water in accordance with all regulations.
6. Repeat rinsing the container to remove residue. You may use warm water (approximately 38°C) for the final rinse to increase the solubility of any remaining chemicals. Our standard recommendation is to rinse **at least three times**.
7. Once you no longer need the bottle caps, rinse and discard them. Do not place them in the recycling container.
8. If the bottle has visible stains or residue after rinsing, do not recycle it. Dispose of it in accordance with local regulations.
9. Slit plastic bottles so that they cannot be used again, and place them in your recycling collection container, or dispose of them in accordance with local regulations.

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