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## **How to Clean Racks and Tanks Using Red Stuff Developer Systems Cleaner**

H.R. Simon's **RED STUFF** Developer Systems cleaner is specifically designed to dissolve metallic silver from the transport rollers and recirculation systems on all brands and models of automatic processors.

### **Dilution**

Use 12 ounces of cleaner concentrate for each gallon of water.

Note- Always add concentrate to water **not** water to concentrate. Wear goggles and protective clothing when handling solutions.

### **Caution**

**RED STUFF** Developer Systems Cleaner has corrosive properties. Take appropriate care that the solution does not splash into the eyes or onto skin. If eye contact occurs, immediately flush the eyes with copious amounts of cold running water for at least fifteen (15) minutes and seek medical attention. If skin contact occurs, flush the area with plenty of water. If irritation occurs, seek medical attention. Refer to the Material Safety Data Sheet (MSDS) for complete details.

### **Cleaning the Developer Tank and Racks**

- ?? Turn off the power to the processor and drain the developer.
- ?? Remove and discard the developer filter and reassemble the cartridge without the filter.
- ?? Rinse the rack and tank with water, then remove the rack.
- ?? Fill the developer tank with warm water to approximately four (4) inches from the overflow point.
- ?? Add the appropriate amount of cleaner concentrate.

Example- a typical 2 ½ gallon developer tank would require about one quart of cleaner concentrate.

- ?? Turn on the power to the processor and make sure that the solution is being recirculated.
- ?? Turn off the power and replace the rack into the processor tank.
- ?? Turn on the power and run the processor for approximately thirty (30) minutes.
- ?? Turn off the power and drain the waste cleaner into a suitable container (plastic or stainless steel) and set aside for later neutralization.
- ?? Thoroughly rinse the developer tank and rack, allowing the water to circulate and drain. Repeat this step to ensure complete rinsing. If there is any doubt about the thoroughness of your rinse procedures, repeat again. Any residual cleaner left in the processor will contaminate the fresh developer.

## Disposal of Spent Cleaner

**Always** check with your local sewer authority before discharging used solutions into the drain as regulations may prohibit the discharge of chromium containing solutions. If the discharge is prohibited, the used solution must be treated as a RCRA hazardous waste.

The orange color of the **RED STUFF** Developer cleaner is due to the presence of hexavalent chromium ions, Cr+6. To change these ions to a more environmentally compatible form, they must be converted to Cr+3.

1. In a well-ventilated area, slowly add equal parts of exhausted (desilvered) \*fixer and the spent developer cleaner. Do not use excessive fixer as it will raise the pH and lower the efficiency of the reactions. **Caution:** Sulfur dioxide may be generated.

\*If exhausted fixer is not available, you may use sodium bisulfite or sodium metabisulfite in the ratio of seven (7) grams per liter of spent systems cleaner.

2. Blend the mixture for five (5) minutes and note the color change to green, indicating the formation of trivalent chromium (Cr+3).

If the above procedure does not meet local sewer codes, the chromium may be precipitated by adding a volume of developer which is equal to the fixer originally added. The developer will raise the pH to approximately 8.5 and the Cr+3 will precipitate as chromium hydroxide ( $\text{Cr}[\text{OH}]_3$ ), a light green sludge. Chromium hydroxide will redissolve at pH 11, so avoid excess alkalinity (developer).

If chromium hydroxide sludge cannot be added to the sewer system, it will require disposal through a chemical disposal service. The sludge can be concentrated by allowing it to settle, followed by draining off the liquid.