

ACTEGA Kelstar Technical Bulletin

Calcium Issues

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Calcium Problems

Printers seem to be having more problems than ever before with calcium contaminating the fountain solution. There are two main reasons for this: the switch to alkaline paper making methods and the growing use of post consumer recycled fiber. These changes mean that the paper has more alkaline calcium carbonate fillers that dissolve into the fountain solution.

•**Rollers** – White deposits develop on the surface of rollers mostly in the ink train and occasionally in the dampening system. This interferes with the ability of these rollers to carry uniform ink and/or water films and leads to poor ink transfer, roller stripping or sensitive water rollers. If these deposits become thick and crusty, the rollers may have to be reground or recovered.

•**Plates** – Calcium deposits in the non-image area may lead to sensitivity. These deposits may not come off even with a strongly acidic plate cleaner like Acid Plate Cleaner. The more common problem is that small amounts of calcium salts are deposited onto small dots which stop accepting ink. The dots are still present but have become blind. Plate cleaners may be effective, but often only a short time later the dots stop printing.

•**Fountain Solution Circulator System** – The fountain solution may become milky or develop a white sludge layer on the bottom. The main problem is a large and often rapid rise in conductivity and pH. This rise along with the dissolved calcium may cause a loss of strength for the desensitizing power. This causes the pressman to use more water, which in turn can increase toning, and quite possibly over emulsification.

Sources of Calcium

•**Paper** – The change from the acid bleaching and sizing method to alkaline paper making has been

driven by environmental concerns. Alkaline paper is less costly and less polluting to make. Previously, clay was used as filler with rosin sizing. This paper is slightly acid to make the rosin binder work. Alkaline paper user brighter calcium carbonate and latex sizing which helps to overcome the gray nature of recycled fiber content. Paper that is too water receptive or does not have enough sizing can loose filler onto the blankets and then into the water. This build up tends to cause sensitivity and the response of higher water dials only makes the situation worse.

•**Ink** – Often calcium is used as the salt to precipitate the pigments during flush manufacturing. If the flush cake is not well washed, that ink will contain significant calcium and may have a high pH. Red pigments are the most problematic in this respect.

•**Water** – Untreated hard water contains significant amounts of calcium from limestone. Water softening or the use of RO units will provide a good solution.

What the Printer Can Do to Prevent Problems

•**Roller Maintenance** – To lengthen roller life as much as possible, a good maintenance and inspection program is critical. Rollers should be inspected and deglazed at least once per month, more frequently if there is glazing or signs of calcium buildup.

•**Deglazer / Roller Paste** – In addition to using a high quality daily wash, the printer should use a strong deglazer and roller paste such as Erase as needed. To remove calcium deposits, Deglaze is very effective and designed for printing applications. Vinegar is not strong enough to be effective and other products like Lime Away may not be suitable for use on printing presses.

•**Metering Rollers** – Metering rollers should be cleaned regularly and treated with gum arabic and Chrome Roller Cleaner. This keeps the rollers hydrophilic and retards the feedback of ink into the dampening system.

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Fount Circulator Maintenance

Fount circulators always seem to be the poor stepchild. They are behind the press and often get little attention. The tanks should be drained and cleaned weekly to prevent the buildup of contamination. If there is any sign of bacterial or fungus activity the tanks should be cleaned with Systems Cleaner or bleach used at 1 quart per five gallons of hot water.

The pH and conductivity should be monitored for changes. This provides real insight into what is happening on press. If the conductivity rises more than 1,000 mmhos or the pH more than 0.75 units, the tanks should be drained and refilled to prevent problems.

Fountain Solution

•**What is the Best pH?** There is a trend to change to higher starting pHs. The reason is simple. Less acid founts react more slowly with alkaline paper. They are inherently less capable of dissolving the calcium carbonate fillers so the calcium and corresponding pH and conductivity changes, buildup slower. This often means longer tank life before dumping. Founts that start at pH=5 seem to work very well and are still capable of desensitizing the plates.

•**Why Do Some Founts Glaze More Than Others?** The calcium glaze on rollers or blinding on plates are salts formed between calcium and the acid anions used in the fountain solution buffer system. Any salt that forms insoluble calcium precipitates can cause this problem (citrate, phosphate, malate). Unfortunately, the acids that do not cause problems (like acetic) do not desensitize well, especially on CTP plates.

This then is the trade off for the printer. He may like the sharper dots, lower water dials or faster restarts, but not the glazing. With a simple and effective maintenance program, the printer can usually get the benefits without the problems.

•**Fount Selection** – An ACTEGA Kelstar Technical Sales Representative can help you determine what the real issues are and propose an effective solution. We offer founts tailored to match any water, specific plate needs, glazing resistance, stronger desensitizing for reduced piling, etc.

•**Contact ACTEGA Kelstar** at 856 829 6300 or info.actega.kelstar@altana.com for additional information or technical assistance.