



Tech Talk From

Prisco®

Tech Talk #7

FOAMING

A PRESSROOM PERFORMANCE MINI-SEMINAR

Excessive foam can be generated almost any time mixed fountain solution is put into a recirculating-type reservoir. When this happens, printers tend to blame the fountain solution! **Printers' Service** technical representatives are often asked by customer to diagnose foam problems and to eliminate them. Our experience shows us that there are two distinct categories of foam problems:

- mechanical, because of the physical mixing and agitating of the fountain solution in the recirculator; and
- chemical, due to the molecular interactions between the components of different products.

Here's an easy way of determining what kind of foam you're experiencing. Take a sample cup of mixed fountain solution that has foam on it, and let it rest for a few minutes. If the foam disappears, then it has a mechanical source. If it remains, it is due to a chemical problem.

Let's review the various reasons for foaming, along with the solutions that our technical representatives recommend to resolve the issues.

CHEMICAL FOAMING PROBLEMS

Fountain Solution

All **Prisco** fountain solution concentrates are designed to have minimal foam when the dosage, in ounces per gallon, is within the specified, correct range. If the dosage is too low, the amount of defoamer may not be sufficient—and foam can result. Your **PRINTERS' SERVICE** technical representative can help you adjust dosage to the correct amount.

Contamination

A variety of contaminants make their way into the fountain solution as a byproduct of the printing process. These come from paper (paper dust, lint, and calcium compounds), ink, plate cleaners, wash products, additives, spray powders, and even microscopic organisms.

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A dirty reservoir can contain contaminants that cause foaming, and we'll talk about them below. Even more important, these contaminants may cause an increase in pH and/or conductivity. **PRINTERS' SERVICE** recommends that you monitor both pH and conductivity. Good housekeeping is critical, so even if your fountain solution appears to be clean, consider draining reservoirs when:

- a) pH rises more than 0.5 units, **or**
- b) conductivity goes up more than 1000 µmhos.

For best printing under normal conditions, reservoirs should be drained and refilled with freshly mixed fountain solution at least once per week, or more often if necessary. Also, be sure that filters are discarded and replaced with new filters when you change fountain solution. Do not re-use the old, dirty filters.

Sometimes, additional filtration is necessary when contamination problems are severe. We supply a **PriscoTech** cartridge-type **AquaFilter** that, when installed in the feed line to the press, helps eliminate contamination-related problems.

To enhance fountain solution longevity even further, many printers recognize the value of a capital investment in our **PriscoTech AquaChill® II** Filtration, Refrigeration and Recirculation System. Its unique tri-filtration filtering process removes contaminants as small as 5 microns from used fountain solution, helping extend fountain solution life and reducing disposal fees. The unit then returns chilled, clean fountain solution back to the press to be re-used. Printers find that this system has a major positive impact on their print quality as well.

Plate Cleaners

Many commonly used plate cleaners are extremely alkaline mixtures of silicates and phosphates which contain surfactants to help them remove ink and other residue from the plate surface. Poor cleanup technique can result in excessive amounts of plate cleaners getting into the fountain pan, and from there into the reservoir, where the surfactant creates foam.

Alkaline plate cleaners help consume the buffer system in the fountain solution, contributing to shortened fountain solution life.

Consider modifying plate cleanup techniques to eliminate this problem. Don't squirt large quantities of plate cleaner directly onto the plate, because that makes it easier for the cleaner to feed back into the fountain pan and reservoir. Using a cloth with the cleaner is usually a better method—but make sure that the press is idle while you're attempting to clean the plate. If you need to apply plate cleaner to a web press "on the fly", be sparing with the quantity. Our **Prisco Web-Klene** is a product specifically designed to be used "on the fly".

Press Wash

Water-miscible washes contain surfactants to help them in mixing with water. As with plate cleaners, when water-miscible wash moves into the fountain pan, these surfactants can create foaming problems. We find that poor manual wash-up techniques are the main cause for this contamination of the fountain solution.

citrate and phosphate, and precipitate out on rollers as a white haze or as hard, rock-like deposits.

Now that we have described the problem and how to minimize its effects, let's discuss the sources for calcium in today's printing environment, and how they contribute.

Make sure that you lift the dampening form rollers before cleaning blankets, and the ink form rollers if you're cleaning the ink train. Wipe the rollers and cylinders with a damp cloth to remove excess wash before dropping the rollers. As with plate cleaners, we urge you to avoid over-use of the press wash.

Automatic blanket washers can use either solvent or water-miscible washes. The risk of foaming, however, tends to be lower because less wash product is used, in most cases. If you're noting foaming problems and can't identify any other cause, consider testing a non-water-miscible wash product.

Storage Temperature

Most fountain solution concentrates contain defoamers. These defoamers by their nature are only very slightly soluble in the fountain concentrate. Cold temperatures during shipment or storage sometimes cause the defoamer ingredients to "kick out" and float to the surface. This does not affect print quality, but the mixed fountain solution does not have enough dissolved defoamer, and excessive foam results.

MECHANICAL FOAMING PROBLEMS

Recirculator Temperature

When printers used more alcohol, they needed to maintain colder temperatures in their recirculators, to help slow alcohol evaporation. For alcohol-free printing, **PRINTERS' SERVICE** recommends a fountain solution reservoir temperature of $60^{\circ} \pm 5^{\circ}$ F. This provides a fountain pan temperature of 70° to 75° F., very close to that of the ink train. This avoids the "shock" effect of mixing very cold fountain solution with warm ink: the ink viscosity drops and the ink loses its ability to emulsify and print.

We have found that when reservoir temperatures fall below 55° F., it increases the potential for excessive foam generation. Simply raising temperature to our recommended level may resolve the problem.

Entrained Air

Small leaks, even pin-hole in size, in the fountain solution return lines can result in entrained air being sent to the reservoir. Examine the lines, joints and seals carefully to eliminate this potential source of foam.

Leakage

Many small recirculators have a canister with a foam filter through which the contaminated solution passes when it comes from the press. With these devices it is essential that all the returning solution pass through the foam filter, because any leakage at the fittings or through the end cap will cause foam. Tightening the fittings and fashioning a "gasket" from a piece of used blanket for the end cap will eliminate the foam. Sometimes, just submerging the canister helps.

Venturi-Type Returns

These components utilize a partial vacuum to return fountain solution to the recirculator, which can introduce air into the liquid. This sometimes leads to foaming. Consider modifying the return mechanism, perhaps to a gravity-type return system, to eliminate this problem.

Agitation

Sometimes the impellers in recirculator pumps aerate the solution and cause it to foam excessively. If this is the case, contact your recirculator manufacturer to see if he has a different impeller available.

Coating

Although the coating tanks and pumps are a completely separate part of the press from the dampening system, foaming in the coating units can cause a cascade or overflow from the pan. Residue builds up in the coating tray, including dried, "stranded" coating, paper fibers and ink, and calcium carbonate. This residue causes restrictions in the lines delivering and returning the coating to the coating unit, and the product moves unevenly through the lines—resulting in foam. If there is overflow, it requires additional cleanup, or it can be a safety hazard, making the floor or catwalk around the press slippery.

We have found that foaming is best prevented by proper maintenance of the coating units. This includes frequent cleaning with a product such as **Prisco Aqueous Coating Cleaner**, which quickly and easily removes dried-on coating from the tank and press parts. Circulate it through the system in a back-flushing holding drum for waste water, to clean the veins of the recirculation pump and all the lines.

SOLVING YOUR FOAMING PROBLEMS

We have had a chance to review the many potential causes for foam—besides fountain solution—in the pressroom. We hope that these simple tips are sufficient to help you solve any problems that you've experienced. If you need more assistance, your **PRINTERS' SERVICE** technical representative is available.

He will advise you on the best fountain solution concentrate for your press configuration and your applications. If you need one of our special additives or defoamers, he'll show you how to use it.

OPTIMIZE YOUR PERFORMANCE

Our goal is to help you optimize your performance on press. Preventing or solving foam problems is just one of the ways we can improve your printing operation. Thanks for the opportunity to share our expertise with you.

10/05

As always, your local **PRINTERS' SERVICE** office is happy to answer your questions:

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