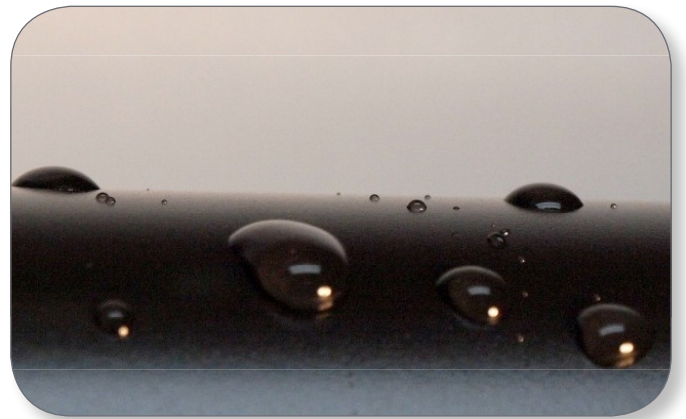


Alcohol-free sheetfed offset printing

Low-alcohol printing has been the standard in sheetfed offset for several years. Thanks to new press technologies, modern measuring and metering units, special fountain solution additives and modified dampening rollers, the majority of sheetfed offset printers achieve satisfactory results with IPA concentrations of less than 6% in their fountain solutions. But the trend goes on. Today, it is possible to dispense entirely with IPA and still achieve reliable results. Many printing firms are now doing just that – without sacrificing quality. In fact, under the right circumstances, distinct advantages can be achieved.

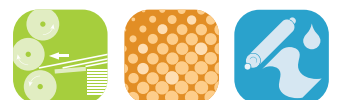
Isopropyl alcohol (IPA) performs important functions in the offset printing process. By increasing fountain solution viscosity, it increases the volume of fountain solution conveyed by the fountain system at the same ductor roller speed. The dynamic surface tension of the fountain solution is reduced, resulting in more complete dampening of the printing plate, even at high printing speeds. At the same time, IPA acts as an emulsifier and supports the absorption of fountain solution into the ink. This is not always desirable, however, as emulsification expands the dampening range, on the one hand, while a high fountain solution concentration in the ink results in a loss of brilliance in the printed product and slower drying.

Other properties, such as high vapor pressure and rapid evaporation, as well as the biocidal effect of IPA in the fountain solution circulation system, are worthy of note as well.



If no IPA is added to the fountain solution, other components must assume the functions otherwise performed by alcohol. Fountain solution additives, dampening rollers and blankets play particularly important roles in this context.

Special fountain solution additives for low-IPA or IPA-free printing contain substances which replace the alcohol and perform some of its functions. Special dampening rollers are capable of enhancing fountain solution transport and thus feeding the same quantity of solution even at a lower viscosity. Furthermore, specially designed dampening form rollers can support emulsification with the printing ink. Special coatings on water pan rollers and/or dampening metering rollers can also even out the transported fountain solution film and protect the rollers against the adverse chemical effects of new fountain solution additives incorporating alcohol substitutes.





Systems ►► Sheetfed Offset

Dampening roller compounds for low-alcohol and alcohol-free printing

Böttcher has developed a number of different compounds with specific properties in order to meet the requirements of low-IPA and IPA-free printing applications.

1. Water pan rollers and dampening metering rollers:

Compound 147 25:

This compound has proven very well suited for low-IPA and IPA-free operations. High transfer volume with uniform transfer characteristics.

Compound 116 25:

A new compound with a very smooth surface and high chemical resistance for a very uniform fountain solution film. Particularly well suited for the American market and fountain solutions with high concentrations of alcohol substitutes and highly acidic pH.

Compound ProAqualis 128 25:

A specially coated dampening roller which is totally resistant to radial swelling. Quick release properties, easy to clean. For a very uniform fountain solution film and extraordinarily long service life. Suitable for all fountain solutions.

2. Dampening form rollers:

Compound 124 25:

This compound has proven suitable for conventional IPA-free and low-IPA operations. A hydrophilic surface facilitates emulsification with ink and enhances the effect of the fountain solution additives. Highly resistant to conventional inks but not suitable for use with UV inks. For certain fountain solutions additives with very high IPA-substitute concentrations, compounds such as **116 25** and **128 25** are preferable..

Compound 116 25:

A compound with high chemical resistance for a very uniform fountain solution film. Particularly well suited for the American market and fountain solutions with high concentrations of alcohol substitutes and highly acidic pH.

Compound 125 25:

A newly developed product with special surface quality characteristics, also highly resistant to fountain solutions with high concentrations of IPA substitutes, low pH. Very good resistance to conventional inks. Also excellent in combination with ProAqualis.



Compound 134 25:

A compound with a hydrophilic surface for use in IPA-free and low-IPA UV mixed mode printing

Compound 715 25:

A compound designed for use in straight UV printing applications.

Printing blankets for low-alcohol printing

Böttcher has applied the experience gained with roller compounds to printing blankets. With **BöttcherTop 3201**, **BöttcherTop 5400**, **BöttcherTop 7200** and **BöttcherTop 7501**, sheetfed offset printers have a range of blankets at their disposal which offer very hydrophilic surfaces and advantages for low-IPA printing. **BöttcherTop 7501** is also suitable for mixed mode printing. **BöttcherTop 4800** performs well in low-IPA and IPA-free UV printing applications.

Fountain solutions for IPA-free sheetfed offset printing

The **BöttcherFount S-3007** fountain solution additive was developed specifically for IPA-free printing applications. The additive is corrosion-inhibited and provides for a stable ink-water balance and rapid wetting of the printing plate even in combination with IPA concentrations of 5% or less. Undesirable calcium deposits that can form on inking rollers in alcohol-free printing operations are largely eliminated.

BöttcherFount S-3007 is used in a concentration of 4% and supports IPA-free printing on all types of presses used in packaging and commercial printing. One of its most outstanding features is very rapid ink drying on non-

absorbent substrates, such as polyethylene and aluminum-laminated paper and cardboard. The additive is also well suited for use with UV inks. It has no negative effect on pigment gloss when used with metallic inks

Problems that often occur in IPA-free printing, such as ink feedback to the dampening rollers, paper coating build-up on the inking rollers and rapid soiling of fountain solution are substantially reduced with the use of **BöttcherFount S-3007**.

BöttcherFount S-3007 performs ideally in combination with coated ProAquilis dampening rollers

Dampening roller cleaning

Ink residues may accumulate on water pan and dampening metering rollers, often in combination with ink feedback to the fountain solution.

Böttcher has developed **Böttcherin FR-1000**, a special cleaner for dampening rollers. It exhibits very strong ink-dissolving power but contains no aggressive components, such as aromates or acetone. The hydrophilic roller surface is preserved after thorough cleaning and supports trouble-free restarts

Roller care and maintenance

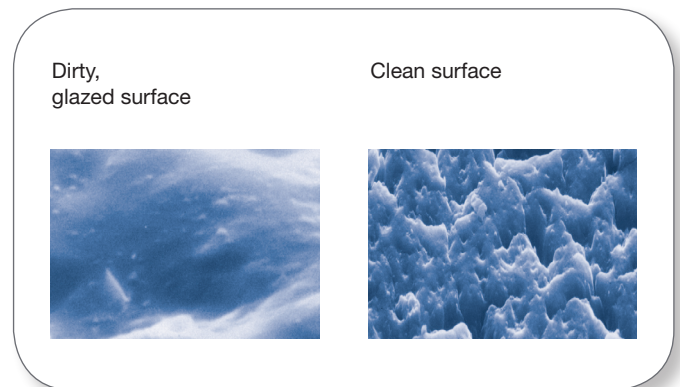
A clean surface is an absolute prerequisite for optimum ink transport and emulsification of fountain solution with the ink. Therefore, rollers must be cleaned regularly to remove undesirable calcium deposits, accumulated paper coating residues and other residues.

BöttcherPro Calciumfix ensures effective, non-invasive removal of calcium and paper coating deposits.



All other deposits can be removed completely with **BöttcherPro Cleanfix**.

The result is a clean roller surface which retains its original roughness or „nap“.



Harmonious interplay of products

Success is achievable in alcohol-free printing only through the harmonious interplay of all products.

Interaction between chemicals can result in swelling in rollers and blankets and must therefore be prevented in order to ensure trouble-free printing.

Böttcher offers a complete range of rollers, printing blankets and printing chemicals. These products are matched in such a way as to ensure that negative interaction is prevented.

Recommended preparations for alcohol-free printing:

- Precise metering of fountain solution additive
- Assurance of constant water quality
- Treatment of water through reverse osmosis and hardening with **BöttcherPro Calcit**, if necessary
- Exact adjustment of printing rollers
- Regular cleaning and maintenance of rollers
- Fountain solution changes at regular intervals



Systems ►► Sheetfed Offset

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