



## Fount solution in offset printing

Importants facts  
for the use of fount concentrates

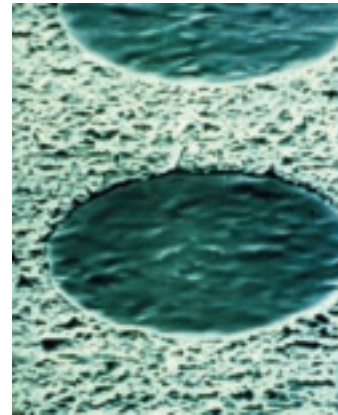


## The offset printing process

Offset continues to be the predominant printing process for small and larger run printing jobs due to its flexibility, its variability, the high quality standard that can be achieved by it and its cost effectiveness.

Contrary to other printing processes, offset uses a printing forme (printing plate) considered to be flat. The plates, which are specially treated with chemicals, are able to accept inks and repel water (hydrophobic) in the image areas and accept water (hydrophilic) in the non-image areas. To achieve a sharp separation of the printing areas from the non-printing ones of the plate, it is necessary to use an aqueous fount solution in conjunction with the offset printing ink.

The water used for this purpose as well as the fount solution additives employed, must conform to certain specifications.



## The water

The composition of water is determined by the geological strata in the catchment area and by any subsequent treatment. The following parameters are of importance for offset printing:

### Total hardness

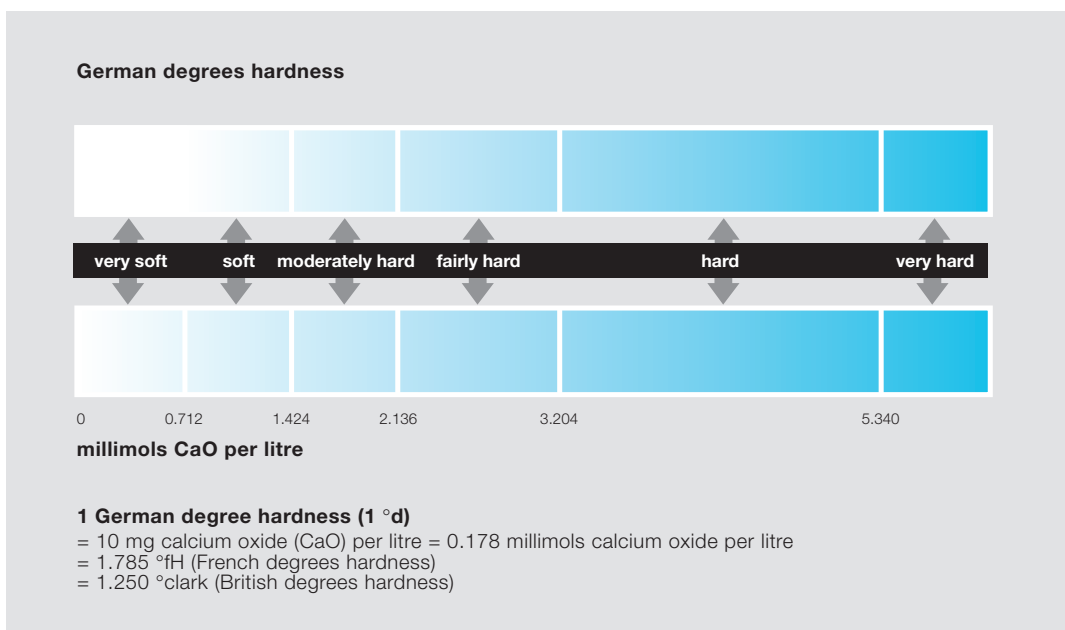
Total hardness indicates the amount of calcium and magnesium salts dissolved in the water. In Germany, total hardness is defined in German degrees ( $^{\circ}\text{d}$ ) hardness. Optimum hardness for offset printing ranges from  $8^{\circ}\text{d}$  to  $12^{\circ}\text{d}$ . When using water with a high total hardness in conjunction with predominantly matt-coated stock, ink rollers may tend to strip (especially in the red unit).

Stripping is caused by deposition of poorly soluble calcium compounds in the pores of the rubber rollers, which then clog up, becoming increasingly hydrophilic, and greatly disrupt ink transfer in the inking unit.

Two methods are possible to eliminate these problems:

- The tap water that is used can be softened or deionised.
- Special fount solution additives, formulated to prevent the formation of poorly soluble calcium salts, can be used.

In any case, any deposits already on rollers need be removed by means of special cleaning agents such as **Roller Cleaning Gel 10 T 0023**.



## ATTENTION

For use in offset printing, it is necessary to readjust deionised or softened water again by means of a rehardening agent – **SALINOFIX 5005 09** – to approx. 8 – 12 °d.

### Hydrogen carbonate concentration

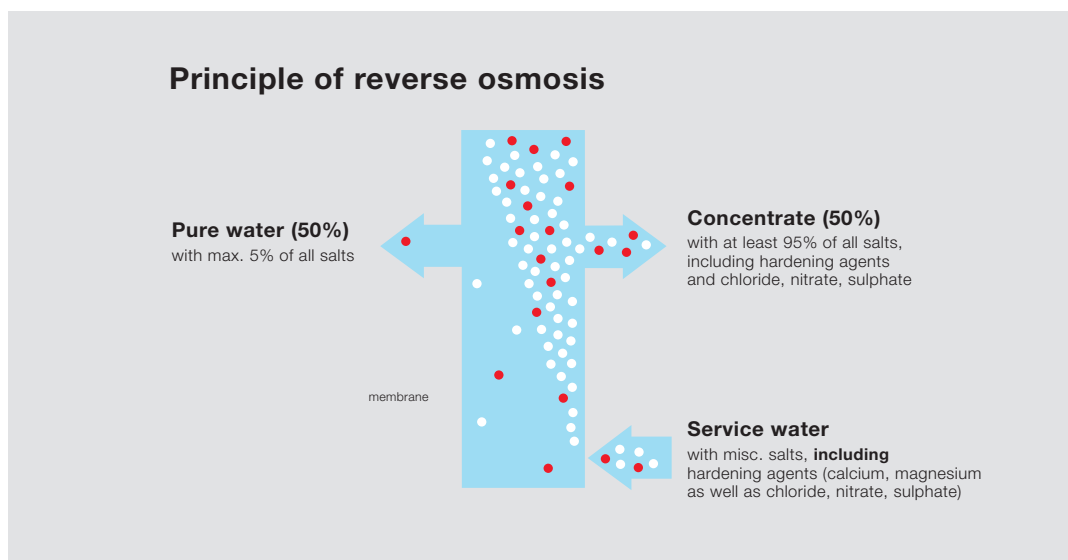
All waters from natural sources contain hydrogen carbonates which show a slightly alkaline reaction and, therefore, cause a rise in the pH of the fount solution. The pH of water containing large amounts of hydrogen carbonates may even lie above the range considered to be favourable for printing. For this reason, we adjust the buffer in our fount solution additives to the hydrogen carbonate content of the water.

### Chloride, nitrate, sulphate

Corrosion of certain metals may be caused or increased by water components such as chloride, nitrate and sulphate. Therefore, machine manufacturers specify limits for the content of such products in the water.

When these limits are exceeded, it may become necessary to install a water conditioning (reverse osmosis) plant.

We offer the service of a free water analysis if no information is available about the quality of the water and cannot be obtained from its supplier. Moreover, our trained experts advise on the type and size of water conditioning plant you may require.



### The fount solution additive

The fount solution must work well with every piece of printing equipment: the press, fount application unit, printing plate, stock and offset ink. Very early on in the history of offset printing, it was realised that untreated tap water is seldom suitable as a fount solution.

To meet demands on modern fount solutions, fount solution additives which have been adapted to the water quality and are added to it. They serve the following general purposes:

- Adjustment and stabilisation of pH.
- Adjustment of the surface tension.
- Corrosion protection for the printing plates.
- Stable adjustment of the ink/fount solution balance.
- Corrosion protection for certain machine parts.

In addition, it is possible to incorporate special agents (e.g. to prevent roller stripping, to accelerate ink drying or to substitute alcohol) in the fount solution additive.

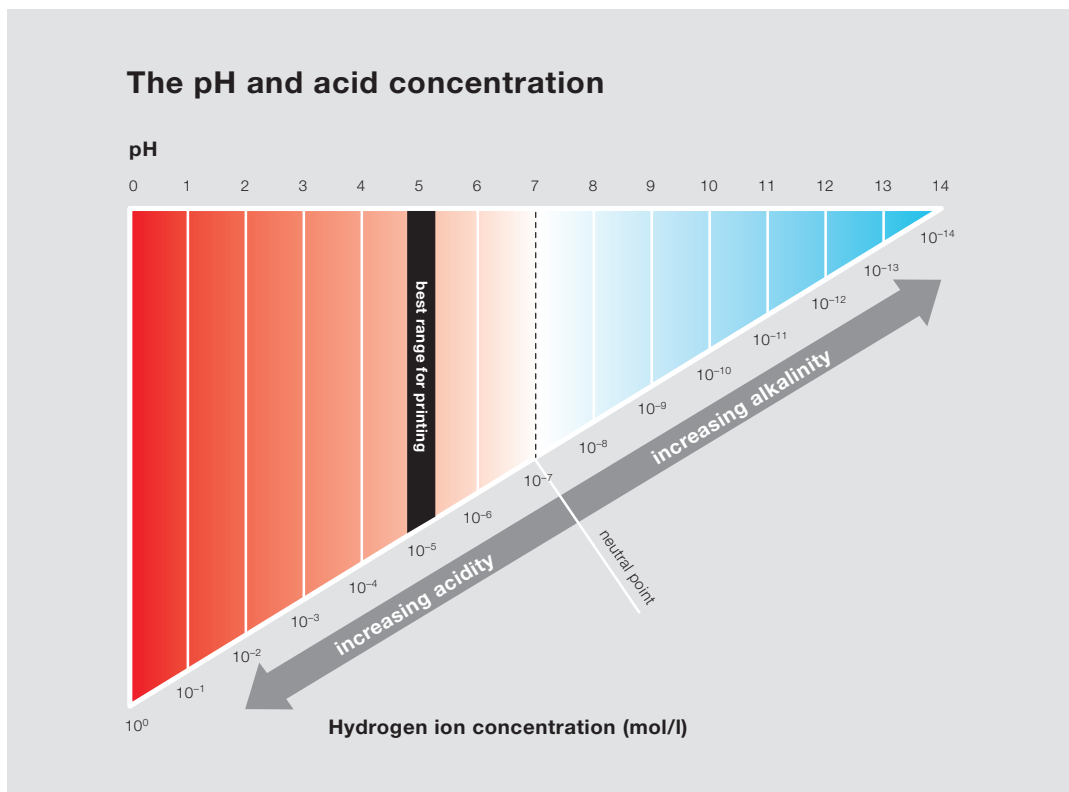
## The pH

The pH indicates the acidity of a medium. Within its dimensionless numerical series, the pH range from 0 to 7 is defined as acid and the range from 7 to 14 as alkaline, with pH 7 as the neutral point.

As the offset printing process has developed, the range between 4.8 and 5.3 has proven to be the most favourable for printing purposes. New developments in newspaper printing also include the use of fount solution additives buffered in the neutral range.

Two methods can be used for determining the pH:

- pH-indicator strips are available in a wide range of calibrations and types. However, the measurement error observed in buffered systems is often 0.5 pH units and this method is therefore not recommended.
- In contrast, electrical pH meters with glass electrodes permit very accurate measurements of pH, even if the solution is buffered. The only prerequisite is that the device is serviced and calibrated as prescribed.

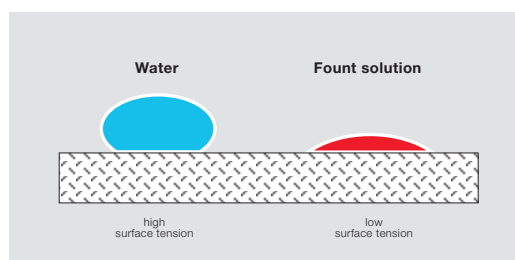


## Electrical conductivity

Electrical conductivity is often referred to in practice as a second criteria. However, it has no relevance to the technical printing performance and can therefore only be used to test if the correct amount of fount solution additive has been admixed. Certain borderline conditions need to be observed, however, in this regard (please consult our folder entitled "Electrical conductivity" [MB 8]).

## Surface tension

The measurable variable for judging the wetting capacity of liquid is its surface tension. Water has approximately the same surface tension of 72 mN/m irrespective of whether it is classified as soft or very hard. A fount solution with such a high surface tension cannot adequately wet the printing plate surface. This is why substances (surfactants) are added to the fount solution additives, which specifically reduce surface tension.



## Isopropanol

Since isopropanol, too, has the effect of reducing surface tension, a suitable combination of surfactants and alcohol substitutes in the fount solution may allow us to considerably reduce the isopropanol content required in the fount solution. It may even be possible to eliminate isopropanol entirely if the fount units are suitably equipped, e.g. with ceramic or hydrophilic rubber rollers.

## Corrosion protection

To protect printing machines against corrosion, it is strongly recommended to use corrosion-inhibited fount solution additives which have been authorised for use, as demanded by the machine manufacturers.

In this connection we emphasise again the possible promotion of corrosive effects by substances contained in water, for which specific limits have been set.

## Metering

Standardising the offset printing process should also include standardisation of the composition of the fount solution. The specified quantity to be added must be observed since all effective ingredients are matched to the recommended concentration for use. Over- and under-metering are equally inadvisable and can cause printing and corrosion problems in the long term. We recommend the you use of automatic metering systems for the fount solution additive, the isopropanol and re-hardening agents, if these are required.

For keeping the isopropanol content in the fount solution constant, there are now new metering systems available which are based on different working principles and are a lot more accurate than the familiar float systems. They perform accurately even in the range below 5 vol. % alcohol.

All of the metering, cooling and circulation systems that are in contact with reconditioned water or fount solution must be free from copper or brass parts and should instead consist of plastic or stainless steel.

## The service programme

We offer a free service programme consisting of:

- analysis of the water used
- recommendation of an optimally adapted fount solution additive
- advice and training by our service team.



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Contact addresses for advice and further information: [www.hubergroup.de](http://www.hubergroup.de)

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