

Indicators	Indication of pH variations.
Ink dryers	The fountain combines with the ink and thus reduces ink drying time.
pH buffer	Used to maintain the pH of the solution to a suitable value thus resisting the effect of careless mixing and the influence of the stock. Most founts are acid with a pH in the range 4.5 - 6.0. The commonest systems are citrate or phosphate based. Can cause build up of salts on blankets. Alkali founts are also used in some circumstances, i.e. newspapers using diazo wipe-on plates and direct litho.
Sequestrants	Control of excess water hardness. Common examples are various salts of EDTA and nitrilotriacetic acid.
Stabilisers	To stabilise the effect of the other additives.
Surfactant	Lowers surface tension, and is therefore a wetting agent. Reduces the amount of water that need be used to wet the plate. Increases the ability of the ink to become emulsified, which if controlled, may be beneficial. Can mimic some of the properties of isopropanol.

Apart from the fountain additives there are a number of other factors to be considered when trying to gain any concept of the ink/water/process relationship and the success or failure of a fountain solution. These factors are to do with the press, the substrate, the plate, the job in question, the ink characteristics (pigment and vehicle properties, flow properties, and water take-up properties), the base water contaminants, and the ambient conditions. It is partly this large number of influences in the system that makes it so difficult to study effectively.

Some observations

Use of iso-propyl alcohol

It is interesting to observe the success of alcohol dampening systems. These use iso-propyl alcohol. The effect of alcohol is effectively to swamp the possible variations from all other causes, and this may be a factor in its success. However, whether this is a long term solution is questionable. IPA is expensive, presents a storage problem (fire risk), and there is possibly a health risk since the alcohol evaporates into the atmosphere in the press room.

Simple emulsification tests reveal some striking differences between alcohol based fount solutions and others, in relation to water take up and release. An alcohol based fount solution separates very quickly (i.e. almost instantly) from an ink/fount emulsion - i.e. it forms a very unstable emulsion. De-ionised water, on the other hand, forms a nearly stable emulsion, and separation only occurs over a long period. Since alcohol is so successful in practice it suggests that the requirement is for an unstable emulsion.