SOLUTION CONTROLS

Densitising Requirements

Desensitising and film-forming agents are usually colloidal materials, e.g. gum arabic, which are only slowly soluble in water. These materials, which have large molecular structures, are very difficult to remove and washout when absorbed into the pores of the anodised aluminium. They also have very good adherence to the anodised aluminium surface and contain organic carboxyl groups (−COOH) which react with the hydroxyl (−OH) groups of the aluminium oxide layer and become firmly attached to the metal. (fig. 1.).

This reaction is promoted by the presence of a mild acid which produces further carboxyl groups and enhances the adhesion of the colloidal material. Therefore, the desensitising action is continued and strengthened during the press run and the hydrophilic properties of the plate are maintained.

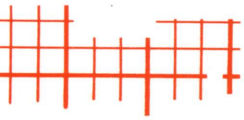
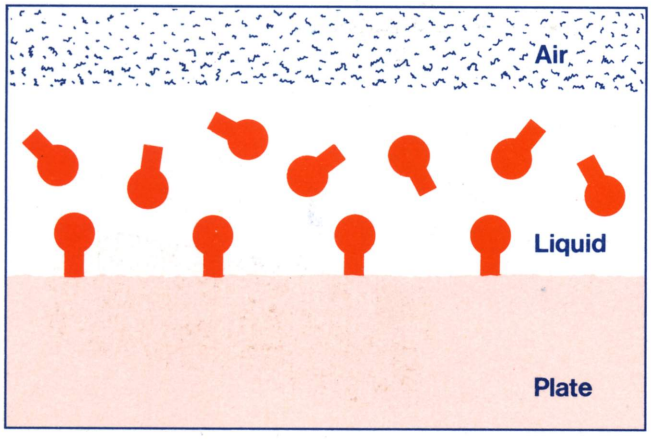


fig. 1.



Ph Control

The modern lithographic plate responds satisfactorily to a mild acidic action with a pH range of 4.3 to 5.5 which enhances the desensitising action and maintains the hydrophilic character of the background areas. The use of highly acidic damping solutions to continually etch, clean and maintain the porosity of the surface is no longer required with electrochemically grained and anodised plates.

It is important to maintain the required pH to avoid drastic changes and inconsistencies which might cause damping problems, ink emulsification, poor ink drying or corrosion of the plate and press components. Buffering agents are used to ensure that the pH of the working strength damping solution remains consistent no matter what dosing level is used, i.e. 0.4% solution has pH 5.0, 6% solution has pH 5.0. Therefore, any mixing or dosing errors in the damping system or equipment will not significantly alter the pH. (fig. 2.).

This buffering action also has the ability to absorb comparatively high levels of acid or alkali from the paper stock, ink or water (which can range in pH from 6.5 to 9.0) and still maintain a consistent pH.

fig. 2.