



TECHNICAL BULLETIN

ELECTROSTATIC PLATES AND SOLUTIONS - EFFECTS ON INKS

The electrostatic imaging of plates has been and continues to be a popular method for imaging offset printing plates quickly and inexpensively. The quality of image reproduction has improved tremendously in recent years and now can approach the reproduction quality of metal plates. This results in the printer attempting to produce work using electrostatic plates that should be done from metal plates, and in some cases paying a penalty for doing so. The electrostatic plates and chemistry was developed originally for low cost duplicating on bond and was not intended to be used for commercially oriented work (ie. Coated papers, foils, plastics, board, etc.).

The following review of the electrostatic plate/solution materials may help in understanding why some inks do not perform well in certain situations when E/S materials are used.

The E/S plate material is treated with a special zinc coating which acts as an excellent receptor for the toner (the imaging material). This zinc coating requires a special etch and fountain solution to adequately de-sensitize the non-image areas of the plate and keep it de-sensitized during the printing process. It is the chemistry of these solutions which can lead to ink "problems" during and after printing.

One of the common situations that develops is the formation of deposits in the ink and water systems. These are really crystals of a complex water soluble compound, used in the etch and fountain solutions, which will tend to come out of solution and deposit on rollers (both ink and water), pans, trays, and generally any part of the press which is in continuing contact with the etching (conversion) or fountain solutions. As these residues build up in the ink rollers they mix with the ink and increase the tendency of ink to emulsify.

Careful consideration is given to duplicator ink formulation in order to reduce this emulsification tendency.

A reasonable press maintenance schedule will diminish the chances of serious problems from this source. Since the crystals are water soluble, the commercially available water miscible roller washes, used according to directions are the best for wash up of ink rollers. Regular solvent type washes will not dissolve and remove these crystalline deposits.

The other major problem which occurs with inks and E/S plate chemistry is one that in many cases does not appear until the job is printed - POOR DRYING.

The unique and unusual components of the conversion and fountain solutions require the use of a very potent anti-oxidant in order to maintain a reasonable shelf life. As the ink and water mix on press, the anti-oxidant mixes with the ink and deactivates any driers or oxidizable materials in the ink.

Printing on any substrate for which oxidation of the ink has to be relied upon is definitely out of the question if any degree of hardness of dry or rub resistance is desired in the final printed product. Stocks such as tag, heavy index, enamels, boards, and certainly any type of synthetic paper should be avoided when printing from electrostatic plate material. Additions of driers are not effective as a drying assist.

If the above comments are considered when inks and press materials are specified for a particular job, the chances of producing sub standard printing in the small offset field can be reduced.