

# TECHNICAL BULLETIN

## OFFSET PRINTING ON NON-ABSORBENT FACE STOCKS

*It's easy!*

Offset printing on a non-absorbent face stock such as a semi-rigid vinyl, polyester film or synthetic product is no more difficult than printing on paper face stocks. Please note the following: 1) Films as well as most synthetics are non-absorbent materials thus they repel water and 2) Inks formulated for paper face stocks dry via polymerization while inks formulated for films and synthetics dry via **oxidation**.

**PROTAC** has consulted with leading ink manufacturers and they recommend the following techniques when printing non-absorbent face stocks:

- 1) Synthetic inks dry via contact with outside air (oxidation) thus the use of small lifts will reduce the potential of offsetting during the drying process. The use of a commercially available offset powder (approximately 50-micron) will increase the presence of air between the sheets enhancing drying time. Run smaller lifts to allow more air between the sheets. Allow adequate time for the ink to dry before performing post press operations.
- 2) Synthetic ink colors are long bodied and softer than standard offset inks and as a result, the amount of ink needed for effective coverage should be reduced to a minimum to insure smoothness. pH levels in the fountain solution(s) should be held between 4.0 to 5.5, as improper pH levels will inhibit (slow) the drying properties (oxidation) of the ink.
- 3) The use of water during the printing process should be reduced to a minimum as synthetics and films are non-absorbent materials allowing any excess water to remain on the sheet. Scumming during startup is normal for synthetic inks and should disappear as the press comes up to speed. Minimum pressure setting will prevent excessive water from being forced into the ink itself.
- 4) Small amounts of drier additives may be used in synthetic inks to reduce offsetting and to enhance drying time. However, too much drier will cause synthetic inks to become softer, which will cause slower drying.
- 5) Synthetic sheet stocks are more susceptible to static buildup than are paper face stocks. Fanning lifts, the use of commercial static guard spray or ionizing jets will reduce static.

The tremendous versatility of synthetic and film products has made the use of such non-absorbent face stocks one of the fastest growing segments of offset lithography. Synthetics and films provide a clear advantage over paper face stocks for many end user applications and the correctly formulated inks will ensure a smooth job. *Always involve your favorite ink supplier*, as they will formulate the right ink for your application.

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## **OFFSET INK CONCERNS WHEN AQUEOUS COATING**

### **The Compatibility of stock, ink and coating must be checked before EACH RUN**

1. Certain pigments used in offset inks are sensitive to alkali, soaps and solvents. Ammonia, surfactants and small amounts of solvent in aqueous coatings can affect these pigments. It is imperative that REFLEX ALKALI BLUE, RHODAMINE REDS and RED LAKE C be eliminated from all offset ink formulations (tints and full strengths). LIHTOL RUBINE and METHYL VIOLET can also be affected in tints on non-absorbent substrates where residual components of the coating cannot escape.
2. Some additives in offset inks can act as solvents for aqueous coatings thus slowing the drying of the coating. These include slow boiling alcohols such as TDA and lubricants like petrolatum and IC compound.
3. For rub resistance of offset inks, add only polyethylene wax compound at normal percentages. DO NOT use microcrystalline, carnauba, paraffin, Fischer-Tropsch or Teflon waxes unless you want to introduce special characteristics (i.e., resistance to adhesives in easy open boxes).
4. Faster setting inks perform better than slower setting inks under aqueous coating. Slower setting inks can create a "jelly bean" effect under the dry film of the coating and any movement of the printed material can cause scratching.
5. Metallic inks are generally over pigmented systems. The binder to pigment ratio is very low. Aqueous coatings have a tendency to drain the binder out of the inks, leaving the leafing metallic pigments unprotected. Coatings applied over these inks will result in the entire system flaking right down to the substrate. We recommend using custom formulated gold and silver inks whenever the job is to be aqueous or UV coated.

For samples or additional information on any PROTAC products, please call our sales service representatives at (800) 466-5247 or e-mail us at [protacinc@protacinc.com](mailto:protacinc@protacinc.com).

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