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APPLICATION NOTES

FOIL BLOCKING OF UV INKS AND COATINGS

Introduction

Because of the nature of most UV inks and coatings, the application of transfer foils is not a simple matter. If the following guidelines and appropriate care is taken the foils may be applied reproducibly and without defects.

Typical problems encountered

- * Fine lines do not release cleanly with patches missing or ragged edges and/or the foil does not adhere.
- * Solids do not release cleanly, show blister spots or do not adhere.

Generally these problems relate to one or more of the following:

1. Undercure or overcure in the ink or coating
2. Flow additives in the ink or coating
3. Adhesion failure of the ink or coating to the substrate
4. Inadequate or excessive impression pressure and temperature during foil blocking
5. Inappropriate choice of ink, coating or foil.

Choice of inks/coatings

Most letterpress and lithographic inks are readily foiled however on some occasions, and only on certain substrates, dark colours (black and reflex blue for example) may be difficult to foil due to undercure. This can usually be fixed by using a UV keycoat primer under the ink.

Only certain varnishes are suitable for foiling. These CONTAIN NO FLOW ADDITIVES and are specially formulated to be receptive to foil. They do however require an “easy release” type foil to work effectively (see “choice of foils”).

Most UV screen inks and varnishes are difficult to foil stamp as they invariably contain silicone flow additives.

Application of inks and coatings

Avoid heavy application of UV inks and coatings as these are more likely to be undercured. Undercure results in “sweating” of uncured materials to the surface to which foils will not take. Excessive curing of inks and coatings can make them very hard and “glassy”. This type of surface is also less receptive to foil.

Choice of foils

Recommended foils are Kurtz: 385 grade 7 or 8.

Grade 7 is slightly better for slower flat bed foiling and grade 8 better suited to rotary foiling. Whiley (API) has effective equivalents to these.

Application of foils

Avoid excessive impression pressure. Better release control is obtained by application temperature, with recommended temperatures between 115 and 130 Celsius usually effective. These temperatures may need to be higher at faster running speed, depending upon the heat capacity of the die used and the thermal transfer efficiency of the heating system.

Printing over foils

When a foil is applied to a surface, a lubricant/release agent is present on the top of the foil in order for it to be separated from its carrier backing. Tight release foils have lower levels of release agent and are therefore more receptive to inks and coatings.

Prismatic inks can offer some suitable options for printing over foil:

a) UV Letterpress keycoat primer 11062 has excellent adhesion and drying over a wide variety of foils. Application at lowest film weights (0.5 – 1 um) is beneficial and economical. The surface may subsequently be coated with any type of UV ink or varnish. Primer is also readily applied via UV-flexo using 400+ line/inch aniloxes

b) UV Flexo Matt Coating O/F (11028) and UV Flexo Satin O/F (11013) both have excellent adhesion to tight release foils (e.g. API). In addition UV Flexo Supermatt FB (11016) may be used where overprinting is also demanded. These varnishes are low in silicone levels yet display true adhesion to metallic surfaces.

c) UV Screen Corflute inks (224xx) have good adhesion to certain foils.