

Backtrap Mottle



Mottle /mät' l/ *verb*: to mark with spots of different colors; to dapple. *noun*: A variegated spot or streak. The term “mottle” is widely used throughout the printing trade and the paper industry to describe a printed piece that is nonuniform. Sometimes mottle can be seen on white paper. But the most elusive is the type of mottle that appears during printing, as spots of varying density on a printed job. The latter type of mottle appears primarily where the coverage of cyan ink is the heaviest. It is often referred to as **BackTrap mottle**.

BackTrap mottle is a frequent topic of conversation among paper manufacturers as well as among printers. Paper manufacturers want to know how to measure it. On the other hand, printers want to know how to get rid of it.

There are three criteria that have to exist for Backtrap Mottle to occur on press:

A fast setting ink.

A fast setting paper.

Nonuniform paper surface absorption.

Inks formulated with high solvent (so-called “thin” oil) concentrations typically have quick-setting resin systems. That is, these inks will give up the thin oils into the paper at a rapid rate.

Papers vary in the rate at which they can absorb the thin oils from the inks. Sheets with low holdout are quick to absorb the thin oils from the ink. High holdout papers are generally slow to absorb solvents.

When a wet film of cyan is printed from the second unit on a sheet-fed press, the thin oils, or solvents, in that ink immediately begin to be absorbed into the surface of a coated sheet. As the paper proceeds through the press, this wet film of ink comes in contact with several blankets.

The sheet must exit the press into the delivery before the ink film sets on the paper’s surface. If the ink film sets, it loses its tack, and will trap back onto the blanket, which is a stickier surface than the paper. This is called *backtrapping*, and the inks printed first in a multi-color press will backtrap more than the other colors.

If the surface of the paper is nonuniform in its absorption, it may set the ink in some areas, and not set it on others. And if the ink and paper are fast setting, then the nonuniform absorption into the paper will create nonuniform backtrapping, or BackTrap mottle.

Since cyan ink is typically printed as one of the first inks in sequence (Black + Cyan + Magenta + Yellow is a very common order), it is the color in which most mottle is seen. If the cyan is moved to a later printing unit, the mottle will be minimized, since the ink remains on the sheet for a shorter time period. A last-down yellow cannot backtrap, since it does not hit any additional blankets in the press.

There are tests that can be run on papers and inks to predict various types of mottle, and simulating conditions to minimize mottle on press.