UV INKS AND ANILOX ROLLS
Technical Product Manager, HarperScientific.com

Within the past several years, Flexo has made some tremendous strides printing UV Ink Flexo. While, for the most part, we have been able to consistently print water-base and solvent-base inks, there have been some inconsistencies with UV Inks.

There are many printers printing high quality UV Ink flexo, however, they sometimes struggle with consistancy from press to press depending upon metering system. They, often times, believe they get the same results as water or solvent-based inks.

Understanding the release characteristics of the ink in relationship to the anilox roll is very important. Because UV Inks are thicker than water-base and solvent-base inks, it releases different from the anilox roll. A similar analogy can be made to that of coatings and adhesives as well as metallic inks. The fluidity of the ink is different. The release characteristics are not the same; therefore the result will not be the same at the transfer point from the anilox to the plate.

Through research and development we have been able to combat the release characteristic issue and cater to the specific ink by modifying the engraved cells.

The common engraving used for water and solvent-based inks is the 60-degree hexagonal design. This type of engraving releases very well and actually add 15% more cells to the engraving giving you more cells to support the very small dots on the plate and enhances your printed product substantially. The problem is, because UV Inks are thicker, they release differently and this type of engraving may not necessarily be the best fit for the UV Flexo printing process. Inconsistency problems have been seen using UV Inks.

Achieving adequate color density and reproducing it each successive run and from press to press is the common goal of flexo printers. Accomplishing this goal provides two basic benefits. One, set up time is minimized which is becoming more important to the bottom line as
order size shrinks. Two companies who own several or more presses with the same capabilities can experience scheduling flexibility when densities can be matched within tight tolerances.

Matching color before you go to press is very important. Being able to match the color of your press ready ink and get the same result on the press can save you tens of thousands of dollars within one month.

While we were able to match color from drawdown to drawdown consistently with water and solvent based inks, we, just like the printer, struggled to get consistency from print to print with the UV Inks.

Through this research and development, using the Echocel Junior precision hand proofer, a miniature simulated press with a doctor blade, we were able to modify different engravings and determined that, in fact, the engraving makes all the difference in the world.

What we were able to determine was that, because the release characteristics of the UV Ink were different, by using the 60-degree hexagonal engraving, it created turbulence at the transfer point. What this means is, because the analogy of ink is to bridge from one cell to another and form a film of ink, the viscosity or fluidity of the ink is different and acted like a tidal wave. When the doctor blade metered the UV Ink, it put a tremendous amount of force on
the transfer point therefore creating a chattering effect. This caused many problems from inconsistent ink films, ink spitting or drooling as well as spots on the printed substrate.

The result of this research allowed us to manipulate the engraving to eliminate the tidal wave effect and give it some free flowing characteristics. By channeling the engraving, it allowed the ink to release easier with less turbulence created from the doctor blade, therefore resulting in a very consistent and smooth ink film. It also allowed us to get consistent and repeatable drawdowns.

As a result of this research and development we have been able to provide laser engraved ceramic, channeled engravings to many UV Ink printers and they are printing, in most cases, quality better than that of the offset industry. Please understand the effect of printing 4 color process with channeled cells may result in slightly higher dot gain, but the benefits usually out way the adjustments needed to compensate for the increase or gain of dot size.

As a footnote, we have found that using a thicker blade, as similar to coatings and adhesives, provides for a better meter. The gage thickness of the doctor blade should be no less than .008 and no more than .010.

To summarize, printing UV Ink can make for a beautiful printed product. As we, in the anilox roll industry continue to learn more about the physics-taking place within the transfer point of the press, this particular research should provide for a much easier operation. As the anilox roll is the heart of the press, sometimes, a simple modification can solve many issues that were otherwise, not considered.

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