TECHNICAL TIP

ICC PROFILES & DIGITAL PRINTING

PROFILES

General Formulations Digital Print Media is formulated and developed for optimal ink receptivity on solvent, eco-solvent, UV curable and latex printers. While the print media is an integral part of the printing process, the printer obviously plays a major role in the process and its' features also need to be considered. Is the print shop printing in CMYK, but expecting CMYKlclm quality gradients? Some printers have spot colors and other light inks to help the user achieve their color matching goals. The printer is connected to a main computer that uses raster image processing, (RIP) software, to manage the printing operations. The RIP uses an ICC profile to assure consistent color output. The profile is a key starting point, but printer performance is of monumental importance.

GF Digital Media is available in a wide variety of vinyl films and other substrates such as fabrics. Vinyl films are formulated differently with various gloss levels, a range of thicknesses, flexibility, film opacity, and color, depending on the ultimate application of the media. Pressure sensitive adhesives also vary depending upon how long they need to adhere and to what they need to adhere to.

WHAT MAKES UP AN ICC PROFILE?

To overcome media and printer variability in the then developing digital printing industry, eight vendors in 1993 established the International Color Consortium, (ICC). Their efforts led to standardizing color to make it seamless between printing devices. Detailed information concerning the ICC is available from their website, color.org. ICC profiles are part of any RIP software. An ICC profile used within the RIP color management system is the means by which your printer can optimize output along with color consistency. Besides the ICC profile for the specific media, other factors can effect color quality and consistency. Resolution, ink saturation, heat settings, input and output profiles along with ink type and manufacturer are some of the variables. Therefore, when trying to select or develop an ICC profile for your specific GF Digital Media, the printer model, RIP (software), ink type, ink setup (color configuration) and print quality (resolution and passes) are required. In summary, ICC profiles are very specific to the combinations of variables listed above and any change in one of the variables could result in a color shift in your printed output.

OVERSATURATION OF INKS

If the ICC profile is not correct for the printer and media, color quality and consistency will be affected. With improper color control, ink oversaturation of the media can occur. Oversaturation of ink on the media can lead to a host of problems down the road. First of all, the graphic will have a flooded look, the flesh tones will look too dark, colors will overall be dull, and there will be a loss of sharpness. Secondly, the ink probably will not dry correctly because the RIP software will not have the correct drying instructions for the amount of ink deposited. If the prints are rolled or stacked, ink offsetting can induce gloss mottling at the least, and ink smearing at the worst. Even if the ink appears to be dry, retained solvents can still be in the ink film trying to outgas. Graphic edge curl and delamination have been associated with excessive ink solvents trapped in the media because of poor ink drying. Studies have shown retained ink solvents can affect both vinyl substrates and the pressure sensitive adhesive to induce premature graphic failure. A vinyl film can be softened to the point of stretching, which will make it difficult to cut and apply correctly. Pressure sensitive adhesives will lose tack and bond under those influences. This potential issue can affect the vinyls' effectiveness in situations where an installer is trying to stretch the film and get it to conform to a channel or compound curve. Since the adhesive has already been degraded due to oversaturation (incorrect profile), this could and will most likely lead to edge curling, edge shrinking, and eventually delamination.

DRYING AND OUTGASSING

Pressure sensitive adhesive gets blamed for many graphic failures, but the root cause is ink oversaturation which leads directly to poor ink drying. This is caused by choosing the wrong ICC profile for the media. When digitally printed graphics are overlaid with a protective film, the overlay adhesive is in direct contact with the printed ink. If the ink is oversaturated and/or not dried correctly, the retained ink solvents have the same effect on the overlay adhesive as they did on the vinyl adhesive. The effect is that the adhesive, is softened and loses bond to the ink. In extreme cases, ink retained solvents can form gas bubbles in the laminates pressure sensitive adhesive, especially when exposed to sunlight. In milder cases there may be a slight fogging of the pressure sensitive adhesive resulting in distortion of the graphic image. In both cases the ultimate result may be loss of adhesive bond and delamination of the overlay film from the graphic. The root cause is the same. The failure points directly to an incompatible ICC profile for the media being printed, not the laminate adhesive although it is where the issues are seen.

Along with your choice of GF Digital Media, the correct ICC profile is critical for a successful digital output. ICC profiles are very specific to media, printer, ink and the other variables mentioned above. Any change in one of these variables will require a different ICC profile to successfully complete your job. General Formulations offers ICC profiles for the various series of GF digital media. Some are available on the General Formulations website, generalformulations.com. For further assistance or questions concerning ICC profiles contact General Formulations Technical Service at 800-253-3664. Have your printer model number and series of GF media available.