Max-Imize Your Color - Sep 08 - ICC Profile Swatch Options

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Solution Details

When generating an ICC swatch you print a swatch of color patches, measure the swatch, set up build options, and then the profile build engine thinks for awhile (sometimes for a long while) before saving the profile. In the process of building a profile one often focuses on the profile build options and how to set them to get desired results. Certainly the profile build options affect what is happening while the number crunching is going on, but one of the biggest decisions related to how well a profile performs can be related to the choice you make when the ICC swatch is printed.

A significant portion of building a good profile involves having a good idea of how each and every possible ink combination relates its measured color. Establishing this relationship is known as defining a device characterization (since we are trying to determine the device's character or behavior for each ink combination). Having a good device characterization is essential to getting a good profile.

A large part of defining a device characterization comes from the measurement of the patches on the swatch and the knowledge of how much ink goes into each patch. In most cases, every possible combination of ink is not printed in the swatch. Therefore, the expected measurement of colors that are not printed needs to be guessed at. Having more patches in a swatch can result in better device characterization since the gaps are smaller and there is less to guess about.

(Note: In some instances, things like ink limiting and ink restrictions can make the guessing a lot more difficult).

For CMYK profiling, the Profiling Lab at ONYX generally uses an Ultra Accuracy swatch for generating ICC profiles since this provides the highest degree of sampling to provide the best device characterization while building the profile. Using a swatch with fewer patches can result in a larger possibility of having a less than perfect device characterization. In many cases there is a correlation between the time to print and measure the swatch and the accuracy in building a profile. Larger swatches can take more time, but they can also improve accuracy.

For printers that have more than CMYK inks (like CMYKOG or CMYKRGB ink combinations found in more recent printers), there are two general categories of swatches that can be selected when printing the ICC swatch. Both options have pro's and con's with no one best choice for all situations.

1. Use a CMYK based swatch.

If a CMYK image is printed to one of these printers without using ICC profiles, the CMYK ink

combinations are re-separated using hard coded ink separation to make better use of the extra available ink channels. Because of this, it is possible to generate a CMYK profile for one of these printers, and then allow the hard coded ink re-separation to make use of the extra inks.

Unless a swatch name identifies ink channels in its name, the swatch can be considered to be a CMYK swatch. The CMYK swatch choices are all selectable when profiling a CMYKOG or CMYKRGB printer.

Note: When using a CMYK profile with hard coded ink separation, the ink separation is not always optimal. Additionally, the device characterization information (used to display the soft proof of the image) does not actually represent the device since information about only four pseudo channels is maintained.

Building a CMYK profile takes less time. Additionally, due to the nature of CMYK characterization the profiles can be less affected by Ink Limiting and Ink Restrictions than CMYKOG and CMYKRGB profiles.

 The default swatch when profiling one of these printers is actually a CMYK based swatch.

2. Use a Swatch designed for the inks used by the printer.

For a CMYKOG printer there will be a CMYKOG swatch, and for a CMYKRGB printer there will be a CMYKRGB swatch. In this case, different combinations of all the color channels available to the print mode are utilized by the swatch.

CMYKOG and CMYKRGB swatches are organized differently than CMYK swatches in that they sample the possible ink percentages much more selectively. This is because with more channels comes a LOT more possible combinations. All possible combinations are covered, but the more likely combinations have more patches and the less likely combinations have fewer patches. This can result in more accurate results for some combinations and less accurate results for others.

With a CMYKOG or CMYKRGB swatch it is possible to dynamically determine the ink separation in an attempt to define a more optimal ink separation. This option in the build settings is only selectable when a CMYKOG or CMYKRGB swatch is used to build the profile.

Because more channels are being processed building a CMYKOG or CMYKRGB profile can take significantly longer to build.