Advanced Ink Restrictions

The Ink Restrictions step is the process of determining a maximum per channel ink setting for the material being profiled. Ink Restrictions has built in Gamut Size presets that control the maximum ink value. They provide ease of use, but in some cases the maximum value is still too high. The profiled material may be able to hold a lot of ink for a given channel, but more color is not acheived. In these cases ink is used without any benefit to the profile's gamut.

This white paper explains how to use an advanced method to get better values in Ink Restriction.

After Ink Restrictions readings have been scanned, the Gamut Size is applied. The maximum values are listed under the black diamond section.

Figure 1: View Readings

The readings will first be plotted. The plotted readings will show hooks in the chroma for some channels and clustered readings for others. These hooks and clusters indicate where more ink is added to the material, but will not generate more color for the final gamut. The goal is to identify the ink volume where the hooks and clusters begin.

1. At step 2, click the triangle next to the *Read Swatch* button
2. Click on *View Readings*

A window with the list of readings. The readings must be selected to be plotted.

3. Click on the top reading
4. Scroll to the bottom of the list
5. Hold the Shift key and click on the last reading. All readings are now selected
6. Enable the *Plot Readings* box located in the lower right

Figure 2: Plot window

The Plot window opens showing the readings. There are different ways to view the readings. The default values for the X and Y axis are Chroma for X-Axis, and Lightness for Y-Axis. Leave these values as default. If the Plot window is not configured this way, change it.

The Plot window identifies where the chroma values peak. Some substrates can handle more ink for a given channel, but this does not mean more color. The readings indicate the color values have peaked
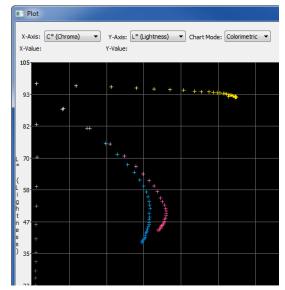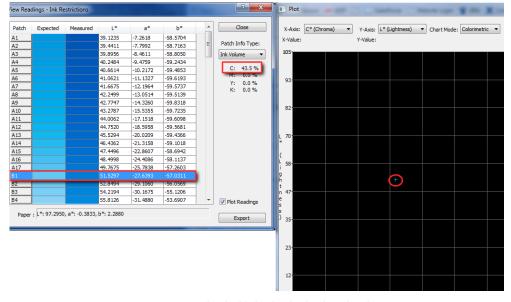

Figure 3: Cyan reading highlighted with Ink Volume listed

by the hook shape. As the readings start to move back on the x axis potential color is reduced. The goal is to identify what ink volume results in the highest chroma.

The readings for black and yellow will not show a hook. They appear to follow linear paths. The correct value can be determined at the point where the readings begin to cluster together. Choose the value at the start of the clustered readings.

The next step is identifying what patch provides the highest chroma.

Identify the ink volume by doing the following:

1. In the Plot window count the number of points starting from the lightest patch to where the hook starts or the clustering begins
2. Repeat this for each channel
3. In the View Readings window start from the lightest patch and count the same number determined from the Plot window
4. Click that patch only to highlight it. Sometimes the patch needs to be clicked on twice to clear the highlight for the other patches
5. Change *Patch Info*, on the right of the View Readings window to Ink Volume
6. Write down the Ink Volume value for that patch
7. Repeat the same process for each channel
8. Close the View Readings and Plot windows when finished

Figure 4: New Ink Volume values highlighted

Next step is to change Ink Restrictions with the determined Ink Volume values. This is done in the bottom section of the Ink Restriction step.

1. Expand the black diamond section
2. Adjust the *Max* value until the Ink Volume below is as close to the determined Ink Volume value as possible
3. Click on the next channel tab and repeat the previous steps

It is recommended after the changes to print a test image to verify the changes. After completing this step continue the rest of the profiling process.
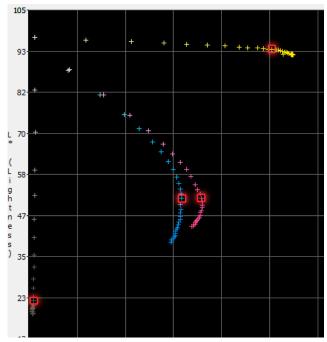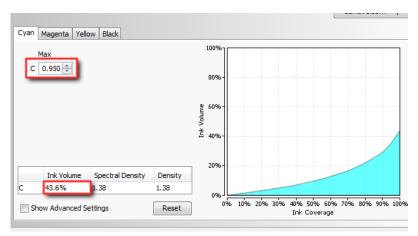

Figure 5: Modify Ink Volume