

Fine Tuning the Dmax with a PS Curves, including in a Create ICC-RGB Workflow

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6-6-06

The ink load is one of the basic settings that must be made in any workflow to get a good print. Too little ink on the paper leads to a weak black (low dmax), and too much ink also reduces the dmax and can cause blotchiness of various kinds.

When printing with the Epson driver selecting the media type or paper type setting in the driver sets the basic ink limit. The “Epson Enhanced Matte” (“EEM”) setting often has one of the highest ink loads and gives a good dmax on most of the best papers, but it can overload some matte papers and many glossy ones.

One of the first things I do in profiling a new paper is determine what paper type gives the best dmax. I do this simply by printing small ½ inch squares of 100% black on the paper. A spectro or scanner in addition to visual inspection can determine what paper setting is best.

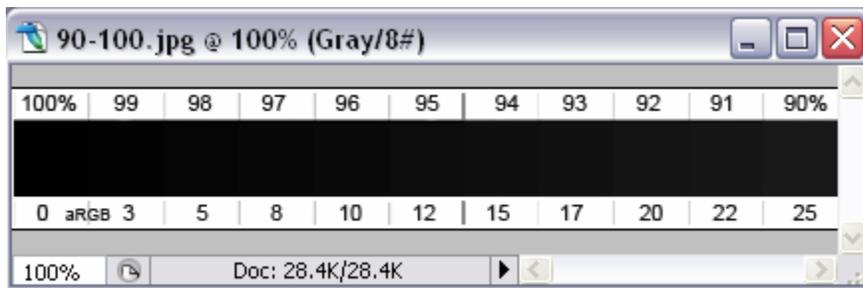
Sometimes no media type setting is perfect. This is where the approach I’m suggesting here comes into play.

As long as the midtones are not blotchy, select the media type that gives just a bit more ink than is optimum. For example, if the midtones look good with EEM, select it.

After I find the best paper type setting, I make or select the curves I want to use with the paper. If there are some for another similar paper type I often start with those. For now, assume the curves have been made.

Now, to fine-tune the curves and optimize the dmax, try this:

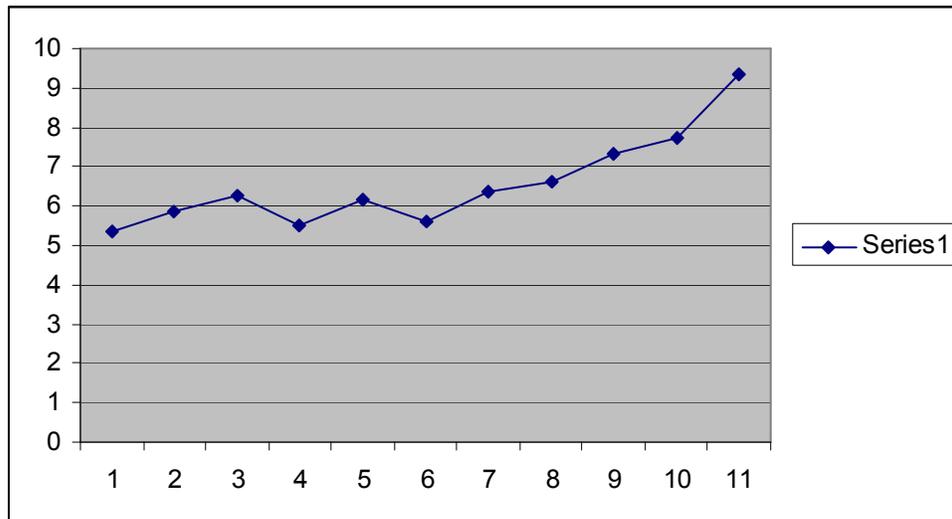
1. Print the following step wedge with the curves:



This file is found at <http://home1.gte.net/res09aij/90-100.jpg> . The grayscale percentages are noted on the top, and the 0 – 255 Adobe RGB values on the bottom of the test strip.

2. Use a spectro or scanner to read the relative densities or Lightness values of the patches.

For a recent Crane Silver Rag profile – Photoshop curve – I was making, using the EEM paper type in a 2200, the graph below shows the Lab L* values for a print of the above test file:

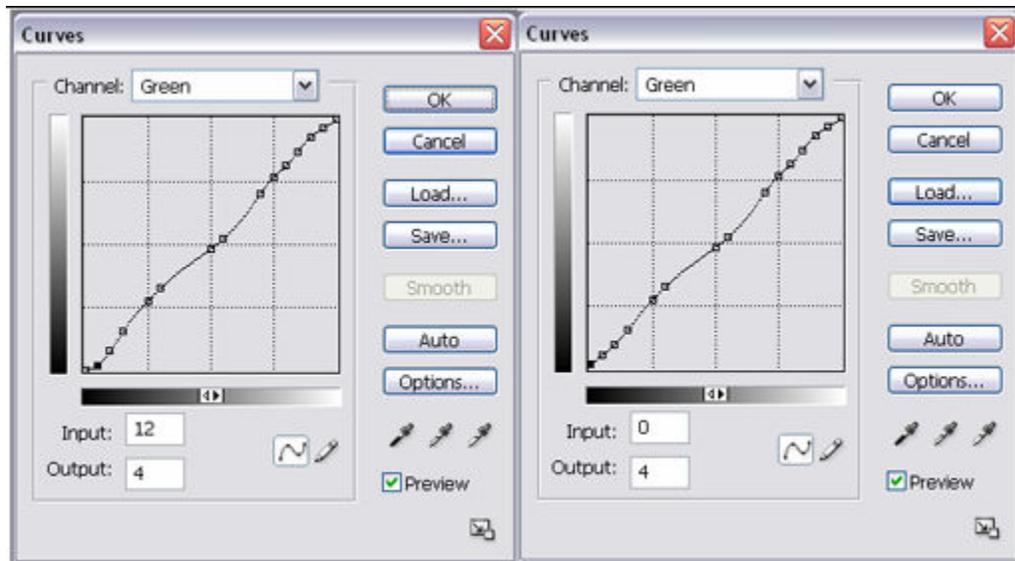


Here the Lab L* values are on the left, vertical axis. The 100% patch is at the left, the 90% patch at the right of the horizontal axis.

What I had noticed in printing with the early versions of the curve is apparently random fluctuations in the dmax, occasional posterization, with the 95% being darker than the 100%, and harsh transitions when ICCs were made with the curve in question. Other Epson paper type settings, however, led to weak blacks.

3. Select the point that gives the best combination of dmax and consistent, lower densities (higher Lab L* values) as one moves away from the dmax. Here number 6 or 95% provided that point.

4. Change the curves so that the black end point is the point determined above. See the example, below.



Original curve

Modified curve

Here the green curve initially ended at (0, 0), which is the normal case. This curve is shown on the left. The 95% value (12 in the 0 – 255 RGB scale) had an output of 4. So, I changed the curve such that a 0 input (100% black) had an output of 4. This is shown on the right. I did this for all 3 of the curves – Red, Green and Blue. For some of the curves there was no convenient point on the curve at the 95% or RGB 12 input. So, I just used the mouse pointer to find what the output was when the input was 12.

5. I saved the modified curve, made a print with it to check it, and then created my ICC with this modified curve. It appeared to work well in the ICC and solved the problems I'd noted with the curves previously.