

## **Eboni & Arches**

### **“Carbon on Cotton”**

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(This is a work in progress.)

The vast majority of inkjet printing – for me as well as most – has been and, no doubt, will continue to be with coated papers. There are many excellent ones.

That said, Arches uncoated watercolor paper has been a paper that I’ve always tested with different printing approaches because it can produce a very nice image without the need for the inkjet coating. Now, combining Arches and a 100% carbon printing approach would seem to give us a medium that has some interesting potentials. No color inks and no coating may be as close to my “carbon on cotton” paradigm as I’ll ever need to get. (And it can be cheap.) While I’m now using the relatively neutral MIS Eboni MK and its dilutions, Jon Cone’s carbon sepia on Arches should have the same potential.

### **Arches Hot Press Watercolor Paper**

This un-coated, natural paper has been refined over a period of about 500 years and has been among the most trusted papers used by artists during that span. Its history and reputation provides some confidence in its longevity that I don’t believe any accelerated testing can duplicate. Conceptually, the lack of a coating should make it inherently less likely to experience the cracking that coated photo materials have had trouble with.<sup>1</sup>

Of course, there are reasons inkjet papers have been coated; a better dmax, more saturated colors, and greater smoothness are among them. Today, the smoothness of coated papers can be matched with a rip like QTR, and the dmax of Arches with Eboni can be better than some coated matte papers, though mid-to-high 1.50’s is what I usually measure. Arches has the best dmax of any watercolor paper I’ve printed. Arches “Hot Press” is a smooth paper, while the “Cold Press” has a pronounced texture. Arches HP comes in both a “bright white” (still no optical brightening agents – Lab B = 1.9 to 2.5) and natural (Lab B = 3.2 to 3.4).<sup>2</sup>

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<sup>1</sup> Some think of the carbon-cotton print as being similar to the platinum-palladium print. On the other hand, carbon-cotton may be even more archival due to the metal’s catalytic actions and chemical residues that may be causing damage to the paper substrates of the pt-pd prints, in addition to those prints being coated.

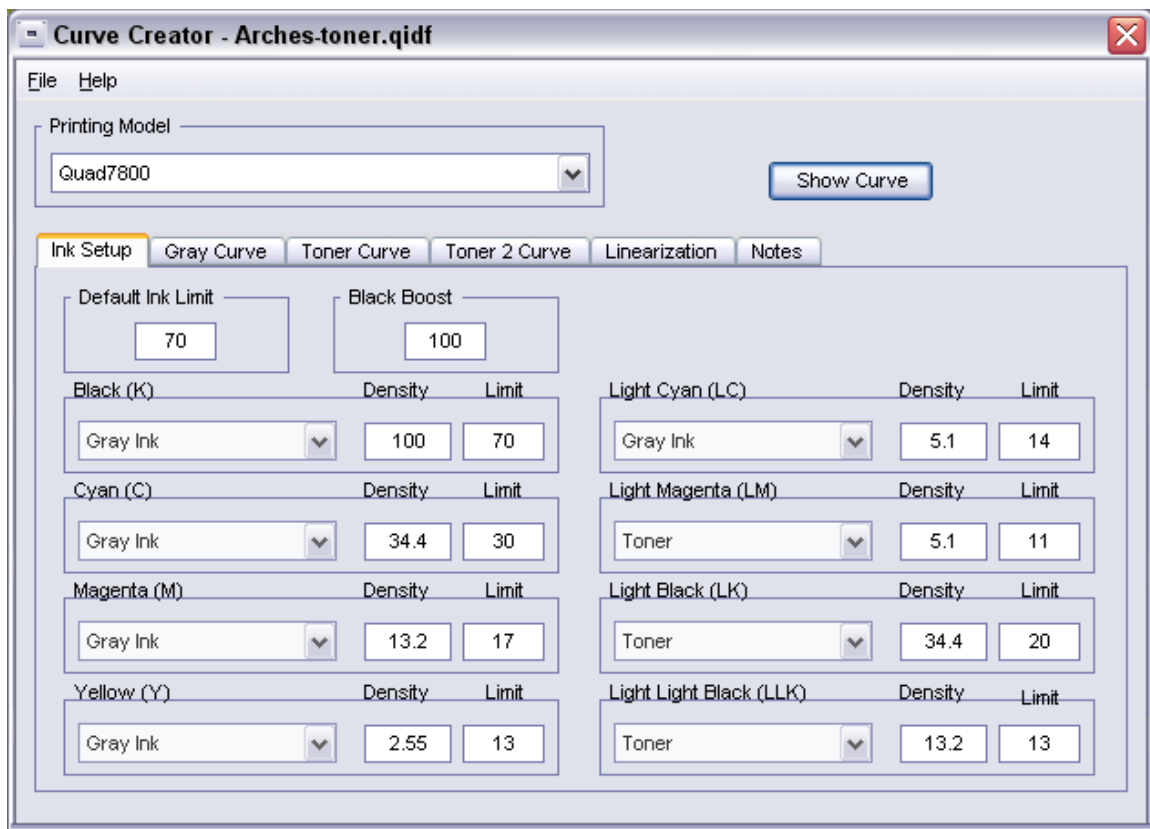
<sup>2</sup> The papers seem to vary between batches and, to a lesser degree, even within a single sheet. Additionally, comparison of spectrophotometers at the price points we photographers generally use suggests that plus or minus one Lab unit is a normal variance among these instruments.

The Arches paper sheets are 22 5/8 x 30 1/8” (22.625 x 30.125). Dick Blick is a very good source for this paper.<sup>3</sup>

## QTR 7800 Profile Setup For Arches

I use a very low midtone ink limit and high black ink limit. This is needed for good printing, and it requires a rip like QTR. The Epson driver will not work well for Arches.

### QTR Setup, Arches, 7800, Eboni-6

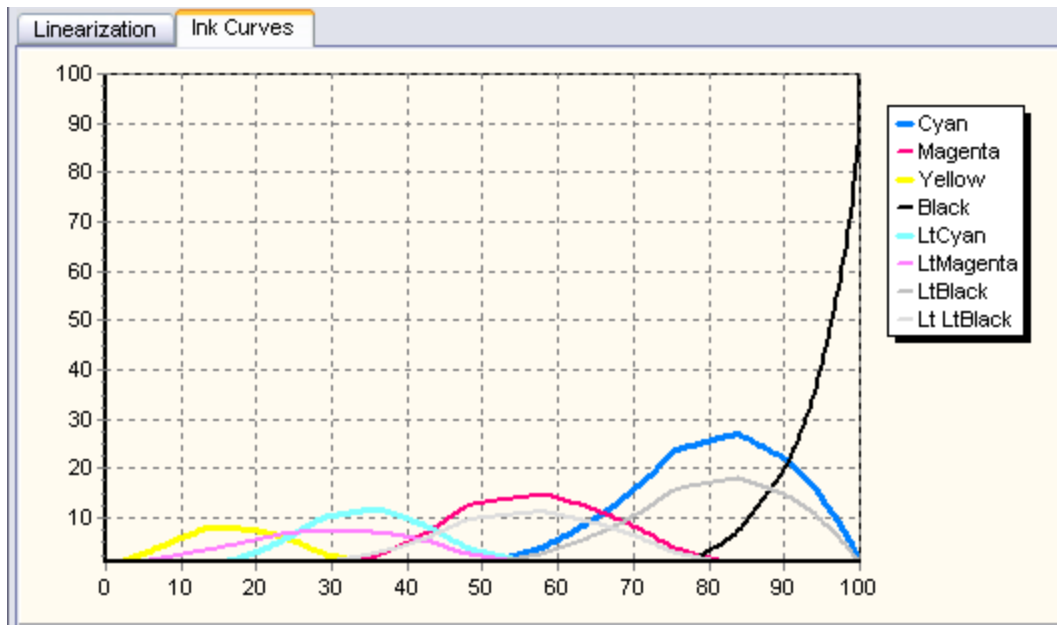


Note that the above profile has the duplicated densities set up in the “toner” channel. This mixes up the cross-overs and results has more jets firing at a time.<sup>4</sup>

<sup>3</sup> See <http://www.dickblick.com/categories/watercolorpapers/#artistwatercolorpapers> Some suppliers have sheets with glued-on labels – to be avoided. The sheets’ actual sizes are 22 5/8 by 30 1/8 inches. The paper has deckle edges that can be used to good effect for artistic purposes, or just cut off. To avoid head strikes, be sure the deckle edges are flattened before printing.

<sup>4</sup> See <http://www.paulroark.com/BW-Info/7800-Carbon-6.pdf> for more on my 7800 “C6-Dual” setup. That too is a work in progress.

The graph below shows the results in terms of ink usage.



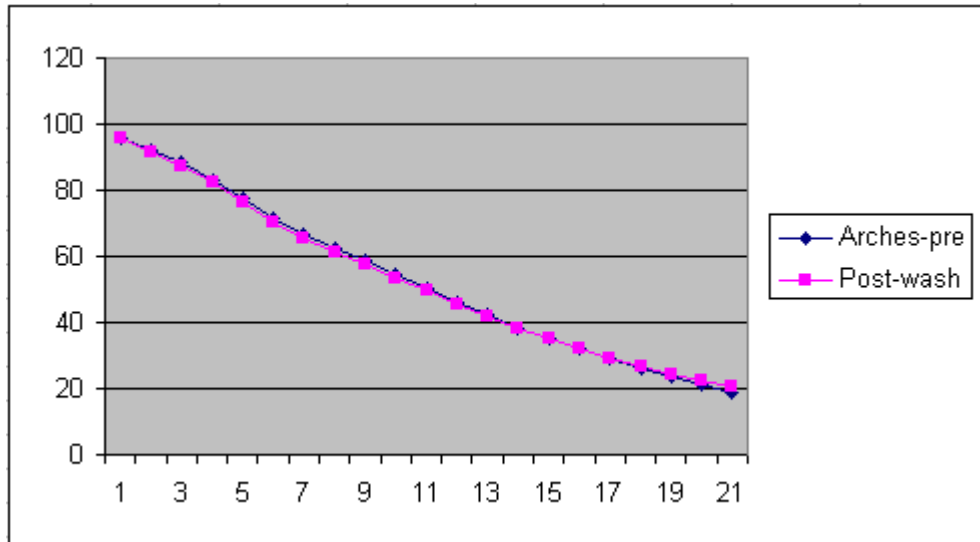
The 3.5 pl 7800 has no trouble with the 6% in the highlights as well as the 2% Eboni.

### Washing Arches

Because Arches is a watercolor paper with no inkjet receptor coating, it can be quickly rinsed or washed with little impact on the image.<sup>5</sup>

<sup>5</sup> Early adopters of washing the cotton substrates include Joshua Partridge (an heir of Imogen Cunningham and the printer for the Cunningham trust) and Italian photographer Mantinieri – [www.mantinieri.com](http://www.mantinieri.com). Mantinieri has summarized his washing technique at <http://tech.groups.yahoo.com/group/DigitalBlackandWhiteThePrint/message/98541>.

Below is a graph that compares the Lab L of an Arches 21-step test strip before and after rinsing.<sup>6</sup>



21-Step test strip, Lab L, 1400, Eboni-6, Arches (pre-linearization)

In general, the loss of  $d_{max}$  is the main concern. In a recent test rinse of a print made with the 2200 and Eboni, the maximum black dropped from Lab L= 18.5 to 20. This is not enough of a change for people to notice unless examined very critically side by side.<sup>7</sup>

The lack of significant change means that prints profiled to be shown with no rinsing can be carefully washed later if needed. At this point it's unclear what the net effect of

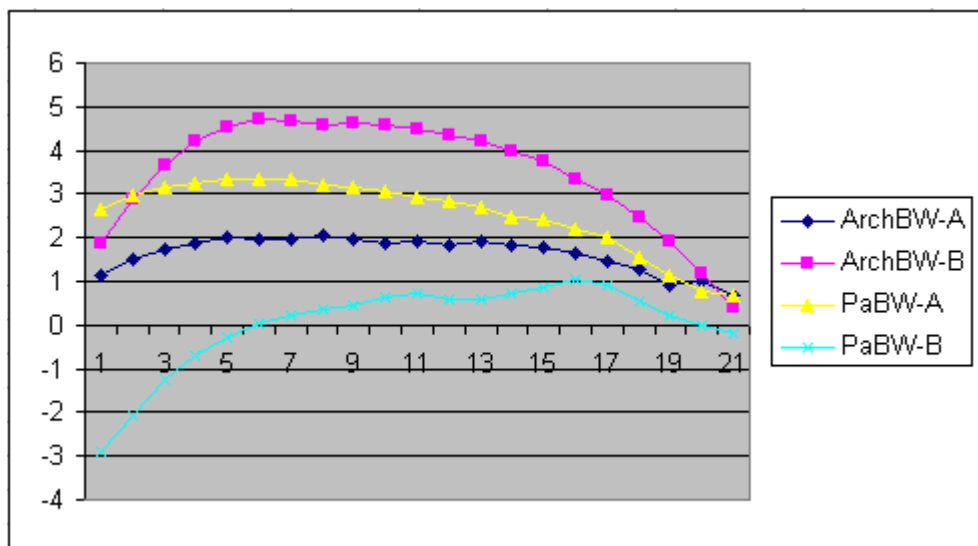
<sup>6</sup> Tap water at just under 100 degrees F., shower-head attachment to faucet, 10 second rinse.

<sup>7</sup> It appears that how long between printing and washing is one variable in how much carbon is lost from the 100% black patch. It takes more than one day for the inks to totally "cure." The main rinsing procedure used by Josh Partridge and myself has been to use a shower-head type attachment to a tap water outlet. I temperature control the water to just under 100 F. I've been using ten seconds of this active rinsing. Prints with solid or near solid, plain black skies – always the hardest to get perfect – have shown some water marks if not pre-rinsed by pulling them through a tray of distilled water before and after the surface rinse. The prints that have been pulled through the distilled water to wet both sides exhibit less curl. Thirty seconds in a dry mount press set to 180 F. flattens the prints. This is necessary for Arches that is wetted on both sides. I hang the prints to dry. Several clothes pins at the top and a 2" x 1/8" x (print width) aluminum bar attached to the bottom of the print with clothes pins helps the prints dry flat. Removing excess water to avoid running may be needed. Darkroom type blotter paper may be a good way to absorb extra water and dry the prints. The prints with solid black skies needed more spotting than those that are not washed. As was my practice with silver prints, retouching with a round toothpick and magnifying goggles appears to work very well. But, avoiding the need for this is a goal, and if it cannot be done with the washing, I will not wash these types of prints. Uncoated papers, like the coated matte papers, may benefit from surface brushing and/or air blasting to remove loose particles.

washing is on longevity and other concerns.<sup>8</sup> The main short term benefit of washing may be that it reduces the rub-off or the loose carbon in the very black areas, and this by itself may justify the procedure, as physical damage from touching and abrasion is a serious problem with current coated inkjet prints.

## Paper Tones

The graph below shows Lab A and B for ArchesBW as well as Premier Art's SmoothBW, which is my standard paper for "neutral/cool" printing with carbon. Arches is a bit warmer, but the delta Lab B is low for carbon, giving the image just a slightly warm look.



The Premier Art SmoothBW test strip was printed with the Epson driver using an ICC made with QTR's Create ICC-RGB. The curve I embed in that uses the lighter inks more heavily and gives a slightly more neutral tone than other approaches.

Again, this is a work in progress.

Paul

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<sup>8</sup> Removing the glycerol, glycol, and surfactants is assumed by some to have a beneficial long term effect on the longevity of the print. On the other hand, a few chemists have felt there will probably be no detrimental effect from these chemicals, many of which may either just evaporate or be essentially inert in the paper base. One chemist even opined that the tap water used may introduce more problematic chemicals than are removed. I have found no sophisticated analyses or tests that suggest any long term effects. Some think the washing is a way to distinguish the print from a strictly machine made product.