

Comparison of my 8 week Claria Black Only fade test with Aardenburg Imaging and Archives fade tests

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8/3/2015

In an effort to somewhat “calibrate” my testing to that of Aal&A¹ I fade tested sample printed with the Epson 1400 on Epson Premium Photo Paper Glossy, using QTR and “black only” ink. A similar fade test was done by Aal&A.²

There are variables in my test procedures³ that will never make direct comparison totally accurate. My setup is hotter and brighter than Aal&A’s. The light also probably does not have as smooth a spectrum, and it is not glass/UV filtered in addition to whatever the light does. While the heat and probable higher UV content would accelerate fading, the brighter light will tend to dry the samples more. Higher humidity speeds the fading, while lower water content in the sample, as can be caused by a very bright light, tends to slow fading, all else being equal. To offset this factor, my setup is in a tray of water. However, I’m unable to measure the humidity at the sample.

The bottom line is that there are variables of unknown impact that might make my 8 week, 30 MLux-hours of exposure fade either faster or slower than the samples tested at Aal&A for 30 MLux-hours. Testing an ink-paper combination that is the same as one that Aal&A tested seemed like a logical way to empirically see how these variables affect the outcome.

I chose Claria Black Only on Epson Premium Photo Paper Glossy as a convenient comparison medium, in part, because it fades much faster than my usual carbon pigments. Additionally, I use the Epson dyes and have an interest in exploring that medium.

Of course, in addition to the variables in the test conditions, there is also a possibility that different inks and papers will react differently to those variables. On the other hand, all accelerated fade testing is an approximation of what will happen in real world display. As such, I offer this comparison and my testing approach and results as a source of information that is far from perfect but better than nothing, which is our usual alternative.

In this comparison I look at the Lab L, A and B actual fade of the samples to try and see how 8 weeks in my fader compares to the similar ink/paper sample in Aal&A’s setup.

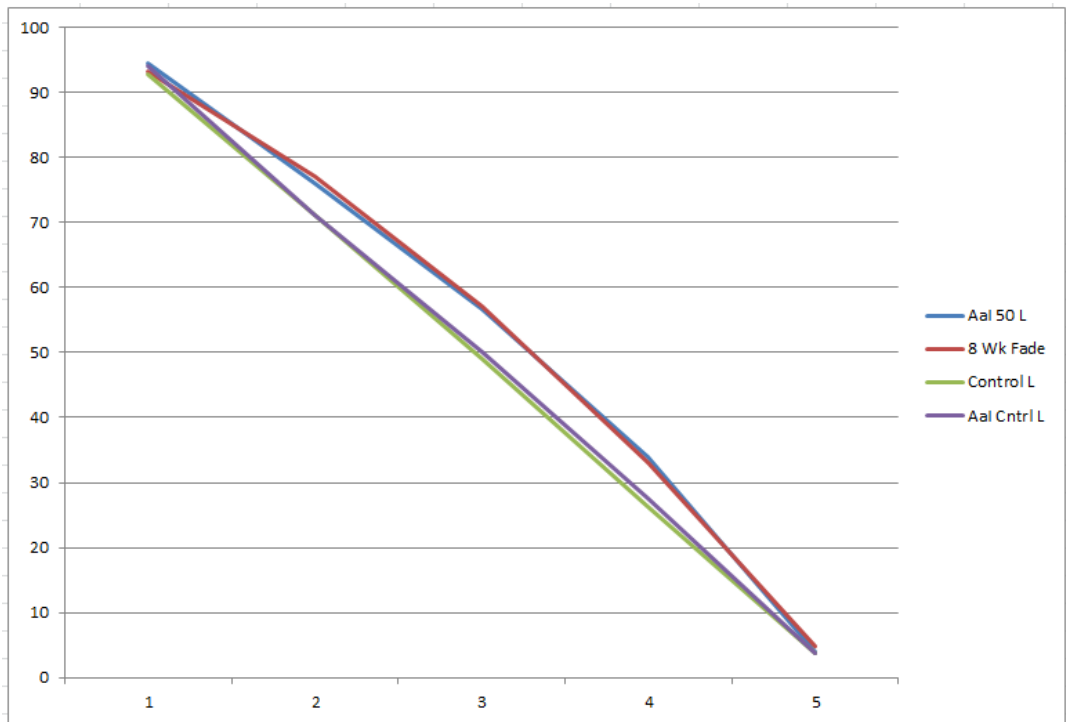
For those not interested in the details, my conclusion is that 8 weeks in my fader is about equivalent to slightly more than 50 MLux-hours in the Aal&A tests, though OBAs will burn out faster in my tests.

¹ See <http://www.aardenburg-imaging.com/>

² See Sample # Aal_20100308_SN001 at Aal&A

³ My fader setup is shown at <http://www.paulroark.com/BW-Info/Fader-Setup.pdf>.

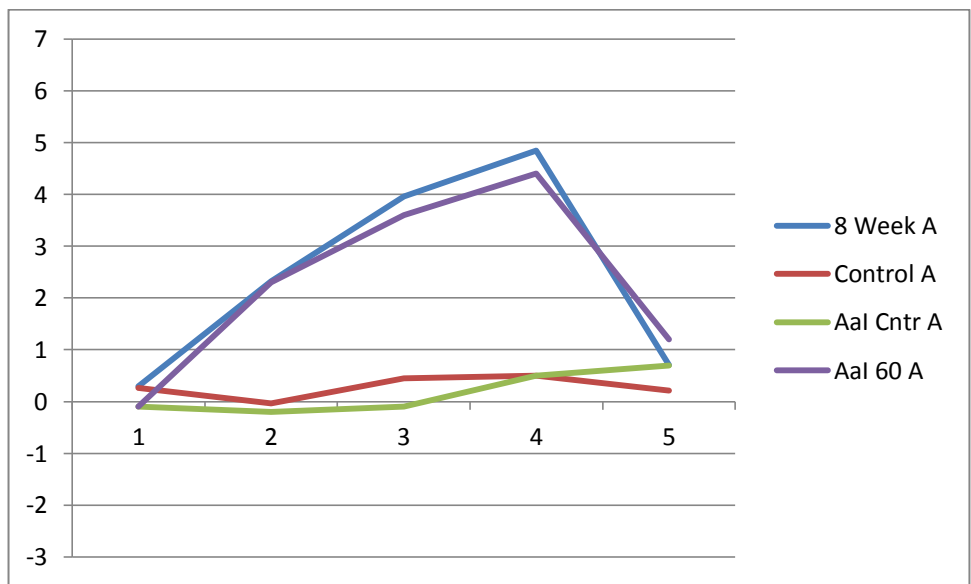
Lab L – P Roark 8 Week Claria BO Fade v. Aal&A 50 MLux-Hr Fade



Aal&A test patches A1, A4, C4, E4, and F5 are very close to my 5 test patches. As such, these are the ones that are used on all of the comparisons.

Looking at the Lab L results, the Aal&A 50 MLux-hour results are very close to what my setup produced in 8 weeks.

Lab A, P Roark 8 Week v. Aal&A 60 MLux-Hr

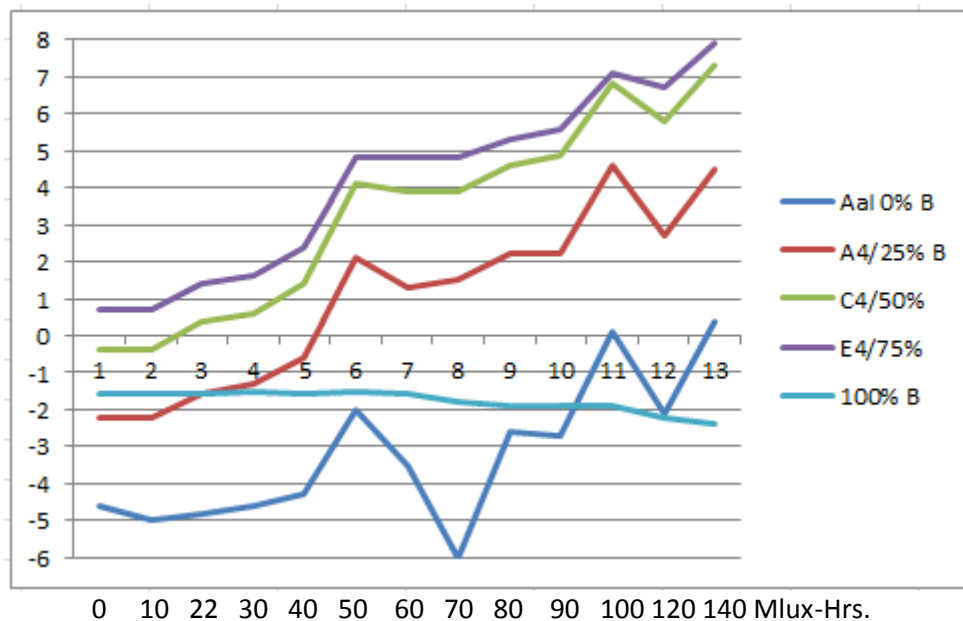


Looking at the Lab A results, the Aal&A 60 Mlux-hr results look very similar to my 8 week test period results.

Lab B Comparison

The Aal&A Lab B results are a bit trickier to figure out and draw a comparison to. Below I graph the results of the Aal&A 140 Mlux-hr test from the control, 0 hour, start point at the left to the 140 Mlux-hr end point of the test.⁴ Each line on the graph is a different test patch. The three relatively congruent ones at the top of the graph are the gray tones. The paper white and 100% black patches take rather different paths.

Aal&A Lab B values for the relevant test patches,
From the start point (0 hours) to 140 Mlux-hours of exposure



Looking at the paper white first, my 8 week test produced a Lab B increase of 2.8 units. Aal&A, on the other hand, shows a Lab B that appears erratic. At 50 Mlux-hours the change in Lab B is very close to what I had. However, then the Lab B value drops to colder than the starting point. The erratic behavior of the paper white measure seems to be consistent with but an exaggeration of what is seen in the gray patch Lab B measures. We know the OBAs are dyes that “fade” (or are burned out) by light exposure, particularly UV. As this happens the Lab B values of brightened paper increase. As such, one would expect to see a relatively smoothly increasing Lab B result here. If we smooth the Aal&A graph for the paper white (0% black ink), it looks like it would equal my results at about 90 Mlux hours. This result is consistent with what I expected; that is, my un-filtered light has more UV in it than the Aai&A test setup. How this increased UV content might affect the relative performance of other ink samples is unknown.

At the 100% black point, Lab B drops slightly in both my 8 week test and the Aal&A test. In my test the Lab B of the 100% K test patch dropped about 0.2 units. In the Aal&A test, this amount of Lab B

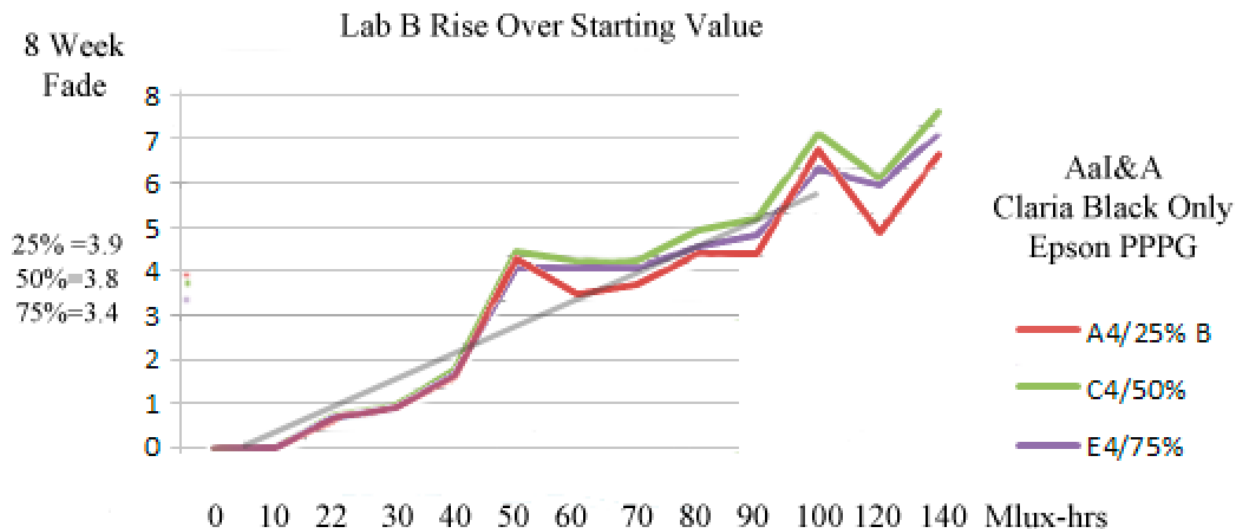
⁴ Note that after 100 there are two 20 Mlux-hr steps that are compressed here.

decrease occurred at 70 Mlux-hrs. The somewhat faster drop in my test may have resulted from the increased heat on the black patch.

I, basically, do not recommend paying much attention to the white and black point results discussed above. The inks in the gray areas are where the main impact of fading is seen.

If we take the 3 midtone patches that I'm using for this comparison and adjust their curves so that they start at the same point, they are all relatively similar. See the graph below for the Aal&A test patches that match ones in my 8 week test. The gray line is one I have added as a somewhat average, smoothed trend line – nothing scientific, just a visual approximation.

The changes in my 8 week test patch Lab B values are noted to the left, with small dots on the graph at those points. Although the spike at 50 Mlux-hours might suggest that the equivalent fade point is slightly below 50 Mlux-hours, the trend line and the Aal&A values for 60 Mlux-hours suggest that 60 might be the better comparison.



In sum, looking at the Lab L, A and B changes in my 8 week fade test of Claria BO, it looks like the equivalent amounts of change were reached in the Aal&A test at 50, 60, and 60 Mlux-hours, respectively. This is an approximation, but it seems like something slightly above 50 Aal&A Mlux-hours as the rough equivalent to my 8 week test might be a reasonable comparison point.⁵

⁵ An Excel file with the raw data in it is posted at <http://www.paulroark.com/BW-Info/Fade-ClariaBO-8Wk-6DayRest-8-2015.xlsx>