

Epson WorkForce 1100 and MIS “Ebony-4”

www.PaulRoark.com

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This WF1100 - Ebony-4 combination brings the most lightfast pigments to Epson’s least expensive printer that can handle 13” wide paper. Note, however, that QuadToneRip does not support the WF 1100. Those wanting to make their own profiles or use QTR for printing on papers like Arches watercolor paper should use the Epson 1400 with Ebony-6.¹

Black and white prints made with 100% carbon pigments are the most lightfast possible with today’s technology. MIS “Ebony” carbon has the advantage over other carbon pigments of being able to make prints that are relatively neutral in tone. See the table, below, summarizing comparable Aardenburg-Imaging fade test data.² “Delta-e” measures the degree to which density and color have changed from the beginning of the fade test.³ Lower is better.

Delta-e at 60 Mlux-hrs Light Exposure

	Average	50% test patch
Ebony (1800), PA 205 paper, Print Shield spray	0.2	0.2
Ebony (1800), H. Photo Rag (HPR)	0.3	0.2
Cone Carbon Sepia, Museum K, HPR	0.4	0.2
Epson ABW, HPR	1.0	1.6
HP Vivera, HPR, neutral only	1.1	1.4
Cone Neutral K6, HPR	2.2	2.9

The print tone is very dependent on the paper used. The range of print tones is from near-neutral to medium warm. If cool-tone and/or glossy paper are your preferences, do not use this inkset. See <http://www.paulroark.com/BW-Info/1100.pdf> for the “EZ” approach to cool tones and glossy paper. If making the very best, fine-art quality prints for the least money is your goal, then this Ebony-4 approach is the most appropriate.

Note that Ebony is for matte paper only.

¹ See <http://www.paulroark.com/BW-Info/Ebony-6.pdf> ; See <http://www.quadtonerip.com/html/QTRoverview.html> for QTR.

² See <http://www.aardenburg-imaging.com/> for full reports. See also <http://www.paulroark.com/BW-Info/R1800-Lightfastness.pdf> for general information relating to carbon pigment lightfastness.

³ See http://www.colorwiki.com/wiki/Delta_E:_The_Color_Difference

Ink Positions

The 1100 Eboni-4 approach uses MIS Eboni-6⁴ in a traditional “quadtone” B&W setup. This uses only Eboni-6 Y, LM, M and K in the Y, M, C, and K positions, respectively.⁵ These inks are available from MIS Associates at http://www.inksupply.com/epson_workforce_1100_eb4.cfm.

1100-Eb4K = Eboni MK

1100-Eb4-Y = Eboni-6 Y (2% Eboni MK)

1100-Eb4-M = Eboni-6-LM (6% Eboni MK)

1100-Eb4-C = Eboni-6-M (18% Eboni MK)

Printing Profiles

To take full advantage of the lighter inks and obtain the most neutral 100% carbon pigment prints, the inks must be printed with “profiles” that use the lightest ink first. A number ICC profiles, as well as profiles for other WF 1100 inkset arrangements, are in the WF1100 profiles Zip file at <http://www.paulroark.com/BW-Info/MIS-WF1100-Profiles.zip>.

Note that the Epson WF1100 and Photoshop CS5 may have a “bug” that can cause the incorrect profile to be loaded the first time any particular profile is set in the Photoshop print dialog box. When the Profile is changed from what is initially shown to a new, one, such as an ICC for the 1100, the old setting will still be used on the first print. I print a plain paper, fast version of my image after I change the PS Profile. Wasting a sheet of plain paper saves wasting a good piece of paper. Once an image is printed with an ICC, that image file should remember what profile to use if the image is saved after being printed with the settings. This should avoid the problem when the image is printed subsequently with the same printer and ICC.

The profiles are first made with Photoshop image adjustment curves, which are then embedded into ICCs made with QuadToneRip’s “Create ICC-RGB” program.⁶

Print Tones

The print tones for some of my favorite papers that print relatively neutral for carbon are shown below. In the graph, which shows the Lab B values for 21-step test strips, positive numbers on the vertical axis indicate a warmer tone, and negative numbers cooler.

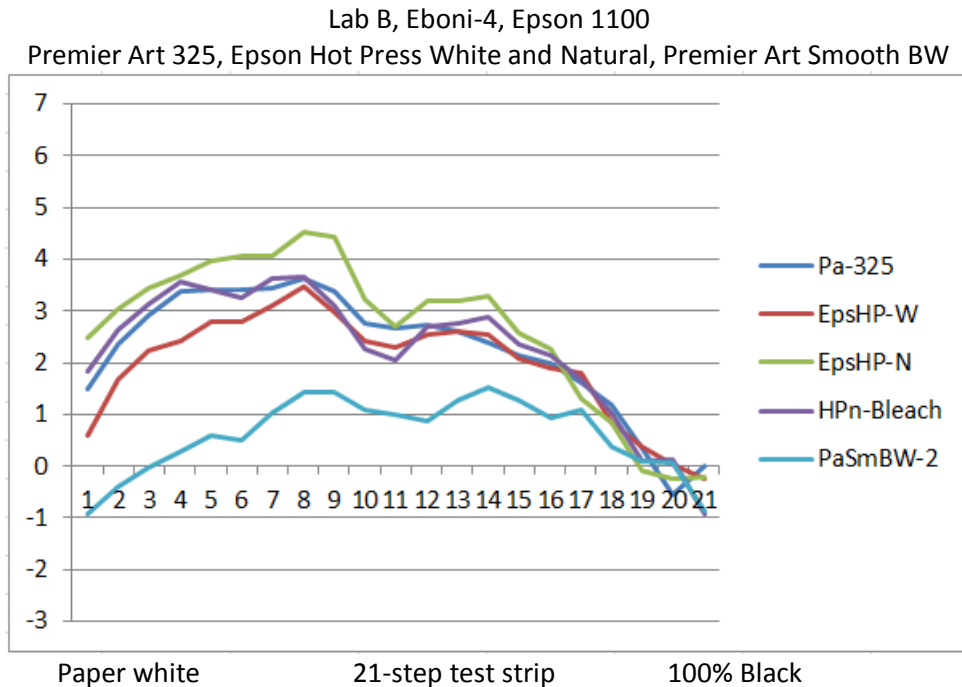
Premier Art Smooth BW (Bright White) is the paper that I’ve found gives the most neutral tone. It has some warmth in the midtones, but in reading these graphs, keep in mind that a one-unit Lab B change is

⁴ See <http://www.paulroark.com/BW-Info/Eboni-6.pdf> for more information on Eboni-6.

⁵ Note that the 1100 “Eboni-4” ink arrangement is different than what is used in the 1400 “Eboni-4 Plus” approach outlined at <http://www.paulroark.com/BW-Info/Eboni-4-Plus.pdf>.

⁶ See <http://www.quadtonerip.com/html/QTRoverview.html>. The QTR download includes Create ICC-RGB, which is located in the Eye-One folder. See http://www.paulroark.com/BW-Info/Embedding_Photoshop_Curves_in_ICCs.pdf for notes on how to embed PS curves in the ICC. Note that the Rip part of QTR does not support the Epson WF 1100. However, the ICC application works for all printers.

considered barely perceptible.⁷ As such, compared to a neutral (Lab B = 0) reference, the Premier Art Smooth BW midtone values are just slightly warm, and the highlights just slightly cool. On the other hand, if enough of the brightened bare paper is showing, the 2 unit increase in warmth will be more apparent. Therefore, I display these prints, and others that use brightened papers, with the images “over-matted” such that no bright border shows.



The Premier Art Smooth Hot Press Fine Art 325 gsm paper⁸ is what I specified for a museum exhibit that used matte paper and Eboni carbon inks. I felt at the time it gave the best combination of tone, smoothness, and expected longevity, among the papers I was aware of at the time. More recently Epson has marketed a “Hot Press” paper in both a “White” (some OBAs) and a “Natural” variation. The Epson HP natural tends to bleach slightly more than most. So, the “Bleach” graph above is after the paper has been in the sun for a couple of days. The version with OBAs will warm up to the bleached level after extended display. My conclusion is that all of the papers above will bleach and/or warm to the same final point, which is probably just below where Pa 325 is. When 100% carbon pigments are used, the primary visible changes to the print will be due to the paper tone changes. The print/paper tone path will be straight to the natural, bleached paper base tone, without going green, since no color pigments are in the mix. All of the print tones along this paper/brightener aging path are good. I recommend and use all of these papers.

⁷ Lab B (yellow-blue axis), where positive numbers are warm and negative numbers cool, is the best single measure of paper and print warmth. The Lab B (red-green axis) is generally set by the paper slightly positive, and it stays roughly the same across the density range for most papers with this inkset. As such, it drops out as a significant variable.

⁸ See http://www.premierimagingproducts.com/pm_smoothhp.php

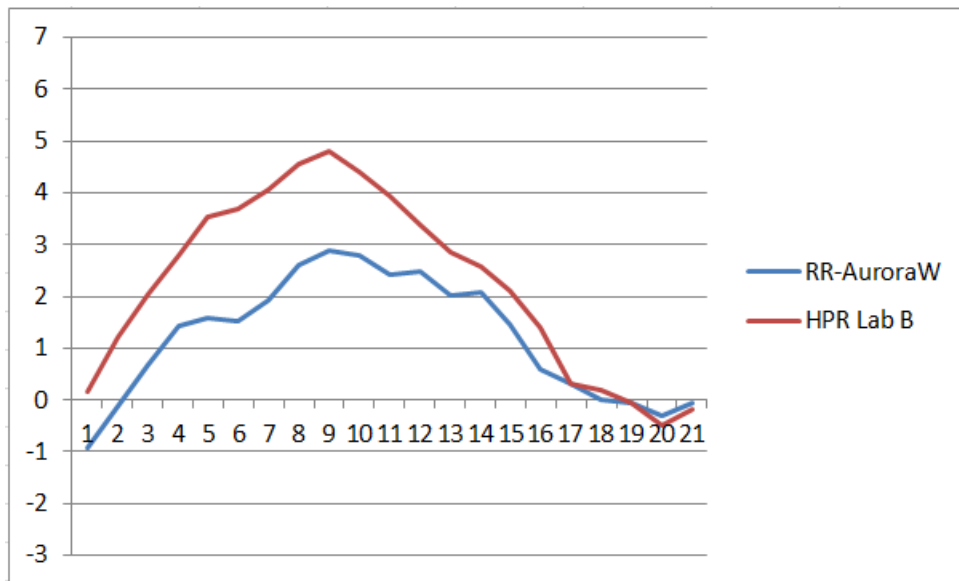
The Hot Press papers from Epson and Premier Art shown in the graph are slightly warm but will look relatively neutral when displayed on the wall if the mat board is a natural (un-brightened) paper. These mats typically have a Lab B value of about 3. The eye tends to do a white balance on the mat board.

With a natural paper mat board a Premier Art Smooth BW print, when the image is over-matted to avoid showing a bright paper boarder, will look slightly cool. The natural paper mat will be warmer than any part of the image and will be used by the eye as a reference white.

Because the eye tends to do a white-balance on any bright relatively white reference, it is important that prints be viewed not only in the type of light used for display, but also not in front of a, typically, very cold computer monitor. On the wall with natural white mat board, all of these papers will look like relatively neutral B&W prints. Under glass or acrylic, so that the matte surface is hidden, most viewers will not be able to distinguish them from traditional silver prints. On the other hand, next to brightened papers, including standard copy paper, or next to a cold monitor, the prints will look slightly warm.

Most papers print with a warmer tone and higher change in the Lab B values between the paper white and middle densities. The range of Lab B variances is between about 2 and 4.6. The higher the change in the Lab B, the warmer the print will look.

The graph below shows the Lab B distributions for Red River Aurora White⁹ and Hahnemuhle Photo Rag. These tones are typical of many papers.



Enjoy.

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⁹ See <http://www.redrivercatalog.com/browse/fine-art-inkjet-papers.html>



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