1400 B&W Inkset
UT-14

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The UT-14 inkset for the Epson 1400 is similar to past MIS B&W UltraTone inksets in its layout, but takes good advantage of the capabilities of this latest 1.5 picoliter droplet hextone printer.

With the Epson driver, UT-14 is both "plug-and-play" easy and a flexible variable tone inkset that can print on matte and glossy papers without the need to change inks.

The inkset can also print neutral 100% carbon pigment prints on matte paper. This uses a Black Only approach with the QTR rip.

The flexibility of this inkset allows it to cover a wide variety of papers and print tones without changing inks. This facilitates CIS/CFS use; of course, cartridges also work well.

Ink Positions

K (black) position = Eboni matte black (MK)

Cyan position = Neutral-cool Photo Black (PKn, a blend of 60% carbon, 40% color pigments)
LC = Neutral-cool Light Black (LKn, 30% UT14-C, 70% clear base)

M = MIS K4-Photo black, (PK, 100% carbon and warm)
LM = MIS K4-LK (100% warm carbon)

Y = Gloss Optimizer ("Glop")

Eboni MK is for matte paper only, the other inks are both matte and glossy paper compatible. The densities of both channels are approximately the same. There is no high gamut toner.

The Gloss Optimizer in the Yellow position is for controlling bronzing and gloss differentials in glossy printing, including for those who want neutral 100% carbon pigment glossy prints. Note that there are relatively few glossy paper artifacts with this inkset. As such, those interested in customizing their inkset will find this spot an appropriate one to utilize.

The UT14 inks are available from MIS at
http://www.inksupply.com/ut14_black_and_white.cfm

Matte Paper

This inkset and printer support a broad range of workflows and print tones.

With the Epson driver at default settings, the inkset prints a very useable
grayscale that looks good even with High Speed checked.

For the best quality, increase the Epson driver settings to their highest quality.
The Epson driver set to "Color Controls" and Gamma 2.2 gives the best ramp for
the most papers. That is the assumed setting for matte paper ICCs and curves
in the 1400-Profiles download at
http://www.paulroark.com/BW-Info/1400-Profiles.zip

The standard **Epson driver settings for matte papers** are shown below.
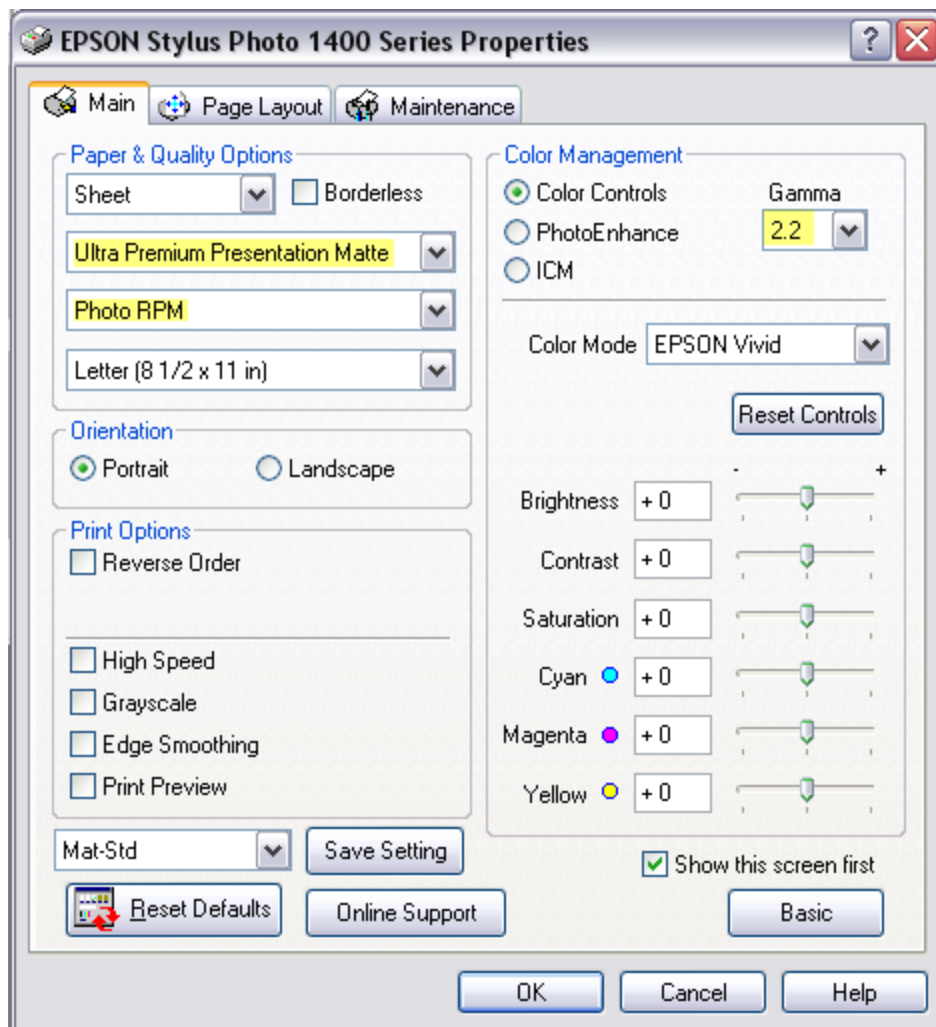
Matte paper print tones vary according to the paper used, and beyond this are variable depending on what curves or ICCs are used. Driver sliders are also available for minor adjustments.

The most objective way to show and compare print tones is via graphs (Excel "charts") of the Lab A (red positive, green negative) and Lab B (yellow positive, blue negative) values. These graphs are made by printing a 21-Step test file and measuring the Lab A and B values for each of the 21 different density steps in the test print. The higher the values are, the warmer the print tones. Lab A is relatively stable for all papers, with a slight positive (warm red/magenta) value normally preferred and thus manufactured into the paper. Lab B is where most of the variability is, with a positive value being yellowish warm and a negative value being bluish cool. A value change of one unit is barely visible even in side-by-side comparisons.

With no tone controls – ICCs or curves – the UT-14 inkset prints a medium warm split tone on some papers, like Hahnemuhle Photo Rag tone graph, below.
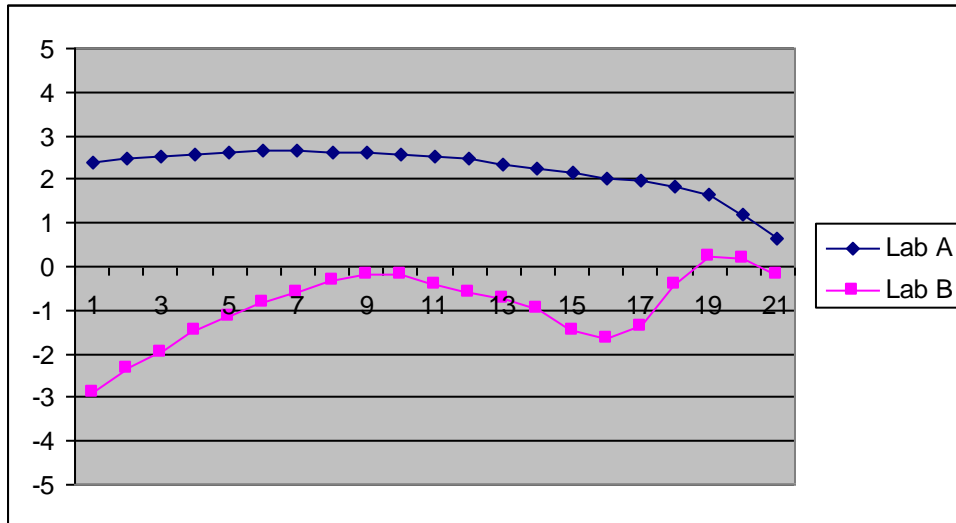
Hahnemuhle Photo Rag tones – Lab A & B – UT14, No profile
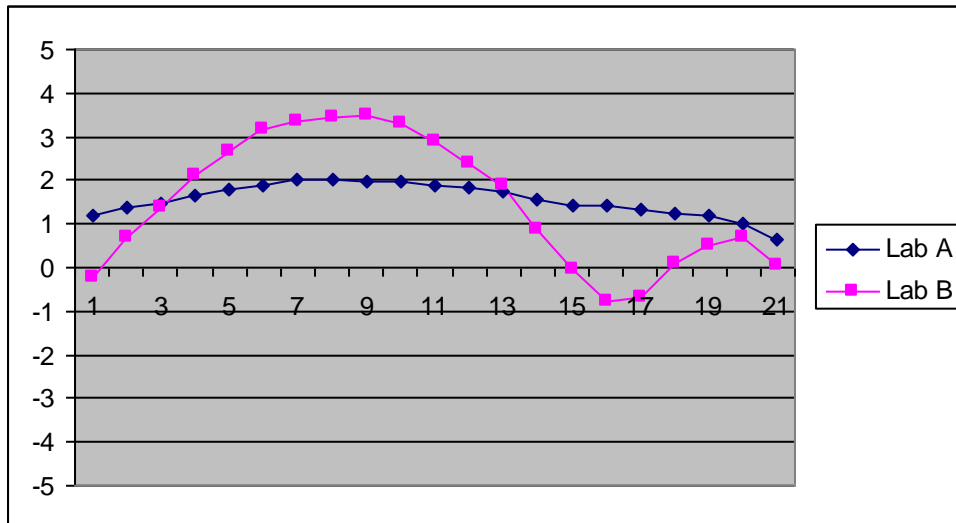
Paper White on left …. 21-Step test print patches …. 100% Black on right

On others it makes a print that looks quite neutral. See the graph of the tones for Premier Art Smooth BW, below:

UT-14, Premier Art Smooth BW, No ICC or curve

The 2 papers and graphs above are representative of numerous matte papers. The difference is the extent of the warmth in the midtones relative to a straight line that is drawn between the paper white and black. The first group, represented by Photo Rag, is typical of most matte papers. In this group the Lab B variance is typically about 4 Lab B units. The second group, represented by Premier Art Smooth (bright white and non-OBA papers) includes also Moab Entrada papers and Hawk Mountain Condor BW. Here the variance can be as low as 2 units.

The apparent warmth of a paper is affected not only by the absolute Lab B values, but also the extent of the Lab B variance from the hypothetical straight line between the paper white and black tones. How "bright" – actually slightly bluish – the paper is does not necessarily affect the extent of the Lab B variance. A very bright paper like Premier Art Matte BW (210) is in the high variance group. The large variance gives even this cold, bluish paper a feeling of some warmth.

With these default print tones, the already reasonable grayscale ramp can be made straighter and "color managed" such that the print relative densities match the monitor by making and using an ICC. These simple QTR grayscale ICCs can be made even with a flatbed scanner.
See http://www.paulroark.com/BW-Info/Making_B-W_ICCs-GrayCard.pdf

Tone controls with curves and ICCs that have Photoshop curves embedded in them make the UT-14 inkset a full variable tone inkset for matte and glossy papers, without the need to change inks.

Either Photoshop or Elements image editors are needed to use these ICCs.

Representative curves and ICCs can be downloaded from http://www.paulroark.com/BW-Info/1400-Profiles.zip .

Create ICC-RGB, which allows a broad range of papers to be profiled with the curves that are included in the download can be downloaded from http://www.quadtonerip.com/html/QTRoverview.html .
The "Create ICC-RGB" program is part of the QTR download.

With this workflow, a single tone curve can be used to make ICCs for a number of papers. Create ICC-RGB linearizes the outputs, correcting for most of the differences among the papers of a similar type.

Additionally, by putting the curve on a layer and having the layer at less than 100% opacity, tone curves can often be applied only partially to achieve intermediate paper tones.

Making a new ICC only requires a flatbed scanner and Create ICC-RGB. See http://www.paulroark.com/BW-Info/Making_B-W_ICCs-GrayCard.pdf for how to use a flatbed scanner for ICCs with Create ICC (no curves used).

See http://www.paulroark.com/BW-Info/Embedding_Photoshop_Curves_in_ICCs.pdf for information on using the next step up, which is Create ICC-RGB and the use of a tone curve.

Very briefly, to make a custom ICC with Create ICC-RGB, a Photoshop adjustment (*.acv) curve, such as those in the download Zip file, are applied to a 21-step Adobe RGB test file, printed and measured for its Lab L values or densities. The Lab L readings in a text file and the curve (applied to a special image test file, "rgb-raw-16.psd," in the QTR package) can then simply to dragged and dropped into the Create ICC-RGB icon on the desktop, and a custom ICC for printing that paper is created.

Note that the standard matte paper Epson driver settings, as shown above, are assumed with the ICCs and curves in the 1400-Profiles.zip. These including "Color Controls" checked with Gamma 2.2. (This varies from the "No Color Adjustment" setting that is used for glossy paper and has often been used with previous inksets. The "NCA" setting with matte papers lacks sufficient steps in the deep shadows.)

The matte "Neutral-1" curve is designed to make the print tones closely match the hypothetical straight line between the paper white and black. Note that tones are mostly visible in the lighter midtones. In the very deep shadows subtle tones are not easily detected. The graph below shows the print tones for Photo Rag with this curve applied to an RGB version of the 21-Step test file.

Hahnemuhle Photo Rag, Neutral-1 curve
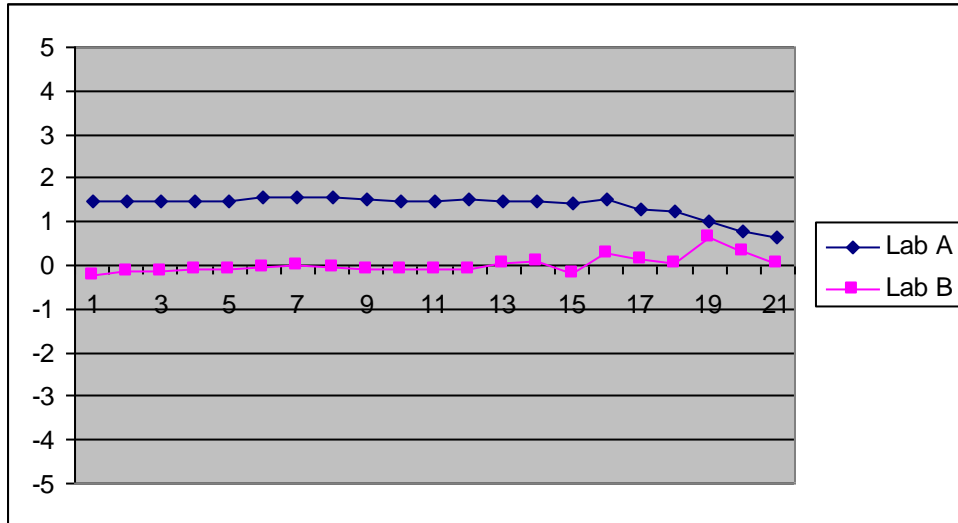
This curve accomplishes a similar straight line (between paper white and 100% black) for most of the papers that have the typical 4 unit variance. For paper with a smaller variance, the same curve will accomplish a straighter response when used on an adjustment layer at less than full opacity. That is, one can apply the curve on a layer and vary the extent to which the curve affects the default printing tones.

Photo Rag with the Warm-1 curve
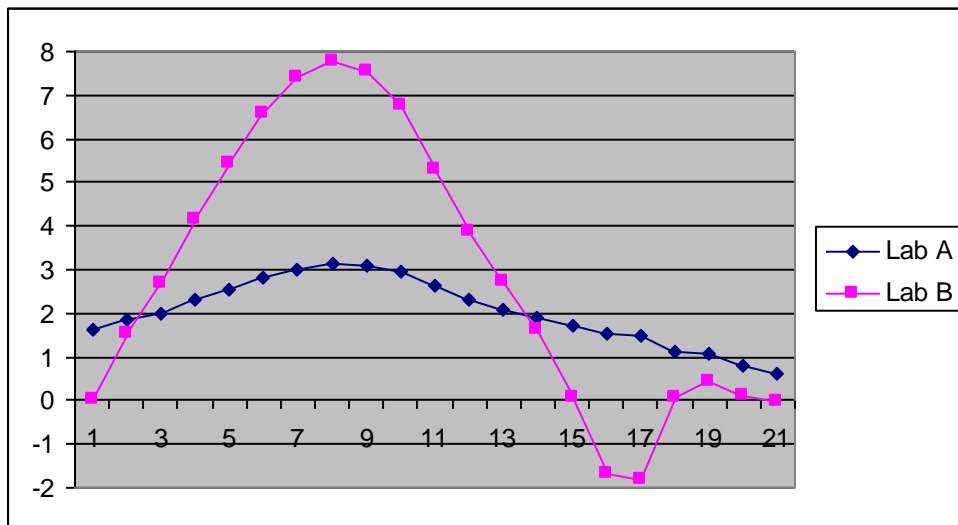
This shows the range Photo Rag can get with this inkset and the Epson driver. One can achieve warmer (100% carbon) shadows with QTR.
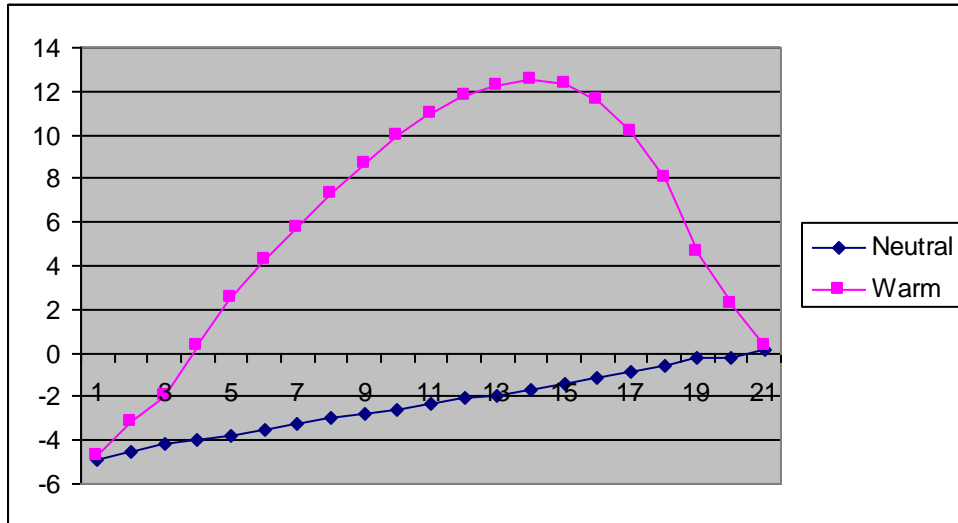
Glossy Papers

The system prints on glossy paper with its midtone, MIS UT type glossy-compatible inks.   Because the 100% black is formed with a combination of the C and M inks, Eboni (MK) must not be used. As such, a Photoshop curve, ICC, or QTR must be used to print glossy prints. To achieve the best dmax, "No Color Adjustment" must be set in the Epson driver. The paper type used is "Ultra Premium Presentation Matte." This makes a better black than the glossy type paper settings. See the screen grab, below, for the recommended glossy paper settings.

**Epson driver settings for gloss papers**:
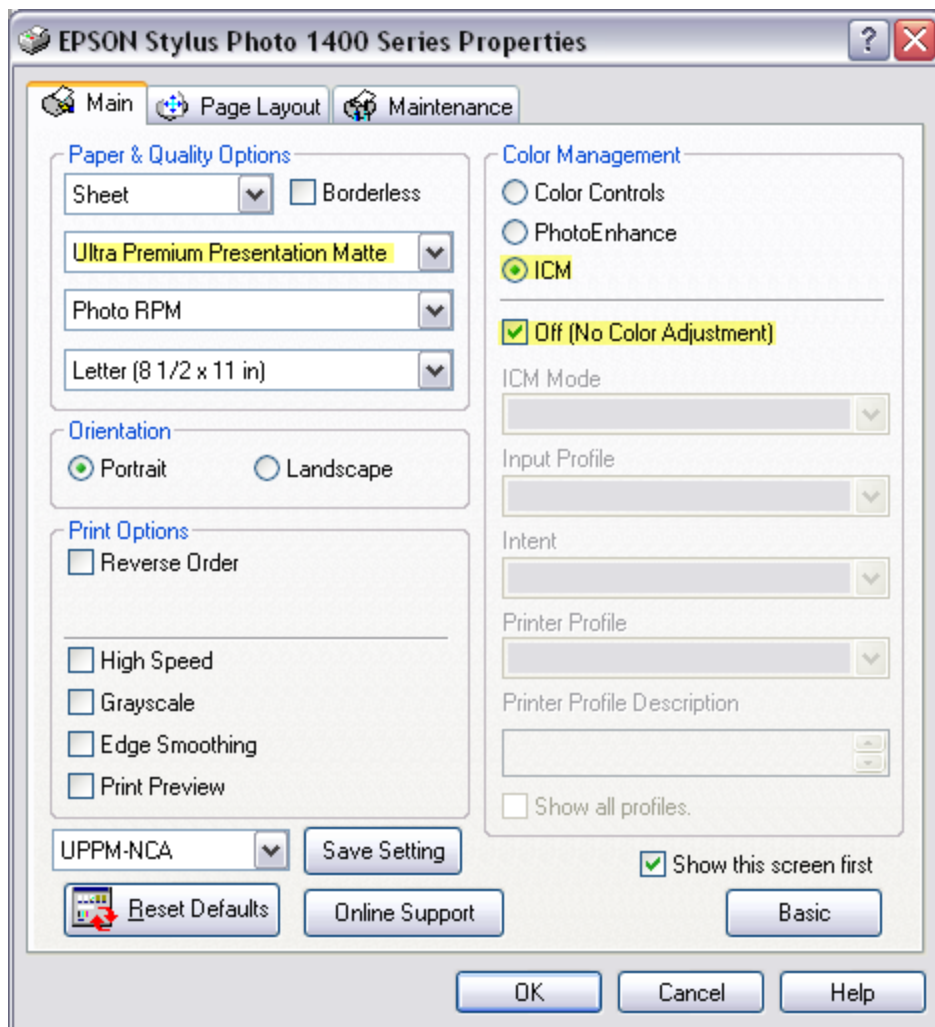
One of the better values in glossy printing has been the Costco Kirkland line. The graph shows the Lab B tones of Kirkland glossy with the Kirkland Neutral and Warm profiles. With glossy papers the warm curve is almost a light sepia tone.

Lab B range - Kirkland Glossy with Neutral and Warm profiles
(Note that only the Lab B values are shown here.)

One of the more popular glossy papers currently is the new Ilford Gold Fibre Silk. The Lab A & B tones of the neutral curve/ICC for this paper are shown below.
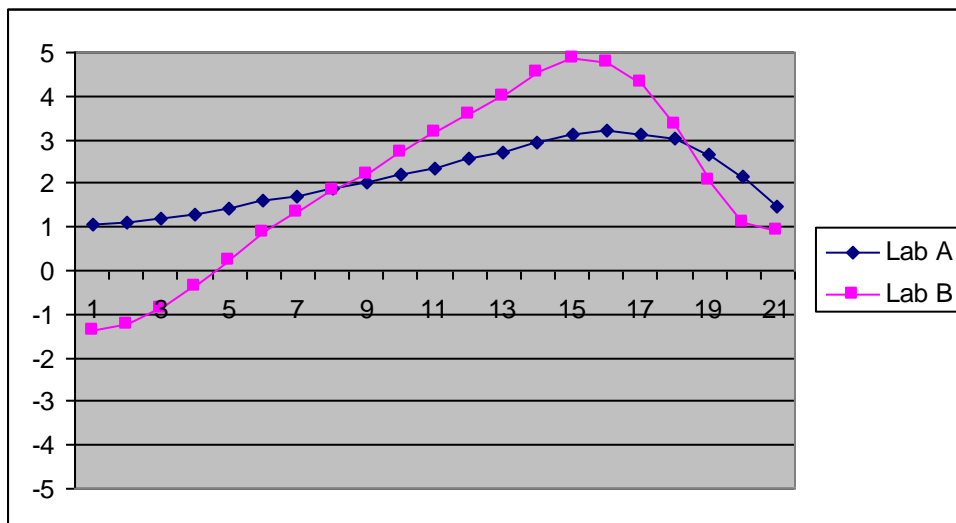
Ilford Gold, UT 14, N-1 profile
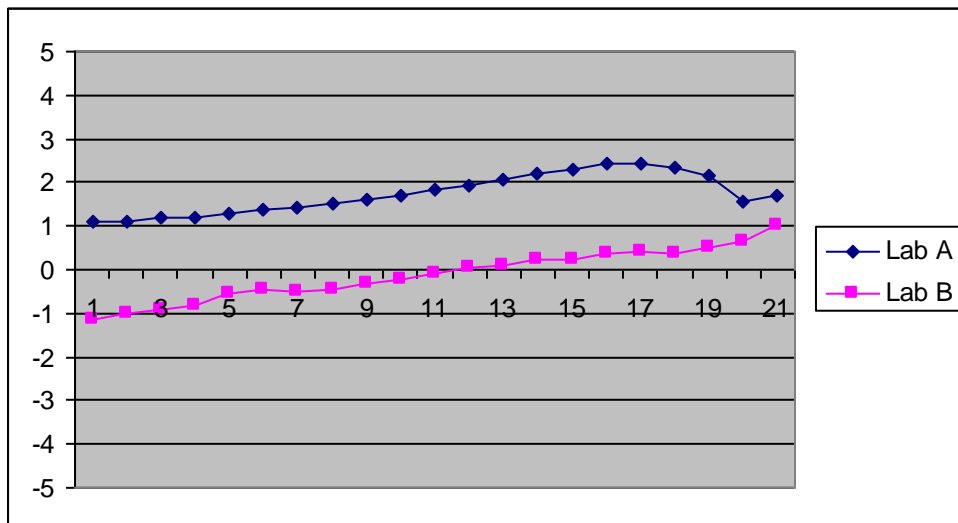
The Lab tones for Ilford Gold with a medium warm tone distribution somewhat similar to that used in LensWork magazine is shown below.

Ilford Gold, UT-14, "LW-Warm" profile

Neutral Tone, 100% Carbon Printing

The workflows briefly discussed below assume some familiarity with QTR.

Matte paper

With its tiny 1.5 pl drop size, the 1400 prints a 100% Eboni Black Only that pulls in all the 1800's capabilities – except smoother. See http://www.paulroark.com/BW-Info/R1800.htm for a description of the characteristics, including print tones, for this workflow. With non-OBA papers, this workflow probably makes the most stable prints possible with today's inkjet technology.

QTR already contains black only curves for the 1400. These were based on the 260 and may need to be re-linearized. Be sure they save to the correct folder. There may be Epson 260 printer identifiers in the QTR files.

Of course, with MK, PK and LK in the inkset, warm carbon prints are easily accomplished with QTR. One could, for example, simply define the LM, M, and K as the Gray channel inks and use the QTR semi-automatic partitioning to make a warm curve.

Glossy 100% Carbon Prints that are Neutral

UT-14 includes both LK and PK that are 100% carbon and glossy compatible. As with all glossy-compatible carbon pigments, these are warm inks. Thus, with QTR, 100% carbon glossy prints that are warm are very easily made with UT-14.

UT-14 also makes neutral-toned prints on glossy papers without the need to spray or do a second pass through the printer. For this normal glossy printing the system uses carbon inks that have been toned neutral with color pigments. This is true for all commercially available glossy neutral carbon pigment inksets.

The more difficult challenge is a neutral 100% carbon print on glossy paper, such as the latest baryta, fiber type papers. This is not recommended for novice printers and is something only those interested in the ultimate in stability will be interested in.

Using the Eboni, glop and PK, the UT-14 inkset can print very neutral 100% carbon glossy print on Ilford Gold Silk. The approach I use does need a post-printing spray, but it makes a dramatic, neutral, 100% carbon glossy print that is relatively well protected behind its Print Shield and should be extremely stable. (This approach does not use a dual-pass workflow.)

The tones of Eboni on Ilford Gold Silk are shown below.
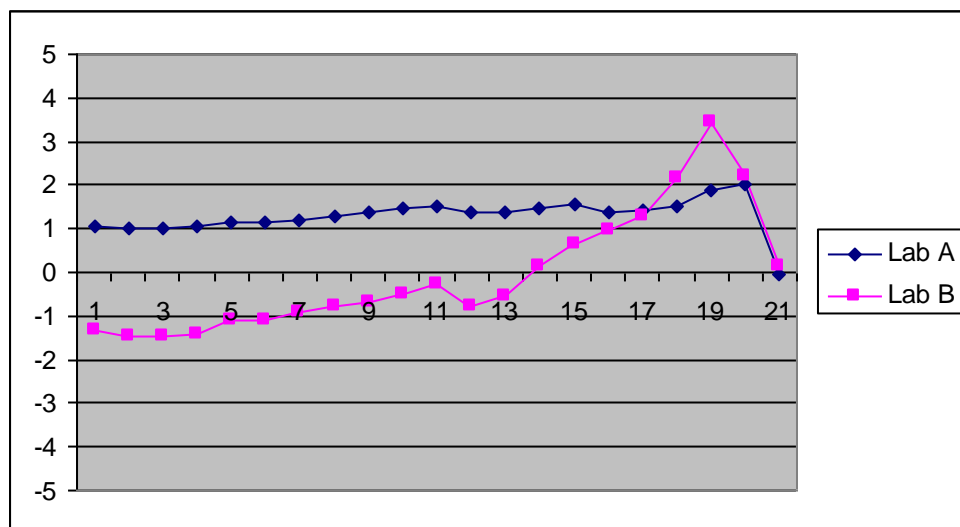
The warmth in the deep shadows is subtle. It's mostly hidden in the darkness. So, the print appearance is very neutral.

This warm shadow tone is caused by the Eboni to PK cross-over. The profile used above used Eboni through the midtones, with glop as needed to hold it down. PK then supplied the glossy dmax.   PK and Eboni can be blended in QTR to get a full range of neutral to warm, 100% carbon prints. (Such profiles, however, are not included in the profiles download.)

Happy printing.

Paul
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