

SEPIAX® Technical Bulletin

SEPIAX Ink Usage Study

Many inks on the market claim to either offer less ink usage per page, lower prices per liter, or some combination of those factors in an effort to market the ink. However, few can actually back up those claims.

In this case, claims have been made that SEPIAX Ink uses between 30-50% less ink when compared to current generation eco solvent inks used by EPSON, Mimaki, Mutoh and Roland. At a list price of USD \$197.50 per liter as of the date of this document, SEPIAX is priced competitively to OEM ink at \$304 per liter (based on a list price of \$67 per 220mL cassette). In this document, we will show the results of a side by side test. To ensure accurate results, we used the same settings, software, and equipment wherever possible.

THE TESTING METHOD

RIP software:	Wasatch SoftRIP 6.7
Profile software:	X-Rite ProfileMaker 5.0.9
Spectrophotometer:	X-Rite i1 iO
Printer:	Mutoh ValueJet VJ-1204
Media:	GO Solvent Satin Photo Paper
Ink:	SEPIAX AquaRes
	Generation 3 OEM Eco Solvent (used by EPSON, Mimaki, Mutoh and Roland)
Print mode:	1440x720 variable dot

PROFILE PROCESS

1. Determine channel ink limits
2. Linearize
3. Determine overall ink limit
4. Print profile patches and build profile

WASATCH SETTINGS

On our initial print of the linearization sheet for the OEM Eco ink, we observed the point at which the dots began to merge occurred at approximately 75% of each channel. For SEPIAX ink, this occurred at approximately 50% of each channel. We therefore chose those as the channel limits based on standard practice.

All other settings in Wasatch were left at their default values.

PROFILE SETTINGS

PM5 includes a number of gray level presets for different output processes. In the case of wide format ink-jet printing, we have found the Inkjet260 preset to produce consistently good results with most ink and media combinations. This setting uses a GCR level of 4, a total ink limit of 260%, and a black start point of 40%.

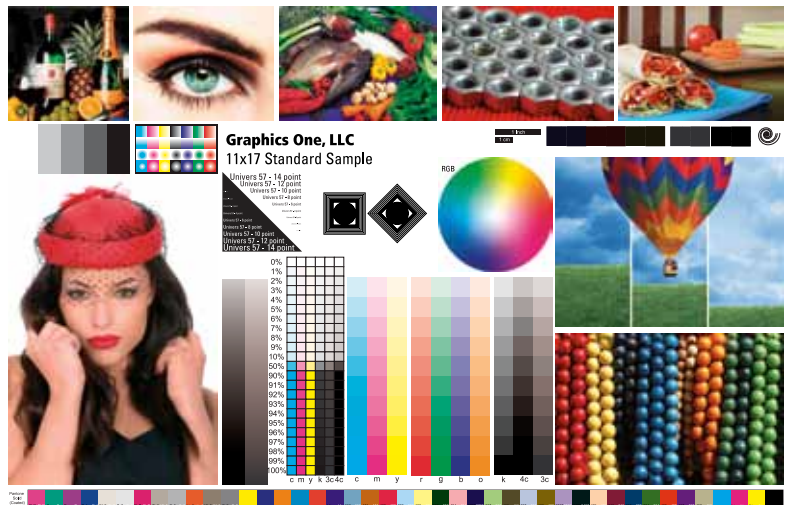


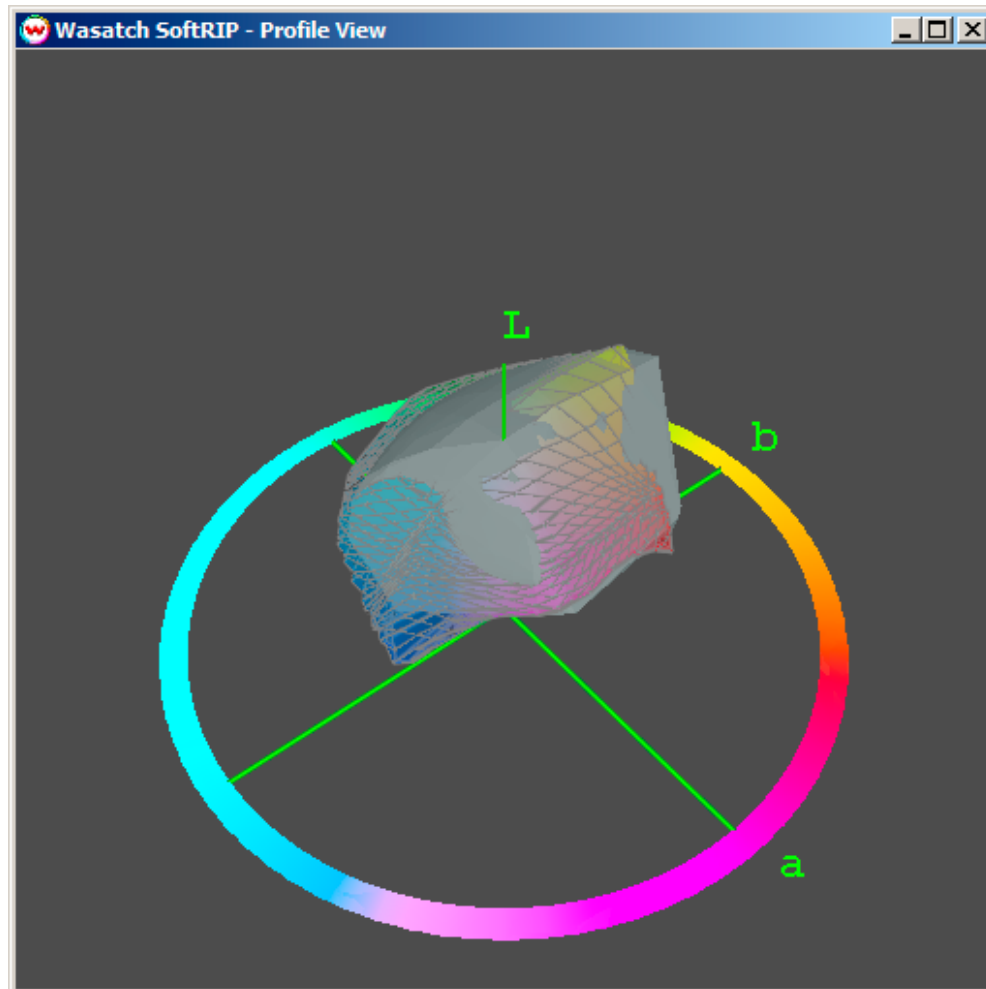
Figure 1. Graphics One's standard 11x17 test image, used to produce the information in this document.

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PROFILE RESULTS

Below is a screenshot of Wasatch's 3D profile view. In this image, the colored area of the center mass represents the color gamut of the SEPIAX ink, while the gray mass represents the color gamut of the OEM Eco ink.

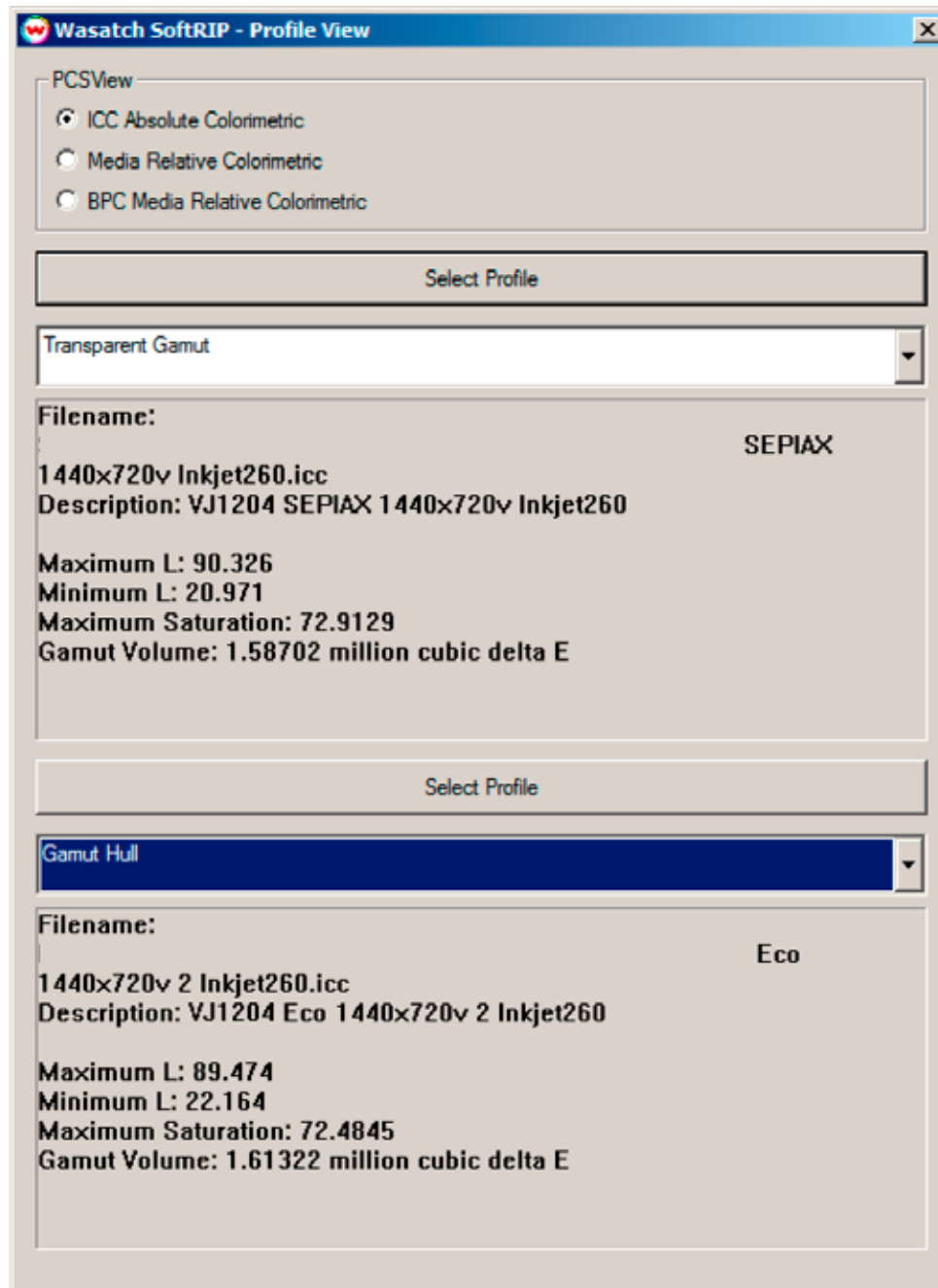


While technical, the screenshot of the information window in Wasatch's profile view (Figure 3, next page) nevertheless provides some very useful information that helps us understand the above graph. The gamut volume of any profile is measured in millions of cubic delta-E; delta-E (also written ΔE) is a metric used to represent the difference between any two given colors. Theoretically, a delta-E of less than 1.0 should be indistinguishable by a trained eye. In practice, differences of up to 4 delta-E are difficult to see.

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Since the graph in Figure 2 is located in 3D L*a*b* space, delta-E is multiplied in all three dimensions, producing cubic delta-E. The difference between the SEPIAX profile (colored area) and the OEM profile (gray mass) is approximately 26,200 cubic delta-E (ΔE^3). This is a lower overall difference than we have seen in many third-party eco solvent inks that claim to be compatible with OEM inks (we have observed differences of up to 300,000 ΔE^3 between those inks and OEM inks on the same material).



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CONCLUSIONS

Let's look at what the information contained in Figure 3 actually means to the consumer:

- On this particular media, SEPIAX offered a minimum L (brightness) that was 2% lower than the OEM eco ink. This corresponds to deeper dark colors, such as rich blacks.

Advantage: SEPIAX

- SEPIAX also offered a maximum L that was ~1% higher than OEM eco ink. This means that it is possible to hit shades closer to white with SEPIAX.

Advantage: SEPIAX

- Overall saturation was 0.5% higher with SEPIAX.

Advantage: SEPIAX

When you factor in the results of the cost comparison (made using the Wasatch Cost Estimator, with default drop sizes of 3.5pl, 12.5pl and 20.8 pl), the difference becomes more pronounced. Consider the chart below, produced using the 11x17 image shown in Figure 1, with a total area of 1.299 square feet.

Figure 4. Data produced by the Wasatch Cost Estimator.

SEPIAX Ink			OEM Eco Ink		
Item	Ink Volume (mL)	Cost	Item	Ink Volume (mL)	Cost
Black	0.03	0.01	Black	0.11	0.03
Cyan	0.07	0.01	Cyan	0.1	0.03
Magenta	0.17	0.03	Magenta	0.44	0.13
Yellow	0.16	0.03	Yellow	0.2	0.06
Total	0.43	0.08	Total	0.85	0.26
Savings	0.42	0.17			
% savings	49.62%	67.44%			

In the case of this particular media, SEPIAX ink consumption was .42mL less than OEM Eco - a volume savings of 50%! When one includes the list prices of SEPIAX and OEM Eco ink, the savings rise to an astonishing 67%.

To put this into terms that are universally understood:

SEPIAX Ink: \$0.06 per ft²
 \$0.64 per m²

OEM ink: \$0.20 per ft²
 \$2.15 per m²

While these figures may vary depending on the substrates used and the profile settings chosen, the advantage of SEPIAX ink should be quite obvious.



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