



## The next generation of inkjet papers are here!

*We are getting closer to saying goodbye to the darkroom.*

The introduction of new papers from Hahnemuhle, Innova, and Museo have everyone scrambling for these papers, as they are supposed to be the reason to finally come out of the darkroom. After all, B&W silver gelatin paper manufacturers are starting to disappear, causing more artists/photographers to convert to digital printing methods. This does not mean that we should start expecting these paper companies to create exact replicas of our favorite silver gelatin papers. We as a community, need to start suggesting what we would like them to change about their current papers rather than asking them to match paper that is oriented to a completely different process. These three papers are derived from exactly that, all three companies listened to the cries of those tired of RC semi-gloss or luster papers. The papers they produced are a tremendous accomplishment for the first generation of a new product, remember these papers are first generation.

If you are tired of the plastic feel of the traditional Luster or Semi-Gloss inkjet papers then the introduction of these papers is just for you. I personally like to think the difference of these new papers to Resin-Coated inkjet Luster papers, is a close comparison to that of Resin-Coated vs. Fiber-based paper in the B&W darkroom. The idea or concept of finding a paper that works with the look and feel that you are trying to find, to create the aesthetic in your artwork/photography is finally back. These papers as you will read are very close in the technical specifications, however, you will find each one has unique benefits to the end-user. It is up to you to decide which of these technical factors you care about in your imagery.

I personally along with many other photographers have refused to print on so-called luster or semi-gloss papers due to their look. The next generation of paper's large color gamut and DMax allows for a higher color saturation, which produces a look that creates images that have a similar image quality and feel as traditional photographic paper. These three papers are nothing like any paper I have ever used, digital or traditional, because they have their own image qualities. We finally have the technical tools, to create the imagery that we all have been waiting for with the advent of these papers.

### Testing Variables

All tests were conducted on an Epson 4800 with photo black & Epson 2400 with photo black. ICC profiles were created from either the Gretag Spectrolino/Spectroscan & Monaco Profiler or the X-Rite DTP70 with Monaco Profiler. Monaco GamutWorks, X-Rite Colorshop & Chromix were used to measure the variables and statistics discussed throughout this paper.

### Paper Types

Hahnemuhle Pearl is Alpha-Cellulose based as is Innova F-Type Gloss, which causes a stiffer type of paper quality. The Museo Silver Rag is 100% cotton based with no Optical Brighteners Added (OBA's) creating a warmer paper than the other two.

## Paper Surface

The paper surface along with the paper whiteness are the factors that will determine whether you like or dislike each of the papers. Hopefully, it will not be a matter of like or dislike but rather, which paper works for each of your projects. I personally, have ideas for which of my photographic series will work on all of the three papers.

### •Hahnemuhle Pearl

Hahnemuhle Pearl is the paper with the least amount of texture to it, however, some people say it does not have enough texture. Pearl has a very fine texture with a duller luster than that of the other two papers. This fine texture can cause problems with the bronzing/gloss differential but is the smoothest of the three papers.

### •Innova F-Type Gloss

Innova F-Type Gloss is the paper with a texture that reminds me of certain fiber-based papers for the darkroom. It is not exactly the same as the fiber-based papers but comes very close. It has a texture to it that has a low sheen and therefore, has less bronzing than the Pearl. The texture is somewhere in between the Hahnemuhle Pearl and the Museo Silver Rag papers with a fine surface quality to it.

### •Museo Silver Rag

The Museo Silver Rag is the paper that has the most amount of texture to it out of the three papers, which still produces an image with a richer quality than the resin-coated inkjet papers. The texture on the surface is deeper than the other two papers and also larger in diameter across the paper surface. The Silver Rag has a low sheen quality to the coating as well.

## Paper Whiteness

### •Hahnemuhle Pearl

Hahnemuhle Pearl is the paper with the greatest amount of OBA's added, therefore creating a brighter paper. The only problem is that OBA's tend to create problems with bronzing & metamerism. However, the bronzing on the Pearl with Epson K3 inks is slightly greater than the other two papers. Hahnemuhle Pearl is the brightest of these three papers due to the OBA content. The paper, when compared to other papers, tends to have a blueish look under certain lighting conditions because of how white it is from the OBA's.

### •Innova F-Type Gloss

Innova F-Type Gloss has a base white that compares to that of traditional fiber-base paper. It has a lower OBA content than that of the Hahnemuhle Pearl which produces a paper with a natural white look. The F-Type Gloss is the paper with the whiteness in the middle of both the Pearl and Silver Rag.

### •Museo Silver Rag

Museo Silver Rag has no OBA content and has been beating up because of the warmer color, it is truly a natural finish because of the lack of OBA's. Yes, the paper is a warmer finish but the lack of OBA's for some users is an attractive feature and some just prefer the look as well.

## Are OBA's bad?

Optical Brighteners are added to papers for different purposes by the inkjet manufacturers. The obvious reason is to whiten the paper and create a larger color gamut and the second is to create a consistency between paper batches for the quality of the papers brightness. If you think about cotton based papers, batches of cotton will have different levels of brightness depending on where they were purchased from and the conditions of the season. The OBA's are often added in smaller amounts to many cotton papers to make sure the batches stay consistent. The use of OBA's to create brighter papers is the cause for alarm by many forums and the digital art communities with a lot of people complaining about paper yellowing. The OBA's will fade overtime, which then returns the paper to the natural color and is often referred to as

yellowing. The paper is not actually yellowing but rather going back to the natural paper color, which was more yellow than the bright white the OBA's gave us.

I have personally had paper that has returned back to the natural paper color of yellow along the edges of the prints. I have taken a black-light to the paper to see whether the OBA's had broken down or whether the base paper was yellowing. The black-light revealed that the OBA's had in fact broken down because they were no longer fluorescing under the black-light condition.

To test the amount of OBA'S in your paper, buy a black-light or Pet Spot Detector (small black-light) and compare your papers with the coated side facing up. You will see the OBA's fluorescing, just as you did when you were in a bar or club and had the stains from your OBA's in your laundry detergent fluoresce under black-light conditions. *Hint: Remember you always fill the washer up with water then add the laundry detergent to dilute the detergent & OBA's, finally add your clothing.*

Just remember that if you use papers with large amounts of OBA's that you can expect overtime the paper may go back to the natural color of the base material making up the paper. Once again, it is up to you whether this is a final determination factor on whether you will use the paper or not.

## Grayscale Gradient

The grayscale or tonal gradation on all three of these papers is a lot smoother and linear than that of previous matte surface papers. The papers really out perform matte papers in the shadow regions by producing darker tonal values with detail, creating a larger maximum usage area in the shadows.

## Bronzing/Gloss Differential

These papers due to their sheen & use of Photo Black on the Epson printers have a slight bronzing/gloss differential. This bronzing can be minimized with the use of coatings and even further by being placed behind the proper glass. The Hahnemuhle Pearl because of the surface and OBA content has the greatest amount of bronzing, but is not as bad as the Epson's Premium Luster or Semi-Gloss on their RC bases. The bronzing as always been a problem with inkjet printing on semi-gloss/gloss papers, it is caused when your light source is at certain angles to the surface of the print because the reflected light becomes trapped between the ink & the paper.

## Scuffing

The three new fiber-base luster/gloss papers blow away the Epson papers when it comes to their durability. These papers stand up to scuffing better than most other inkjet papers out there, Silver Rag was the only paper that scuffed but not until I pressed beyond expectations. Once again, all three really have a tough surface creating a paper that is easier to work with.

## Color Gamut

The color gamut of these papers have been compared utilizing the Epson K3 inkset using the Premium Luster media setting in the Epson Print Drivers. The 1st set of profiles were created using a Gretag Spectrolino/Spectroscan with Monaco Profiler. The second set of profiles were created using the X-Rite DTP70 with Gretag Profile-maker.

### MIDDLETONES

The color gamut of these three papers are fairly similar within the middle tones and all three have a much larger color gamut (Fig. B, C, &D) than papers each company has produced in the past. This has already caused problems for some artist who are getting colors from their prints that they claim “are oversaturated as compared to my matte print.” Very rarely does someone complain about getting too much color, it is just that more colors are within the color gamut, as compared to matte papers, then one ever expected. Remember photographs very rarely have all of these colors in a single photograph and you still have control over how the print is to be outputted in the future. The color gamut of these papers throughout the middletones are very even and consistent with no radical changes or gamut jumps.

### HIGHLIGHTS

The three papers separate in their ability to handle color in the highlight and shadow regions. I have per-

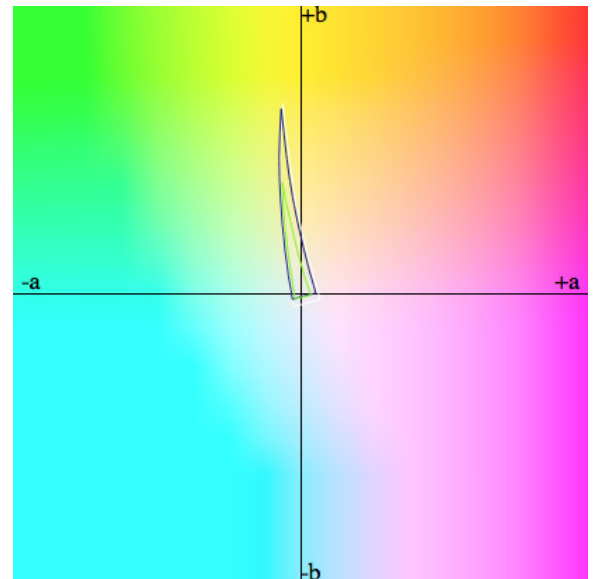


Fig. A

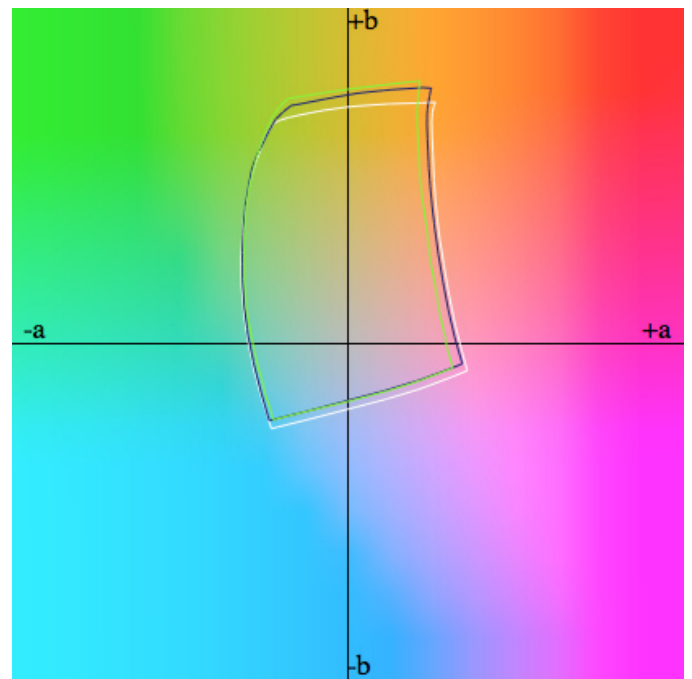


Fig. B

sonally found (Fig. A) that in the highlight region Hahnemuhle Pearl & Museo Silver Rag have a slightly larger color gamut. The difference in the highlight region between all three papers is minimal.

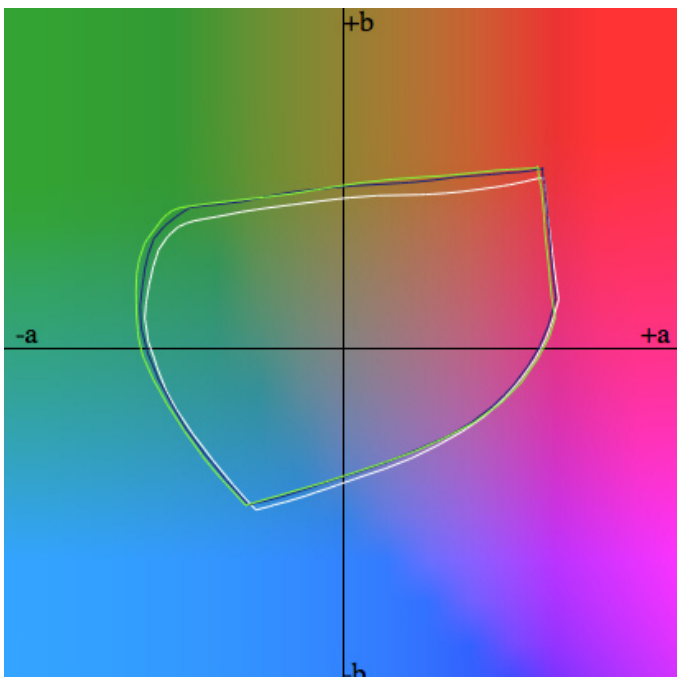
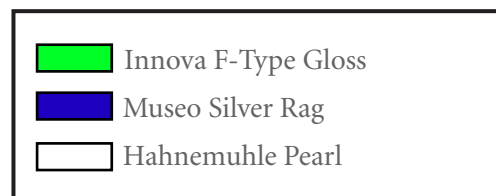


Fig. C



## SHADOWS

In the shadow region (Fig. E) Innova F-Type Gloss clearly outperforms both Hahnemuhle Pearl & Museo Silver Rag.

The shadow detail and color reproduction is another situation where I created two sets of profiles, one on the Epson 4800 PK and another on the Epson 2400 PK. Both sets of profiles showed consistent results, the Hahnemuhle Pearl's color gamut in the shadow region literally jumps around causing colorcast in the shadow regions. The Museo Silver Rag has the second largest color gamut in the shadow region with a smaller gamut than that of the F-Type Gloss.

## L\* Values

The L\* values represent the lightness variable of L\*A\*B\* and inform of us the values one can expect from our paper.

### HIGHLIGHT

Hahnemuhle Pearl	98.01
Innova F-Type Gloss	97.13
Museo Silver Rag	95.53

### SHADOW

Hahnemuhle Pearl	7.87
Innova F-Type Gloss	4.81
Museo Silver Rag	6.23

## DMax

The DMax refers to the darkest black one is able to achieve. Remember that just because you can get a very high maximum density does not mean that you have detail throughout the tonal range, this is called the maximum useful point.

I am personally impressed with these papers, their black point or maximum useful point is much higher than that of any matte paper. This is where these papers will separate from that of the matte surfaces. The Hahnemuhle Pearl is the only paper of these three that had a slight, and I mean slight, problem with the maximum useful point for the blacks.

Hahnemuhle Pearl	2.15
Innova F-Type Gloss	2.43
Museo Silver Rag	2.30

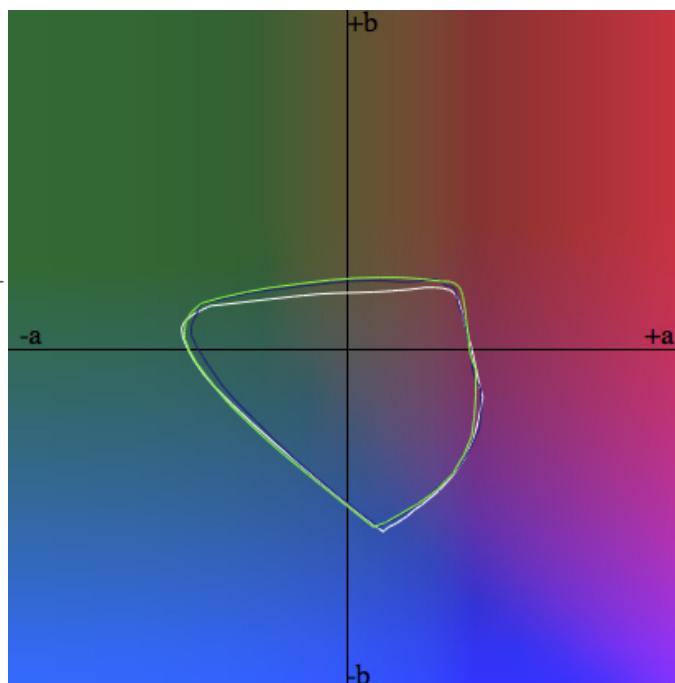


Fig. D

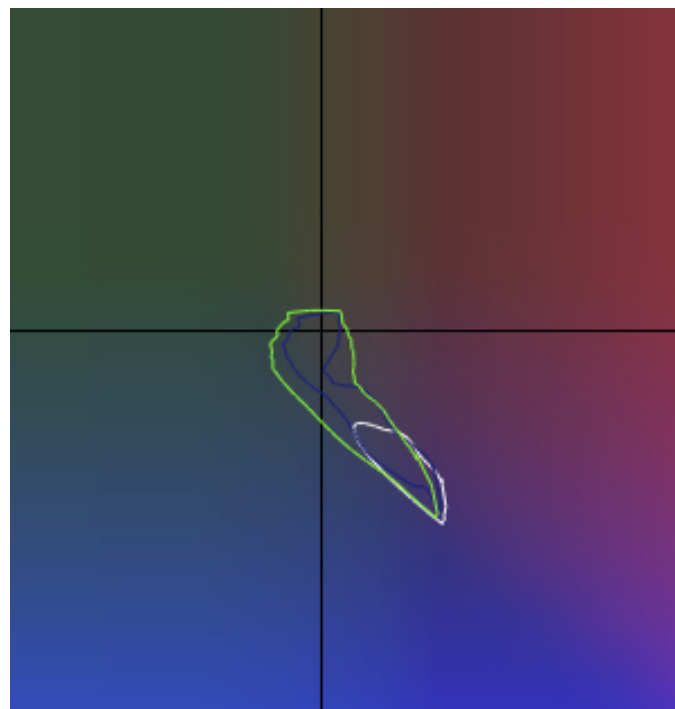


Fig. E

## Conclusion

I truly believe that these three papers are just the start of what we can expect in the future from these companies, we owe each of these companies gratitude for listening to our cries. A lot of people are complaining that these papers are not exactly like the darkroom papers of the past, they never will be. After all, we are not exposing them to light and then running them through chemistry, try to embrace the papers for what they are. Look at all three papers and compare the surface and qualities that they have and not what you wish they were, otherwise you are only setting yourself up to be disappointed. The manufacturers when stating “similar to” are only suggesting what these papers are similar to, none of them claim that their papers are an exact replicas.

These three papers are truly complimentary in my opinion, as every user will be looking for one of the unique characteristics of each paper. You will always here reviews of inkjet paper where people bash papers with information that is more about personal preferences then true quality or paper issues. These papers are clearly close in technical qualities and the real question lies in “What is your preference or feeling you are trying to provoke in your imagery?” We have finally returned back to the idea of which paper should I use to provoke the feeling and quality I am trying to portray in my artwork/photographs. In closing, do yourself a favor and try all three papers to see the unique qualities for yourself and do not listen to all the hype from all of the reviews. Each of these papers is unique and you may find, as I have, that you may have different uses for each of these papers.

The toughest part of getting these papers to create beautiful inkjet prints, is the twiddling of our thumbs as we wait for these papers to be available on a regular basis.

—Eric T. Kunsman  
Booksmart Studio

Special thanks to those who donated paper for these test.

- Bob Haupt—Hahnemuhle USA
- Wayne Connelly—Innova Art USA
- David Williams—Crane Museo

**All of these papers are available at Booksmart Studio & Shades of Paper.**