

Printing Your Own Giclées

Part 3: Ink and Media

By Randy Hufford

Choosing the right inkjet printer to output your own prints today goes beyond just selecting a printer. It also involves selecting the type of inks you want to use, the types of media you print on, the pros and cons of the different media types, and the cost per square foot of your prints. This will help you compare the cost of producing your own prints versus what you would pay an outside print source, an important part of making an intelligent decision about adding digital printing to your business.

Printers and Ink

In choosing an inkjet printer, the primary options today are Epson ProGraphics, HP Design Jet Photo Printer, or Canon imagePrograf. The primary advantage of these three manufacturers' printers is that they use pigmented ink, which is critical for the quality of printing you will do. The newest pigmented inks are virtually unaffected by UV light exposure, which is one of the main reasons a print might fade. This is a very important consideration, since you do not want to be responsible for faded prints. They should be stable and not change over time from exposure to light or environmental contaminants like ozone.

Keep in mind that it's important to stay with the manufacturer's inks. Third-party inks, no matter what a salesperson says, are risky. Most manufacturers' warranties, in fact, become null and void if third party inks are used.

Printers from all three major manufacturers provide great print quality with inks that have longevity. There are only small differences between each of the printers, so you will likely be satisfied no matter which one you choose. All of these machines can also be equipped with a roll take-up, which rolls up the printed media as it comes out of printer. This allows the printers to operate unattended around the clock except for changing ink cartridges and adding fresh roll or sheet media.

While each of these printers will provide professional

This article is the third on how to successfully add giclée printing to your production framing operation. This series covers Set-up and Calibration, Ink & Media, Digital Art Enhancements, Finishing Techniques, and Selling Giclée Prints. It follows the author's DVD training set, "The Perfect Print." Visit <http://ivamaui.com/softwarecinema> for more info.



The Canon I PF8100 is a 44" printer with faster printing that makes it suited to production printing.



The HP printer is a 44" printer that offers the advantage of built-in color accuracy. Its speed also makes it suited to production printing.



An Epson 9880 digital printer has excellent color reproduction. It is shown here with an optional take up for printing continuous rolls of prints.

prints for a wide spectrum of images, there are some subtle differences that can influence your choice. For example, Epson uses piezo technology, which allows for smaller ink dots and a variable dot size. This means more detail and sharpness when printing a photograph on a glossy or luster photo paper. This type of detail can only be seen when using a particular combination of image type (photography) and media (photographic media). If you print on canvas, fine art media, or matte media, this level of detail is not distinguishable. Therefore, Epson's strong point—the capability of printing smaller dots and more dot sizes—makes it the best choice for printing photographic images on photographic media.

Professional inkjet printers need two different blacks. While photo black ink can be used for all media, it was designed for photo media, including photo glossy, photo luster, and photo semi matte substrates. The density (how black the ink looks) of photo black is not very good when used on art media. So manufacturers designed matte black ink to work with art media, producing a denser black on fine art, matte, and canvas media.

One of the drawbacks of Epson printers is that you have to physically switch between matte black and photo black ink cartridges when you change from one printing media to another. In contrast, you can switch from one black ink to another on the fly with HP and Canon—a real benefit for production when you use a variety of media.

Both HP and Canon are fast printers. If high production is a primary concern, then one of these printers is probably the right one for you. HP also has the advantage of built-in color accuracy. A device on the machine helps calibrate the accuracy of the colors, which can be a real advantage. However, HP printers have small ink cartridges (130ml), meaning that they run out of ink faster. Epson and Canon printers offer larger ink cartridges. Epson offers two sizes (110ml and 220 ml) for the 9880 printers and three sizes for the 9900 series (150ml, 350ml and 700ml). Canon offers 330ml and 700ml cartridges. Larger ink cartridges also make purchasing ink more economical.

The last point to consider when purchasing a printer is to ask a dealer about service times for printer repairs in your area. For printers in some more remote locations, it can take up to two weeks to get a service call from a manufacturer while another company might be able to handle the service immediately.

Outgassing Prints

Another significant issue involving inks is outgassing. All three manufacturers' inks use glycol as the vehicle used to carry ink particles. While prints come off a printer dry to the touch, the glycol still has to evaporate—and that takes time. There are two methods for speeding this process. The first is to interleave prints between sheets of absorbent Kraft paper to draw out the glycol. The second



All large format digital printers use a significant amount of ink. Epson K3 pigmented inks, for example, come in six different colors, and each one must be changed on a regular basis as they are used up.



When printing individual sheets, it's important to maintain an inventory of printing media, such as Epson velvet paper.

is to use an inexpensive inkjet paper, such as 32# bond paper offered by Premier Imaging Products. Because these sheets are more absorbent, the outgassing takes less time. You can actually interleave with just about any economical inkjet media as well as Kraft paper; just remember that inkjet paper is more absorbent than other bond paper.

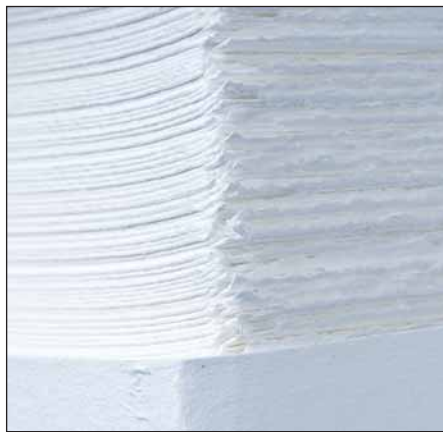
Depending on temperature and humidity, outgassing usually requires one to two days. If proper outgassing is not done and a glazed print is exposed to sunlight or heat, the outgassing will occur in the frame, leaving a ghost image on the inside of the glazing. At that point, the only remedy is to disassemble the frame, clean the glazing, and reassemble. Canvas has no need for an outgassing procedure because the glycol evaporates through the back of the canvas.

Digital Printing Media

The media used for production framing falls into four categories: photographic media, fine art media, matte/art media, and canvas.

Photographic Media – These include glossy, luster, satin, pearl, and semi-matte textures. They match the look of traditional photographic silver halide papers that have been used for years in printing with film. They have the most brilliant colors and are mostly used for repro-

ducing photographic images compared to reproductions of painted art. They are designed for a wide variety of applications, including portrait and wedding photography, portfolios, proofing, posters, and other general photographic



Fine art media is available from such manufacturers as Hahnemuhle Fine Art in either sheet or roll format.

applications. The prices for these media are mid-range.

Fine Art Media – These come in smooth, slightly textured and textured surfaces, such as a museum grade watercolor paper. They are the highest quality digital papers on the market today. They are 100 percent cotton, which is naturally acid- and lignin-free. As with traditional fine art papers, they are mould-made for increased durability and buffered with 2 percent calcium carbonate for added protection from atmospheric contaminants, as specified for archival papers by the Library of Congress. These media are the right choice when longevity and museum-quality standards are required. They are usually framed under glass or acrylic and do not have to be coated unless you want protection during the framing process. Some are vulnerable to scuffs, fingerprints, and any kind of moisture. If you want to retain museum-level archival quality, you must use alphacellulose matboard in framing wherever the print touches a mat. The price range for fine art media is the highest.

Matte/Art Media – These come in smooth, slightly textured, and textured surfaces, such as watercolor paper. Economics are the key reason these media have been developed. They have the best price point for production framing. Although they are not considered museum grade, they still have good longevity ratings but are not as long lasting as

fine art media.

These media are usually framed under glass or acrylic and do not have to be coated unless you want protection during the framing process. The advancement of new inkjet receptor coatings has made these products look really good in their

detail and the colors they can reproduce, called color gamut. The receptor coatings added to all inkjet media keep the ink from bleeding into the media substrate and give the ink scuff resistance. These media range from the most economical to medium in price. This is by far one of the best paper choices for production work.

Canvas – InkJet Canvas is manufactured with surface qualities of gloss, satin, or matte. Matte canvas is the most economical to manufacture. And since you can apply a waterproof coating that adds a gloss, satin, or matte surface as the image requires, you only need to use matte canvas. Some people prefer satin canvas because it looks more like the finished product when coming out of the printer. But for production printing, you would coat a canvas with a product like Eco Print Shield to create a surface quality, longevity, and waterproofing, allowing for easy maintenance and cleaning of stretched canvas.

Canvas also comes in two types of weaves: single and double weave. In a single weave, both the up and down weave (warp) and the right and left weave (weft) contain only one thread. Warp threads run lengthwise and the weft runs from side to side. In double weave, there are two warp threads and one weft thread. The double weave is preferable because of increased strength and durability. Double weave canvas also has less chance of memory—where

Media	Media type	Avg. cost per square foot	Thickness	Basis Weight (Grams per square meter)
Enhanced Matte or Presentation Matte	Matte/Art Media (Alphacellulose)	\$0.82	10.3 mil	192 gsm
Somerset Velvet or Velvet (rolls)	Fine Art Media (100% cotton)	\$2.10	19 mil	255 gsm
Somerset Velvet or Velvet (sheets)	Fine Art Media (100% cotton)	\$3.15	36 mil	505 gsm
Premium Luster	Photographic	\$1.13	10 mil	240 gsm
Canvas	Canvas	\$2.39	19 mil	350 gsm

The prices on this chart reflect ink and media cost.

pressure is applied to a specific area of a canvas and the canvas returns to its flat state.

One of the benefits of using canvas for production is that you do not have to glaze the finished product. The protective coating allows you to do a gallery wrap without any cracking on the edges, making this product even more diverse while still being able to be framed in the usual way. This is one of the oldest art media, and today is very popular. Canvas for today's inkjet printing comes in either 100 percent cotton or a poly/cotton 65/35 percent blend. The poly/cotton blend is considered preferable because of its superior stretching properties. Canvas comes in both a natural museum grade with no optical brighteners and photographic canvas with optical brighteners. The optical brightener style is generally preferable for production work.

Media Chemical Properties

Being acid-free is an important aspect of paper manufacture because acid breaks down all organic matter. Wood pulp has a naturally occurring substance called lignin, which is acidic and unstable. Lignin is what makes newsprint turn yellow after a few days in the sun. Manufacturers remove the lignin from wood pulp when making alphasellulose paper. Such papers are called lignin free (also called alphasellulose papers or matte/art papers).

Alphasellulose papers may be made from either cotton or purified wood pulp. Fine art digital papers, for example are made from 100 percent cotton, which is naturally acid free. Matte/art media are made from alphasellulose and are manufactured to make them acid- and lignin-free.

The Library of Congress has determined standards for archival papers, which include buffering paper with 2 percent calcium carbonate. Buffering is the process of adding calcium carbonate to the water and pulp before being poured into moulds and the water is pressed out. Thus the term mould-made. Calcium carbonate absorbs the environmental contaminants so they don't damage the paper, thus giving additional life to the paper. Calcium carbonate is very base, which is opposite of acidic, thus slowing down the natural degradation process.

Optical Brighteners

Optical brighteners are additives that a manufacturer may put into any media to give it a brighter white point.



A media swatch book from Premier Imaging Products (800-508-5122) displays sample swatches of a wide variety of digital media.

White point refers to how bright white a particular media is compared to other media. The white of a print can only be as white as the media itself unless optical brighteners are used. For example, for 100 percent cotton media, the white will still have a small amount of natural yellow, as this is the natural color of cotton.

The opposite of the white point is called D-Max, also called black point. This is a measure of how black that ink can look on a given media. Together, the whites and blacks printed on a specific media are what give the printed image its depth. In a painting, the whites tend to jump out towards you and the blacks give a feeling of depth or

going into the image. The brighter the whites and the darker the blacks, the more sense of dimension or depth a print will have.

While it's often preferable to use a media with good optical brighteners to get more dimension in prints, a museum does not want optical brighteners because over time they dissipate. Museums and art collectors do not want any change in prints. Because optical brighteners dissipate, some prints will look a little different 30 years from now. A museum-quality print, on the other hand, will not show any change for more than 100 years.

Production Choices

Taking all these factors into account, the two main choices for selecting media for production digital printing would be a matte/art media (alphasellulose paper) or canvas. These are the first choices when price is the most important factor. You also have the option of going to a photographic media when a job demands a photographic look. And finally, for any museum-level jobs, fine art media would be the solution.

In selecting an overall printing and media combination, there are really no bad choices. What you do get by choosing the right printer and media is output that balances quality and price and is suited to the specifics of your digital printing projects. ■



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