

JUST PAINT

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Paint & Pixels

By Digital Atelier® Artists,
Karin Schminke, Dorothy Simpson Krause,
Bonny Pierce Lhotka

As computers are becoming commonplace in homes and studios, artists are integrating digital processes into their work at an ever-increasing rate. Superior digital editing capabilities encourage creative exploration and give the artist more precise control over the production of their art.

Some artists are attracted to digital imaging because they like the ability to see

Warning When Using Desktop Inkjet Printers

Before beginning your experimentation on a desktop printer, a word of caution is necessary. Most desktop printers have ejection wheels that are included to assure that desktop printers can print multiple pages unattended, but which can also interfere with certain mixed media processes. These wheels (sometimes called pizza wheels because they look like small round pizza-cutting wheels) track across the surface of the print right after printing. If the ink does not dry on contact, these tracks can be visible in the final print.

Instant drying will assure that tracking will not occur when printing on commercially precoated surfaces, porous surfaces (like paper) coated with clear inkAID™ or on any surface coated with inkAID White Matte precoat. But if you are using one of the clear inkAID products like the Gloss or Semi-Gloss inkAID over surfaces like plastic or acrylic paint, the inks will still be wet as they pass under the wheels, causing tracking. If your printer is out of warranty, consider following directions available online to disable or remove the pizza wheels or consider a wide format (24" or wider) printer - most do not have pizza wheels.

alternative views of work or “undo” decisions made moments or weeks ago. Some like the ability to add photographic realism to their prints or paintings. Perhaps the most compelling aspect of digital imaging is that it facilitates integration of a wide range of media. Painting, drawing, collage, photography and printmaking can all be combined seamlessly using digital tools.

In recent years, affordable prices and technological advances in inks, printing processes, software and digital imaging products have removed the remaining perceived barriers to art created using computers.

The resolution of today’s inkjet printers is so fine that it takes careful scrutiny to distinguish some digital prints from photographs. Large format inkjet printers print images wider than 24" by any length, giving artists a tool for working at a large scale. And artists can now create a digital print that will last longer than ever before. A resource for longevity information can be found at <http://www.wilhelm-research.com>. Some ink and inkjet media manufacturers offer their own longevity data.

Inkjet printers rely on a surface that is “precoated” with an inkjet receiver to hold the ink in order to produce the best colors. Typically artists have purchased specially coated art papers for this purpose. Most manufactures of inkjet printers offer coated papers and color profiles for their inks. Many manufacturers of traditional art papers are now offering their papers coated for inkjet printing. The most widely known example is Arches. Its inkjet paper is called Arches Infinity. Other sources for coated inkjet art papers include: Legion Paper, which sells precoated rice paper, Hahnemuhle, Somerset and others, and Twinrocker Handmade Paper, which now offers precoated inkjet handmade papers. The paper surface variations available in these precoated inkjet papers are similar to standard art papers such as hot press and cold press surfaces.

From Mark Golden

It remains our goal in these pages of *Just Paint* to create a forum for discussion of some of the most important topics related to modern art materials in contemporary art. In this ongoing effort to stay relevant, we have dedicated this issue primarily to working with digital art. I couldn’t be more anxious about an issue and more excited at the same time. Our company has been about painters painting with real paint. With these articles we begin to explore some of the deeper reaches within mixed media using the new digital media. This issue of *Just Paint* will consider the technical possibilities of going back and forth between the virtual digital world of computer developed images and real materials.

To help us do this we are delighted to have Bonny Pierce Lhotka, Karin Schminke and Dorothy Simpson Krause, the authors of *Digital Art Studio: Techniques for Combining Inkjet Printing with Traditional Art Materials* pen the article “*Paint and Pixels*.” Bonny and her colleagues are pioneers amongst the group of artists who are finding ways to bring painting back into the world while embracing the use of modern technology.

To round out the topic, Sarah Sands, from our Technical Support Team has concluded the initial phase of research into the effectiveness of protective coatings on digital prints.

Additionally, Mike Townsend, also of our Technical Support Team, will provide some of the critical product suggestions for working with and protecting your art when incorporating digital media into your work.





Left: A faint image taken from a photograph and printed on paper. **Right:** Acrylic paints have been applied over the printed image.

In addition, both clear and white precoats are available from inkAID™ in a brush-on form to allow an artist the ability to coat their favorite art paper or create unique surfaces for inkjet printing. As a result, a print can be made on any surface that will feed through an inkjet printer, including collages, paintings, etc. If you are using a desktop printer, please see *Sidebar 1 Warning When Using Desktop Inkjet Printers*.

These advancements are bringing about a paradigm shift in how art is created and produced as the computer facilitates the ideation stage of creativity as well as the production process.

Some basic ways an artist might integrate digital imaging with traditional media are to use a digital image as an underprint, an overprint or to a print on a custom surface.

Underprinting Digital Images

When underprinting, the digital image (a photograph or a scan of art created in other media) is used as a base image under other media. The underprint could be a black and white photograph to be colored with traditional media, or the print could be used to help position collage or painted elements. For example, five copies could be printed of a partially complete image on canvas. Acrylic paints could be applied creating five related but unique paintings. This process can be used to do studies on a theme, to develop an idea, or explore different media.

For underprinting you may want to use a commercially precoated canvas. Be sure to find a canvas that is compatible with your printer. Inkjet coated canvas is available from the manufacturers of the printers and is matched to their ink chemistry or from distributors like Digital Art Supplies. Currently, if you want to print on linen canvas you will need to make your own. The linen will need to be stretched, gessoed

with GOLDEN Gesso, then precoated with one of the inkjet receivers from inkAID. After it is dry, cut the canvas from the bars. Roll it face out on a cardboard tube until it is ready to be imaged. Once the print on canvas is complete you may brush on acrylic paint as with any other canvas. In addition to acrylic paints, other media like chine collé, colored pencils or gold leaf can also be combined with the printed image. Interference, metallic and pearlescent acrylic paints can add luminosity to the printed surface.

As a matter of fact, almost all traditional materials work well over underprints on various surfaces. Graphite, charcoal, colored pencils and pastels can even be used but may require that the paper is prepared with GOLDEN Acrylic Ground for Pastels. Underprinted images can be collaged together before being worked on with traditional media to create art that is not limited by printer size.

Overprinting Digital Images

In overprinting, the artist starts with traditional media and then adds a digital print layer. This process uses a clear precoat so that the traditional media image remains visible beneath the digital print in the final art. Almost all traditional media can be applied to this process including acrylic, watercolor, black-and-white and color photos, newsprint, letters, fabrics, colored pencil, collage, charcoal, and prints from woodblocks to lithographs.

Combining traditional media with inkjet printing results in the best of both worlds. You can utilize the wide range of textures and surfaces available to the mixed-media artist while taking advantage of the precise image control available to the digital artist — and along the way, you can even preview how your final image will look.

Inkjet prints result in a transparent overlay rather than an opaque cover on the

Overprinting Digital Images on Other Media

The process is relatively simple:

Step 1. Choose your digital image to be used as the overprint.

Step 2. Create a painting on the paper that you can feed through your printer. Reference your digital image as you paint, considering its colors, values and shapes.

Step 3. When your painting is dry, brush on the inkAID precoat using a sponge brush.

Step 4. When the inkAID is dry enough not to run, hang the paper in order to help keep it flat. If it isn't flat after drying you will need to press it overnight under a weighted board, then roll the paper, image side out, onto a 2-3" core tube the length of your paper. Leave it on the roll about an hour before printing.

Step 5. Print your digital overprint onto the surface of your painting.

printed surface, allowing the characteristics of the surface or underlying artwork to show through. Not only do inkjet prints over other media benefit from a richness of surface; they also gain access to a much wider color range. Any handwork on the substrate will enhance the image beyond what is possible by just printing on purchased papers.

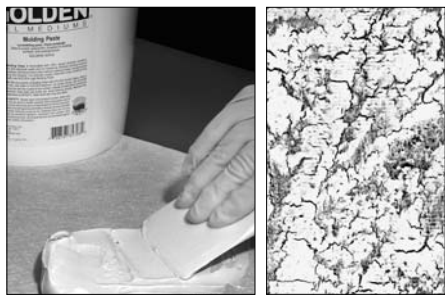
Acrylic paints can be used to create colorful and detailed surfaces on which to add a digital print. This method works around the color-gamut limitations inherent in digital printing, which ultimately still relies on a four-color CMYK process. For example, even newer 6 color systems like Epson's Ultrachrome™ inks, create expanded ink sets by merely adding transparent versions of Cyan, Magenta, and different Blacks to the base selection. Acrylics, on the other hand, have access to hundreds of individual pigments that can be further modified with Gels and Mediums to generate any degree of translucency you might desire. This provides you with a tremendous amount of control and leaves a significant range of colors, including the special effects of GOLDEN's Iridescent and Interference paints, beyond the reach of printing inks alone. The same is true with texture, where you can use acrylic Gels, Mediums and Pastes to produce a wide variety of surfaces that impart a tactile presence not easily achieved by other means. Or you can add a more subtle sense of

handmade strokes by simply underpainting in light washes of color. In all these cases, combining the two media allows you to create a luminous imagery unachievable by either one separately.

When working with acrylics plan your color values in advance, applying your lightest values first in the same way a traditional watercolor is developed. The digital photo, which is printed last, should always provide the darkest elements. Or you may wish to fit the photo into an area of your painting reserved for this purpose and left free of any darker colors. Once the acrylic underpainting is complete let everything dry thoroughly before applying the precoat. The *Overprinting Digital Images on Other Media* sidebar on page 2 gives information on the overprinting process.

Creating Custom Substrates

Any surface able to pass through your printer can be prepared with a precoat for printing. Three ways of making custom surfaces are the Base Method, which creates a permanent base for the art; the Carrier Method, which employs a plastic sheet that carries the surface through the printer then releases the surface after printing; and the



Left: GOLDEN Molding Paste applied to a non-woven fabric to create a textured surface.

Right: Detail of surface made from GOLDEN Crackle Paste with GOLDEN Acrylic Gold Glaze.

Support Method, which is a temporary base upon which the surface is built before being removed, precoated and printed.

The Base Method

Beautiful textured surfaces for printing can be created using GOLDEN Gel Medium, Soft or Heavy Gels, Molding Paste, Crackle Paste, or Pumice Gel. Many large format printers can print on surfaces up to the thickness of a penny. Check your printer specifications for media thickness. Start with a thin but stable base like non-woven spunbonded polyester, (sold in fabric stores as interfacing), which will not warp when wet. Strathmore Aquarius paper also works well. If necessary, seal the surface with a coat or two of gesso. Apply the texturing media and allow to dry completely. Precoat with inkAID, allow to dry again and feed through the printer for imaging.



Rice paper removes easily from carrier after printing.

The Carrier Method

To print on sheer papers like rice paper, which do not feed well through the printer or do not have a surface able to receive a print, the carrier method is ideal. Use inkAID Clear Semi-Gloss precoat to adhere your thin paper to a slightly larger sheet of 5 mil Dura-Lar® polyester film. Allow the precoat to dry, print and remove the image from the Dura-Lar carrier sheet.



Materials are collaged to a polypropylene support using GOLDEN Regular Gel to create unique surfaces for inkjet printing.

The Support Method

As a variation to using paintings as an underlying layer for a digital image, many artists create a collaged surface, which is removed from its support before printing. A collage can be made from a wide choice of art materials – rice paper, fabrics, etc. can be collaged with acrylic medium and paint to a .02 or .03 inch polypropylene or polyethylene sheet – the plastic to which nothing will stick. When dry, the translucent collage will peel off the sheet. The collage can be precoated with clear inkAID on either the textured topside or the smooth side that had been adhered to the support, and then printed with your inkjet printer.

If there is a head-height adjustment on your printer, set it to the maximum height to help the heads clear as the surface is printed. Some printer software will override a maximum-height setting, so make sure to also select the proper head height in the printer driver or RIP if such an option is available.

Clear precoats allow the color of the underlying surface to show through the print. But if you want to preserve the texture of a material while obscuring its surface image or color, you can precoat with inkAID White Matte precoat. Two coats of this precoat is opaque enough to render colors beneath invisible. The White Matte precoat is also safe to use over non-porous painted surfaces when printing with a desktop printer.

More Experimentation

After experimenting with these basic approaches to integrating digital images with traditional media, you can start to layer your images in more combinations. For example, you might print an underprint on paper, paint over all or part of the image with acrylics, precoat with inkAID Clear Semi-Gloss, add another digital image and then chine collé a thin rice paper on which you have printed or painted a third image. Although there are advanced techniques for alignment, you should start your experiments with imagery where alignment is not critical.

Postcoating

For art, which used a clear precoat, GOLDEN MSA Varnish makes an excellent choice to protect your print. It is recommended to start with one coat of gloss and finish with a coat or two of gloss, satin, or matte to get the finish you desire. As the varnish is not water soluble, it will not move or interfere with your image. In addition, it has UV inhibitors to help extend the life of your print. The aerosol version is an excellent choice for protecting digital prints as it eliminates the need for clean up with solvents.

But do not use any solvent-based products (like GOLDEN MSA Varnish) on top of surfaces coated with White Matte Precoat (whether commercially or self-coated) as the solvents will eventually damage the precoat. As it is water-based, GOLDEN Polymer Varnish can be used to finish surfaces coated with White Matte Precoats.

Further Exploration

These basic methods for integrating digital with traditional tools give a glimpse into the exciting possibilities of integrated media. Many unique variations on these processes can be developed with some experimentation. For more detailed directions, ideas for further exploration and advanced techniques, please refer to the authors' book, *Digital Art Studio, Combining Inkjet Printing with Traditional Artists Materials* (Watson-Guptill, 2005). Advanced topics covered include creating wet transfers, dry emulsion transfers, gelatin

(fresco) transfers, dimensional images, and fabric printing. This book presents ten years of experimentation previously available only within limited workshops and is written to inspire exploration of this exciting new genre of digital/mixed media.



From left to right: Karin Schminke, Bonny Lhotka, and Dorothy Simpson Krause at the Whitley Center on San Juan Island, WA working on the first draft of their book in May 2003.

Digital Atelier Bio

The artists of Digital Atelier, Bonny Lhotka, Dorothy Simpson Krause and Karin Schminke, are traditionally trained artists who were early adapters and integrators of digital technologies. Their leadership position has allowed them to spotlight successful innovation in this rapidly evolving field as they write or have been written about in dozens of periodicals and books. Their work is widely exhibited and can be found in more than 200 public and private collections. For their work in shaping and interpreting the significance and influence of the new technologies on fine art they are recipients of the Computer World Smithsonian Award for “visionary use of information technology.”

The content of this article was adapted from *Digital Art Studio: Techniques for Combining Inkjet Printing with Traditional Art Materials* by Karin Schminke, Dorothy Simpson Krause, and Bonny Pierce Lhotka. (c) 2004 LSK LLC. Published by Watson-Guptill Publication. Used with permission from the publisher.

Editor's Note

The information in this article is based on research and testing done by Digital Atelier® and is provided as a basis for understanding and experimentation. Due to the numerous variables inherent with the methods, equipment, and materials described, the artist must assess each application to ensure all individual project requirements are met. GOLDEN ARTIST COLORS, INC. MAKES NO EXPRESS OR IMPLIED WARRANTIES REGARDING THIS INFORMATION.

Don't Fade Away: Recent Testing of Protective Coatings

By Sarah Sands

“I’m not particularly worried about lightfastness,” the customer said with confidence as we discussed the merits of using a UV protective varnish. “The ink system I’m using is rated as permanent for more than 100 years.” I glance at the time, and take a deep breath. “Here we go,” I thought, and began explaining why these assertions need to be taken with a great deal of caution and seen in context. This whole field has become a tangled mess of competing claims and misunderstood concepts and unraveling all the facts can be dizzying.

In the following pages we begin by looking at how the lifespan of a print is determined, the elements that can affect this, and the limitations of accelerated testing to accurately predict the longevity of digital media. We also provide you with some of the information you need to make better, informed choices when deciding to protect your prints. Finally, we share results from our own testing, conducted over the last three years, showing the effectiveness of our MSA Varnishes to increase the lightfastness of these materials – both in isolation and as compared to the major, competitive brands in the marketplace.

Lightfastness in Paints vs. Prints

It is easy to assume lightfastness ratings for printing inks and artists’ paints must be comparable, or at least the methodology for determining them must be similar. But neither assumption is correct. The fields have actually evolved historically distinct criteria for measuring lightfastness and permanence. Artists’ paints rely on measuring changes to a color’s spectrophotometer reading based on the CIE L*a*b* color space. Depending on the degree of change, known as the Delta E (ΔE)¹, each color is then assigned a particular lightfastness rating set by ASTM standards. By contrast, digital prints use densitometry readings to track changes in the density of a particular dye rather than measuring a shift in color space. In this system what is significant are not the changes to a particular swatch of color but how much density any of the CMYK dyes can lose before an image is deemed unacceptable based on ‘psychometrics evaluations’.² As set by Wilhelm Imaging Research, currently allowed percentages of density loss before failure is reached runs from a low of 25% for Magenta to a high of 35% for Yellow. Clearly this is a very different type of

measurement than painters are accustomed to. Nor will most of them realize that when a particular ink system claims a specific duration for lightfastness, it is referring to how long it might take to reach this level of density loss. In addition, lightfastness ratings for digital prints almost exclusively assume the prints are mounted behind glass, at 70° F and 60% Relative Humidity (RH), with display conditions of 450 lux for 12 hours per day. While ultimately not a matter of either system being better or worse, it does show the distinct concerns and traditions each medium brings to its field.

Other Factors Involved in Fading

While concerns over print stability usually center on UV exposure, other factors such as humidity, exposure to air, and heat are just as significant. Although not the focus of our own testing, it is important to be aware of their impact.

Humidity

For many types of digital media, humidity alone can induce major color changes. For example, some dye-based systems exhibited upwards of 16 Delta E units of change in just seven days when exposed to 80% RH and 75° F.³ These changes would far outweigh anything caused by UV alone over a similar time period, and those conditions are not all that uncommon for a humid summer. While it is true that pigmented systems were shown to have excellent lightfastness, changes were still considerable for dye-based inks even at lower humidity levels of 70% RH.

Air Fade

Simple exposure to air found in normal household and office environments will cause changes. It is largely thought that pollutants, and in particular ozone, are the major cause for this. In one reported test, significant ‘air fade’ was seen for prints done on porous media after 4 months of exposure to air in a dark environment. The majority of these samples had a 15-25% density loss in Cyan, with one sample even registering above the failure criteria of 30%.⁴

Temperature / Dark Fade

Many materials yellow when exposed to heat alone, and various chemical reactions will continue in the absence of light. In some recent testing we noted clearly visible yellowing for various clear coats after 400 hrs at 140° F.

(Continued on page 8)

Product Exploration and Development:

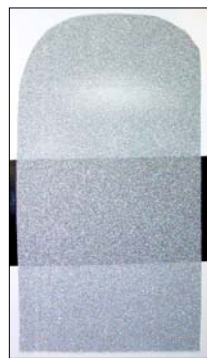
New from the GOLDEN Custom Laboratory

By Scott Bennett

We regularly review new pigments and binders for potential inclusion into our already vast line of products for artists. Sometimes it is obvious that we need to fill a color space or gap between existing colors. The goal is to make smoother transitions between colors and ultimately, give the artist more color choices. After researching and testing a number of pigments, making test batches of paint and conducting further testing for stability issues, a new paint color can be the result. Other times, there are requests for specific colors, textures, and working properties of both paints and mediums, and our research brings an assortment of possibilities to the table. And finally, serendipity comes into play with a particular material suggesting other avenues to explore.

These new experimental products are a series of colors, mediums and pastes that have come from one of the above avenues of exploration and development. As is the case with all new paints and mediums, experimentation will yield unique results and possibilities that opens doors for artists.

COLORS



Iridescent Holographic Silver –

This unique iridescent paint possesses a combination of certain qualities of both our existing interference colors and iridescent metallic colors. In full strength, the cool and warm particles

appear evenly dispersed, and account for the “Holographic” 3D sense of space. A slight angle-dependent color flip is noticeable and the surface has a fine sandpaper-like feel. When the paint is mixed with a gel medium [Heavy Gel (Gloss) in my test] in a ratio where the particles are widely dispersed in the gel, the flip from blue to gold-like colors is much more noticeable and quite beautiful, and the gritty surface becomes glossy and smooth. In certain light and angle situations all the colors of the spectrum are represented in the particle reflections.



Iridescent Aluminum

– This heavy body metallic paint contains fine aluminum powder as the pigment. The paint is very opaque with a wonderful dense, creamy, wet working property. Compared to Iridescent Silver, Stainless Steel (Fine

and (Coarse), and other metallic colors like Copper, Bronze and Gold, it fills a color and surface space very nicely. It has a softer and cooler metallic appearance than our Iridescent Silver (Fine) and offers an ultra smooth reflective surface, which is fairly mar resistant.



Biotite Flake (XL) –

Biotite is the primary dark mineral present in granite and is typically black or brown with a flaky texture. The particles vary from about 3/4" long down to microscopic in size.

When applied, the distribution of the particles is unpredictable. This product is sure to pique interest in those of us looking for something to shake us out of our usual habits of working.



Vermiculite (Coarse)

– This color resembles GOLDEN Coarse Pumice Gel in texture, but with a pyrite-like (*fool's gold*) effect that is the result of all the tiny reflective facets in the particles. It is dull bronze to medium brown in color,

with lighter particles evenly dispersed throughout. This expanded form is porous and takes stains and washes well.



Raw Vermiculite

(XL) – Chunky pieces of this iridescent, bronze colored, mica-like material dispersed in acrylic can have a similar bunching together of particles that one sees in the Biotite Flake (XL),

but these solids are thicker (composed of more layers), more iridescent, and more regularly sized. The platelets are mostly 1/4" - 1/2" in length and irregularly angular in shape. Because of the large particles, the resulting film becomes bas relief-like, and can function as a drawing or as a compositional element.



Fluid Ultramarine Blue (New) –

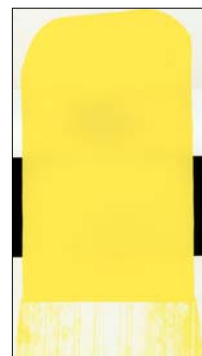
This is a more translucent, cleaner, and stronger tinting color as compared to our existing Ultramarine Blue.

This does not necessarily mean it is a better pigment,

since color is both relative and specific in its particular use. We felt that it was significantly different from what has been our standard Ultramarine Blue to warrant a look.

NEW YELLOWS

While we have known about the pigments used in these new yellows for some time, we didn't see, at first, that they served a purpose in filling needed color spaces, and for color mixing attributes. After requests from a number of artists to make paint from these pigments, we made some test batches and reviewed the color swatches and drawdowns. We all felt positive about the increased lightfastness, exterior durability, and subtle filling in of color spaces that these colors offered within our existing line up of yellows.

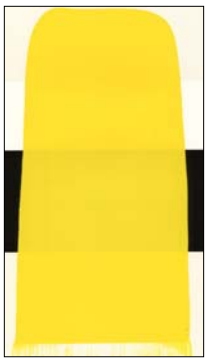


Bismuth Vanadate Yellow PY 184 –

This inorganic pigment has the opacity and lightfastness of a cadmium, without the typical UV/moisture sensitivity that limits cadmiums in outdoor use. It compares to our existing Hansa

Yellow Light and Cadmium Yellow Light, but is brighter, cleaner and more opaque than the Hansa and more translucent, cooler and cleaner than the Cadmium. It fills a color space in the cool end of the yellows.

The following two Benzimidazole Yellows are extremely lightfast. PY 151 is quite a bit more opaque than its cousin PY 175. Both are organic pigments.



Benzimidazolone Yellow PY 151 – This color is similar to Hansa Yellow Opaque in the masstone, but a little less red and not quite as opaque. Much cleaner and brighter when tinted. In the masstone the Hansa Yellow Opaque and

this yellow appear very similar, but when tinted with equal amounts of titanium white, the differences are obvious. Hansa Yellow Opaque appears more red and the Benzimidazolone Yellow appears cleaner, brighter and cooler.



Benzimidazolone Yellow PY 175 – This color is the most translucent of the three and by a subtle margin, produces the cleanest tint of the group. In color temperature, it resides between the other two new yellows.

MEDIUMS



Talc Medium – This is a very translucent medium, which imparts a soft satin sheen in the dry film. Talc Medium has a delicate surface and can be burnished and marked very easily. One possibility with this product is

to use it as a ground for pastel and drawing. In addition, it takes stains and washes well, leaving a very crisp edge.



Satin Pearl Medium – The size of the pigment in this product is comparable to Iridescent Holographic Silver, but the dry film is much more translucent, primarily cool white light is reflected, and there is a unique soft feel to the dried film. At the same time, it possesses a

nice tooth for pastel work. It has a delicate surface and can be burnished and marked easily. The velvety dry film will take washes and stains easily, with a bit of edge bleeding.

PASTES



Opaque Fiber Paste II – When this product is applied with a palette knife and has dried, it looks like rough handmade paper and takes washes and stains very well, keeping clean, sharp edges. To the touch, it has a much harder feel than

paper, but is more flexible and whiter than our previous version. This product can be used to make paper-like grounds on canvas or board: the challenge is in the application. It tends to bunch up or clump when spread out over a surface. Skimming with a wet palette knife will help to create a smoother surface and reduce the clumping effect, but for many artists, an uneven surface and less predictable working properties may be fine. Like watercolor paper, a dry stained area can be scratched into to reveal the original white of the material.



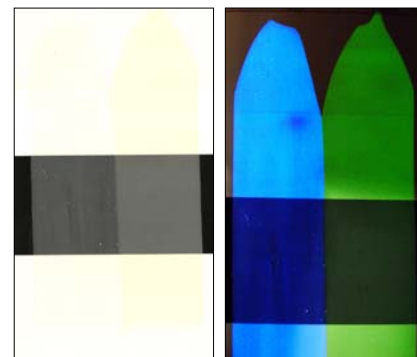
Molding Paste (Coarse) and Molding Paste (Extra Coarse) – These two new

molding pastes were originally called “Calcium Carbonate Pastes,” reflecting the mineral used as the pigment/filler. Both have a similar translucency and flexibility. Generally, they can be used as molding pastes are used, but each has its own special qualities. The Extra Coarse version has a distinct, rough surface in the dry film, appearing somewhat like a white Coarse Pumice Gel. There are noticeable

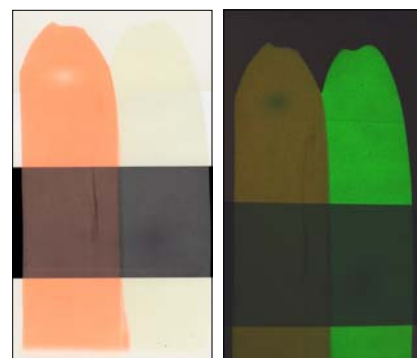
facets that reflect light in places, which give the surface a crystalline-like appearance. Paint washes will show the coarse nature of the surface in the way that the paint will tend to settle and concentrate in the many low areas of the rough surface.

The Coarse variety looks similar to Light Molding Paste but is more dense and harder. It can be spread out easily to create thin, very translucent, warm, white surfaces that take fluids and drawing media well. It dries to a matte, somewhat rough film that can be scraped and burnished easily. For those artists who want to dig, carve or scratch into the surfaces of their work, both of these products will find good use. If you cut and scrape into the dry films and then stain into it, the marks will soak up the paint and appear much darker than the surrounding area, creating intaglio print-like marks.

PHOSPHORESCENT COLORS



Phosphorescent Blue – In daylight, Phosphorescent Blue appears to be a much more translucent version of our original Phosphorescent Green, but as you take it into the dark, it begins to glow violet and then in complete darkness, it glows an intense blue. It is a very unique product.



Phosphorescent Orange – In daylight, this appears as a pale orange, and in the dark, it has a similar yellow green glow as in our standard phosphorescent paint.

If you are interested in purchasing one or more of the experimental Custom Lab products described above, please call GOLDEN Customer Service at 607-847-6154. For questions regarding any GOLDEN product contact our Technical Support Team at 800-959-6543.

Disclaimer

The information on pages 5-6 is based on research and testing done by Golden Artist Colors, Inc., and is provided as a basis for understanding the potential uses of the products mentioned. Due to the numerous variables in methods, materials and conditions of producing art, Golden Artist Colors, Inc. cannot be sure the product will be right for you. Therefore, we urge product users to test each application to ensure all individual project requirements are met.

While we believe the above information is accurate, WE MAKE NO EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, and we shall in no event be liable for any damages (indirect, consequential, or otherwise) that may occur as a result of a product application.

¹ Vermiculite is the mineralogical name given to hydrated laminar magnesium-aluminum-

iron silicate, which resembles mica in appearance. Flakes of raw vermiculite contain interlayer water in their structure and when they are heated rapidly above a specific temperature, the water flashes into steam, and the flakes expand, or exfoliate into accordion-like particles. The resulting lightweight material, the most common in commercial use, is chemically inert, fire resistant, and odorless. There is a color change during expansion that is dependent upon the composition of the vermiculite and furnace temperature.

GAC Products on Inkjet Prints *establishing best practices*

By Mike Townsend

The volume of e-mails and calls to our Technical Support Department reveals a consistent increase in the number of artists incorporating inkjet printing into their artwork. While some artists' focus is making quality prints, others see the print as a starting point for creating original artwork. This article focuses on materials and application methods, and product interaction when working with GOLDEN products on digital prints.

Print Systems

Today the artist is presented with a wide assortment of pre-coated papers, canvases, specialty printers, inks, protective coatings and varnishes. In an effort to improve the performance of a print, as well as to control sales, companies develop printers, inks and substrates together as a system. If an alternative substrate is used, for example, the receptive coating may not allow the inks to penetrate as well as the recommended substrate's surface, and so the print's quality is compromised. Starting with an established system provides a baseline for the artist for future testing.

Substrates

The key requirement for any substrate being considered for inkjet printing is how receptive it is to the ink system. Physical characteristics of the substrate impact subsequent product applications.

Below is a breakdown of benefits and potential issues of common substrates:

Inkjet Papers – A range of papers are available, from very glossy photo stock to heavy matte papers. This group can include watercolor papers specifically produced for inkjet printing. Various paper stocks and coatings can experience color change and yellowing regardless of how the inks fare. Therefore, not all inkjet papers are suitable for archival use.

Inkjet Canvases – The canvases intended for use through printers tends to be easy to coat and seal because the surface is not very absorbent. If properly coated, the canvas texture can be retained and it can be stretched and framed like a painting. These pre-coats may not be receptive to all inks, and may also repel applications of mediums or varnishes. As with papers, inkjet canvas coatings may have inherent archival issues.

Uncoated Substrates – Artists have experimented with many materials for use in digital printing, including 100% cotton rag paper. Although some may be quite permanent and appropriate for fine art work, because they are not specifically developed for inkjet printing, these surfaces may cause poor reception of the inks. Without an appropriate sizing such as inkAID™ or other ink receptive coatings the quality of the resulting print may be compromised. If used without any receptive ground coat, the high degree of absorbency means multiple applications of a sealer may be required to close the porous surface.

Inks

The two types of inks available for inkjet printing are dye-based inks and pigmented inks. Dyes are colorants, which are soluble in the solution carrying them. By nature they are more prone to fading from exposure to light, especially in the ultraviolet portion of the spectrum. Pigments are larger insoluble particles with significantly stronger bond strength holding them together and therefore, less subject to break down from ultraviolet light exposure.

Pigmented systems are more permanent, but the dye-based inksets have a wider color gamut. Of course this is a generalization, but each artist will need to make a decision as to which one to settle upon. Their choice affects what substrates and subsequent coatings can be used as well. Dye-based inks are generally more

water sensitive than pigmented inks, but this can be countered by using substrates designed to minimize the issue. Pigmented systems tend to be less vibrant than dyes and their water resistance reduces inadvertent reactions with a larger variety of coatings. The use of pigmented inks can allow for direct waterborne coating applications.

Sealing Coats

The function of a sealing coat is to reduce the absorbency of the substrate and also to encapsulate the inks, making them less susceptible to reacting with subsequently applied materials. It also seals the substrate's ink-receptive coating if one is present. Each substrate will have a unique degree of absorbency and reaction to the initial sealing coats applied to it. Sealing allows for uniform varnish coats and the ability to apply and manipulate subsequent products more readily. Once a uniform layer has been established, the artist is free to "re-mark" — the post manipulation of a print with color and texture — with paints, gel mediums, or varnishes.

In many cases it can be difficult to apply water-based coatings directly onto the print without some color bleed — even systems deemed "water resistant." Spraying provides the most even application of these coatings. Light, fast-drying seal coats can minimize the occurrence of inks bleeding or distortion of the image.

Once it is established that a waterborne coating can be used, then determine what properties are desired with this coating and what application method works best. For example, GAC 500 blended with Airbrush Transparent Extender makes a good overall spray coating, while Soft Gel (Gloss) thinned with water is better for brushing. Thin coats are best to seal the surface. Absorbent papers may require several coats to properly seal the paper. Gloss products

(Continued on page 10)

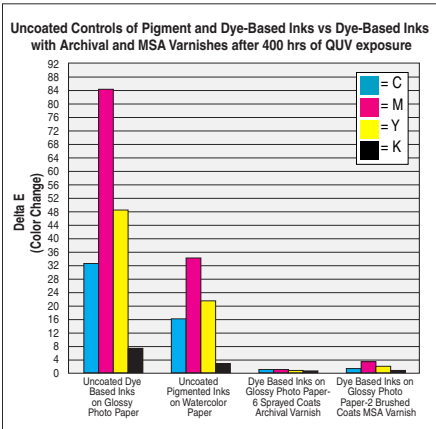


Figure 1: Uncoated dye-based and pigmented inks compared to Dye-based Inks with 6 sprayed or 2 brushed coats of GOLDEN MSA Varnish (Gloss) after 400 hrs. QUV exposure. 400 hrs. is thought to be roughly equivalent to 33 years of indoor conditions.

(Continued from page 4)

Limitations of Accelerated Testing

It is critical to recognize the limitations of accelerated testing to predict the longevity of digital prints. Very often we are asked if we can guarantee a certain result, or to certify a specific effectiveness for our products. And nothing would be nicer than if the test results and data allowed for that. Unfortunately, the best we can say is how a particular set of materials performed under very specific conditions. Beyond that, one enters into rougher and rougher approximations to any real life application. The strength of accelerated testing is that it can subject materials to very controlled, repeatable, and standardized settings. The complexity and synergy of actual situations, however, will always be more intricate and challenging to analyze. Nor is it simply a matter of taking into account the environmental elements we already alluded to. For example, we know the combination and choice of paper stock and ink system plays a dominant role in deciding the degree of permanence. At the same time, this is

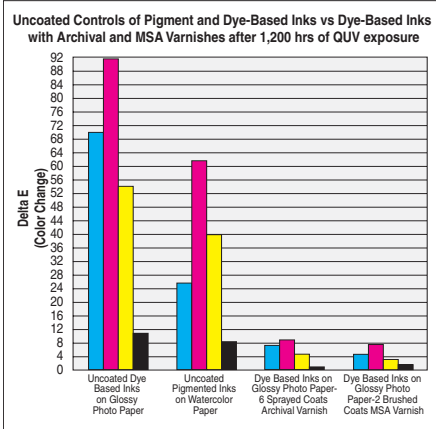


Figure 2: Same samples as Figure 1 after 1,200 hrs., or the equivalent of 100 years of indoor conditions. Varnished samples were able to stay near or below 8 Delta E, which is the upper limit for a Lightfastness II color by ASTM standards.

not a static field. New systems and technologies are being constantly unveiled, so test results quickly become dated or irrelevant.

Reciprocity Failure

This is one of the most essential concepts for understanding the limits of accelerated testing for digital media. At its most basic, it describes the fact that inks fade more quickly when exposed to lower light levels for longer periods than the short exposure/high intensity used in accelerated tests would predict. In other words, one cannot assume that exposing a print to twice as much UV in half the time is comparable to the same accumulative exposure done in real-time. Even taking into account more conservative estimations, reported rates of reciprocity failure suggest accelerated tests can overstate expected lightfastness results anywhere from 40% to as high as 1000%, or ten times longer, than would be expected in real life results.⁵ Under these circumstances, a system rated for 100 years by an accelerated test might only last anywhere from 60 years to as few as 10 years in real life.

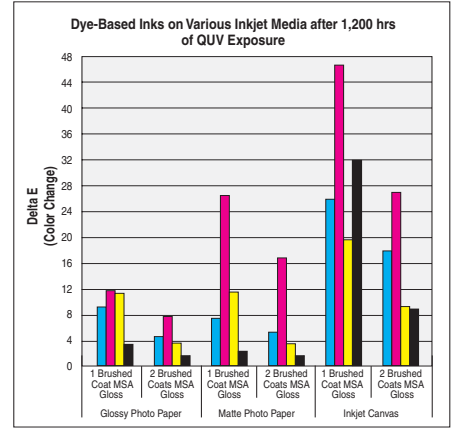


Figure 3: Shows the impact of different levels of varnish and various substrates with dye-based inks after 1,200 hrs. of QUV exposure.

Light Intensity

Lastly, how much light, and what type of light, a print is exposed to will effect results to a degree most people do not realize. Cool fluorescent or Xenon Arc, at various levels of intensity and either filtered through glass or allowed to directly expose, are possibilities that attempt to simulate different environments. Currently there is no industry-wide agreement on which of these configurations should act as a standard. To make matters worse, there are equally wide disagreements on what constitutes a 'typical' level of lighting that prints are exposed to, which in turn determines how you correlate total accelerated exposure to an equivalent number of actual years. Wilhelm Imaging uses as typical indoor exposure of 450 lux for 12 hours per day. Kodak uses 250 lux/12 hour. Museums expose sensitive materials to as low as 50 lux, and a high of 250, while a piece hung near a window that receives direct sunlight for several hours a day might receive as much as 50,000 lux.

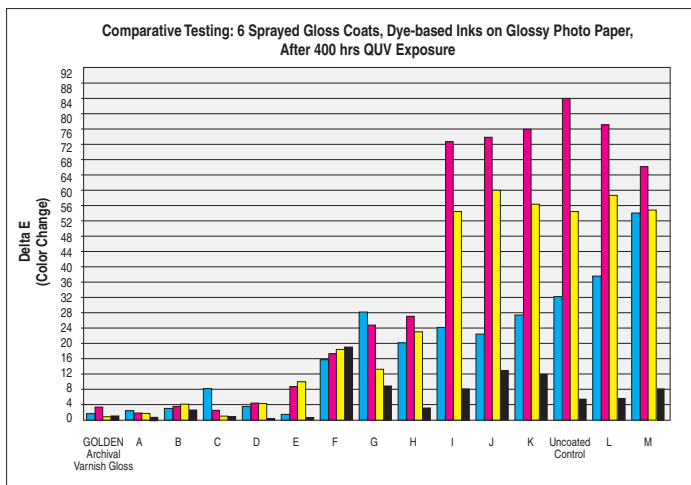


Figure 4: Relative rankings based on average Delta E measurements for the CMYK of all 14 products, and one uncoated control, after 400 hrs. QUV exposure. Surprisingly two products marketed specifically for protecting digital prints had overall scores lower than even the uncoated control.

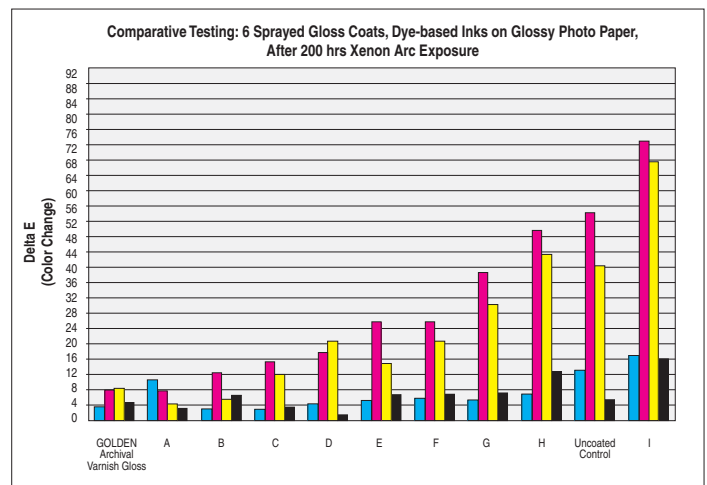


Figure 5: Current data from ongoing Xenon Arc test. Relative rankings based on averaged Delta E measurements for the CMYK of each product after 400 hrs. QUV.

Predictive vs. Comparative

As you can tell from the arguments presented, there exists some profound obstacles to accurately determining the permanency of prints with current methods of accelerated testing. However, it is also important to understand the difference of conducting comparative rather than predictive tests. Comparative testing simply states that a set of samples, subjected to identical circumstances, produced a specific set of results that can be used as a measure for comparing performance under those particular conditions. The requirements for predictive testing would be quite large by comparison, since a host of variables representing possible conditions would need to be accounted for, and the results used to make predictions for how these materials might perform in real life. This distinction defines many of the parameters and procedures used in the testing and the significance of the results.

Results of Recent GOLDEN Testing

Protocols

For creating standard test samples we chose fugitive dye-based inks printed on typical inkjet media. We felt this 'worst case scenario' presented a good test of the effectiveness of GOLDEN MSA and Archival Varnishes to protect materials from fading due to UV exposure. The samples were created from a digital file using an Epson 700 desktop printer with standard ink-set on ordinary Glossy and Matte Photo Paper, as well as Inkjet Canvas, recommended by the manufacturer. Additional samples, used for some of our controls, were made with a professional Giclee printer and widely used pigmented ink system on water-color paper. Measurements were always taken from bands or squares of pure Cyan, Magenta, Yellow, and Black inks printed at maximum density. It is critical to note that the focus of these tests was solely the performance of the clearcoats and never meant as an assessment of the inks or substrates.

For accelerated lightfastness testing we utilized Q-Lab QUV type instruments with UV-A 351 bulbs. These provide a very similar UV energy curve as natural daylight (filtered through window glass) in the most important region of short wave energy. Typical test parameters use an irradiance setting of .762W/m²@ 340nm and a temperature of 60° C. Each 400 hour cycle approximately correlates to 33 years of indoor UV exposure. There were no dark or condensation cycles employed for these tests. Humidity is

ambient and normally below 50%.

Color measurements were done using a Minolta Spectrophotometer. Initial data points were taken prior to the start of the test and subsequently at set intervals of exposure. Delta E was computed using CIE 1976, as required by ASTM D4303-03 for computing the lightfastness of artist paints.

Prior Results

More than three years ago an earlier round of testing was completed using a large number of our standard inkjet samples treated with varying coats of either brushed or sprayed MSA Varnish. Initial spectrophotometer readings were taken of representative data points on each card to establish a basis for measuring subsequent color shifts. Readings from a broader group of target areas were then taken at intervals of 200, 400, 800, and 1200 hours. Each particular substrate/coating combination was prepared and tested in triplicate, with one test sample pulled and saved after each 400 hours of exposure. Data used for this article was culled from 66 test strips and more than 900 data points. Values for the Delta E's used in the graphs were generated by averaging readings collected from similar substrate/coating combinations exposed for identical lengths of time.

Figures 1 & 2 compare the color changes of both unvarnished dye and pigment-based inks versus dye-based samples protected with 6 sprayed or 2 brushed coats of GOLDEN MSA Varnish after 400 and 1,200 hours of exposure.

The dramatic improvement in lightfastness provided by the varnish layers is clearly evident, while color losses experienced by the uncoated samples were equally striking, with even the pigmented system experiencing considerable color loss after just 400 hours, or 33 years of typical indoor exposure. By contrast those treated with our MSA Varnish barely budged. Even after 1,200 hours of exposure these samples retained their color near or well below 8 Delta E, which is the threshold for an ASTM Lightfastness II rating and the maximum level of change deemed acceptable for artist paints.

Figure 3 shows the degree of color change recorded for various inkjet media coated with one or two brushed layers of GOLDEN MSA Varnish. The impact of each substrate on the final results seems indisputable. It is also significant to observe the amount of improvement a second coat of varnish provided, often cutting the Delta E by more than 30% and bringing many of

the color shifts within or near the Lightfastness II threshold. Lastly, it is worth noting that nearly all of the fading associated with the inkjet canvas was confined to the peaks of the weave, where both the ink and varnish were naturally thinnest. By contrast, little change was seen in the valleys, where the ink and varnish pooled.

Comparative Tests

While these results clearly demonstrated the significant protection GOLDEN MSA Varnish could provide for even a very fugitive ink system, we felt they needed to be further examined within a broader context of other products available for coating digital prints.

Our first major round of comparative testing included a wide sampling of fine art varnishes, clear protective coatings, and several topcoats marketed specifically for the serious digital artist and Giclee print-maker. In all we selected 18 products by 13 manufacturers including: Bulldog Ultra Gloss, Clearjet Gloss, Clearshield Gloss, GAC Archival Varnish Gloss and Matte, Grumbacher Picture Varnish, Krylon Crystal Clear and Kamar Varnish, Lascaux UV Varnish Gloss and Matte, Lyson Printguard, Optima Millenium, Premier Art Printshield, Schminke Glanzfilm and Mattefilm, Suregard Pro-tecta-cote #911 Gloss and #941 Matte, and Winsor Newton Artists' Picture Varnish Gloss. Samples were prepared in duplicate for each product, one coated with two and the other with six spray applications respectively. Data points were taken at both the outset and conclusion of the testing, which ran for only 400 hours due to evident, widespread loss of color as well as signs of considerable physical deterioration in some of the samples.

In Figure 4, due to space limitations, we only included results for the samples with six sprayed coats, along with one uncoated control. The results are arranged according to the averaged Delta E calculated from the CMYK of each sample. Starting from the left, these averages ran from a low of 1.15 to a high of 45.67.

Beyond our own Archival Varnish, a handful of other brands also provided significant protection and kept the averaged, overall color shifts to below 8 Delta E. These products included: Lascaux UV Varnish Gloss, Suregard Pro-tecta-cote #911 Gloss, Optima Millenium, Schminke Glanzfilm, and Clearjet Gloss. Also keep in mind these results are based only on one sample of each product, and only for 400 hours of exposure, so cannot be reliably used to predict actual long-term results. The

sole purpose is to allow you to make a rough comparison of how these coatings performed under similar, controlled conditions.

Figure 5 focuses on a current, ongoing test that exposes a slightly smaller subset of the same products to Xenon-Arc irradiance as specified by ASTM D4303-03. As we go to press the first 200 hours of exposure will have been completed, which represents a total irradiance roughly equivalent to the previous round's 400 hours of QUV, or about 33 years of typical indoor conditions. Spectrophotometer readings for each CMYK data point are taken at set intervals and Delta E calculated from initial measurements. Overall performance was then assessed by averaging these individual CMYK calculations. As before, for the sake of clarity, the graph only shows results for samples with six sprayed coatings.

Beyond our Archival Varnish, which has continued to do the best, Lascaux's UV Varnish Gloss, Optima Millennium, and

Schminke's Glanzfilm are also performing at or near acceptable levels. It is also worth noting how vital it is for artists to test their materials as one product in this group, which claimed to provide substantial UV protection for inkjet prints, is already performing worse than the uncoated control.

Final Note

The test results we have shared represent only a small amount of the work we have done in this direction over the years, and of course the work is ever ongoing. When interpreting them, it is important to note that many products we tested were not made specifically for the digital print market, and several make absolutely no claim of providing UV protection. However, as a group, we feel they represent a good cross section of what artists currently use or might find on the shelves of their art store. *A full bibliography is available at www.goldenpaints.com.*

1 The difference between two colors, expressed in units corresponding to the smallest perceptible change that someone with normal color vision could notice.

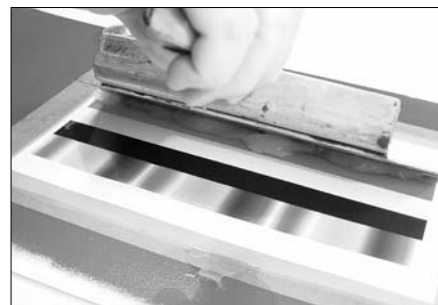
2 How Long Will They Last? An Overview of the Light-Fading Stability of Inkjet Prints and Traditional Color Photographs, Henry Wilhelm, Wilhelm Imaging Research, published in IS&T's 12th International Symposium on Photofinishing Technology, Feb. 2002, pp. 32-37, http://Wilhelm_IS&T_Paper_Feb2002.pdf

3 Humidity-Induced Color Changes and Ink Migration Effects in Inkjet Photographs in Real-World Environmental Conditions, Henry Wilhelm & Mark McCormick-Goodhart, Wilhelm Imaging Research, Inc., IS&T's NIP16 International Conference on Digital Printing Technologies, Oct., 2000, pp.74-77, http://Wilhelm_IS&T_Paper_Oct2000.pdf

4 Inkjet Photo Prints: Here to Stay, Dr. Nils Miller, Hewlett-Packard Company, June 2004

5 See in particular: Reciprocity Behavior in the Light Stability Testing of Inkjet Photographs, Henry Wilhelm & Mark McCormick-Goodhart, Wilhelm Imaging Research, IS&T's NIP17 International Conference on Digital Printing Technologies, Oct., 2001, pp.197-202; A Review of Accelerated Test Methods for Predicting the Image Life of Digitally-Printed Photographs – Part II, Henry Wilhelm, Wilhelm Imaging Research, IS&T's NIP20:2004 International Conference on Digital Printing Technologies, Nov. 2004, pp. 664-669; How Long Will Inkjet Prints Last: Estimating Print Life Using Accelerated Test Methods

(Continued from page 7)



Three ways to seal a print include spraying with GOLDEN Archival Varnish, brushing with GOLDEN MSA Varnish or applying MSA Gel with a squeegee. These Mineral Spirit Acrylic-based products should not distort water sensitive prints.

provide better clarity and depth of color than semi-gloss or matte products.

If the image is too easily blurred with a direct application of a water-based coating, the most practical solution is to apply the GOLDEN MSA Varnish (Gloss) or Aerosol Archival Varnish (Gloss) as the primary sealing coat. This solvent-based acrylic varnish should not react with water-soluble inks or ink-receptive coats.

"Re-Marking"

Assuming the print has been sealed with a compatible coat; manipulation of the surface can begin. The initial seal coat aids in stabilizing the inks and substrate, which in turn allows for more working time, smoother applications with less foam generation, and the ability to also work over the print, applying thin or thick layers of paints, gels and mediums.

Commonly used GOLDEN products

for "re-marking" inkjet prints include:

Gels and Mediums – Care must be taken to avoid excessive foam bubbles, distort water-sensitive inks, or otherwise harm the print. While some artists prefer to use semi-gloss or matte products, to ensure transparency and image clarity, the standard recommendation is to use gloss gels for texturing. Modify the gloss sheen later by finishing the work with a lower sheen topcoat, such as MSA Varnish (Satin).

Custom MSA Gel – This mineral spirit acrylic-based product allows for one-coat applications to combine reduction of water sensitivity, adding texture, and UV protection all in one product instead of having to apply multiple materials. However, if the MSA Gel is not going to be used over the entire print, an overall pre-coating of MSA Varnish (Gloss) creates a uniform surface for the gel. MSA Gel is available with and without the Ultra Violet Light

Stabilizer (UVLS) system.

Blended Paints and Mediums – GOLDEN Acrylics such as Heavy Body and Fluid are appropriate for "re-marking" sealed prints. Artist paints offer a significant advantage of lightfast pigments and range of color. The use of specialty colors such as Iridescent and Interference colors can add elements to a print that cannot be digitally created. Paints can be combined with gels and mediums to create translucent glazes. Refer to an article in issue 12 of *Just Paint*, titled "Defining Luminous Effects" for a better understanding of glazing.

GOLDEN Varnishes

Varnishing provides significant protection by reducing change, such as fading and yellowing. The number of coats needed for such protection can vary based upon the application method and materials. Refer to the test results in this *Just Paint* issue and

other GOLDEN information sheets for further information.

Both the GOLDEN MSA Varnish and Polymer Varnish contain Ultraviolet Light Stabilizers (UVLS) to minimize fading, and some artists will prefer to use one system for both sealing the substrate and also for the actual UV protection. Both products can be used on a sealed surface or directly onto a print, as long as there are no solvent or water sensitivity issues. These products will offer water resistance but not make a print waterproof. However, applying a varnish will allow for general cleaning and handling.

Mixed Media

Whenever mixed media is being considered for artwork, it is important to understand product relationships to assure adhesion and compatibility. For example, it may be necessary to seal between layers, especially if working with delicate media, such as pencil or charcoal. Testing various products over one another before committing them to the print can mean the difference between success and failure. When inkjet prints are involved in mixed media work the most important issues are adhesion and whether various materials will distort the print.

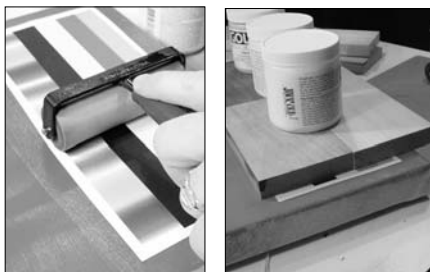
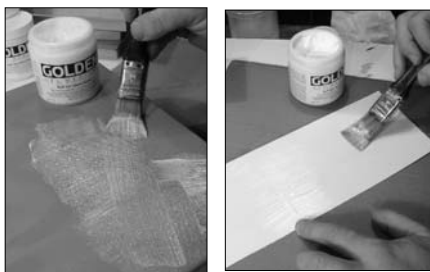
Preparing Prints for Use in Collage

Rather than the artwork being limited to the printable substrate, some artists want to add printed elements into a painting. For collage work, once the sensitivity of the print has been addressed, the print can be used as would any other paper element in the composition.

Mounting Prints to Canvas or Panel

Acrylic mediums and gels can be used as glues for mounting prints, but if the print is one with water-sensitive materials, this should be addressed first. A good example of this is attaching a giclee print with water-sensitive dye-based inks on watercolor paper onto a panel.

Prepare the back of the paper with one or two thin coats of Soft Gel. This seals the absorbency prior to actually attaching the paper to the panel. The panel's surface should simultaneously be prepared with a coat of Soft Gel to seal the panel's absorbency. By pre-coating these surfaces, less Soft Gel is needed for the actual gluing process and in turn, a better bond is created. This process also reduces the chance of edges curling and air pockets developing due to lack of gel between the two materials. Mounting large prints can be the most difficult as the gel needs to stay wet until the two objects are ready to be glued together.



Top left: Seal paper and canvas surfaces with Soft Gel; allow to dry.

Top right: Apply thin coat Soft Gel as glue layer.

Bottom left: While gel is wet, lay print evenly onto canvas.

Bottom right: Carefully place weight on print to prevent buckling; allow to dry.

The Importance of Testing

The digital print world moves at a very fast pace. By the time this issue of *Just Paint* is published there could easily be several new substrates and colorant systems in the marketplace. It is imperative to test and re-test materials for compatibility. Inkjet canvases and papers have special receptive coatings, and these films may cause adhesion failure of certain materials. Some ink may be touted as water resistant, but when a heavy coating of acrylic gel is applied, the moisture remains on the surface long enough to cause the image to blur or color to change. Therefore, do not assume because a product worked fine for one kind of ink and a particular canvas it will perform as well on others.

Conclusion

If the intent of the artist is to create a lasting artwork, they need to be prepared to spend time gathering information and conducting some tests. This new digital medium can provide so many options for the artist. It can serve as simply a print media or become part of a much more complex mixed media work. So many questions remain unanswered as to the ultimate permanency of this media. As more artists push the boundaries of this technology and as their customers demand greater confidence that their work will remain viable, the products will continue to improve. It is our goal to continue to investigate what is possible within this media and provide our best practice ideas as the field continues to evolve.



The Salon

Over the last several years, I have been given the opportunity to be personally involved with an international conference of decorative painters, known as *The Salon*.

It is an invitation-only gathering of dedicated decorative painters from around the world coming together to exhibit their work and discuss old and new techniques, products, and information in the field. *The Salon*, which began in 1992 in Belgium with a small gathering of professionals, reconvened in 1996 and has been coming together in growing numbers every year since. *The Salon* is now recognized as the most important and significant gathering of decorative painters in the world. Because of the uniqueness of this gathering I thought it would be valuable to introduce it to a wider artist community in *Just Paint*.

Participants of *The Salon* include teachers from schools as well as those who are independent commercial craftspeople. *The Salon* is a way for some of the most unique traditions within the field of decorative arts to be shared amongst one another and ultimately, passed onto participants' students. The opportunity enhances and extends the level of communication between serious and committed craftsmen.

The Salon is also a way for visitors and the outside public to experience the high quality of work present and meet the real masters of this craft. Ongoing demonstrations and an exhibit hall allow visitors and participants to view works specifically created for *The Salon*.

The Salon will be held this year in the Netherlands in the old medieval city of Utrecht at the modern painter's school NIMETO, on March 23rd – 26th. For additional information about *The Salon*, go to www.salonforever.com.

Mark Golden

creative community. Some shops have set aside retail space for hanging artists work, others have committed valuable retail space for regular workshops and education. Others pride themselves in having incredibly knowledgeable artists on staff. A few shops have become savvy purveyors of art materials from around the world, searching for unique and one-of-a-kind materials to inspire their customers. And still there are those that endeavor to have just about everything, in every size, time, money and staffing. Many of our favorite art supply retailers, large and small, have re-invested heavily within the arts community they serve. They deserve and have earned our patronage.

As a manufacturer that supplies these retailers, we believe in supporting those partners that help to create and support the community of artists, wherever and however they exist. For all of us to thrive as part of a sustaining creative community we must all commit to be a significant contributor to our communities, to share and to give back to one another for our mutual success.

Despite the market pressures, Golden Artist Colors, Inc. is committed to maintaining the high product quality and the extensive services that we believe have value for all artists. We will continue to provide access to unique materials that excite and provide value to our customers. We will continue to make our product available to artists as an information resource. We enjoy making a quality product in the U.S. and will continue working diligently to improve all our processes so that we can continue to manufacture competitively. And we will continue to be a conduit for creative expression that requires the integration of science and technology with fine arts. It is our passion and our commitment.

Golden Artist Colors, Inc. has worked diligently to create a company that we could all be proud of. Our mission, emerging from our conversation with artists, has kept our direction focused: To grow a sustainable company dedicated to creating and sharing the most imaginative and innovative tools of color, line and texture for inspiring those who turn their vision into reality. As we continue to work with artists to develop new creative tools, we are embarking on what may be our most challenging journey yet.

Collectively, the art material industry, along with other manufacturers of quality consumer products, face tremendous market pressure to lower prices and offer continuing concessions for placement of product. This "Wal-Mart effect" has created an accessible range of inexpensive student-grade products, encouraged a flood of imported products and pushed many manufacturers to adjust the quality of their product and reduce services in order to meet these pricing demands.

With the marketplace so focused on price, opportunities such as improving quality, increasing the range of available products, creating new innovative offerings, and providing support services are all at risk. If it continues, the effects of commodification will eventually reduce the choices available to artists, including where to buy products, availability of materials, quality of products and availability of services. This may be a perfectly acceptable proposition for some artists, and we understand that. We also honor the range of unique materials from other manufacturers that meet artists' individual needs. But we believe that there is an opportunity here for us to make a difference. It is our hope and belief that our efforts will help make all these products more available, sustaining wider choices and making our creative world that much richer.

We all know of stores, whether online suppliers, chains or small independent shops that have worked diligently to become a significant part of their

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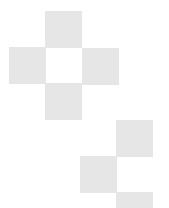
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With the marketplace so focused on price, opportunities such as improving quality, increasing the range of available products, creating new

innovative offerings, and providing support services are all at risk. If it continues, the effects of commodification will eventually reduce the choices available to artists, including where to buy products, availability of materials, quality of products and availability of services. This may be a perfectly acceptable value proposition for some artists, and we understand that. We also honor the range of unique materials from other manufacturers that meet artists' individual needs. But we believe that there is an opportunity here for us to make a difference. It is our hope and belief that our efforts will help make all these products more available, sustaining wider choices and making our creative world that much richer.

We all know of stores, whether online suppliers, chains or small independent shops that have worked diligently to become a significant part of their creative community. Some shops have set aside retail space for hanging artist's work, others have committed valuable retail space for regular workshops and education. Others pride themselves in having incredibly knowledgeable artists on staff. A few shops have become savvy purveyors of art materials from around the world, searching for unique and one-of-a-kind materials to inspire their customers. And still there are those that endeavor to have just about everything, in every size, always in stock. None of this is accomplished without a serious commitment in time, money and staffing. Many of our favorite

art supply retailers, large and small, have re-invested heavily within the arts community they serve. They deserve and have earned our patronage.

As a manufacturer that supplies these retailers, we believe in supporting those partners that help to create and support the community of artists, wherever and however they exist. For all of us to thrive as part of a sustaining creative community we must all commit to be a significant contributor to our communities, to share and to give back to one another for our mutual success.

Despite the market pressures, Golden Artist Colors, Inc. is committed to maintaining the high product quality and the extensive services that we believe have value for all artists. We will continue to provide access to unique materials that excite and provide value to our customers. We will continue to make ourselves available to artists as an information resource. We enjoy making a quality product in the U.S. and will continue working diligently to improve all our processes so that we can continue to manufacture competitively. And we will continue to be a conduit for creative expression that requires the integration of science and technology with fine arts. It is our passion and our commitment.



Mark Golden

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