

Mastering Mounting



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Everything Old Is New Again: Trends for 2002

Trends are a general course or prevailing tendency; a current style or vogue; a certain direction. It appears the trends for mounting this year will be more of the same—and not. History has shown us again and again that, just like the song says in “All That Jazz,” everything old is new again. And quite honestly this could be the theme song of this year’s mounting trends. Macrame, *découpage*, and candlemaking re-emerge every 10 years or so in the craft industry. Bell bottoms and tie dye from the 70s flooded the fashion industry a few years back and retro is everywhere.

Revolutionary Dry Mounting

Last month we took a walk through history with the development of heated dry mounting and its revolutionary concepts and adhesives. Progress and technology had been keeping up with the hands-on world of custom picture framing with the development of equipment and techniques that made it relatively easy to achieve long-term mounting permanence.

The machine age helped to make life simpler and more predictable for the framer. Presses not only iron things flat and bond them to boards, but also suck the air out and dry all the layers as it bonds them. They’re very user-friendly, but it is still up to the framer to determine the best way to enhance and protect any image that he or she is challenged with framing.

Heated dry mounting has been touted

over the years as the best way to long-term mount any mountable item. And though that may still be true, dry mounting is not always suitable to an item.

Originals, limited editions, family heirlooms, and collectibles may all tolerate heat but require preservation mounting when being framed because of their inherent (often sentimental) value. The thermographic items of the 80s (including faxes, tickets, and raised lettering on business cards and invitations) are all heat sensitive.

Digital Trends

Trends in technology and art greatly impact our industry. We have seen the birth of the computerized mat cutter and its rise in popularity. We have also seen the once disposable, digitally printed proof (prerequisite for the lithograph) evolve into fine art. First the disposable proof, then four color copiers, one-hour developing, and now home office inkjet printers. Let’s explore.

Electrophotographic, electrostatic, thermal transfer, and inkjet printing all fall under the print technologies umbrella—often referred to as digital imaging. They are all difficult to identify by sight and nearly impossible to tell apart in relation to heat sensitivities. Perhaps the best way to explain the basic types of digital images is to attempt to define the types of printing processes used to create them.

The four basic printing groups are electrophotography, electrostatic, thermal

Four Basic Print Technologies

transfer and inkjet. In layman's terms, digital printing (also called electronic printing) is done with either a desktop printer or a copying machine. A desktop printer requires a stream of digital data, while a copier requires an original document.

Photocopying processes use electrical, chemical, or photographic techniques to copy previously printed and pictorial material (existing documents). There are wet methods of electrostatic photocopying that use liquid ink, and dry methods (xerographic) that use dry granular ink called toner.

Electrophotography

Dry pigment toner copiers for original documents

Electrophotography is based on a dry copying process introduced in 1950 called xerography, from the Greek "to write dry." Xerography is an indirect printing process in which an electrically charged rotating drum receives an illuminated image that has been converted into a dot pattern. It is contacted by dry powder toner which is attracted to the charged drum, rolled onto the clean paper, and fixed by heat and pressure (fuser) rollers the same way a laser printer does.

Color electrophotography includes all basic four-color copiers, like those found in Office Max, Staples, and Kinko's. For color images, the process described above for black toner is done four times—three with color toners (yellow, magenta, cyan) and once with black. The illuminated image is internally color-separated and the image drum is activated and rotated once for each color separation. After the drum has rotated four times the paper is fed past it to transfer the image, which is then fixed by heat and pressure.

Originally launched by Canon, Inc. about 10 years ago, this process remains the primary system found in color copiers and color printers. In its infancy this process was rather light fugitive, but today tests have proven these copies to be lightfast.

Electrostatic printing is generally not used for fine art. It is a copying process that uses static electricity (electrostatic) or the attractive force of electric charges to transfer the image to a charged plate or drum. A laser gives a negative

electric charge to a cylinder in the specified pattern corresponding to the image. Positively charged toner is attracted to negatively charged areas on the drum. Paper is pressed against the drum, receives the toner, and is run through heat fuser rollers to set.

Electrostatic Printing

Pigmented toner on dielectric paper and laser printers

Electrostatic graphics are defined by the fact that images must be printed on special dielectric media, which is usually paper. The machine applies the electrical charged pattern to the surface of the dielectric paper. Electrostatic photocopying does not use thermal papers, it does use a heat-set ink process.

It is best to select cold mounting techniques of wet, spray, or P-S methods for mounting. Any cold mounting procedure may be used, but moisture control should be implemented. However, relatively lightfast printed images for commercial use should be cold laminated or surface coated to protect them from moisture.

Once printed the image may be transferred to another substrate such as vinyl, then laminated for commercial wide format use. This transfer process falls into three categories: image transfer (for outdoor signage), dry transfer (short- to mid-term use banners), and wet transfer (numerous commercial applications). Color electrostatic plotters are considered the top choice for fast, accurate, high-quality color images. These are large format printers for commercial applications. This process is not used for fine art.

In thermal printers, a print head is in direct contact with the uncoated side of a wax ribbon, while the inked side of the ribbon in contact with the printing surface. The ink is heated which causes it to

Thermal Transfer

Four-color printers using dyes and pigments on a ribbon of wax-like paper

melt and adhere to the print surface. Wax ribbons in each of the four process colors (CMYK) pass over media while a thermal print head lays down minute dots of wax in precise color locations.

Thermal printing produces uniform dots and color densities. Spot-color ribbons have good opacity and consistent color characteristics. The resulting images may be up to 40" wide, UV resistant, and moisture resistant. The advantage to thermal transfer technology is its tolerance for outdoor use without lamination or transfer to another

substrate. Since the image is transferred with heat during printing, they can be heat sensitive. This is not always the case though, since the hotter temperatures used in the process are significantly higher than traditional mounting equipment and adhesives.

Dye sublimation technology of the 90s was standard for photo realistic printers as a common thermal transfer process. Dyes are gasified and absorbed by the print or transparency medium. Dye sublimation printers have the ability to vary dot size, plus crispness makes images appear more photo realistic. They could be heat sensitive though.

Inkjet imaging is by far the most common digital device. Printers are relatively inexpensive, reliable, and easy to use. They have superior color intensity and consistence, but are still challenged with fading and lack of moisture resistance. Inkjet uses cartridge inks (dyes and pigmented dyes) and are made for desktop use, large format commercial, and fine art applications.

Inkjet Printing
Liquid inks sprayed as dot pattern onto assorted substrates

Inkjet equipment is less expensive than electrostatic but is also slower and the materials have higher costs. Since there are so many variations and types of inkjet, individual heat sensitivity varies depending on substrate, inks, and printer combinations. Heat should be avoided. There are two basic categories of inkjet printers: *drop-on-demand (DOD)* and *continuous flow*.

DOD technology deposits ink at the appropriate location as the printer head moves back and forth across the paper surface. There are three types of DOD printers: *thermal (bubblejet)*, *phase change*, and *piezoelectric*.

Thermal (bubblejet) is the most common desktop technology. In the thermal print head, the ink is drawn into a reservoir, heated, pressurized, and jetted through a nozzle onto the paper or canvas media. These are generally not used in fine art printing of giclées.

Phase change is a type of inkjet which uses a solid wax-based CMYK color ink stick or puck. The wax ink is heated then projected onto the substrate surface through the nozzle onto the paper. This type of printing is generally considered for commercial applications and will print on many substrates.

Piezoelectric printing, also known as micropiezo, uses ink droplets that are squeezed through a nozzle when volt-

age is applied to a crystal. The crystal pushes on a sealed membrane which in turn pushes the drop onto the paper. A separate crystal is used for each color (most require six) and a drop is pushed out for application with every voltage signal.

Piezoelectric printers are used predominantly in fine art, large format printing and are manufactured by companies such as Epson, Xerox, Tektronics, Roland, and ColorSpan. They can print with water-based or solvent-based inks, dye, and pigment inks.

There is also a continuous flow printer. Noted for near photographic duplication, these inkjet printers have such a tight dot pattern it appears nearly to be a continuous flood of ink. Iris systems developed a 3-picoliter droplet which makes 300 dpi (dots per inch) appear to be 2000 dpi. The technology is of such notable quality that prints of this type are on exhibit at the Museum of Modern Art in New York City.

Other companies have now followed in the footsteps of the high-tech age of continuous flow printers first established by IRIS and with wide format printers and lightfast pigmented inks, the quality of digitals is soaring.

Once Identified, Twice Questioned

Now that the digitals have been identified on paper, how are you to identify them when the paper comes into your shop? Knowing what the technologies are do not necessarily enable you to tell the difference between them. Because of that, the mounting advice for the time being is to keep the heat presses turned off and revert to cold mounting methods. As mentioned last month, we've come full circle for everything old is new again.

Determining whether something is mountable or not seems to be the question of the day, and therein lies the issue of the digital world—heat sensitivity. I will be writing about this next, and I will report on recent heat sensitivity testing I have been doing in association with ANSI (American National Standards Institute) and Nielsen Bainbridge. In other issues, I'll contribute to the new "Digital Directions" department, as well as various features on framing design.

So, have a Happy New Year! May it turn out to be progressive and positive, leaving the challenges of 2001

behind. The West Coast Art & Frame Show and National Conference is this month, and is a great way to launch the new year. Top educators and lecturers will abound with exhibitors at every turn. I'll be there...will you? ■