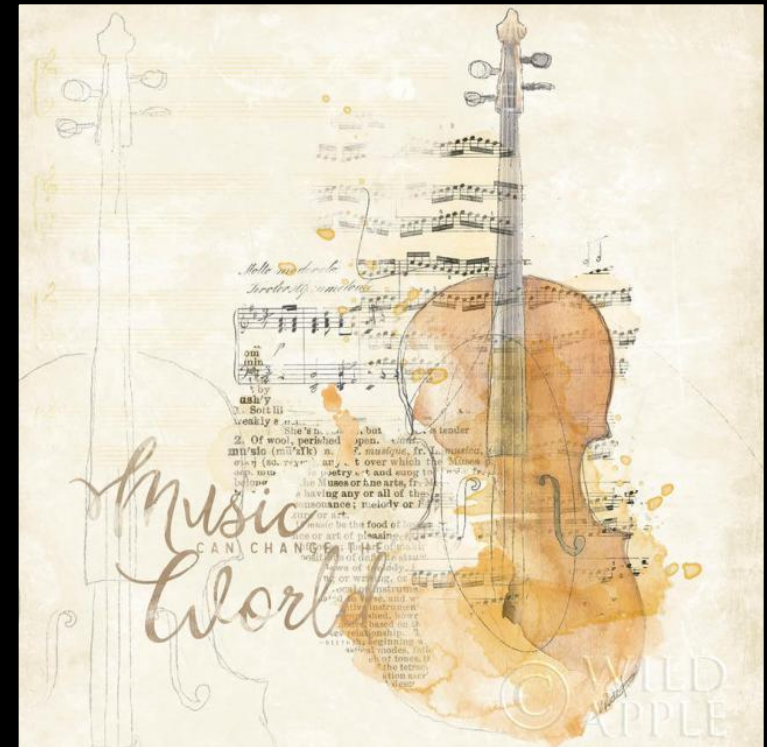
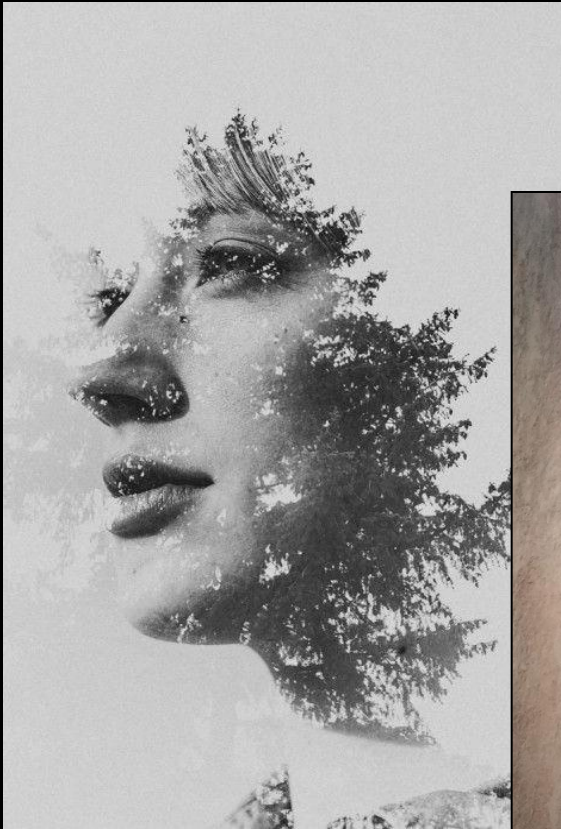


Mastering Mounting: Understanding & Handling Digitals

Chris A. Paschke, CPF GCF

West Coast Art & Frame, Las Vegas 2024



Inkjet as Art

Originally used as prepress,
select inkjet has a
fine art category.

Shown on metal, canvas, paper.

Inkjet as Textiles

Inkjet textile printing on assorted woven fabrics, often polyester, is everywhere:

- Hanging Signage
- Backlit Signage
- Draped on Buildings
- Double-Sided Flags
- Banners
- Tents and Awnings
- Home Soft Goods
- Home Furnishings
- Personalized Products
- Fabrics and Apparel





Dye Sublimation Inkjet on flexible fabric for home and wall décor.



Art as Wallpaper Solvent Inkjet

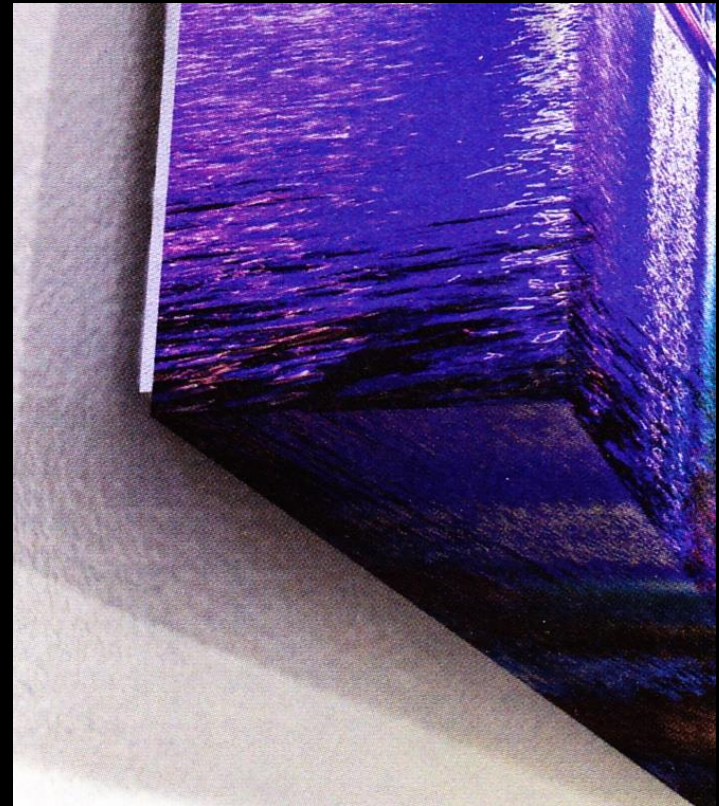
Shown on ceiling, risers and wall

Creative Art Applications

UV Inkjet



Canvas Express prints wall décor on
EnCore Embossed Canvas foam
folded to look like stretched canvas





Art as Vehicle Wrap

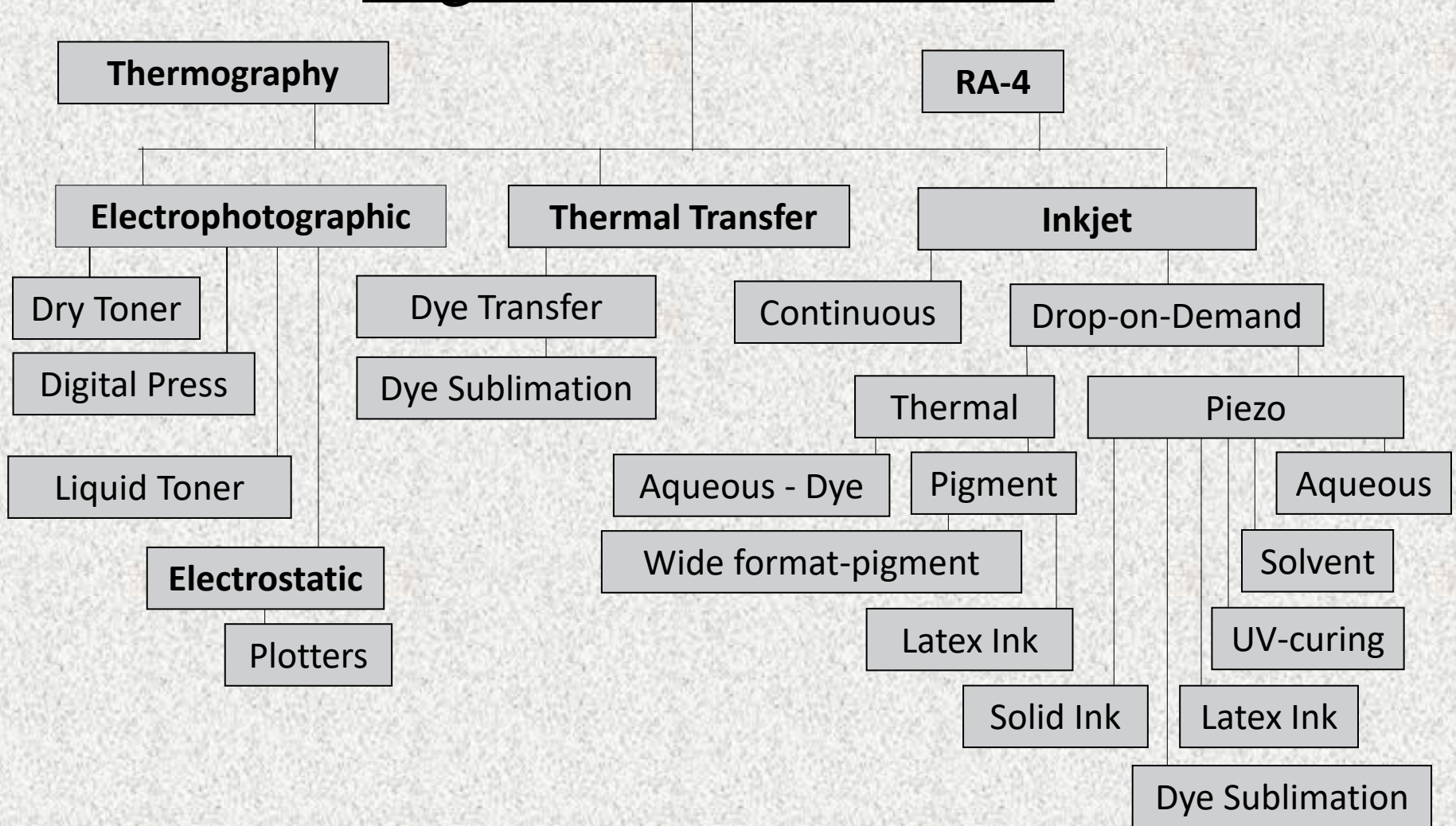
Solvent, UV Curing, or Latex Inkjet

Wrapped bus ad for Copenhagen Zoo



Mural installation 65'x49' digital graphic applied to wall using wheatpaste and coarse bristle brush on residential building in Berlin.

Digital Umbrella 2024



Thermography – Typographic Method

Direct Thermal

Relies on heat to create the letters & images on paper.

- Paper coated to change color
- No ribbon or ink transfer
- Older FAX machines and Sales Registers

Raised Print Process

Post print process achieved using traditional printing in a three-step process:

1. Applies plastic resin thermographic embossing powder to the substrate.
1. Vacuums extract powder from non-inked areas.
2. Heat-sets at 90°F to 130°F.

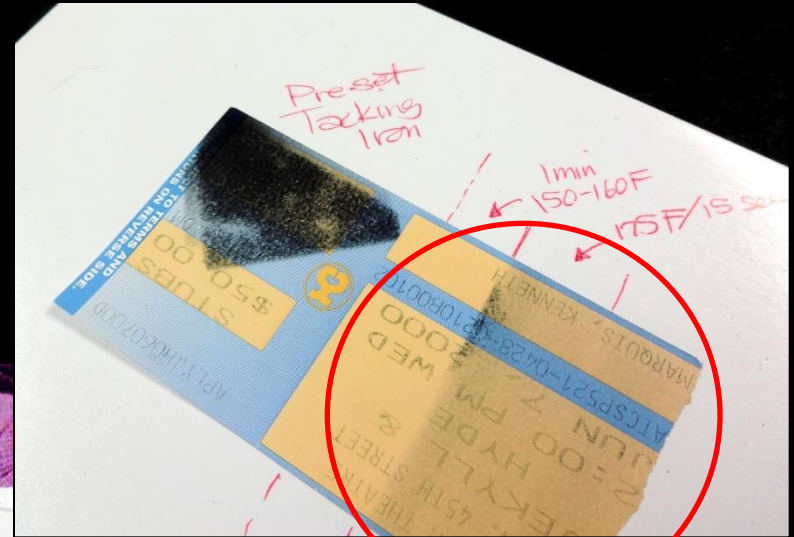
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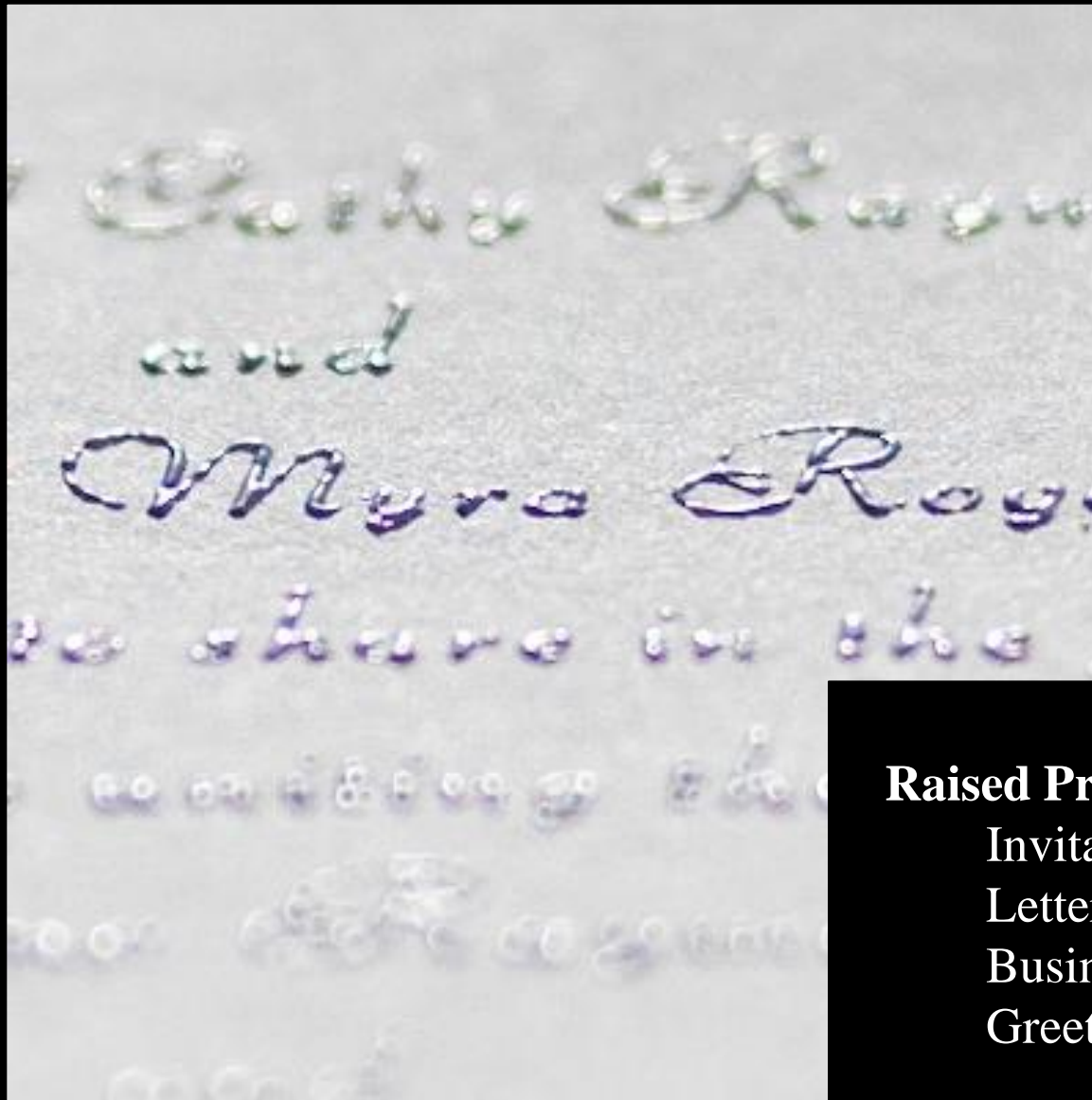
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WEDNESDAY MAY 28 2008 217

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CHICAGO
OF
THE
ART INSTITUTE

130F 160F 185F





Raised Print Process

Invitations

Letterhead

Business cards

Greetings cards

Digital Umbrella

```
graph TD; A["Digital Umbrella"] --- B["Electrophotographic"]; B --- C["Dry Toner"]; C --- D["Copiers - 8-1/2\"x11\" thin 20-22# plain paper"]; C --- E["B&W Laser - Monochrome toner"]; C --- F["Xerox Phaser - Laser Printers"];
```

Electrophotographic

Dry Toner

Copiers - 8-1/2"x11" thin 20-22# plain paper

B&W Laser - Monochrome toner

Xerox Phaser - Laser Printers

I3A Initiative Process

Today

- I3A serves seven active technical committees, which develop standards, test and certify products, and administer domestic and international committees with continued input from the industry.
- I3A's technical committees encompass all aspects of imaging, from traditional film photography to digital imaging, and the need for, and importance of, standards in the digital imaging world.
- I3A's technical committees encompass all aspects of imaging, from traditional film photography to digital imaging, and the need for, and importance of, standards in the digital imaging world.

As the pace of technological change continues to accelerate, and we become more dependent on digital imaging, the need for, and importance of, standards in the digital imaging world, I3A is the leader in development of standards for the industry.

I3A served for many years as the Administrative Secretariat for the American National Standards Institute (ANSI) Standards Developing Organization (SDO) for the development of standards in the field of photography and to establish industry association worldwide. I3A is the leader in development of standards for the industry.

I3A standards are approved using an ANSI-accredited SDO process. I3A standards are approved using an ANSI-accredited SDO process. I3A standards are approved using an ANSI-accredited SDO process.

I3A Launches Digital Photo Preservation Website at www.savemymemories.org

Las Vegas, NV—The International Imaging Industry Association (I3A) has launched its new website at www.savemymemories.org. The new website is designed to educate and motivate people to take steps to protect their digital photos and prevent the loss of their memories. The new website is designed to educate and motivate people to take steps to protect their digital photos and prevent the loss of their memories.

The new website is designed to educate and motivate people to take steps to protect their digital photos and prevent the loss of their memories. The new website is designed to educate and motivate people to take steps to protect their digital photos and prevent the loss of their memories.

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SaveMyMemories.org

Are your memories safe?

For more than 150 years, people have recognized the unique value of photography. Imagine how this groundbreaking invention has shaped our lives, giving way to preserving precious memories of the places and events in our world. And while digital technologies have changed the way we capture and store photos, the desire to safeguard our visual heritage today, and in the future, remains essentially the same.

The companies that comprise the International Imaging Industry or I3A understand this all too well. That's why we created this site to help you understand the how to prepare and preserve your photographic memories for years to come.

Quick start

1. Protect your Pictures

If you have all of your digital photos stored on your computer but have yet to do anything else with them, take steps to protect them right away. Make prints, copy to CDs or DVDs, a second hard drive, or upload to an online service for storage.

2. Organize

If you use a photo software program or create your own system based on folders and file names, you need to be organized in a way that lets you find them when you want them. Learn more about how to organize your photos.

3. Stay Informed

Watch the industry for technical developments, always use proven techniques, and keep your equipment up to date.

FEATURING

by Elizabeth Cunningham

New Ideas, Technologies, Printing & Finishing

Industry report

FEATURING

by Elizabeth Cunningham

Black-and-White Lives: Inkjet and Photo Solutions

Photo find new niche markets, have you thought about... New media for digital and photo are on display, inkjet fiber-like media. There are huge collections of printed, and guess what, they are B&W. Canvas displays, greeting cards, calendars, even a few of the applications for monochrome inkjet. Packard inkjet, or a Dust Lambda, Ciba, or B&W lab technicians are still using enlargers together? Because there's good money in the technologies, UK and Efford The Cpi Group. For two years, came to PMA with strong suit to sort them out since both offer inkjet label, but... 3100ps designjet Z Photo Printer GP Photo Printer for consistent and use specialized...

Electrophotographic Color Copies – dry toner



Electrophotographic four color toner copies and heat damage

Digital Umbrella

Electrophotographic (xerographic)

Liquid Toner

Color Digital Presses – Photographs , Book Printing

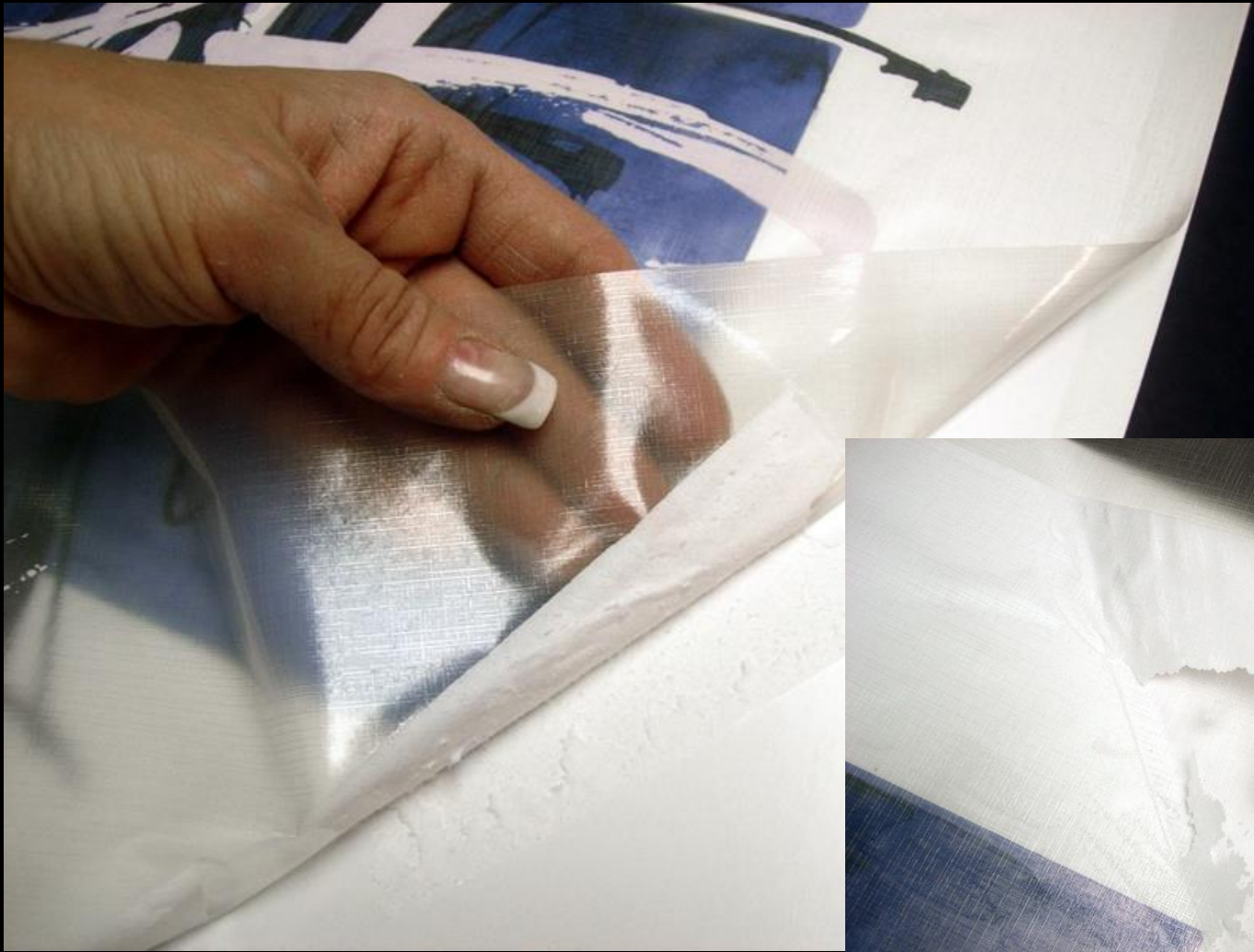
- HP Indigo
- Mitsubishi
- Ricoh

Offset Electric Digital Press

Heidelberg Press

- Open Edition Prints
- Laminate Sensitivities





Digital press toner lifts ink from paper when laminate is lifted to realign



Heidelberg Digital Press – changed color under heat and laminate

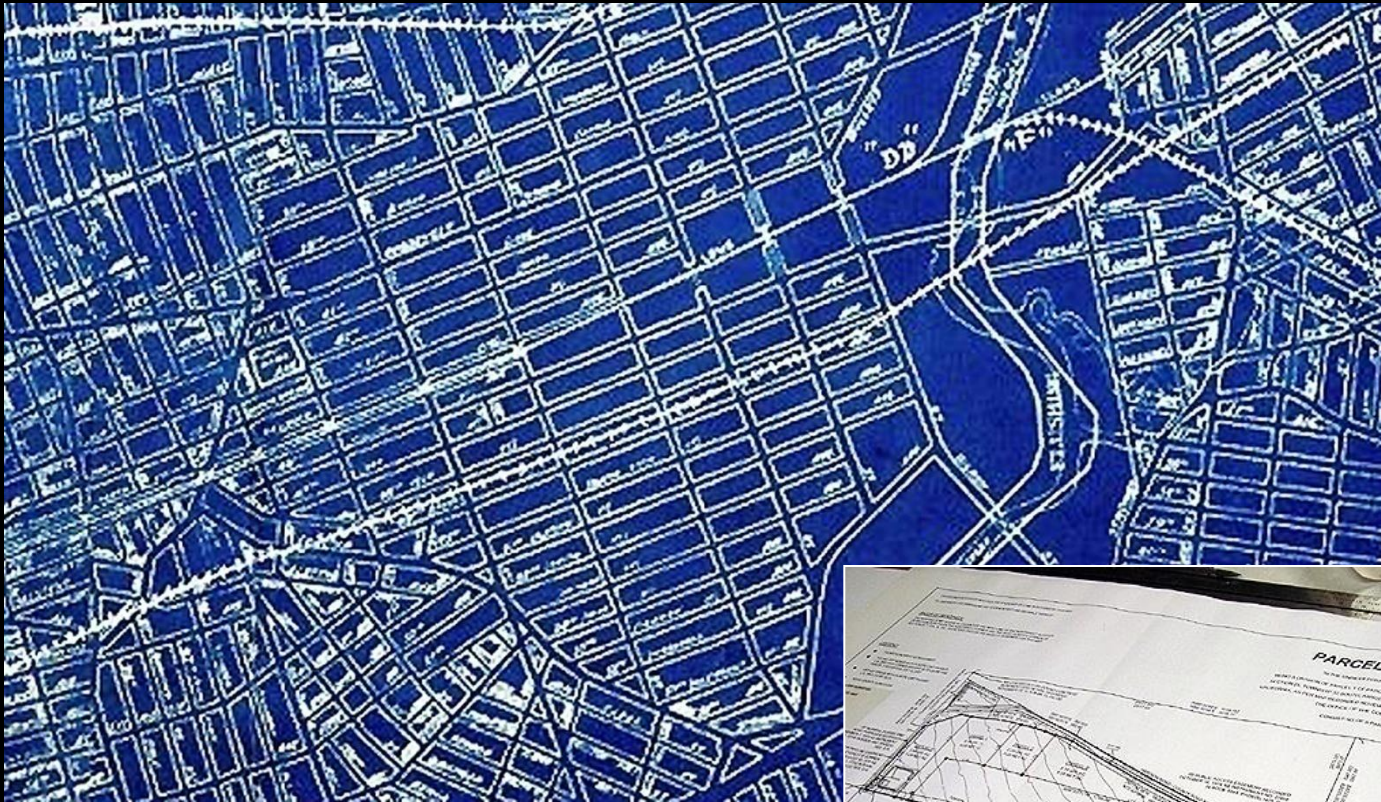
Digital Umbrella

```
graph TD; A["Digital Umbrella"] --- B["Electrostatic"]; B --- C["Large-format Plotters"]; C --- D["• Bluelines & Maps, Sepias, Diazo Prints"]; C --- E["• Ricoh Laser Transfer System"]; C --- F["• IBM"];
```

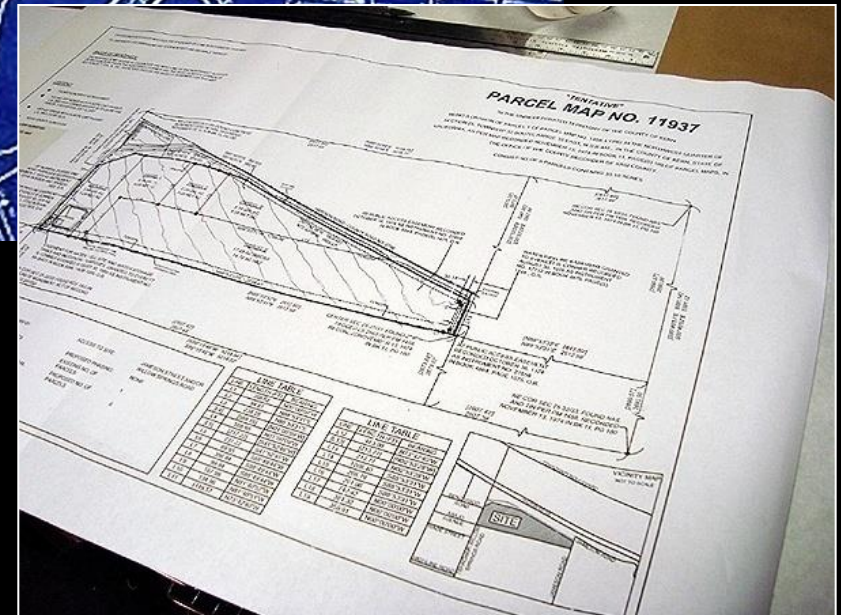
Electrostatic

Large-format Plotters

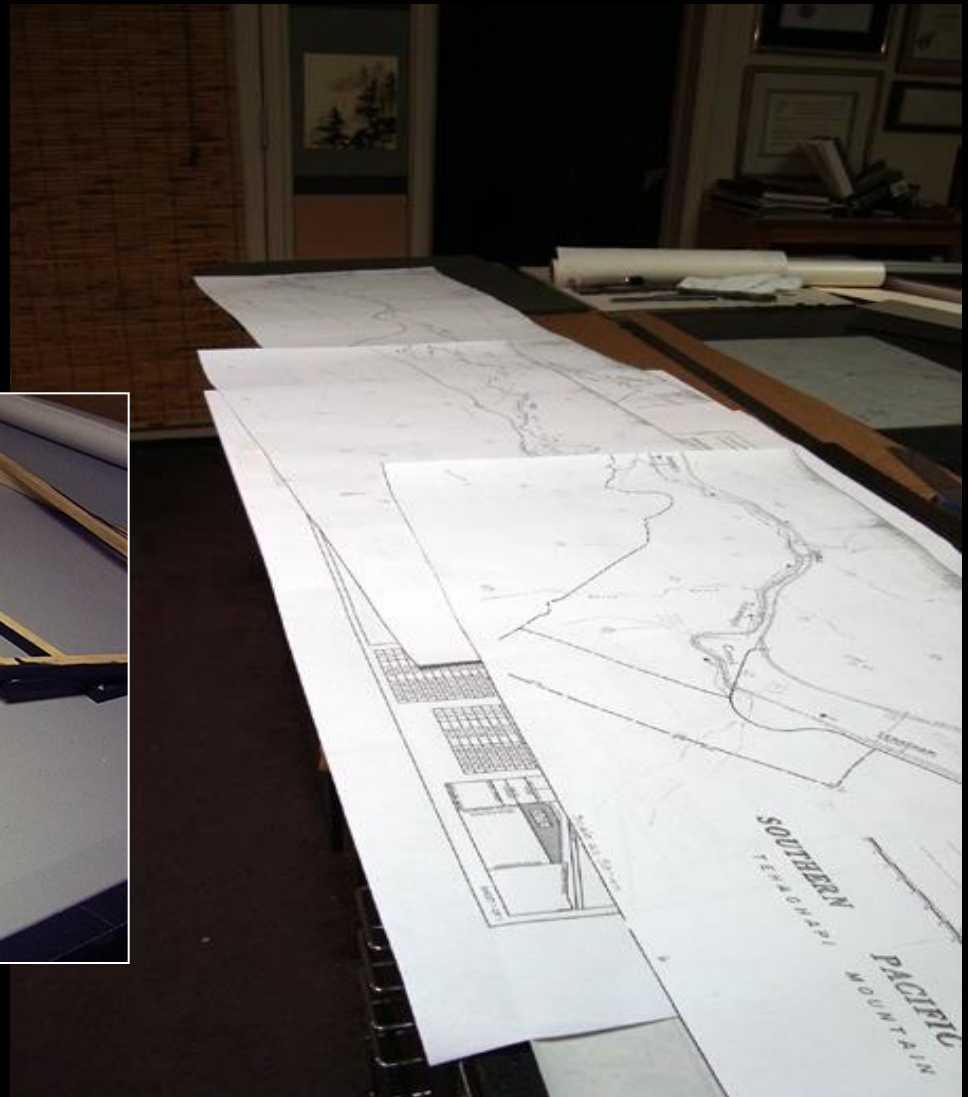
- Bluelines & Maps, Sepias, Diazo Prints
- Ricoh Laser Transfer System
- IBM



Traditional Blueprint



Electrostatic
Blueline



Electrostatic Dry Toner Plotter - Blueline



Blueline mounted and laminated with lifters

Digital Umbrella

Thermal Transfer

Dye Transfer

Kiosks (outdated)

- Sony Picture Station
- Mitsubishi Electric
- Kodak Picture Maker

Minilabs

Dye Sublimation

Portables (outdated)

- Portraits, Weddings
- Social & Sports events
- On-location imaging

Dye Sub Inkjet

Used for textile printing

- Embed into fabric
- Permanent & washable



Mitsubishi Electric dye sublimation kiosk prints

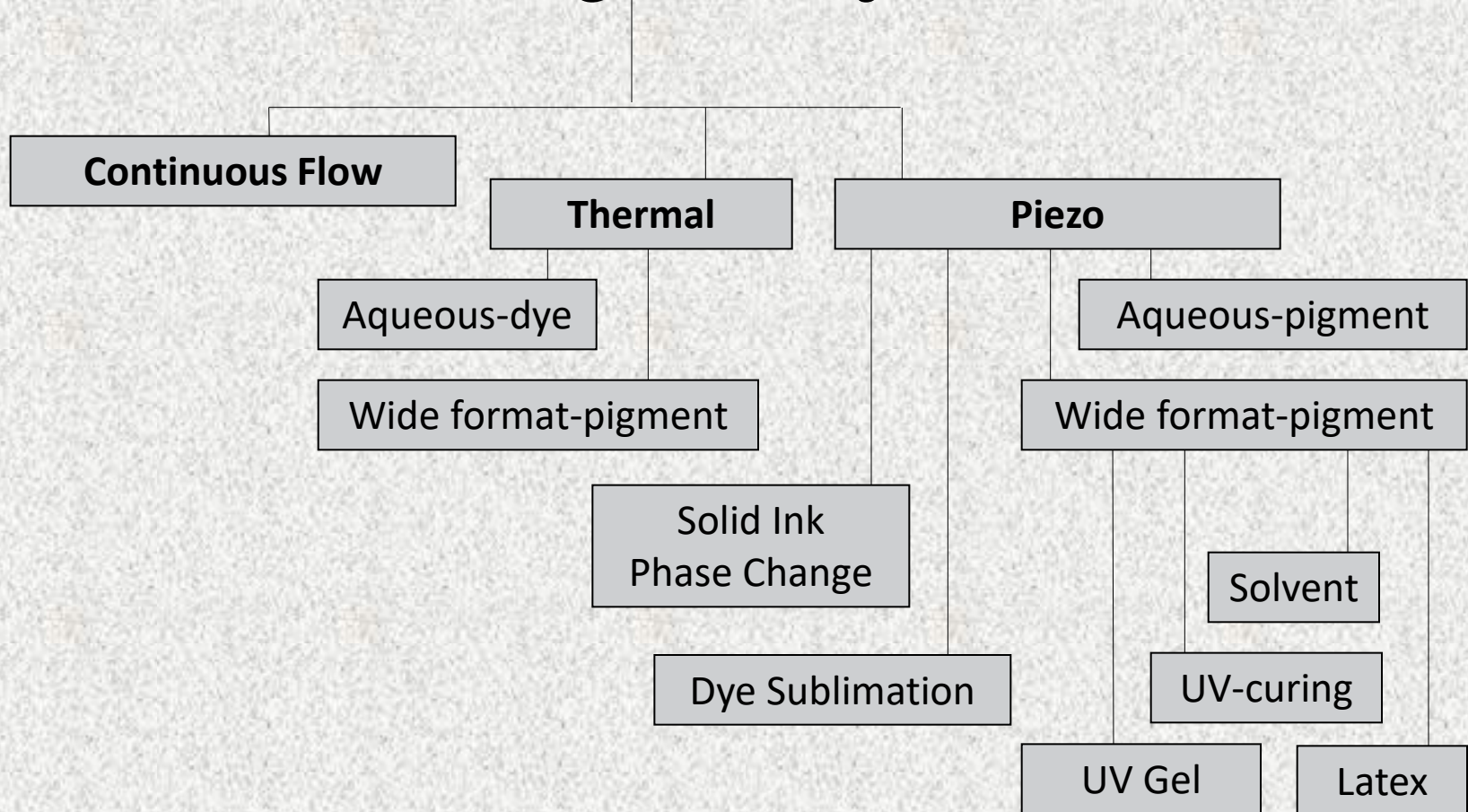


Cropped and bordered photos are an indicator of thermal transfer kiosks



Dye sublimation technology is common for photos at weddings, sports and special events

Digital Inkjet



What is Inkjet?

Inkjet printing is a type of computer printing that creates a digital image by propelling droplets of ink onto paper.

It used to be all about the process: Thermal vs. Piezo.

Current definitions are all about the equipment:

Format - Rollfed vs. Flatbed

Size - Desktop, Wide-format, Grand format

Ink - Aqueous, Solvent/Eco-Solvent, UV Curing,
UV Gel, Latex, Resin-Latex, and
Dye Sublimation, Solid



Fuji Acuity Rollfed and Flatbed UV printers



Printer Size

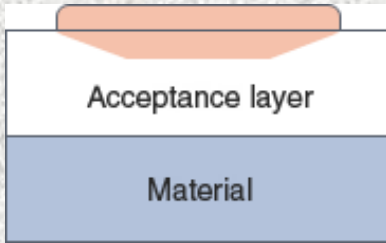
Desktop = up to 11x17"

Wide Format = 13x19" to 64"

Grand Format = over 72" wide

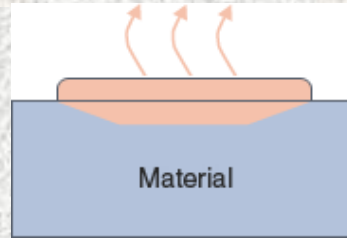
Grand-Format building wrap
in Philippines

Comparison of Four Basic Inkjet Printers



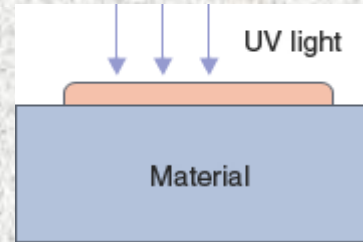
Aqueous Ink

has less odor and rich color, for indoor use of poster and fine art. The ink penetrates the media during drying, making compatible substrates limited.



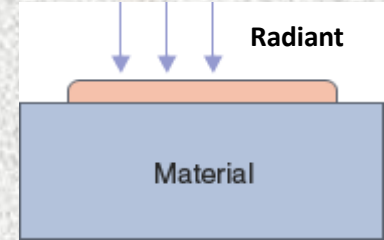
Solvent Ink

dries quickly by heat and evaporation. Great for outdoor commercial use as they do not need special coatings, are waterproof, durable and resistant to UV light.



UV Curable Ink

cures by UV light instantly onto the substrate without the ink seeping into the surface, so they may be used with materials without special preparation.



Latex Ink

dries by internal radiant heaters with forced airflow to cure and produce dry prints inside the printer.



Inkjet vs. Giclée

All giclées are inkjet, but not all inkjet are giclée.

Inkjet refers to small format desktop printing to plain paper from word processing.

Giclée is an individually produced, high-resolution, high-fidelity, high-tech reproduction (CMYK) done on special large format pigment ink printers using only high-gamut, moisture-resistant, archival inks.

Iris, Roland, Colorspan, Canon, HP and Epson

Archival Inks

Dye-base Ink

- Excellent color gamut
- Molecularly soluble in its vehicle (water)

Pigment Ink

- Excel in permanence
- Not molecularly soluble
- Embed into receiving layer making them water-resistant
- Less susceptible to destructive environmental elements

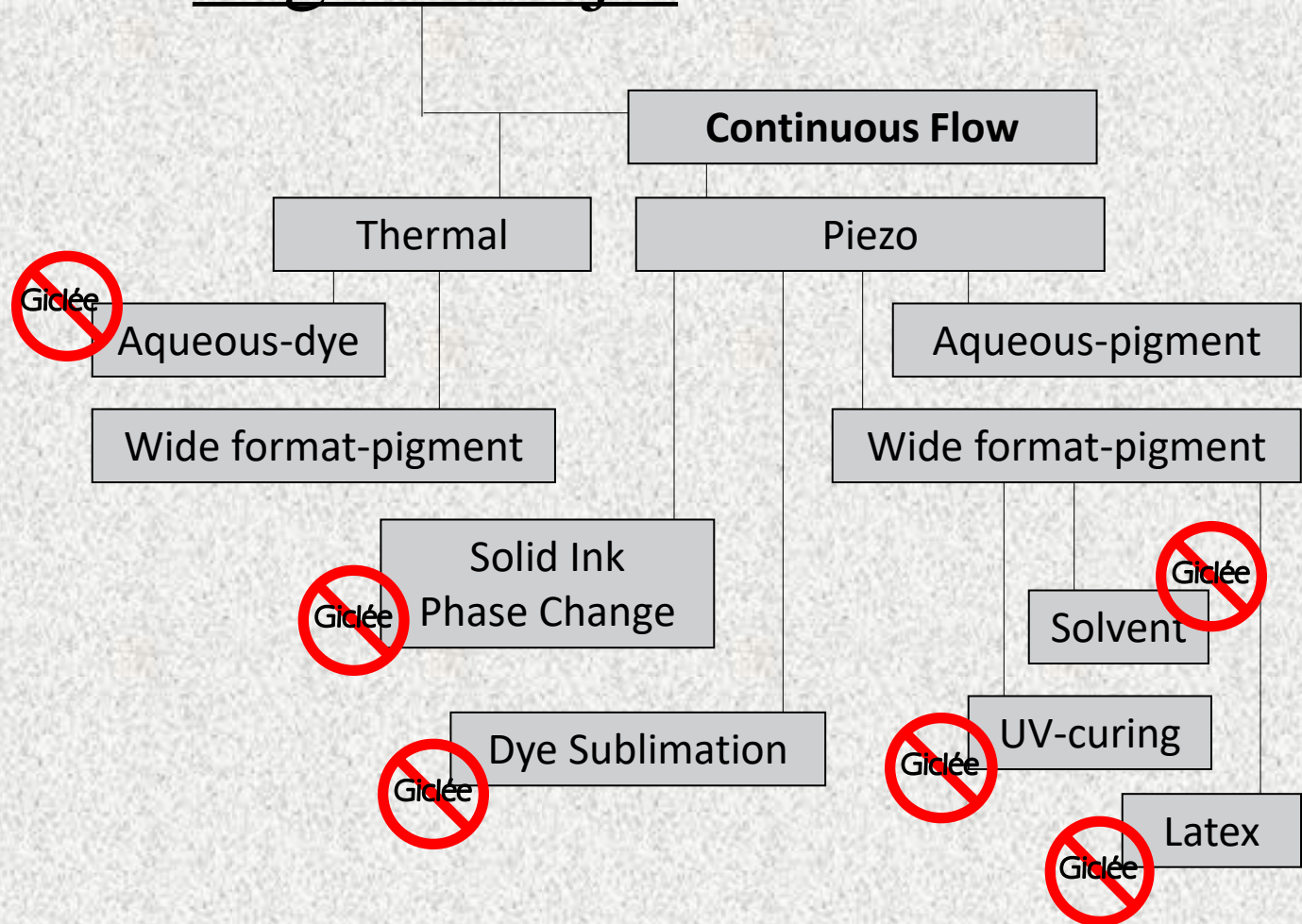
Many digital papers have coatings which enhance gamut, making them susceptible to scuffing and scratching which diminishes the archival properties of the print.

Is Solvent Inkjet Giclée Quality?

The biggest question is not giclée or not, but rather will solvent inkjet have long term stability and lightfastness.

Today many publishers use solvent, eco-solvent, UV, latex, and dye sublimation printers to produce canvases, gallery wraps and wall décor.

Digital Inkjet



Digital Inkjet

```
graph TD; A["Digital Inkjet"] --- B["Continuous Flow"]; B --- C["Giclée Fine Art Images  
Digital, color calibrated, large-format  
Print to Fine art paper, silk, canvas, bamboo, acrylic, aluminum  
• IRIS (1984)  
    Designed as a digital prepress for proofing colors  
    Piezoelectric technology  
• Epson large-format printers replaced IRIS by 2010"]
```

Continuous Flow

Giclée Fine Art Images

Digital, color calibrated, large-format

Print to Fine art paper, silk, canvas, bamboo, acrylic, aluminum

- IRIS (1984)

Designed as a digital prepress for proofing colors

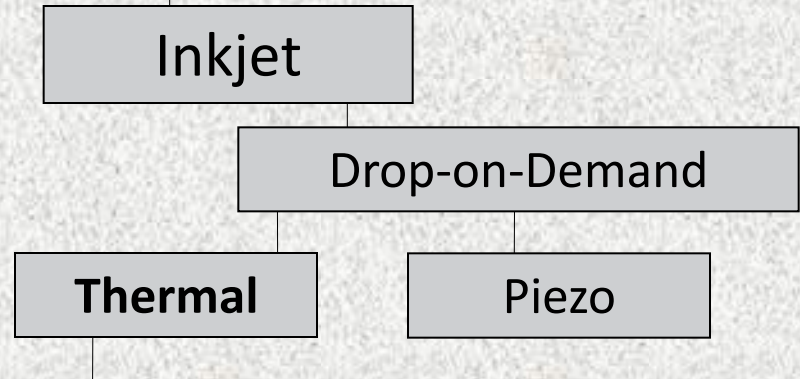
Piezoelectric technology

- Epson large-format printers replaced IRIS by 2010



Continuous flow fine art inkjet

Digital Umbrella



Desktop Inkjet – Dye Ink

Plain paper, photo paper, light coated paper

- Canon imagePROGRAF PRO
- HP DesignJet Z series

Large Format – Pigment Ink

Canvas, photo, film, polypropylene, Tyvek, textured & coated paper

- HP DesignJet Z series
- Canon imagePROGRAF PRO series

Wide Format

- HP DesignJet Z9 series
- Epson SureColor P series





Thermal Inkjet desktop prints

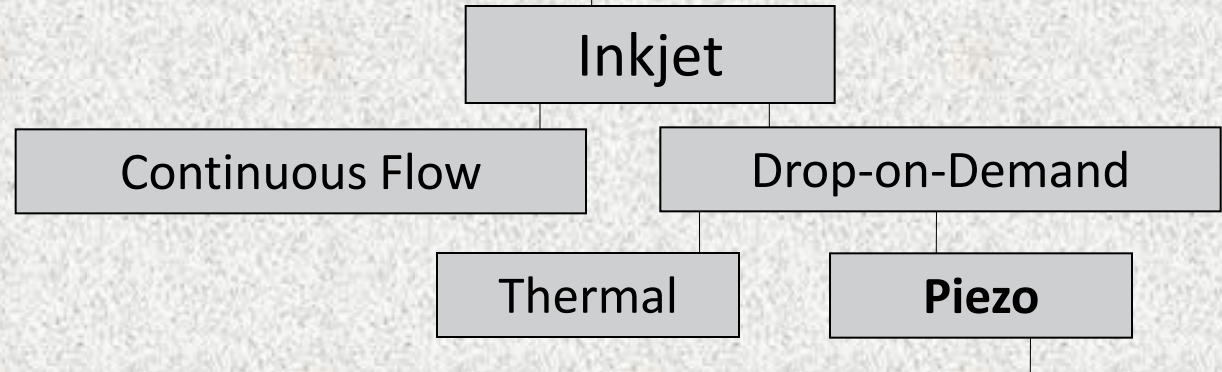


Thermal Wide-format Canon image PROGRAF paper and canvas



Thermal inkjet photo printer papers - clockwise
 HP Matte Litho-realistic Paper (HP Z3100); HP Hahnemühle Smooth Fine Art Paper on Z2100; HP Professional Satin Photo Paper and HP Collector Satin Canvas on Z3100

Digital Umbrella



Desktop – Pigment Ink

Also called piezoelectric

Wide Format – Giclée quality

- Epson SureColor P series – fine art paper and photos
- Roland

Wide Format - Commercial Use

- Epson SureColor P7000 - P20000





Surface sensitivity of Epson desktop inkjet printer on porous paper

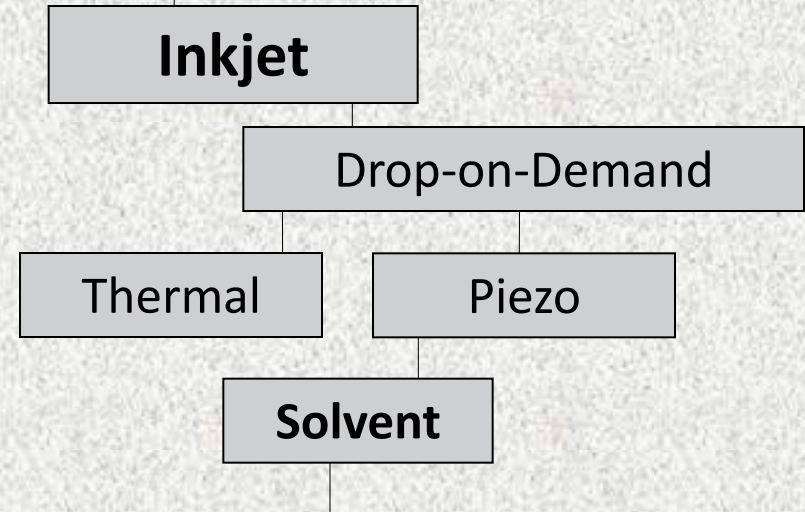


HP Z-series
Heat tolerant

Epson Wide-format
Heat tolerant

Heidelberg Press
NOT heat tolerant

Digital Umbrella



Wide Format Solvent Inkjet

Eco-solvent inks = waterproof, durable and resistant to UV

Digitally printed canvases

For commercial use and signage

Interior and exterior with no special coatings

- Epson SureColor S-series
- Roland VersaCAMM Eco-Solvent
- Mutoh Eco-Solvent



Roland VersaCAMM solvent inkjet 56" wide format

Photo Surface Scuffing





Mounted plaques on Railroad Museum Timeline



Café wall solvent on MDF



Banners

Océ Arizona solvent on mesh

Digital Umbrella

Inkjet

Drop-on-Demand

Thermal

Piezo

UV-Curing

UV-Curing Inkjet

- high-intensity UV light instantly cures ink, coating, adhesive
- scratch resistant
- environmentally friendly
- for glass, acrylic, corrugated foam, polycarbonate & ACM
- for automotive, electronics, telecommunications, graphic arts, and converting
- for use on metal, glass and plastic

UV-Curing Inkjet

- Canon Arizona flatbed
- LexJet
- HP
- Durst Rho
- Ricoh Pro UV flatbed

~~Giclée~~



Printing to flexible media as
Product labels, window
décor, vehicle wraps...



Digital Umbrella

Inkjet

Drop-on-Demand

Thermal

Piezo

Latex

Latex Inkjet

- aqueous pigment in ink
- prints to uncoated media
- internal radiant heaters
- forced airflow to cure
- lightfast
- ready-to-use
- for flexible signage (Tyvek)
- indoor and outdoor
- scratch, smudge resistant
- water resistant
- resin/latex for wall graphics

Large Format Latex Ink

- HP Latex R series
- Ricoh Pro Latex

Resin/Latex

- Roland TrueVIS
- Epson SureColor R-series

Giclée



Lightbox, wall décor...



Osmond Sign – Latex Print



Digital Umbrella

Inkjet

Drop-on-Demand

Thermal

Piezo

Dye Sublimation

Dye Sublimation Inkjet

- direct printing process
- replacing screen printing
- for polyester textiles
- permanent and washable
- requires heat setting

Direct Printing

- uses compatible dye inks
- for silk, cotton, wool
- requires pre-treatment, washing and post-treatment

Wide Format Printers (24-64")

- Epson SureColor series
- Mimaki textile printers
- Mutoh textile printers
- Roland textile printers
- Agfa Ardeco

Grand Format Printers (>72")

- Agfa Graphics 126"

 Giclée

Grand Format Dye Sublimation

Printing on cotton and polyester-based fabrics with Pigment-based dye sublimation and direct-disperse inks is growing in wall decor.



Dye Sublimation on Metal Plate

Sentry West, 24" x 48"

Anita Jesse, artist



Dye Sublimation on Canvas

Solitude, 24" x 24"

Anita Jesse, artist



Dye Sublimation, 2017

History

- In 1957 French textile company discovered sublimation
- Under high temperature, dyes go to gaseous phase, never liquid.
- Late 60s it was used in early computer printers.
- Dye-sublimation printing is dominantly used for textile printing.
- Rivals UV for printing on 3D objects like mugs, phone covers...

Transfer Process

- A dye-sublimation ink consists of a solid pigment or dye as liquid.
- An image is printed onto a transfer paper.
- Paper then contacts a polyester fabric using heat and pressure.
- Solid dye sublimates into the fabric, solidifying onto the fibers.
- The image physically becomes part of the substrate.
- Allows for more detail, sharper edges and vivid colors.
- For graphics, high-end fashion, sports apparel, interior design, promotional products, interior signage

Current direct dye-sublimation

- Prints directly onto a fabric without a transfer sheet.
- Deeper dye penetration limits detail and color.

PPFA PRINT 2017-18

Sun Dappled II

Created by Wild Apple Studio
Published by Wild Apple Graphics

- Metal plate 6x6"
- High gloss finish on Chromalux
- Epson dye sublimation printer
- Dye inks transfer image to paper
- Applied to the Chromalux panel
- Treated to receive the dyes
- Put flat into a heat press @ 400°F
- 80 psi for 2 minutes
- Printed by Northwest Art + Frame



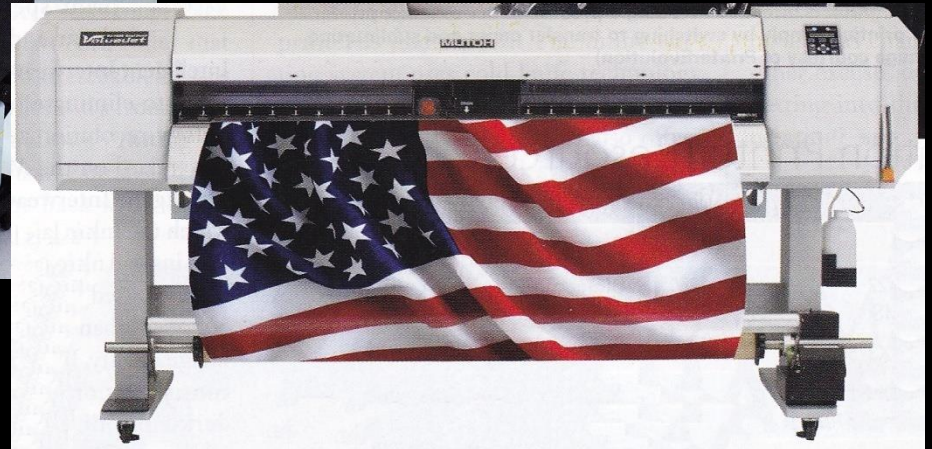


Printer Evolution Evo126DS

Epson SureColor F7170



Mutoh ValueJet



Digital Umbrella

Inkjet

Drop-on-Demand

Thermal

Piezo

Solid Ink

Solid Ink

- wax based inks
- can feel the edges
- 150F + will melt inks
- inks may soak through
- release paper will
to new projects
- commercial applications

Solid Ink/Phase Change Inkjet

- Tektronix
- Xerox Phaser Series

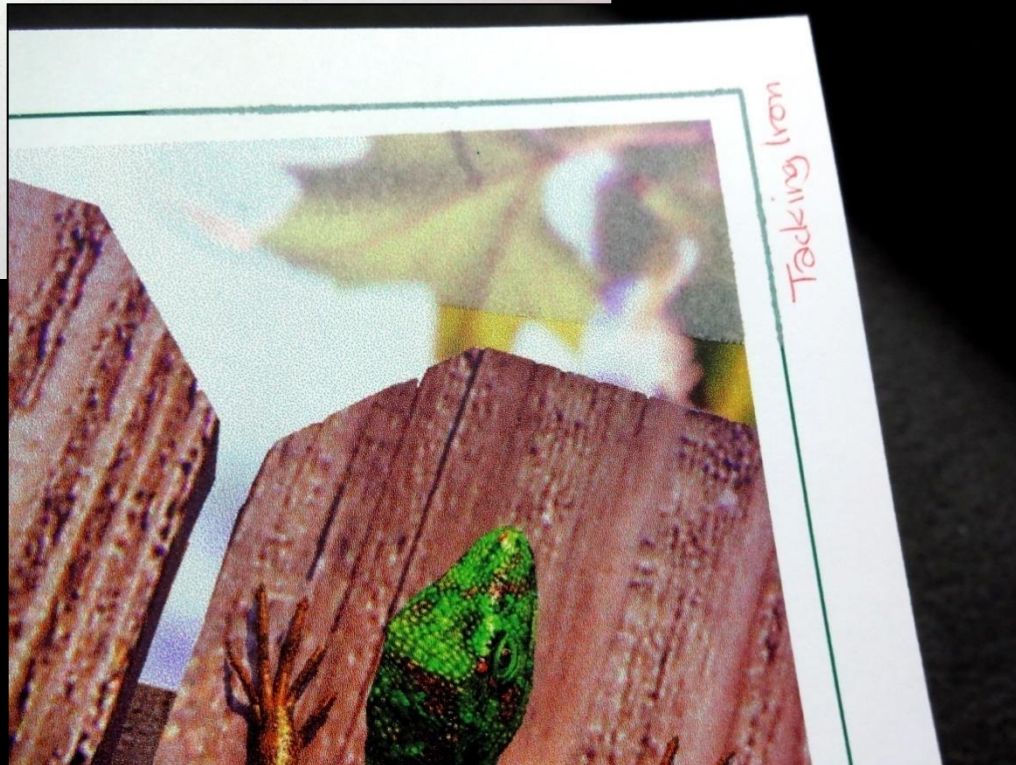
Giclée



Solid Ink – Phase Change Inkjet
Note faint image transfer on release paper

Solid Ink

Even 150F temp, short duration HA board will melt inks and soak through.





Solid Ink – Phase Change Inkjet

Major image melt and transfer from transparency to release paper

Mounting Digitally Printed Items



Tear strength should be aggressive enough to rip the surface paper or mount when pulled

Better bond, but not aggressive enough for true tear strength.



Mounting Digital Canvas and Photos

- 1) Avoid heat and pressure damage.
 - 2) 150°F is too hot for some digitals.
-

Gilman MountCor/MountCor Canvas

- 130°F lowest temperature available
- Safe for ALL digitals

High Tack P-S with Roller Laminator

- Commercial PSA boards or In-house boards
- Drytac, D&K, Coda, Neschen Gudy...

HA Board Comparisons

High Temperature = 180°F

Bainbridge HAF

Medium Temperature = 150°F-160°F

SpeedMount, KoolTack, Gilman InSite

Low Temperature = 130°F

Gilman MountCor

MountCor Canvas

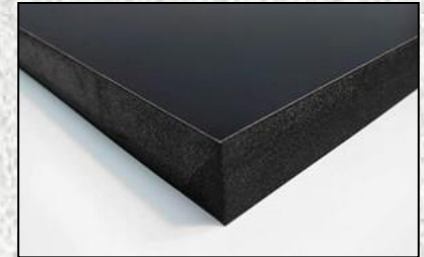
Reversible Board = 150°F-160°F

KoolTack Preserve (100% Reversible Board)

Pressure Sensitive Adhesives

Resilient® Mount - Soft Touch Board

- HT PSA velvet black, closed cell foam,
- Permanent, available 50x87" @ 1/2"-1"
- Best with RL for high gloss imagery
- Chip and crush resistant, lightweight, spring-back
- Wall display or frame ready



Resilient® ALIGN

- Pressure-activated non-tack PSA surface
- Manual mount with squeegee or RL
- Permanent, available 50x87" @ 1/2", 3/4"
- Ultra smooth, moisture resistant, stays flat



When in doubt...Go Cold

Cold Mount Materials

Manual PSAs

Low

Medium

High tack

Roller Laminators

High tack PSAs

Any substrate



Drytac JM26

HA-PSA-Film Applications and Comparisons

Board	Types of Art														Digitals							Board Info															
<p>This chart is a combination of manufacturers suggestions, claims and tested mounting results between 2006-2008. Not all new release products since 2011 have been tested, but might still be mentioned here.</p> <p>Copyright © 2011 Chris A. Paschke, CPF GCF Updated Copyright © 2014 Chris A Paschke, CPF GCF Updated Copyright © 2023 Chris A Paschke, CPF GCF</p>	Lightweight Porous Paper	Coated Paper-mechanical	Coated Paper-vacuum	Heavy or Textured Papers	Asian Papers	Heavy Watercolor Paper	Original Art	Polyester Encapsulate	RC Photo-mechanical	RC Photo-vacuum	RA-4 Photographs	Fabrics / Textiles	Raw Canvas	Digital Canvas	Electrophotographic Copy	Electrostatic / Laser Copy	Dye Sublimation	Thermal Transfer	Thermal (dye) Inkjet	Thermal (pigment) Inkjet	Piezo Inkjet	Digital Canvas	Time - after draw (actual)	Temperature	Permanent	Removable	Reversible / Preservation	Cure or Cool under weight	Neutral pH or stable & inert	Orange peel	High Density	Oversized Mounts	Manual	Rollers - cold	Roller - hot	Mechanical	Hot Vacuum
Heat Activated (HA) Boards															N	N		N																			
Bainbridge SpeedMount	X	X	X						X	X	X											F	1-3m	F150-160		X		X								X	X
Heat Activated Foam (HAF)	X	X	X	X	X			X	X	X	X	X	X	X			X	X		X	X	X	1-3m	F160-180		X		X								X	X
Crescent Heat-Activated Fome-Cor	X	X	X	X	X			X	X	X	X	X	X	X			X	X			X	X	1.5-3m	F165-170	X											X	X
Gilman InSite Heat-Activated Foamboard	X	X	X	X	X			X	X	X	X						X	X		X	X	15s-1m	F160	X			X									X	X
MountCor	X	X	X	X	X	x		X	X	X	X				X	X	X	X	X	X	X	30 sec	F130	X			X								X	X	X
MountCor Canvas	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	1-3m	F130	X												X	X
Kool Tack Preserve 100% Reversible	X	X	X	x		x	x	F	X	X	X									x		15s-30s	F150-160			X	X	X	x							X	X
Drymount Foamboard	X	X	X	x	x	x		-	X	X	X		x	x			X	X		X	X	15s-45s	F150-160		X		X								X	X	X
ACM Competition Plate	X	X	X	x	x	x			X	X	X						X	X		X	X	15s-45s	F160-165		X		X		x						X	X	X
Private Label Brands not Tested																																					
Pressure-Sensitive (P-S) Boards		NA	NA			NA	NA	NA														LT	HT	Repo													
Bainbridge SA Foamboard	X									X				X	X	X	X	X	X	X	F	X		X	X	X	X	X			X	X	X				
Crescent PerfectMount Foam	X			X						X					X	X	X	X	X	X	F	X		X		X	X	X			X	X	X				
Drytac PS Gatorfoam	X			X	X			X			X	X	X	X	X	X	X	X	X	X	X		x		X	X	X		X	X	X	X	X	X			
Foam Board	X			X	X			X			X	X	X	X	X	X	X	X	X	X	X		x		X	X	X		X	X	X	X	X	X			
Gilman High Tack Foam	X			X	X					X					X	X	X	X	X	X	F		x		X	X	X				X	X	X				
Gilman Resilient Align	X			x	X			X		X	X	F	F	F	X	X	X	X	X	X	F	x		X							X	X					
Resilient Mount Soft Touch Board	X			x	X			X			X	F	F	F	X	X	X	X	X	X	F		x								X						
Kool Tack InstaMount	X	x	x	X	X			X			X				X	X	X	X	X	X	F		x		X		X				X	X			x	x	
Private Label Brands not Tested																																					
PSA Films (used with substrates of choice)																						LT	HT	Repo													
Crescent Perfect Mount Film (flat, 2 release liners)	X				X					X					X	X	X	X	X	X	F	X		X		X		X	X				X	X			
Gudy 831/Gudy V (rolled, sheer carrier)	X				X					X					X	X	X	X	X	X	x			X		X		X	X				X	X			
Gudy 870/Gudy O (rolled, no carrier)	X				X					X					X	X	X	X	X	X	x			X		X		X	X				X	X			
PMA (rolled, no carrier)	X				X					X					x	x	x	x	x	x	F	X				X		X	X				X	X			

Legend: NA = not applicable; x = moderate bond; X = good bond; **X** = excellent bond and tear strength; N = do not apply heat over 130°F

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See you next year!!



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