# Mastering Mounting: Digital Trends & Handling 2017

Chris A. Paschke, CPF GCF

**Sponsored by The Gilman Brothers Company** 

West Coast Art & Frame, Las Vegas 2017



### Digital Trends 2017

Art as Furniture

Dye Sublimation Inkjet on flexible fabric









Dye Sublimation Inkjet on flexible fabric for home and wall décor



Art as Wallpaper Solvent Inkjet



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

# Creative Art Applications UV Inkjet





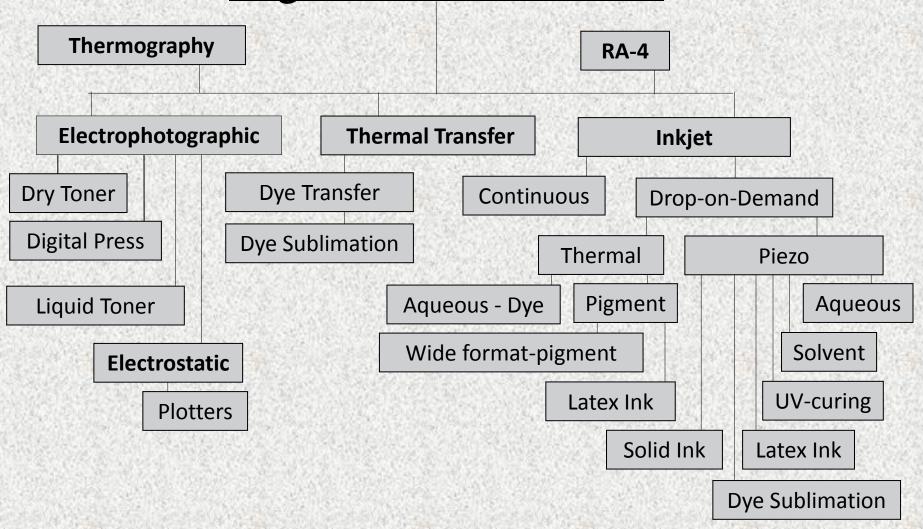
# Art as Vehicle Wrap Solvent, UV Curing, or Latex Inkjet

Wrapped bus ad for Copenhagen Zoo





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



#### Thermography - Typographic Method

#### **Direct Thermal**

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

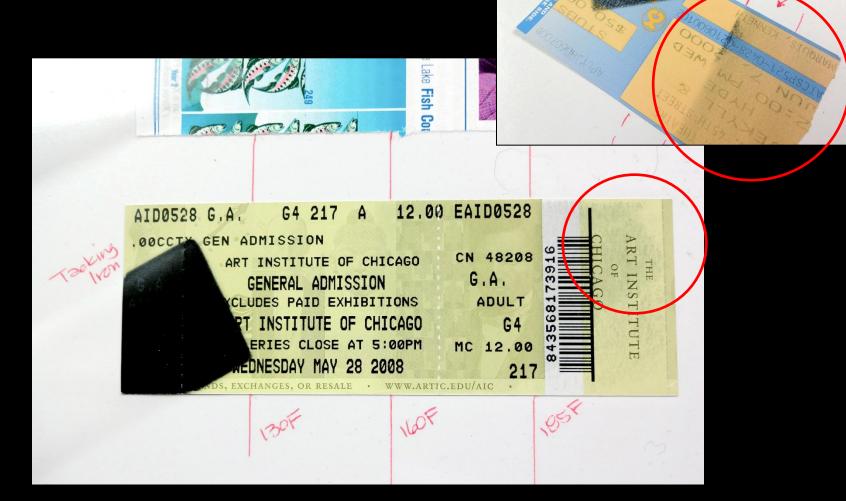
- Paper coated to change color
- No ribbon or ink transfer
- Older FAX machines and Sales Registers

#### **Raised Print Process**

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

- 1. Applies plastic resin thermographic embossing powder to substrate.
- 2. Vacuums excess powder from non-inked areas.
- 3. Heat-sets at 900F to 1300F.

### Thermography

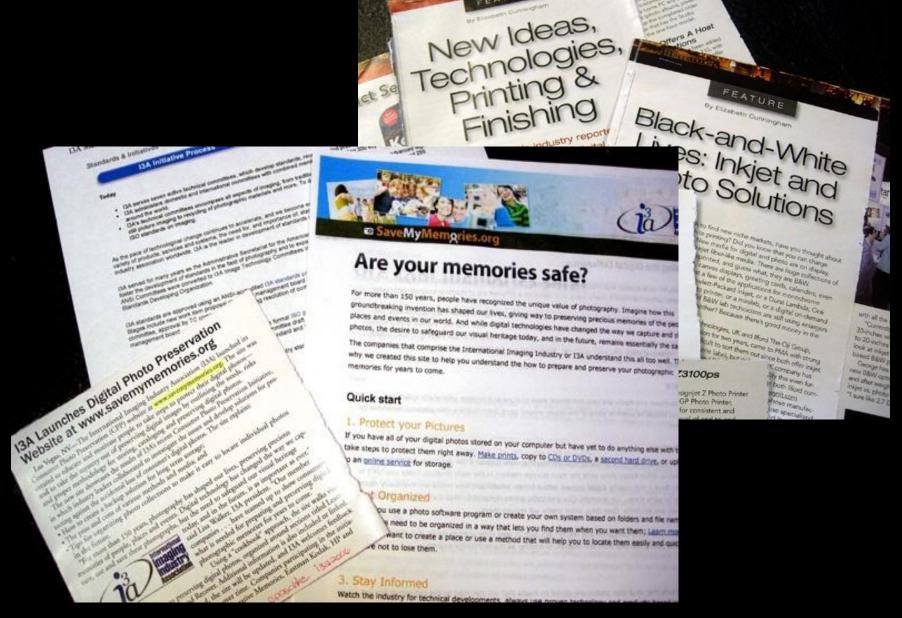




#### Electrophotographic

#### **Dry Toner**

Copiers - 8-1/2"x11" thin 20-22# plain paper B&W Laser - Monochrome toner Color Laser Printers



Electrophotographic Color Copies – dry toner



Electrophotographic four color toner copies and heat damage

### Electrophotographic

#### **Liquid Toner**

Color Digital Presses – Photographs, Book Printing

- HP Indigo
- Mitsubishi
- Ricoh

#### Offset Electric Digital Press Heidelberg Press

- Open Edition Prints
- Laminate Sensitivities
- Digital Canvases



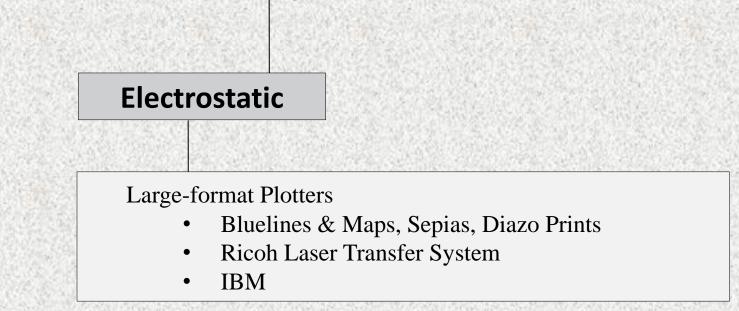
Electrophotographic liquid toner – HP Indigo

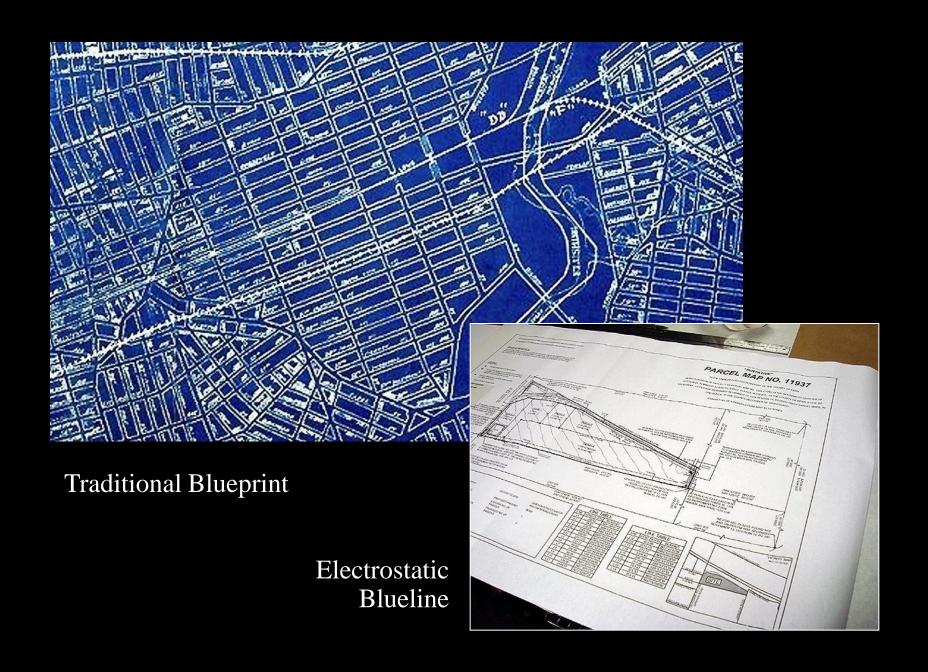


Digital press toner lifts ink from paper when laminate is lifted to realign



Heidelberg Digital Press – changed color under heat and laminate







Electrostatic Dry Toner Plotter - Blueline



Blueline mounted and laminated with lifters

#### **Thermal Transfer**

#### **Dye Transfer**

#### **Kiosks**

- Sony Picture Station
- Mitsubishi Electric
- Kodak Picture Maker

Minilabs

#### **Dye Sublimation**

#### Portables

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

#### **Dye Sub Inkjet**

Used for textile printing

- Embed into fabric
- Permnent & washable



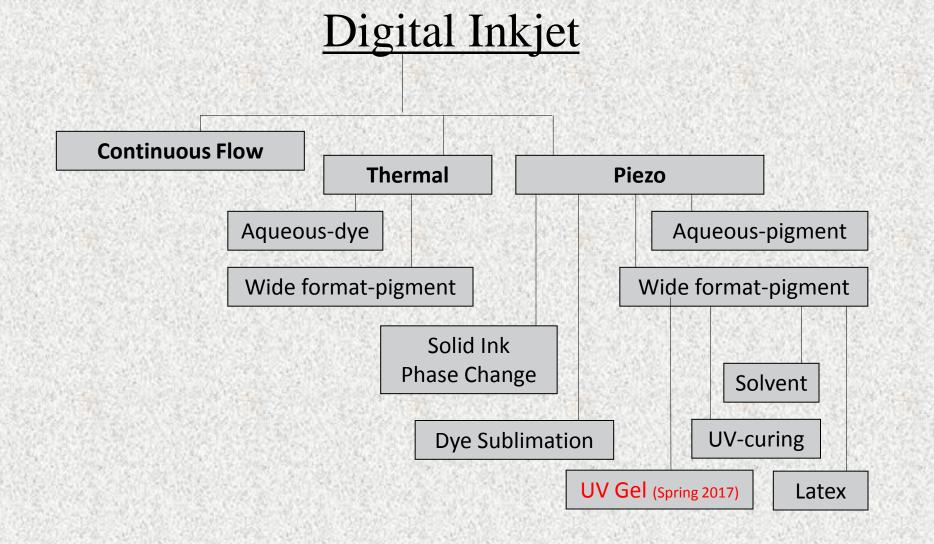
Mitsubishi Electric dye sublimation kiosk prints



Cropped and bordered photos are an indicator of thermal transfer kiosks



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



### 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/EcoSolvent, UV Curing,
Latex, and Dye Sublimation



Fuji EU3081 Acuity Rollfed and Flatbed UV printers



#### **Printer Size**

Desktop = up to 11x17"

Wide Format = 13x19" to 64"

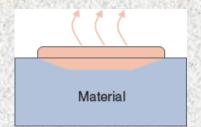
Grand Format = over 72" wide

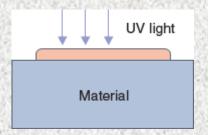
Grand-Format building wrap in Philippines

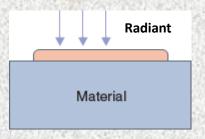
### Comparison of Four Basic Inkjet Printers

Acceptance layer

Material







#### **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

drie 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 <u>pigment ink printers</u> using only high-gamut, moisture-resistant, <u>archival inks</u>.

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.

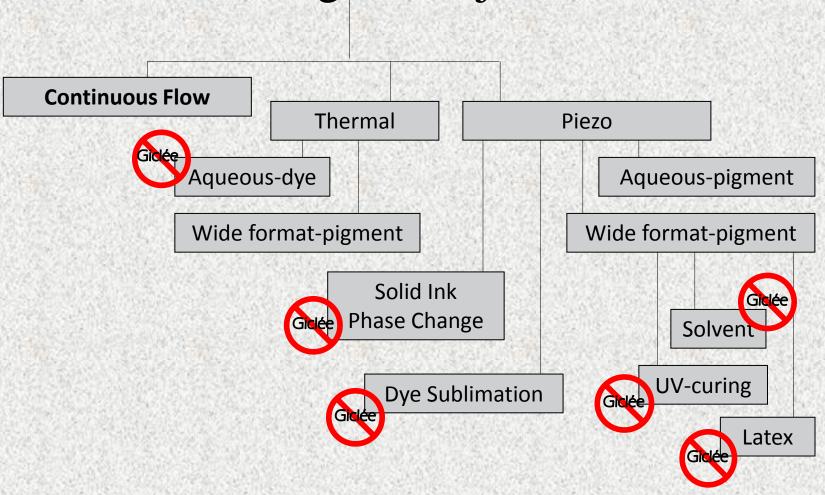
### Is Solvent Inkjet Giclée Quality?

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

In 2015 many publishers use solvent, eco-solvent, UV and latex printers to produce canvases for wall décor.

And dye sublimation may not be far behind.

### Digital Inkjet



# Digital Inkjet

#### **Continuous Flow**

## Giclée Fine Art Images

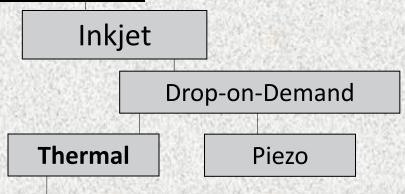
Digital, color calibrated, wide-format

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

- IRIS Scitex
- Epson
- HP Z-series



Continuous flow fine art inkjet





#### **Desktop Inkjet – Dye Ink**

Plain paper, photo paper, light coated paper

- Canon
- HP DesignJet
- Lexmark

#### **Large Format – Pigment Ink**

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

- HP DesignJet 4500, 4500, Z series 3100, 6100
- Canon image PROGRAF iPF series
- Kodak Encad NovaJet



#### Wide Format – Latex Ink

HP DesignJet 25500



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 Inkjet Continuous Flow Drop-on-Demand Thermal Piezo

# Desktop – Pigment Ink

Also called piezoelectric and micro piezo

## Wide Format – Giclée quality

- Epson Stylus Pro 9880 fine art paper and photos
- Roland

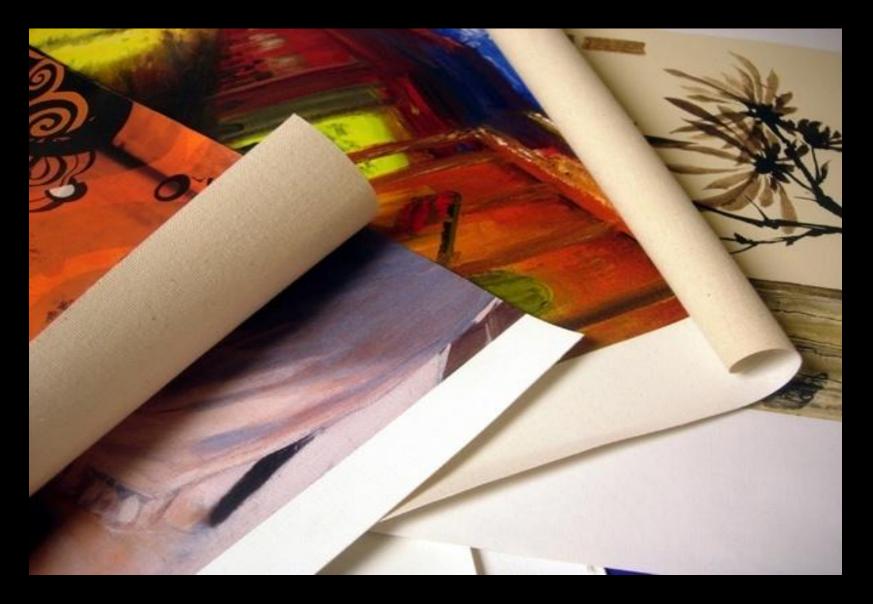
#### Wide Format - Commercial Use

- Epson Stylus Pro 9900
- Mutoh Falcon II
- Mimaki JV4





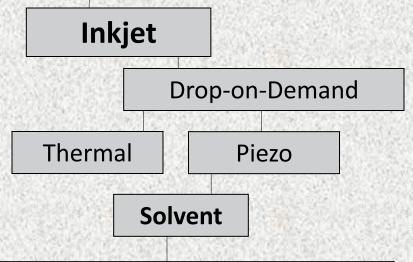
Surface sensitivity of Epson desktop inkjet printer on porous paper



HP Z-series Heat tolerant

Epson Wide-format Heat tolerant

Heidelberg Press NOT heat tolerant





# 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 Stylus Pro GS6000, Epson SureColor S70
- Roland VersaCAMM
- HP Scitex LX600 (formerly HP DesignJet L65500)
- Mutoh ValueJet



Roland VersaCAMM solvent inkjet 56" wide format



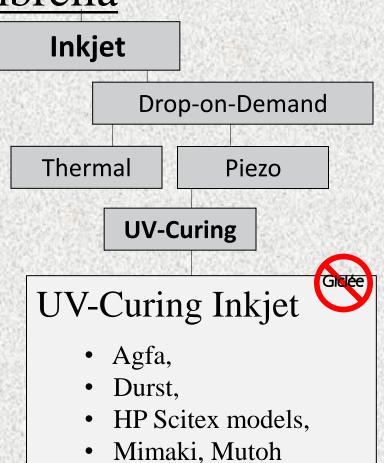


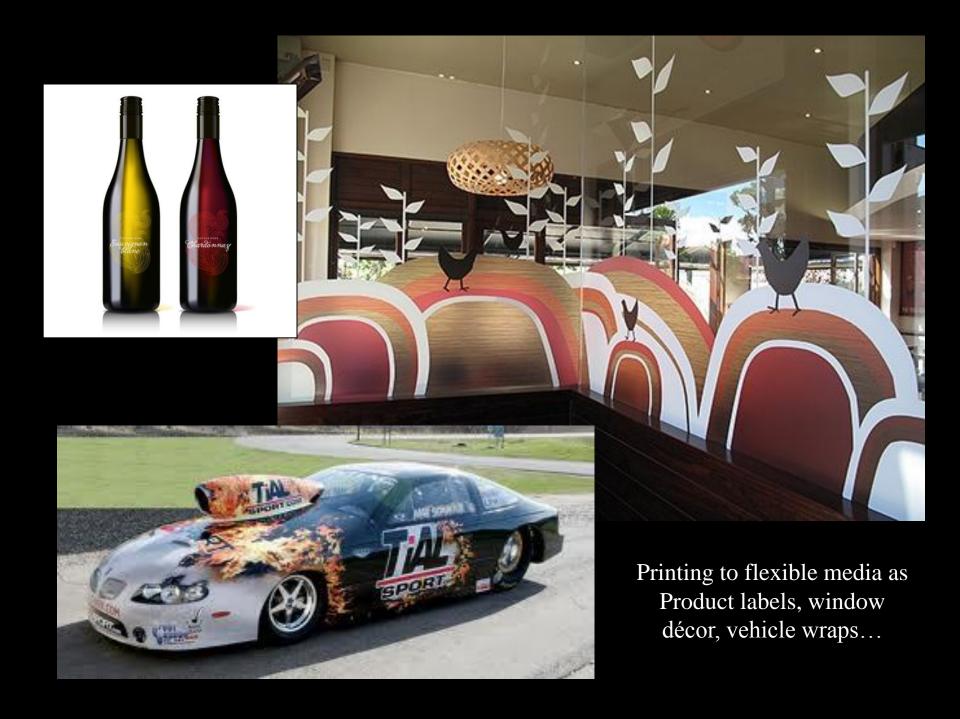
Mounted plaques on Railroad Museum Timeline

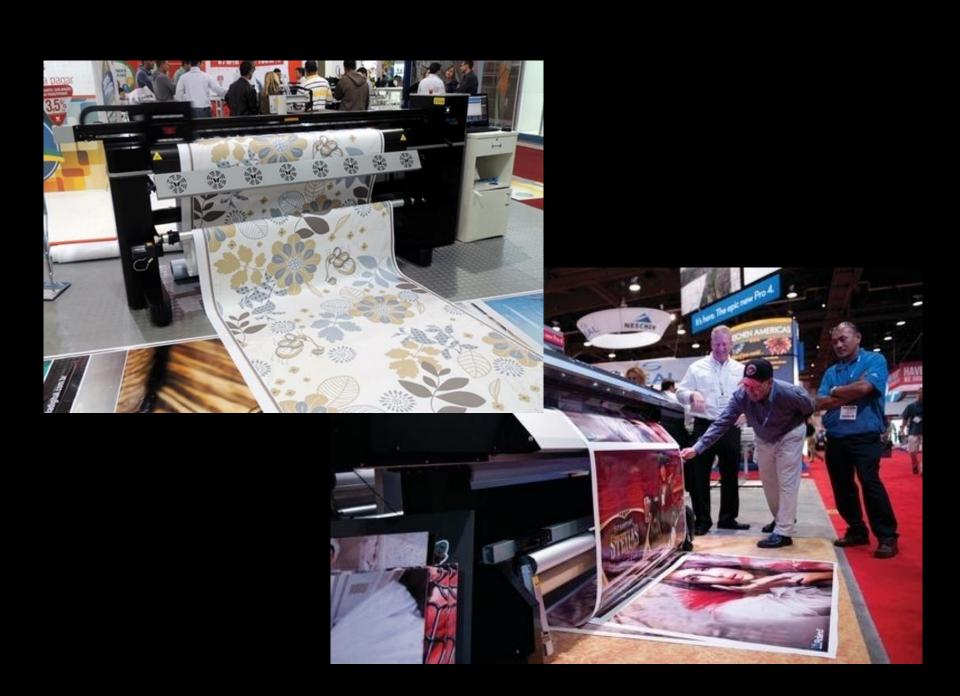


## **UV-Curing Inkjet**

- 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

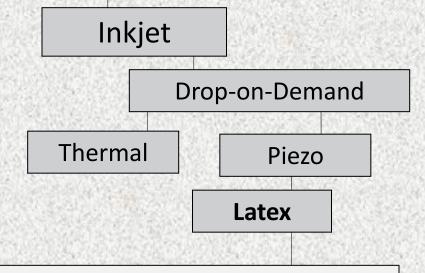






## Latex Inkjet

- 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



## Wide Format Latex Ink

- HP DesignJet L25500,
- L26500
- HP Scitex LX6001
- HP Scitex LX800 Printers
- Mimaki JV400-130LX,
- Mimaki JV400-160LX



# **Vinyl Banners and Ink**

#### True Solvent Inks

- King of banner inks
- Solvents bite deeply into the vinyl and provide a strong, durable bond.
- No further laminating or coating is needed.

#### Eco-Solvent and Low-Solvent Inks

- Don't bond to vinyl media as well as true solvents.
- Good color and durability with lower levels of VOCs.

#### Latex Inks

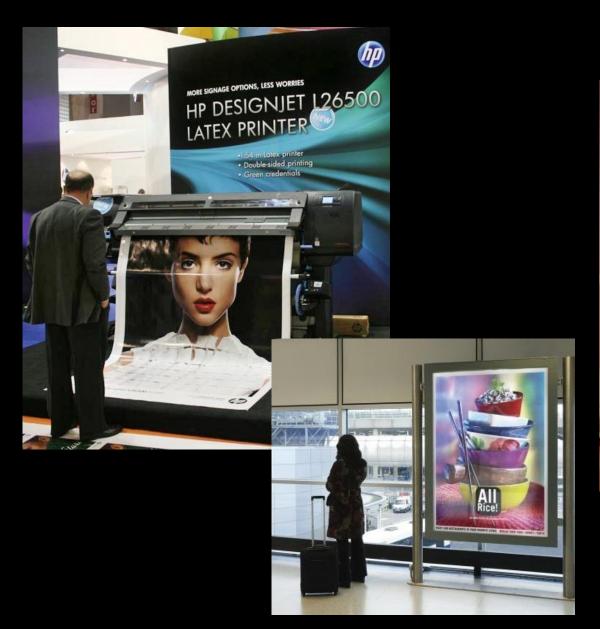
- Pigmented, water-based inks using aqueous-dispersed polymer
- HP claims overall durability that outperforms eco-solvent ink.
- Mimaki has recently introduced its own latex printing systems.

#### UV-Cure Inks

Sit on top of vinyl and use an adhesive to stick to the banner.

#### Aqueous Inks

- Water-based inks cannot print directly onto vinyl banners.
- Coated banner media is more expensive than uncoated media.





Lightbox, wall décor...

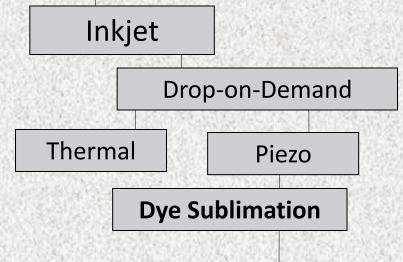


#### **Dye Sublimation Inkjet**

- 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
- Mimaki DS series
- Mutoh ValueJet

## Grand Format Printers (>72")

- Agfa Graphics 126"
- Printer Evolution 126"



# Grand Format Dye Sublimation

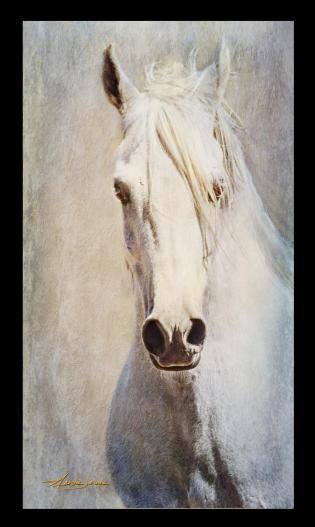
Printing on cotton and polyester-based fabrics with Pigment-based dye sublimation and direct-disperse inks is growing in wall decor.



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

- 6x6" Metal plate
- 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 @ 400F
- 80 psi for 2 minutes
- Printed by Northwest Art + Frame
- Available at PPFA bookstore,
   PFM bookstore and online





2015 New York Fashion Week Digital Coutour Event

- Dye-Sublimation Inkjet
- Epson offered SureColor F-series
- 11 designers for their collections
- Leonor Silva, ESOSA, and Maggie Barry







## Printer Evolution Evo126DS

Epson SureColor F7170

Mutoh ValueJet

# **Inkjet Drop-on-Demand** Thermal Piezo **Solid Ink** Solid Ink/Phase Change Inkjet **Tektronix Xerox Phaser Series**

#### 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 Note faint image transfer on release paper





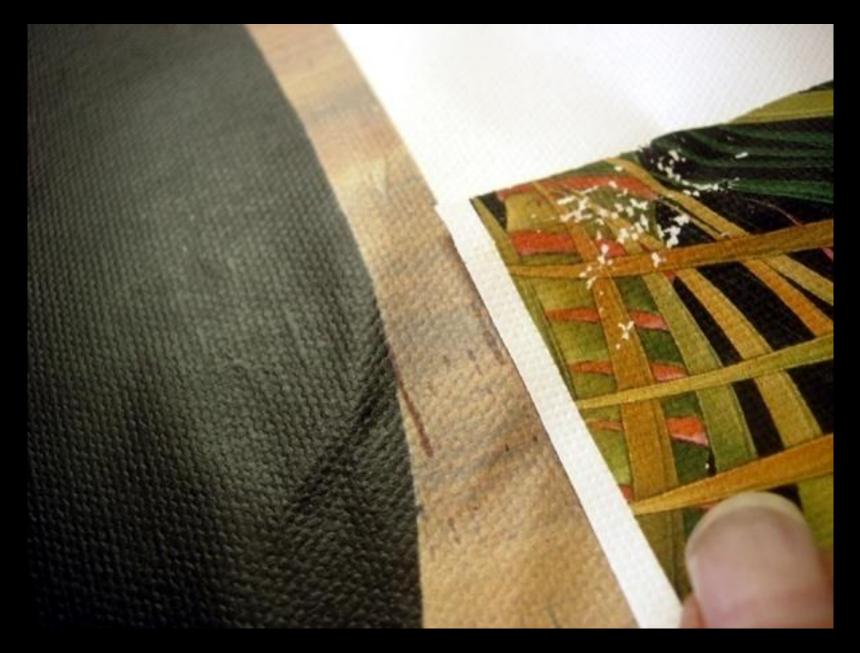
Solid Ink – Phase Change Inkjet

Major image melt and transfer from transparency to release paper

# Digital Printed Canvas



Heidelberg Digital Press – liquid toner on canvas (L) Inkjet (R)



Wide format inkjet (L) does not flake, digital press toner (R)



Epson 7800 Piezo Inkjet on Magiclée Cotton Matte Canvas for pigment ink; Poly/Cotton Canvas for dye/pigment; and Poly/Cotton Matte Canvas for pigment

# Start of Test 2006 Why do they sag?





Faded by 2011





Shear strength may be fine for some mounts, but not all.

Test for digital canvas adhesives PS, HA and film,

PFM article June 2006





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.



**HA Board - Fabric and Printed Digital Canvas Comparisons** 

Board	Types of Art												Т	Digital Canvases							Board Info													
This chart was developed specifically to compare standard industry HA boards including MountCor, Kool Tack, Speedmount, Single Step, Fome-Cor, HartMount, Omega HAM and Coda. Pressure-	Paper	20.	Paper				Paper		Tyvek	ib panel	ig.	, Metallic		art)		cotton	- Pa					1	Τ.		8		actual)					ation	weight	or stable & inert
Sensitive boards as listed and common heat activated roll adhesives.	Lighthweight Porous Paper	Heavy Uncoated Paper	Lightweight Coated	Coated Paper 90#+	Textured Papers	Asian Papers	Heavy Watercolor F	Original Graphic	Synthetic Papers, T	4ply mat, honeycomb panel	Polyester Encapsulate	RC gloss, RC matte,		Digitals (heat tolerant)	Light Fabrics	ik, linen,	Poly slik, satin, moiré	Raw Carness	Cran Minn Mandan	Craire museo mates	Magride Toring 206	Breathing Color Sol	Benefiting Color Cilv	1	Fredriv Initial Carvas	Epson Matte Canvas	Time – after draw (actual)		Temperature	Permanent	Removable	Reversible / Preservation	Cure or Cool under weight	Neutral pH or stable
Heat Activated (HA) Boards	L																		P	CP	c c	PC	P	CF	PC	PC								
3A Fome-Cor Heat Activated	X	X	X		X	X			X		X	X	X	X	X	x :	x i	XX	F	1	F	F	F	П	F	F	1.5-3	m F1	70-180	Х				
Bainbridge Artcare Restore	X					X	X	X			X	X	X	X				FF	-	. [		-			-   -	-	15s-1	m F1	50-170			X	Х	X
SpeedMount	Х	X	X								X	X	X	X					F	1	FF	F	F	1	F	F	1-3n	ı Fi	50-160		Х		Х	
Heat Activated Foam-HAF	Х	_	Х		X				X		X	X	X	X	X z	x :	x i	XX	X	1	C X	X	X	)	K X	X	1-3n	F1	60-180		X		X	
Encore Single Step	X	X	X		X	X						X	X	X Z	X z	x I	X	)	( x	:   :	C X	ı x	( x	1	x x	X	2-3n	1	F180	X				
Gilman InSite Heat-Activated Foamboard	Х	X	Х		X	X			X		X	X	X	X				F F	•	<u>.</u>	-   -	Œ	.  -		- [-	-	15s-1	m	F160	Х				X
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MountCor Canvas	X		X	X	X	X	X		X	X	X	X	X	X	X Z	X Z	X Z	X X		()	( X	( X	( )	( )	( )	X	2-3n	1	F130	X	┖	Ш		X
Hartman HartMount	_	X	X			X						X	X	X					F	1	F	Œ	F	1	F   F	F	1-3n	1	F185	Х				
Kool Tack Preserve	Х	X	X				x	X				X	X	X				F F	-		-   -	_	.  -		-   -	-	15s-3	Os F1	50-160			X	X	X
Preserve Ultra	Х					X	X	X				X	X	X				F F	-		.   -	Ŀ	.  -		<u>.   -</u>	-	15s-3	0s F1	50-160			X	Х	X
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Drymount Foamboard Archival	X	X	X	Ш	X	X	_	Ш	ш	Ш	_	X	X	X :	x			x x	X	<u>: L:</u>	C X	<u> </u>	( x	:   ;	K X	X	15s-1		50-160	Ш	X	Ш	Х	oxdot
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Omega/M&M Heat Activated Mount (HAM)	X	X	X	X	F	X	F		X	X	X	X	Х	x	F	F	x	FF	F	1	F	F	F	1	F	F	1-2m		F170	X				X
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HA Digital Tissues = RagMount, GigléeMount	-	1-	-	-	-	-	-	-	-	-	-	-1	-	-1	- 1	- 1	- 1	F		7		7	Т	Т	7	Т		FI	80-900	Х	П	П	П	X
P-S Film = Gudy 871, PMA, PerfectMount	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- [	- [	FF	Ξ	Т		Т	Τ	Ι	Т			- 1	ollers		X			X
Pressure-Sensitive Boards	Г	Г	Г												Т	Т		Т	Τ	Т	Т	Т	Т	Т	Т	П	Repo	LT	нт					
3A Forne-Cor Self Adhesive	Х	X	Х	X								X	Х	X				FF	Т	Т		Т		Τ	Т			X		Х			X	X
Coda-Foam 1/4" and PVC	X	X	Х	X	П						Х	X	X	X				TF		1									X	Х			Х	X
Gatorfoam	Х	X	Х	Х							X	X	X	X				Ī	•	Ι		Ι		Ι	Ι				X	Х			Х	
Crescent PerfectMount Foam	Х	X	Х	X								X	X	X				FF		J							X	Х		Х			X	X
Drytac PS Gatorfoam	Х	X	X	X	X	x			x		X	X	X	X :	x :	x	X	X X	X		( X	X	( X	)	( )	X			X	X			Х	
Foam Board	X	X	X	X	X	X			X		X	X	X	X :	x :	x	X :	Χĺχ		Ι		Ι		Ι	Ι				X	Х			X	X
Elmer's Quick Stick HT Self Adhesive	Х	X	X	X	X	X					Х	X	X	X :	x z	x	X :	X X		T									X	Х			Х	X
Gilman High Tack Foam	Х	X	Х	Х	П	X			х					X				FF	Т	Т		Т			Т				X	Х			Х	X
Hartman HarTac	Х	X	Х	X	П	X					Х	X	Х	X				FF	1	1		1						Х		Х			Х	X
Kool Tack InstaMount	v	X	Y	Y	v		$\neg$	$\overline{}$	X	$\overline{}$	Х	v	х	X	x :	x	x	χF	-	_		_		1	_				Х	v			_	X

Legend: x = moderate bond; X = good bond; X = excellent bond with tear strength; F = failed when tested; N = do not apply heat; blank = not suitable; PC = poly/cotton; P = polyester; C = Cotton

## Mounting Digital Canvas and Photos

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

#### Gilman MountCor

- 130°F lowest temperature available
- 15 seconds mechanical press, 2 minutes hot vacuum
- Safe for ALL digitals, brass rubbings & high melt wax

### High Tack P-S with Roller Laminator

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

## **Heat Mounting Comparisons**

Dry MHA Tissues or Films Specifically for Digitals Bienfang ClearMount, RagMount @ 180°F-190°F Drytac GigléeMount

HA Foam Center Boards

**High Temperature = 180°F** 

Bainbridge HAF, Single Step, NuCor, Hartman

**Medium Temperature = 150°F-160°F** 

SpeedMount, KoolTack, Gilman InSite

Low Temperature =  $130^{\circ}F$ 

Gilman MountCor

Reversible Boards = 150°F-160°F KoolTack Preserve, Bainbridge Restore

## Digital Photo Identification

#### Endura Metallic Photos - Then and Now

#### Kodak Professional Endura Color Metallic Paper

- Stable like traditional RC
- May heat mount to 190°F
- RA-4 slightly more surface sensitive
- Discontinued 2009

### Kodak Professional Endura Metallic VC Digital Paper

- New Metallic Paper has two dots separating "PAPER", "PAPIER" and "PAPEL"
- Digitally surface sensitive
- Con color shift at 190°F and above
- Mount with P-S or 130°F MountCor

## Fuji Pearl Photos

#### Fuji Crystal Archive Digital Pearl Paper

- Kodak Professional Endura Metallic VC Digital Paper
- Surface Scratches
- Damage with breath
- Transfers substrate surface; Orange Peel
- Acts like Cibachrome
- Commercially printed on Océ LightJet
- Fuji Pearl is not the same as FujiFlex



Fuji Pearl RC (R)

## Cibachrome vs. FujiFlex

#### Ilfochrome Classic

- Traditionally comes from slide film
- Current day are digitally produced
- 100% polyester film substrate
- Glass-like surface very susceptible to damage
- Static mount method to maintain image

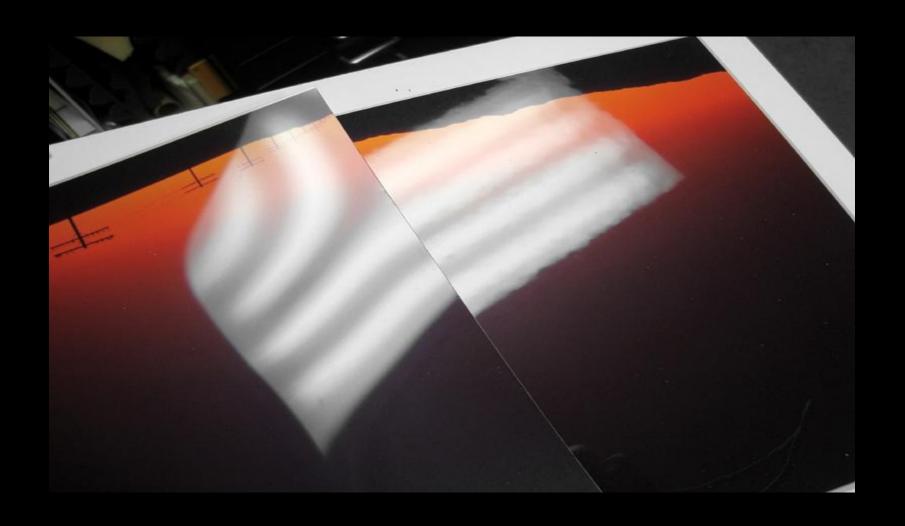
#### FujiFlex Crystal Archive Printing Material

- Glass-like surface very susceptible to damage
- 100% polyester film substrate
- Transfers substrate surface
- Static mount image as above



FujiFlex polyester (L), Ilfochrome Classic polyester (R)





FujiFlex glass-like surface calls for static mounting (L) Even low temp 150°F, short dwell time 15 sec produces orange peel (R)

## When in doubt...Go Cold

Cold Mount Materials
Manual PSAs

Low, Medium, High tack

Roller Laminators
High tack PSAs
Any substrate



Drytac JM26

## **Cold Rollers**

#### D&K55



Drytac ML25











Pressure control (TTPM) is mandatory



## chris@DesignsInkArt.com 661.821.2188

www.designsinkart.com/library.htm

See you next year!!



Chris A. Paschke, CPF GCF Designs Ink

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