Photo Metal Printing
Dye-Sublimation Imaging Technology

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Agenda

- How photo metal panels are used today
- Why get involved now
- How does it work
- The print solution for sublimation
- Substrate Materials
- Business opportunity
- Tips for success
How are Photo Metal Panels being used?

Business Opportunity
Hospital

Architectural Installations
Museum

Water Works
Nassau 42
Republic Metals Corporation
Corporate

R&D Coatings
Restaurants

California Pizza Kitchen
Restaurants

Temecula Pub & Grub
Temecula Valley Hospital
Norton Women’s & Kosair Children’s Hospital
Amway Center
University of Louisville
The Right Time to Get Involved
Current State of Photo Metal Adoption

Change in Market Photo Metal Dye Sublimation

1. Stabilization of Printing Platform
2. Advancement of ChromaLuxe
3. Advancement of Heat Presses
4. Adoption by Top Tier Photographers
5. Acceptance of product as new method of photo display
How does it work

Dye-Sublimation Transfer Technology
What Is Dye Sublimation?

Dye Sublimation is a printing process that uses heat to transform special inks printed on paper to turn to a gas and become permanent part of a material.
Printing & Transfer Process

Transfer Paper

Sublimation Ink

Polyester Molecules
The Printing Solution

Epson SureColor F-Series
Epson SureColor F-Series
On-demand digital textile printing, limited only by your own creativity.

Epson SureColor F6200
$8,495 MSRP
634 ft² 325 ft² 80 ft²
Maximum Speed Fashion/Signage Production Rigid Products Production

Epson SureColor F7200
$15,995 MSRP
634 ft² 325 ft² 100 ft²
Maximum Speed Fashion/Signage Production Rigid Products Production

Epson SureColor F9370
$27,995 MSRP
1,169 ft² 1,004 ft² 190 ft²
Maximum Speed Fashion/Signage Production Rigid Products Production
Epson UltraChrome Dye-Sublimation Ink Technology

- Developed Specifically for the Epson PrecisionCore TFP Print Head
  - Significantly increases the overall print head life
  - The SureColor F-Series printers are designed to be used exclusively with Epson UltraChrome DS inks and not with any other brands of cartridges or inks. Using Epson genuine ink is important for reliable performance and high image quality.

- High Density Black Ink
  - Ink formulated to achieving dramatic color intensity and high color contrast
  - Superior overall image quality - both image definition and text sharpness are amazing
  - Less ink consumed to product rich dark colors and solid blacks

- Safety First
  - Epson UltraChrome DS inks comply with the AZO certification and meet the worldwide Oeko-Tex Safety Standards, including CPSIA.
High Performance Dye Sublimation Papers
- *Multi-purpose* is great for transferring onto mouse pads, t-shirts, ceramics, etc.
- *Adhesive-Textile* is recommended for high-end fabric and apparel production
- *Production* is a lightweight paper ideal for roll-to-roll applications

Enhanced Dye Transfer Performance
- Unique chemical coating technology allows for heavy ink loads with low cockling, superior clarity, and sharpness that only Epson can deliver
- Incredible high-transfer yield properties for amazing performance and productivity

Ready to go right out of the box
- Genuine Epson transfer media have print imaging configurations included with the printer for optimized print quality right out of the box.
EPSON
Dye-Sublimation Solution

Epson PrecisionCore™ TFP
Next-generation print head technology

SureColor F-Series Printers

Wasatch SoftRIP Standard

Epson ICC profiles

4 Color Dye-sublimation Ink

Epson Service and Support

Epson DS Transfer Media

Why Epson?
Total Turn-key Print Solution
Substrate Materials

Universal Wood’s ChromaLuxe
What makes ChromaLuxe superior

- Multiple layers of coating
- Exceptional detail, color resolution and depth
- Increased color gamut compared with direct print
- Scratch & abrasion resistant
- Archival quality, designed to last for generations
- Will not yellow with age
- Chemical resistant, can be cleaned with ANY cleaner
Product Line

• Metal Prints
  - 6 different finishes
    ▪ Gloss White, Matte White, Gloss Silver, Matte Silver, Semi-Gloss White, Semi-Gloss Silver
  - Standard sizes
  - Creative Borders
  - Circles
  - Connections

• Wood Photo Panels
  - Gloss White
  - Natural Wood

• Desktop Wood Panels
ChromaLuxe Connections

- ChromaLuxe Connections are a series of aluminum photo panels grouped together to create a bold impact.
- Available in an array of sizes, they can be arranged in variety of configurations using multiple photos or a single image across the group of photo panels to form a unified piece of wall art.
ChromaLuxe Wood Wall Panels

- 5/8” MDF with black back
- Standard square and rectangle shapes available
- Available in 2 different finishes
  - Gloss White
  - Matte White
- Key holes pre-drilled on back of panels
ChromaLuxe Natural Wood Panels

- 5/8” MDF core with Maple veneer exterior
- Standard square and rectangle shapes available
- Available in Matte Clear
- Key holes pre-drilled on back of panels
ChromaLuxe Desktop Panels

- 1/4” and 1/8” Hardboard
- Available in White Gloss
- Standard square and rectangle shapes available
- Creative Borders
- Variety of display options available
  - Pre-assembled easels
  - Hinges
  - Black aluminum easels
ChromaLuxe Table Tops

- Black pre-edged finish
- Nanotechnology Self Healing Surface
- Available in circles and squares
- Bases are not included
Flooring

- 3/8” moisture resistant high density board.
- Tongue and groove installation
- Textured for durability and skid resistance
- Commercial grade 2
- Available in 24” x 24” or 16” x 24” pieces
- Outdoor rated aluminum
  - .045 Thickness
  - Gloss White
  - Gets twice the life as traditional ChromaLuxe!
ChromaLuxe EXT

- Image quality, depth and color
- Consistent high gloss finish
- Weathers well
- Easy to clean
- Graffiti resistant
- Chemical resistant
- Scratch resistant
- Impact resistant
- Wind resistant
- No need to laminate
- Thoroughly tested
The life of this product is directly linked to the ink used during the printing process.

UV Resistant
Using Epson 4-color ink sets
Expected Life:

- 2 years* (photography based)
- 3 years** (signage based)

*Provides 21-month life for photo based images mounted vertically facing south in Florida. Other locations, orientations or shading will significantly extend the life of the image.

**Utilization of full density (1.0 or higher) prints as sign graphics will result in 3 years or more of life.

Free replacement panels for any photo images not satisfying the end customer for two years and full color signs for three years.
ChromaLuxe Permanence Testing
ChromaLuxe Development

• Starting development process in 2006
• Began with testing at Rochester Institute of Technology (RIT) Permanence Institute
• Have switched to Wilhelm Imaging Research (WIR)
There are currently no ANSI or ISO Print Permanence Test Method Standards that can answer the question: “How Long Will a Print Last.”
ChromaLuxe Coated Aluminum Photo Panels Printed With Epson UltraChrome DS Inks – Print Permanence Ratings

With unprecedented resistance to surface abrasion, high humidity, atmospheric ozone, and contact with water, ChromaLuxe prints – often referred to simply as “Metal Prints” and available in sizes up to 4x6 feet – can be safely displayed without the need for framing under glass or acrylic, face-mounting, or surface laminating. When displayed, unframed prints made with the latest generation of ChromaLuxe aluminum photo panels have WIR Display Permanence Ratings that are more than THREE TIMES better than Kodak Endura silver-halide prints that have been framed under glass. Using test procedures that are identical to those employed with displayed ChromaLuxe prints made with Epson UltraChrome DS inks, the WIR Display Permanence Rating for displayed Kodak Endura silver-halide prints framed under glass is only a very poor 19 years.

<table>
<thead>
<tr>
<th>Display Permanence Ratings and Album/Dark Storage Permanence Ratings</th>
<th>Years Before Noticeable Fading and/or Changes in Color Balance Occurs</th>
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<tr>
<td>Epson 4-Color UltraChrome DS Inks In Epson Dye Sublimation Printers</td>
<td>Displayed Prints Framed Under Glass</td>
</tr>
<tr>
<td>ChromaLuxe Photo Panels, Gloss White</td>
<td>65 years</td>
</tr>
<tr>
<td>ChromaLuxe Photo Panels, Gloss Clear</td>
<td>65 years*</td>
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*Because of the unique reflective properties of the finely brushed aluminum substrate of ChromaLuxe Clear Photo Panels, it is not possible to measure dye fading under existing conditions that might occur with a spectrophotometer. However, careful visual examination of both the White and Clear Gloss versions of the product has led WIR to conclude that the permanence properties are essentially identical. WIR has acquired a sophisticated MegaVision (Multispectral Imaging and Analysis) system that will allow direct measurements to be made with both the White and Clear versions of the product and this technology will be used with future permanence evaluations of these materials.
Xenon Arc Image Permanence Testing*
ChromaLuxe vs. Kodak Endura and Fuji Crystal Archive White

Hours to Failure**

- ** 25°C, 50% RH, 50 kLux @ 420 nm - Window Glass Filter
- ** WIR version 3.0 End point Criteria, Color of Bar Indicates Failure Mode
Financials

Business Opportunity
The Economics of ChromaLuxe®
Cost & Margin Overview

• Unit Cost  
  Example: 16” x 20” Aluminum Panel
  – Net purchase price: $20.95
  – Freight: .50
  – Packaging: 1.00
  – Ink/paper: .33
    • Landed Material Cost: $22.78

• Labor @ 30/hour min @ $20.00 loaded .65

• Total Landed Material and Direct Labor: $23.43
The Economics of ChromaLuxe®
Pricing / Sales Tips

• Do not underestimate what someone is willing to spend!
  – Quality and WOW factor mean a lot.
• Comp shop.
  – What are pro lab’s charging and other fine art printers in your area?
• Make artists / photographers your sales agents
  – Provide samples and promotional materials

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Tips for Success

Dye-Sublimation of ChromaLuxe Metal Plates
Start with Good Resolution Images

Low Resolution Source Image

High Resolution Source Image
Choosing the Optimal Printer Settings will:

- Use just enough ink for vibrant prints
- Color settings are optimized for specific application

Use the correct paper for Hard Substrates

- Optimized to control the release of color inks

Verify print head does not need maintenance

- Print a nozzle check pattern
- If necessary, have printer perform light clean on specific color
Prepare the Printed Paper & Substrate

Remove liner from metal panel
  • Warming the panel relaxes the liner for easy removal
  • Use a lint free cloth to remove any dust from surface of panel

Allow moisture in paper to dry if just printed
  • Place the printed paper in open heat press for 5-15 seconds

Use heat resistive tape to secure paper to metal
  • If paper shifts while hot, the image will have “ghosting”
Use the recommended Heat Temperature and Time:
  - Individual color inks activate at different times
  - Too little time, image appears cold (reduced yellows & reds)
  - Too much time, image appears warm (reduced blues)

Adjust for your specific environment:
  - High elevation – less time
  - Humid environment – more time
Questions

Hands On