

GROWTH OF EMBELLISHMENTS FOR PRINT – WORKING THROUGH INK SELECTION AND CHALLENGES

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Overview

- ▶ Overview of Metallic Decorating Options
 - ▶ Hot Foil Stamping
 - ▶ Cold Foil Transfer
 - ▶ Digital Raised Foil (varnish adhesive)
 - ▶ Digital Flat Foil (toner adhesive – sleeking)
 - ▶ Metallic Substrates (transfer and laminated)
 - ▶ Ink Considerations with Hot Stamping Foils
 - ▶ Ink Considerations with Overprinting Metallic Surfaces
 - ▶ Metallic Secondary Processes vs. Metallic Inks
 - ▶ Selecting the Best Metallic Effect
 - ▶ Sustainability and Metallic Decorating Processes
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- A series of white diagonal lines of varying lengths and thicknesses, located on the right side of the slide, extending from the middle towards the bottom right corner.

Hot Foil Stamping

Process

- ▶ Flat or Rotary Die (Engraving)
- ▶ Heat and pressure are used to release the foil to the substrate
- ▶ offline or inline process



Hot Foil Stamping

Run Lengths

- ▶ From small to very large (most versatile process)

Paper options

- ▶ Coated, uncoated, colored stocks (unlimited options)



Hot Foil Stamping

Foil color options

- ▶ Several hundred metallic colors, plus other options including holographic, pigment and pearlescent foils (most foil color and foil type options)



Hot Foil Stamping

Common Applications

- ▶ Business cards and stationery
- ▶ Greeting cards
- ▶ Cartons
- ▶ Labels
- ▶ Brochures
- ▶ Pocket folders
- ▶ Certificates
- ▶ Invitations
- ▶ Security applications



Hot Foil Stamping

Advantages

- ▶ Most versatile and flexible foil process
- ▶ Process and machines that also emboss
- ▶ Ability to foil and emboss in one pass (combination)
- ▶ Ability to apply refractive (micro-etched) patterns into the surface of the foil
- ▶ Only foil process that can apply registered holograms (security)



Hot Foil Stamping

Disadvantages

- ▶ Tooling costs - flat or rotary engravings are needed to apply foil
- ▶ Set-up and makeready time more extensive
- ▶ More costly for small to medium-sized runs (most often)
- ▶ No ability to provide personalized or variable foiled data
- ▶ Additional offline press needed to overprint CMYK with sheet-fed applications (roll-to-roll hot stamping can be overprinted inline)



Ink Considerations with Hot Stamping Foils

- ▶ UV curable inks (fast drying)
- ▶ Conventional inks (challenges with dark colors)
- ▶ Inks or coatings must be wax free
- ▶ UV coatings challenges (coating after foil stamping)
- ▶ Substrate dyne level of 38 or higher



Cold Foil Transfer

Process

- ▶ A conventional or UV adhesive is applied to the sheet or label stock with a printing blanket or flexo plate
- ▶ The foil is transferred on a separate station where it adheres to the applied adhesive
- ▶ Commonly located on the first two printing stations on an offset press or flexo press, where the foil can then be overprinted inline



Cold Foil Transfer

Run Lengths

- ▶ Medium to very large

Paper options

- ▶ Mostly coated
- ▶ New technology available for uncoated paper



Cold Foil Transfer

Foil color options

- ▶ A large selection of foil colors available (including metallics and holographics)
- ▶ Overprinting provides unlimited color options with silver foil



Cold Foil Transfer

Common Applications

- ▶ Folding cartons
- ▶ Labels
- ▶ Magazine covers
- ▶ Brochures



Cold Foil Transfer

Advantages

- ▶ Ability to apply foil inline with printing process (offset or flexo)
- ▶ No foil stamping dies or makeready time needed – quick set-up time
- ▶ Create unlimited metallic colors by overprinting CMYK
- ▶ Eliminate the need to use white opaque ink



Cold Foil Transfer

Disadvantages

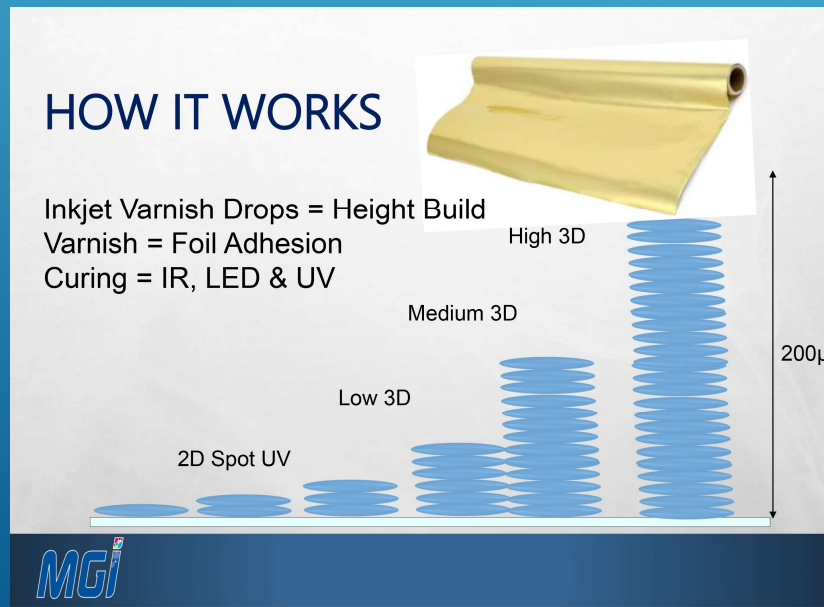
- ▶ Higher cost of foil usage depending on the design
- ▶ Not as suited for dry, porous stocks
- ▶ No combination (foil and embossing) possible
- ▶ Difference in overall brilliance (little or no significant difference any longer)



Digital Raised Foiling – Varnish Adhesive

Digital Decorating Options (Coatings and Foils)

How does digital inkjet coatings and digital foil work?



Digital Raised Foiling – Varnish Adhesive

Run Lengths

- ▶ Small to medium

Paper options

- ▶ Mostly coated – some uncoated digital stocks



Digital Raised Foiling – Varnish Adhesive

Foil color options

- ▶ Several metallic foil colors and holographic foils available



Digital Raised Foiling – Varnish Adhesive

Common Applications

- ▶ Direct mail (personalized)
- ▶ Invitations (personalized)
- ▶ Short-run greeting cards
- ▶ Brochures
- ▶ Posters
- ▶ Small-run cartons and labels
- ▶ Prototypes



Digital Raised Foiling – Varnish Adhesive

Advantages

- ▶ No tooling needed (dies or plates) – excellent for short runs or prototyping
- ▶ Creates single-level emboss (no punch on backside of sheet)
- ▶ Ability to use foil for personalization and/or variable data



Digital Raised Foiling – Varnish Adhesive

Disadvantages

- ▶ Not feasible for very large runs because of speed
- ▶ Not feasible for large areas of foil coverage with digital inkjet process
- ▶ Limitations on paper stocks and foil colors
- ▶ Not commonly overprinted – most often limited to foil color



Digital Foil – Toner Adhesive

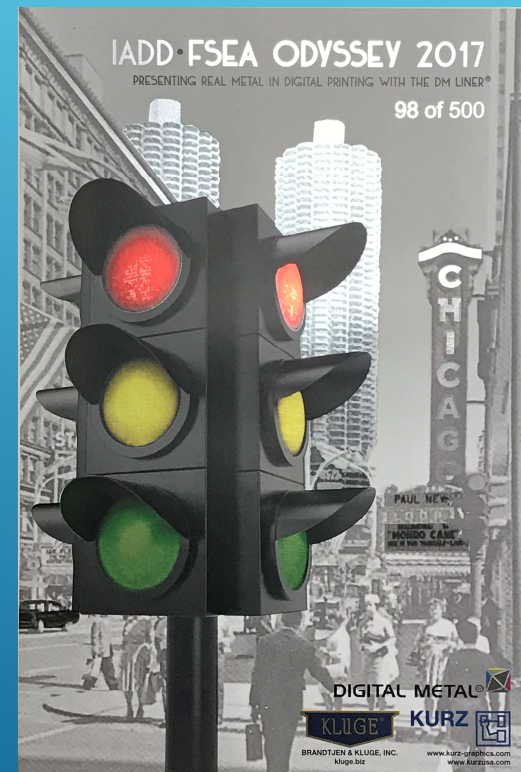
Process

- ▶ A two- to three-step process
- ▶ The artwork to be foiled is first printed in rich black on a toner-based or HP ElectroInk digital press (depending on foiling system)
- ▶ The sheet then runs through a digital foiler (sleeking), where a heated roller applies the foil to the black ink

Digital Flat Foil – Toner Adhesive

Process

- ▶ The sheet can then run through a digital color press to add CMYK on top of the foil or in other areas of the design



Digital Flat Foil – Toner Adhesive

Run Lengths

- ▶ Small to medium

Paper options

- ▶ Mostly coated
- ▶ Some uncoated digital stocks



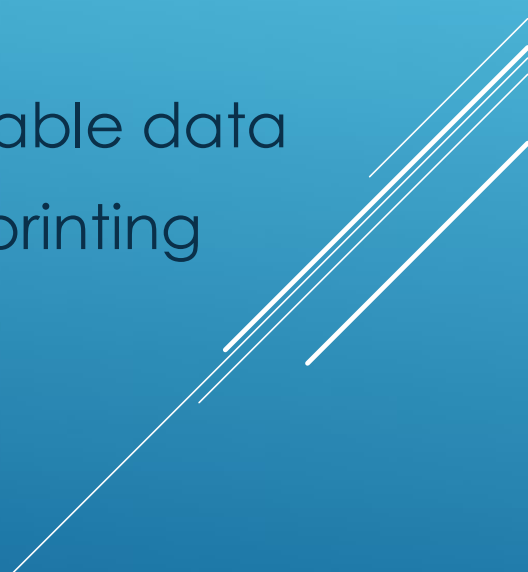
Digital Flat Foil – Toner Adhesive

Foil Colors

- ▶ Limited foil colors available
 - ▶ Overprinting provides unlimited color options
- 
- A series of white diagonal lines of varying lengths and thicknesses, located in the bottom right corner of the slide.

Digital Flat Foil – Toner Adhesive

Advantages

- ▶ No tooling needed (dies or plates) – excellent for short runs or prototyping
 - ▶ Ability to use foil for personalization and/or variable data
 - ▶ Achieve unlimited metallic foil colors with overprinting
 - ▶ Provide large areas of foil coverage digitally
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- A series of three parallel white diagonal lines are positioned in the bottom right corner of the slide, extending from the right edge towards the center.

Digital Flat Foil – Toner Adhesive

Disadvantages

- ▶ For short runs or prototyping only
 - ▶ Limitations on paper stocks and foil colors
 - ▶ Multiple passes needed to achieve toner adhesive, foil and CMYK overprinting
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- A series of four parallel white diagonal lines are positioned in the bottom right corner of the slide, extending from the right edge towards the center.

Metallic Substrates (Transfer or Laminated)

- ▶ Metallic board is provided with a metallic or holographic finish (either transfer or laminated)
 - ▶ Provided in sheets for 4-color CMYK printing over the top of the foil
 - ▶ Most commonly printed with white opaque ink inline or in a separate pass
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- A series of three parallel white diagonal lines are located in the bottom right corner of the slide, extending from the right edge towards the center.

Metallic Substrate (Transfer or Laminated)

Run Lengths

- ▶ Large to very large

Foil color options

- ▶ Limited foil colors available
- ▶ Overprinting provides unlimited color options

Metallic Substrate (Transfer or Laminated)

Advantages

- ▶ Achieve metallic effect without secondary process or use of foil on press
 - ▶ Most feasible choice for very large runs with full metallic or holographic usage
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- A series of white diagonal lines of varying lengths and thicknesses, located in the bottom right corner of the slide.

Metallic Substrate (Transfer or Laminated)

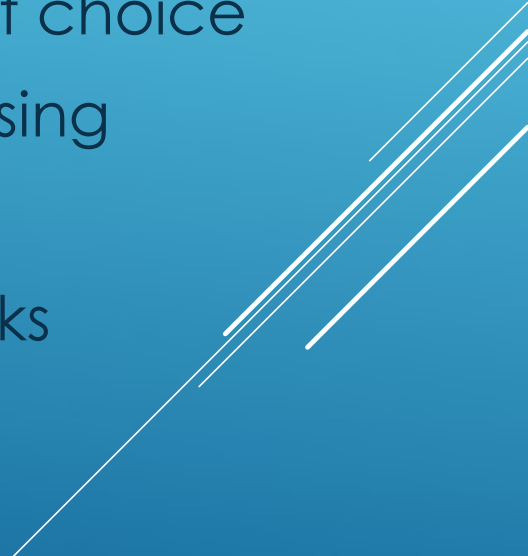
Disadvantages

- ▶ Higher cost of metallic paper/board stock
 - ▶ Must use white opaque ink for non-metallic areas (more difficult to cover and run on press)
 - ▶ Foil Lamination not as environmentally-friendly
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- A series of white diagonal lines of varying lengths and thicknesses, located in the bottom right corner of the slide, extending from the right edge towards the center.

Ink Considerations with Overprinting Cold, Digital, and Metallic Substrates

- ▶ Non-absorbent substrate inks
- ▶ Common paper series inks not compatible
- ▶ UV curable inks recommended (instant curing)
- ▶ UV curable inks maintain sharp dot gain for crisp, translucent overprints
- ▶ Conventional inks can work (slower drying and careful handling)
- ▶ Digital inkjet or toner overprinting (lamination to prevent scratching)
- ▶ Special considerations for white opaque inks (curing challenges)

Metallic Secondary Processes Versus Metallic Inks

- ▶ Metallic Inks applied inline vs secondary foil process
 - ▶ Hot, cold or digital foils more brilliant
 - ▶ Design and end-use final determination on best choice
 - ▶ Secondary metallic processes best with embossing
 - ▶ Secondary metallic processes more durable
 - ▶ Metallic foils contain less metal than metallic inks
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- A series of three parallel white diagonal lines are positioned in the bottom right corner of the slide, extending from the right edge towards the center.

Selecting the Best Metallic Effect

Questions to Ask

- ▶ Will the job have multiple metallic colors?
 - ▶ Will the job have foil only or embossing as well?
 - ▶ What is the overall foil coverage on the job?
 - ▶ What type of paper stock was selected?
 - ▶ What is the run length of the project?
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- Several thin, parallel white lines are drawn diagonally across the bottom right corner of the slide, extending from the right edge towards the bottom.

Selecting the Best Metallic Effect

Examples

- ▶ If the job includes 4 foil colors, 100,000 pieces, on a gloss coated stock? **Cold Foil**
- ▶ If the job has a metallic gold in one general area, 20,000 pieces, on a colored uncoated stock? **Hot Foil Stamping**
- ▶ If the job has multiple foil colors and the metallic covers most of the sheet, 400,000 sheets, on a SBS board?
Metallic Substrate
- ▶ If the job is one color foil, 800 pieces, on a coated cover stock? **Digital Raised Foil – Varnish Adhesive**



NEW EDITION OF THE FOIL CHEAT SHEET

Metallic Decorating and Repulpability/Recyclability – FSEA

- ▶ Repulping of Foil Decorated Paper study with Georgia Tech
- ▶ Recycling of Fiber-Based Materials with Transfer Metallic Decoration
- ▶ Testing and press release on negligible amount of aluminum in transfer foils
- ▶ American Forest & Paper Association's Design Guidance for Recyclability of Paper-Based Packaging





THANK YOU

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