



DECORATION HANDBOOK

Techniques & Considerations

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COMPANY OVERVIEW

As a leading plastic injection molder based in Wisconsin **since 1977**, we specialize in providing comprehensive expertise across various aspects of injection molding. Our team of professionals excels in a range of techniques, including over molding, in-mold labeling, multishot molding, decoration, and insert molding. Central to our operations is a strong emphasis on automation and robotics, forming the backbone of our commitment to enhancing efficiency and delivering dependable solutions, particularly for **mid to high-volume** product requirements.

Our in-house engineers work from **concept** to **production** to build custom work cells, outfitted with the latest technology.





WHY WE'RE THE EXPERTS

Sussex IM has extensive experience with various decoration techniques in plastic injection molding. Given our almost 50 years of experience in the cosmetics market, we have the ability to decorate on a variety of plastic substrates with the pristine quality our customers expect.

Through pad printing, In-Mold Decorating (IML/IMD), Hot Stamping, and Heat Transfer Processes we can ensure we achieve the decoration requirements suited for your application. When choosing the best printing process, considerations must be made regarding the substrate, part design, the look of the finished product, and testing requirements. The material of the part will determine the best process to use and whether a surface treatment is required (i.e. Corona, Flame, or Chemical Treatment).

In 2024, we won the In-Mold Decoration Association (IMDA) award for our cutting edge In-Mold Label (IML) application on the new Kraft HEINZ Keystone 3.0 Dispenser in partnership with ASEPT, a global leader in dispensing solutions.



DECORATION AND UPFRONT CONSIDERATIONS

Upfront Considerations

Before selecting a decoration technique, many factors should be considered, including:

- **Type of substrate**
- **Shape** of part – flat, contoured
- **Decoration area** – size and shape
 - Also consider what is **under the decoration area** for ejector pins or lifters
- **Number of colors** required for the decoration
- **Durability** – scratch, UV, chemical
- **Desired look** – metalized, pantone colors, etc
- **Finish of the part** – high gloss, matte, textured
- **Cost** – are you looking for the cheapest, highest end, most durable?



HEAT TRANSFER

Upfront Considerations

- **Process:** Dry (same process as hot stamper to activate graphics)
- **Curing Required:** No
- **Durability:** Good, but depends on substrate and type of heat transfer
- **Pre-Treatment Required:** Rarely
- **Part Price Impact:** Medium
- **Capital Expenditure Impact:** Low



Key Details

- Can be applied to **slightly contoured** parts but is limited to generally one direction of curvature
- **Requires a hot stamp pad to match the part.** The pad is what activates the heat transfer. **Pads can be generic or a shadow of the decoration.** Shadow pads are generally used on high gloss parts because the sheen changes where the pad touches the part and the shadow pad makes the sheen change look like it is part of the graphic. In other applications, a generic pad can work and for those cases, different decorations can be activated by the same generic pad.
- **Excellent choice for multiple colors** as it can be all printed on the same heat transfer
- **More forgiving than hot stamping** as the process can "hit" the part harder and not distort or overstamp the decoration image.
- Heat transfer decoration **prices are higher than hot stamping or pad printing** but multiple colors / images can be all applied in one dry process

HOT STAMP



Upfront Considerations

- **Process:** Dry
- **Curing Required:** No
- **Durability:** Good. Can be very durable depending on substrate and type of foil.
- **Pre-Treatment Required:** Rarely
- **Part Price Impact:** Low
- **Capital Expenditure Impact:** Low

Key Details

- Can be applied to **slightly contoured parts** but is limited to generally one direction of curvature
- **Requires a hot stamp die** with the artwork. **Flat dies** are low cost and quick to receive but **contoured dies** require a custom mold to be built which can be expensive
- Excellent choice for **single hit, single-color, high-volume applications**
- Foils come in metalized versions **so shiny silver and gold are options** with hot stamping
- Hot stamping **requires perfect fixturing for support and multi-cavity tools need to produce exactly the same part**. 0.003 variation is the difference between a good deco and a deco that has missing portions of the deco
- In volume, single hit hot stamping will give the **lowest per print cost**

IN-MOLD LABELING/DECORATION

Upfront Considerations

- **Process:** Dry
- **Curing Required:** Yes. Labels must be cured prior to molding
- **Durability:** Excellent
- **Pre-Treatment Required:** No
- **Part Price Impact:** Medium
- **Capital Expenditure Impact:** High



Key Details

- IML labels are **not available for many resins**
- IML labels are **easily customizable** with different artwork
- IML labels can come with protective clear coat layers which make the IML **durable**
- IMLs are molded into the plastic so they generally **can never be removed**
- Can be applied to **slightly contoured parts** but is limited to generally one direction of curvature. Pre-forms would be required for complex curvatures.
- **Requires automation** to pick and place the IML label into the mold
- Labels are held in the mold with vacuum, static or mechanically
- The **gating of the part is very important to consider** with regards to IML placement and to keep the IML from moving during the molding process
- IMLs **allow larger, more complex graphics** to be applied to the molded part during the mold cycle with no post-molding processes necessary

LASER ENGRAVING



Upfront Considerations

- **Process:** Dry
- **Curing Required:** No
- **Durability:** Excellent
- **Pre-Treatment Required:** No
- **Part Price Impact:** Low
- **Capital Expenditure Impact:**
Medium

Key Details

- Depending on the type of laser, **marking is "burned" into plastic**
- **Different contrast is sometimes possible** when additives are added to the resin
- Great for **date-coding**
- **Serialization** is possible for traceability

PAD PRINTING

Upfront Considerations

- **Process:** Wet
- **Curing Required:** Yes. Heat or UV depending on the ink system.
- **Durability:** Depends on substrate and type of ink
- **Pre-Treatment Required:** May be required
- **Part Price Impact:** Low
- **Capital Expenditure Impact:** Low



Key Details

- Can be applied to **complex shapes** like golf balls
- **Quick to prototype** – not expensive to have in-house polymer cliché making capabilities
- Good for **low volumes** but can run high volume also
- **Multiple colors possible** depending on part fixture repeatability and user-friendly artwork as each color requires an additional hit
- **Requires experience** on how to manage the inks, thinners, and what tweaks need to be done to the process while its running
- Single hit pad printing usually **costs more than hot stamping** but **less than applying a heat transfer**

PRESSURE SENSITIVE LABEL



Upfront Considerations

- **Process:** Dry
- **Curing Required:** No
- **Durability:** Good, but depends on substrate and type of label
- **Pre-Treatment Required:** No
- **Part Price Impact:** Medium
- **Capital Expenditure Impact:** Medium

Key Details

- Can be applied to **slightly contoured parts** but is limited to generally one direction of curvature
- **Types of label application:**
 - Wipe on
 - Blow
 - Tamp-blow
 - Place
- **Type of label to be considered:**
 - Paper
 - Film
- **Excellent choice for multiple colors** because it can be all printed on the same label
- **More forgiving** from a support/fixturing perspective



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