

## Helpful Facts on Hot Foil Stamping and Cold Foil Printing

Was originally posted on LinkedIn and I read the entire article and felt the need to make some corrections. Being exclusively and technically from the Hot & Cold Foil for 40 years and having only served the foiling industry for these years, the original document in black and all my words are in red.



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THURSDAY DECEMBER 11,2014 | [UNCATEGORIZED](#)



With the variety of manufacturing options available to add multisensory packaging effects, brands across all industries are beginning to branch out and use foils. One of the most talked about topics and points of confusion is the difference between hot foil and cold foil, along with what the pros and cons are of each method. Choosing the right method is tied to many factors, but having this baseline understanding will help with price, speed to market, brand and ultimately, the consumer impact.

**Hot foil stamping.** A process accomplished on a foil stamping machine that uses a metal plate that has been engraved with an image of the desired design required for the particular application. The plate strikes a roll of foil film, which

causes the foil to adhere to the plate. The metal plate then strikes the substrate that is to be imprinted and transfers the foil onto the area of the document requiring the metallic effect. The result is a document that has a highly reflective image with a bright and dense metallic appearance.

**Mike King's version (MKV) on Hot foil stamping:** A process accomplished on a foil stamping machine that uses a metal die that has been engraved with an image of the desired design required for the particular application. The die together with high tonnage and exact high temperature of heat, compresses against the foil and onto the substrate which causes the foil to adhere to the substrate. The result is a highly reflective image with a bright and dense metallic appearance, a rich and flat look.

**Cold foil printing.** A process that can be done in-line on a press. Using a standard printing plate, an image is printed onto a substrate with the use of a [UV-curable](#) cold foil adhesive. A UV dryer then activates the adhesive. The extracted foil is affixed to the printed adhesive and an image is created. Foil that does not adhere to the adhesive is removed.

**MKV on Cold foil printing.** A process that is done in-line on a printing press in various formats (litho, flexo and gravure), both sheetfed and web. In the litho version you are using a standard printing plate. An image is printed onto a coated substrate with the use of a UV-curable cold foil adhesive or a conventional adhesive. The second operation - the foil passes through the nip of the printing press with the substrate that has been printed with the adhesive. Where ever the adhesive is printed is where the foil will adhere. The foil carrier is then rewound into a foil rewind or extracted depending on type of cold foil system and the substrate continues down it path through the printing process to over print on the foil creating the various colors unless silver is desired.

## THINGS TO CONSIDER

**Small Foil Area:** As we learned above, the cold foil process is done in-line on the press. If the foil area (the area on the sheet that will be foiled) is small and does not make use of the entire foil ribbon over the sheet, there can be an excessive amount of waste of foil not being applied.

Comparatively, the hot foil process (done on a hot stamping machine) allows for the foil ribbon to precisely index in small increments and thus maximizing the use of the entire foil ribbon.

**Large foil area:** In this case, cold foil can be a cost effective choice. The large foil area needed on the sheet will allow maximum use of the foil ribbon. Along with the ability to cold foil in-line on press, the second operation of hot foil stamping can be eliminated.

**MKV: Things to consider:** As I have learned and confirmed by my customers, the size of the image area of used foil and the foil process being used will determine the process that should be used along with the amount of images on the one sheet. However, depending on the size of the job will also determine the value in both processes. **The cost of both processes is not only in foil.**

Example: Job has 8 small dies	12,000 sheets both hot & cold have to print		
Cold Foil cost printing plate	\$30.00	Hot Foil Cost @100.00 per die	\$800.00
Make Ready Time 20min	\$200.00	Make Ready time 5hrs for (fine detail)	\$700.00
		Run the job @ 3000perhr @150.00	\$600.00
4 strings of Foil 3" wide	\$950.00	Hot Foil using indexing	\$150.00
Cold Foil Inline printing	\$1,180.00	Hot Foil process another day and	\$2,250.00

This does not always work out for cold foil but does in most jobs under 20,000 sheet runs and some as much as 100,000 sheet runs. All must look closely at all the variables. Most of all will the customer accept the reflective brilliance of cold foil or demand the hot foil.

**Substrate being used:** Certain substrates can pose a challenge for the cold foil process, such as uncoated stocks. During the cold foil process, a layer of adhesive is applied to the sheet. Uncoated stocks tend to absorb the glue, resulting in less adhesive for the foil to adhere to. This can lead to uneven surfaces, rough edges, and flaking of the foil.

Comparatively, hot foil stamping provides more latitude with substrate types since the foil is applied by heated application onto the sheet versus the use of an adhesive.

**In-Line versus Second Operation:** The cold foil process is done in-line on press and therefore eliminates the need for a second off-line operation of hot foil stamping. Being in-line also means that inks, varnishes, and coatings can be applied over the cold foil on press; whereas, that would be an additional press pass following the hot stamping process.

While there are in-line efficiencies of cold foil, considerations such as longer 'make ready' time, adjustments to foil ribbon tension during the run, and the overall coordination of the cold foil components with the press units that may have drawbacks. Any issues with the cold foil components spells downtime for the entire press.

**MKV: In-Line versus Second Operation:** – Make ready times on cold foil process is minutes and not hours. While make ready times of hot foil process on 12 dies could take as much as 8 hours or some times more depending on detail of work. The average make ready of cold foil process without foil setup in the machine from nothing is 30 minutes. I am speaking of the cold foil portion only, not the color process of the job which is a separate and should not be included in the cold foil process much like hot foil make ready is not part of the printing process. In cold foil process if the original setup is complete then make ready times from job to job on cold foil process is minutes. When I say minutes I mean less than 10 additional minutes. Eagle System Cold Foil solution is the only fully automatic foiler in the world and does not require programming for foil tension. All other equipment require foil tension programming which can cause tension issues and breaking if not properly set. This can cause foil damage, foil dust and inferior product.

**Foil Color:** There are limited colors available in cold foil and with one of the most popular being silver. To achieve a specific color it is necessary to lay down ink over foil being applied on press.

Comparatively, with hot foil there is a wider range of foil colors such as gold, silver, blue and red. In addition, hot foil stamping also offers different types of foils such as holographic, patterned, and clear foil options that are not available in cold foil printing.

**Brilliance of Foil:** Hot foil traditionally results in a more brilliant look versus cold foil. Hot foil is applied by heat application giving a different release of color.

**Mike King's Version Foil Color and Brilliance:** The whole idea behind cold foil process is you don't need various colors of foil in stock and you can create with CMYK or PMS colors, to create literally any color in the rainbow. The beauty is when your customer comes in for press check on cold foil and says color is off a bit to my wants on the foil. You simply change the color on your palette in the printing process because the color does come from the over print on the foil. The same scenarios on hot foil process is you are now at a halt if you don't have your customer's exact color in your library of hot foil in stock. Unfortunately most folks have a lot of unused hot foil and never will be used in stock. Cold foil you will keep very minimum inventory of foil as 95% of the work is done in Silver foil. Cold foil does come in gold and many holographic patterns. Cold foil is getting closer to the brilliance of hot foil but not quite there yet. From my years of testing various materials hot & cold foil processes, we are getting closer. There is a place for hot and cold foil process and cold foil has made leaps and bounds in the many years I have worked hard at the process. While I say Hot foil has a flat and rich look, cold foil is a disco ball and flexible look. Cold foil is printing and allows you to do so much more than hot can do and create effects that cannot be done other ways. Ask me for the Eagle's Eye challenge and I will send you samples and explain. Cold unlike hot foil can be done in great detail and will have the cleanest edge far more superior to hot foil. Looking under a loop you will see flashing and filling in on hot where the cold will be very clean, if done correctly!

## QUESTIONS TO ASK

When choosing between hot and cold foiling, it's important to keep the end game in mind. It's best to start with the product's particular needs and then find a match based on how well the capabilities of each technology align with the product. Here are some of the questions that need to be answered:

- **What is best for the application? You need to understand what your product does and who it's targeting. The application itself should be able to point you in a particular direction.**
- **What is the budget? While budget shouldn't be the first consideration, it can often limit you to a particular solution.**
- **What substrate is the foil being used with? Again, the packaging's substrate may determine the preferred method of foiling. Certain substrates only work with hot foil, while others are best with cold foil.**
- **What type of look are you going for? One of the easiest ways to decide whether to use hot or cold foil stamping relies on the type of look you're for. Traditionally hot foil provides more options, more definition, and better brilliance. MKV - Traditionally hot foil did provide more but now cold foil gives a lot more options, except not for the same exact brilliance. Cold foil is 90% or more there to the same brilliance if certain techniques are used. The abilities of cold foil are: reverse outs and positives down to 3pts type. One dot to full coverage, gradient effects and halftones. Fine line detail and most of all done all in perfect register.**

## FINISHES THAT MATTER

At **XYZ Company**, we are one of the leading print and packaging solutions providers in the industry. We have worked with top brands all over the world and pride ourselves on our commitment to pressing the limits.

At Eagle System we work with foil only for 25 years. Michael King the president/CEO and the inventor of all Eagle Systems products and has worked with foil only for 40 years.



Our 2014 calendar was developed and cold foil printed using old cold foil process to create the most reflection for the fireworks. If you don't have this calendar just ask and we will send and you can also see how it was created.

Same picture photographed at 2 different angles. Your customer is looking for their package to be seen coming and going. Cold foil with its reflection angles can do this.

Why are there reflection angles?



How can I use them?



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[www.thefoilexperts.com](http://www.thefoilexperts.com)