



Specialty Printing Processes

It catches your eye. You can see that there is something unusual. The type looks shiny. The logo is puffy. You just want to touch it ...

In today's world of over-communication, it often takes more than ink on paper to make your piece stand out. The average consumer won't be able to put their finger on what it actually is that catches their attention, but you surely will.

Thermography

You have seen it on business cards, often just black on white. The design might not have been impressive, but the raised typography made the carrier of the card most proud.

There is a reason why thermography is often called "imitation engraving" and with the right design, it can make your cards, invitations and other printed pieces look stunning.

How it works

Thermography is a heat activated process. A special unit is attached to the offset press and after the original printing process, while the ink is still wet, the paper is transported through the thermography unit. Next, the whole sheet is spread with a special thermography powder. While the small granulates stick to the wet ink, a vacuum sucks the loose granules up and stores them for re-use. The powder is now fused with heat into a raised, usually glossy, enamel-like look.

The actual thermographed area has a slick, waxy feel to it.

Colors and inks

There are two types of thermographic powders used today: transparent and opaque. Transparent powders are the most commonly used and are available in various finishes. The color of the finish is determined by the color of ink used underneath the transparent powder. Opaque powders are offered in metallic and a variety of primary and pastel colors. There are gloss, semi-gloss, matte and dull finishes available in both powder offerings.

Paper choices

With weights ranging from 20 lb. Writing to 100 lb. Cover, all types of paper stock can be used for thermography. For the best results though, a smooth finish reflects the raised effect better than a textured finish. Too much texture in the paper will also interfere with the vacuuming of the loose powder and might leave unwanted residues.



Making paper fun

Thermography works especially great on colored stock, since the powder gives the ink a more opaque look, which can be a definite plus, especially when printing smaller type or on darker sheets.

Engraving

You see it on wine labels and fine stationery, invitations and business cards. Strong lines and a sharp definition. Slightly raised ink. Mainly printed in one color. Engraving.

With your trained eye for details you can easily see the difference between thermography and engraving. The lines are much finer, there is more detail in the images and the inks have a more chalky feel.

How it works

Unlike thermography, engraving is done on a separate engraving press.

The design is mechanically or chemically etched into a printing plate – also called a die. The finished plate is filled with ink, ensuring that all sub-surfaces are filled, then the plate's surface is wiped clean. Slightly moistened paper is pressed against the plate with immense pressure, forcing the ink from the sub-surface onto the substrate. This produces the characteristically embossed feel of engraving.

Steel plates are used for longer or repeat print runs, such as letterheads, stamps and money, while less expensive copper plates are used for one-offs and shorter runs.

Colors and inks

Even though most engraved pieces you come across will have more subdued colors like black, navy and gray, engraving inks are available in a full spectrum of colors, from pastels to fluorescents. These colors are usually mixed to correspond with the Pantone system.

Engraving inks are much more opaque than offset ones, which means that you cannot build colors in CMYK like you're used to. On the other hand, they make for great readability, even with little contrast to the paper color.

Paper choices

Due to the opacity of the ink, engraving is a great process for colored stocks, with smoother sheets being preferable.



Making paper fun

Weights can range from very light to very heavy stocks. Be aware that due to the tremendous pressure during the printing process, there will be a slightly indented impression on the back of the sheet, which naturally is more obvious on lighter sheets.

Letterpress

Even though today's offset presses are capable of turning out up to 13,000 sheets per hour, printing eight colors and coating in a single pass, the much slower process of letterpress printing is experiencing a revival.

Feeding only a fraction of the sheets (500–2,500 per hour), it offers a distinctive look and feel that offset printing simply can't achieve. As the printed areas are literally pressed into the paper, letters and images achieve a distinct, heavy, debossed look.

It is perfect for projects that call for a unique touch, like announcements, invitations, business cards, stationery and any printing that requires an elegant and stylish impression.

How it works

Dating back to the 14th century, wood (and later metal) type was set, each letter individually, to create lines of type. While individual pieces of type (one letter per piece) is still usable, we now have the advantage of having an entire page of type, including photos/images, engraved into a single plate. This speeds up the process and makes the letterpress process much more cost effective.

Because the ink rollers apply ink directly to the type and the type comes into direct contact with the page, letterpress printing applies much heavier ink coverage to the printed piece. This gives the colors a more vivid look, but also prevents the effect of process colors as they appear in offset printing.

Color and inks

A letterpress piece can be printed with several colors, but those colors never touch. This means designing for letterpress requires specific considerations, and that you should prepare for a learning curve. Even though, depending on the paper used, letterpress printing can replicate type as small as six points clearly, photos and halftones need much coarser screens.

Start talking to your printer early on, so he can prepare to print what you have so carefully designed.



Paper choices

To take full advantage of the debossed look and feel of the process, select a heavy, soft sheet. Uncoated smooth and textured stocks will give you the best results. Many letterpress printers swear by papers with cotton content, but they are not a must.

Heavier stocks are highly recommended. Remember that due to the nature of letterpress printing, the impression of the type will most likely show through on the back side of a lighter sheet. Letterpress truly makes a lasting impression.

Screen printing

When it comes to screen printing, most of us think of T-shirts, but this is only one of many applications. Screen printing is probably the most versatile of all the printing processes as it can be used to print on a wide variety of surfaces. From paper to plastics, to glass to numerous two- and three-dimensional surfaces, no matter what shape or thickness, screen printing will get the job done.

Originally this process was called silk screening because the actual screens were made of silk. But today's screens are made of nylon or metal and the screen printing term is more appropriate.

Though large format inkjet printing has taken over in some areas, screen printing is often preferred because of its low cost, which is the result of the development of automated and rotary screen printing presses, improved dryers and UV curable inks.

How it works

A screen is made of a piece of porous material and stretched tightly over a frame. Areas of the screen are blocked off with a non-permeable material, creating a stencil that is a positive of the image to be printed; that is, the open spaces are where the ink will appear.

Placing the frame on top of the print surface, ink is then pushed through the open areas in the screen by a squeegee (rubber blade) and onto the paper or fabric below.

Screen printing is a one-color-at-a-time process. So before the next color can be applied, the printed product will be moved into the drying oven or through the UV curing system on a conveyor belt to ensure that the first layer of ink is completely dry.



Making paper fun

Color and inks

You can recognize a screen printed product by its thick, raised ink and, in some cases, even by an impression of the mesh screen on the ink.

Once exclusively a manual process, screen printing has been mechanized through the use of rotary screen presses. In the past, the drying time of the thick layer of ink limited the usefulness of this technique, but now as in other print processes, modern inks, such as UV inks, have helped shorten drying times dramatically.

Paper choices

More appropriately, we should call this section “substrate choices.” Screen printing is not limited to paper, but can lay down very thick layers of ink onto almost any surface, including fabric, plastic, metal, paper, leather, wood, glass, ceramic, you name it. So when it comes to paper choices, your options are literally unlimited.

When used for the right project, thermography, engraving, letterpress printing and screen printing are four ways to make your project get the attention it deserves. If vivid ink color and texture is required for a hand-touched look, letterpress is ideal. For opaque ink coverage and a variety of substrates, consider screen printing. These various printing processes create a unique look and feel to make your effort look special. They can create stunning detail and texture for your work and make your design stand apart from the crowd.