Dimensional printing tips

MOHAWK
Mohawk Paper Mills, Inc.
P.O. Box 497
465 Saratoga Street
Cohoes, New York 12047
1 800 the mill
www.mohawkpaper.com

Engraving, thermography, and letterpress are dimensional printing techniques that have long been used for letterhead, business cards, announcements, and envelopes. These techniques add a tactile quality and a quiet elegance to the printed page.

Engraving

Engraving is one of the most prestigious graphic techniques. It can reproduce delicate line work, making it suitable for small pieces of art and finely-serifed type, particulary when close registration is required. Engraving also yields the sharpest image of any printing method.

Engraving requires a metal plate or die into which a design is cut by hand, chemically etched, or photoengraved. This process forms "wells" which are then filled with ink and forced–under immense pressure–into contact with paper backed by a counter die. In the process, ink is lifted out of the plate, transferring a raised, opaque image to the front of the sheets and creating a light depression in the back. One plate and one pass on press are needed for each color.

Engraving is usually specified for type and line work, although one-color photographs and continuous-tone illustrations can be reproduced as precisely as lithography. Engraving is not suitable for four-color process reproduction because the engraving inks are opaque. Any match color will work well on the engraving press and because of their high opacity, light color inks can be printed on dark paper and metallic inks will shine. Avoid large, solid areas of color which can appear mottled or uneven–outlining the image or using a screen tint are possible solutions. Engraving inks can be specified in either dull or gloss.

The plates used for engraving are either made of copper or steel. Copper plates are less expensive and used for runs under 5,000. Steel plates are used for higher runs and the highest quality. Both plates have a maximum size of 5x7".

Talk with your engraver about paper. Because of the craftsmanship and sharpness, engraving demands fine papers. Uncoated papers with a "wove", "eggshell" or "vellum" finish handle engraving beautifully. Coated stocks tend to crack, so pretesting is important. All basis weights can be engraved; heavier papers will show less of a depression on the back side. Envelopes can be engraved before or after converting. Engraving pre-converted envelopes may be necessary for critical and consistent placement of the image. To avoid the slight debossing that appears on the backs of envelopes, the printer can open the flaps before engraving.

Engraving is fully compatible with laser and inkjet printing. Be sure to specify a laser-guaranteed paper for these projects that will be run through laser printers.

Thermography

Thermography creates raised effects much like engraving. It adds dimension and color to type, line work, solids and screens. Although thermography has advantages of its own, it is usually specified as a cost alternative to engraving.

Thermography is a process that combines offset printing ink with a powdered resin which is baked so that the resin "rises" to give the ink a textured effect. The image is first offset printed with a slow-drying ink. Next, the wet printed sheets travel through a tunnel that dusts them with resin, vacuums off the extra, and then melts the remaining resin to form a raised, glassy and slightly-enlarged image. Controlling the inks, resin and heat determine whether the thermography is glossy or if it has a stippled, orange-peel effect.

There are several types of powder used in thermography: fine, medium and coarse, dull, matte and gloss. The powders are transparent so they take on the color of the underlying ink. It is also possible to use a transparent, white ink which will make a transparent or "blind" design.

Thermography is not recommended for screens or halftones as the non-image area may fill in with powder. For the same reason, avoid intricate elements and very small type (7 points or less). Thermographed images do not have any overall size constraints, however large, solid areas of color may blister. Your printer can offer specifics for the image and paper specified.

Coated and uncoated papers are suitable for thermography. Uncoated papers provide contrast to the glossy surface of thermography. Basis weights from 20 lb. (75 gsm) to double-thick covers may be used. Avoid using heavily textured papers that have the potential of trapping powder in non-printing areas. Envelopes can be converted before thermographing.

Thermography will run through inkjet printers, however talk to your printer about using a laser-safe resin for letterhead/shells that will run through laser printers. Because thermography is a heat-set process, and because the printing is raised, it is not recommended on all laser printers or copiers which operate at high temperatures. Be sure to specify a paper that is laser guaranteed for these projects and run tests on the particular laser printers/copiers that will be used before committing to a large print order.

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Letterpress Printing

Letterpress was the first printing process invented and the standard for hundreds of years. Letterpress is now a "specialty" process and is specified for its "craft" look or as a dimensional option much like embossing or engraving. Letterpress printing on a fine uncoated paper denotes history and art, quality and integrity.

Letterpress printing is a relief process whereby a raised image is inked and then pressed into the paper, essentially making an indentation. Type, black and white line art, and solids work best for letterpress printing. Halftones can be printed with coarse screens and care; variable amounts of pressure are needed throughout the image area to make sure the highlight, mid-tone, and shadow dots are printing correctly without accompanying type filling in or disappearing.

The platen press is most commonly used today; flatbed and rotary presses can also be found. Letterpresses operate very slowly, printing either one or two colors, with lots of adjustments made throughout the run. There are a variety of press and plate sizes, ranging from 10x15" to 42x56". Check with your printer before committing to an image and page size.

Letterpress printing requires either a photoengraved plate or handset foundry type. Plates are made from polymer, hard rubber, copper, zinc or magnesium. Using plates gives the designer complete control and limitless typography options. Using metal foundry type, as done since the 14th century, is possible if your printer has a full set of characters, or can set type on a Linotype machine. The individual characters are set by hand into words and sentences and locked into place.

Because letterpress printing transfers more ink to the paper than offset, colors will appear more saturated and opaque. Oil-based and offset inks are used for letterpress printing; any match color can be specified; and the process is laser compatible. Like offset printing, metallic inks will not print shiny on uncoated papers.

Uncoated text and cover papers are well suited for letterpress. Heavier basis weights with a soft surface will carry a deeper impression. Look for papers with a wove, vellum or eggshell finish. Smoother papers can be used, and even preferred if you do not want to see much of the impression of the back of the sheet. Your letterpress printer will likely recommend strong papers that they know will handle the weight and pressure of the press.

For information and samples, please contact your local merchant or call Mohawk at 1-800 the mill. www.mohawkpaper.com