Special Techniques
Embellishments for Paper
Topics

letterpress
watermarking
engraving
embossing
thermography
foil stamping
die cutting
crazy ideas
Letterpress

Printing method

Image on plate or blocks is raised

Presses under high press roll paper over raised surface

Creates an impression on the paper
Letterpress
Letterpress
Watermarking

Private watermarks have been traced back to 13th-century Italy

Places a logo or graphic onto the fibers of the paper

Adds security, cannot be duplicated
Private Watermarks
Watermarking

Watermark is made while the paper is still wet

When the pulp is poured onto the wire from the headbox, it is 99% water

Just as the web loses 5–10% of its water, it passes under a cylinder called a dandy roll
Watermarking

On the dandy roll, the mark design is hand applied

The watermark design displaces the fibers, altering the thickness and opacity, of the paper in those areas

The variation in opacity is actually the visible watermark

Only 2 companies make these dandy rolls in the U.S.
Watermarks

Engraving

Embossing

Thermography

Foil Stamping

Die cutting

Crazy Ideas
Watermarking

3 Types of Watermark:
- Wire
- Shaded
- Combo
Watermarking

**Wire:**

Translucent, lighter than the surrounding area on the sheet.

Effect is the result of your design being soldered onto the surface of the dandy roll’s mesh cover.

Design—or wire—presses against the surface of the paper and displaces fibers to form the watermark.
**Watermarking**

**Shaded:**
watermark is opaque, darker than the surrounding area on the sheet. Your design is recessed in the surface of the dandy roll.

Pulp flows into the recesses, forming your design as different gradations of tone.
Watermarking

**Combination:** uses elements of both wire and shaded marks.
Wire  
Shaded  
Combo
Watermarking

3 positions possible on 8.5 x 11 paper

- localized
- centralized
- random
Watermarking

**localized:** mark falls in the same position on every finished sheet, within a tolerance of plus or minus 1/2”
Watermarking

**centralized:**
1 full mark appears on each finished sheet. The mark appears in the same vertical line on the sheet; its top-to-bottom location varies
Watermarking

**random:**
watermark falls anywhere on the sheet, usually appearing more than once within a single sheet
Watermarking

Ordering:

Watermarks have a minimum sheet order and paper type

About 5,000 pounds

Approx. 415,000 8 1/2 x 11 sheets
The watermark design is produced by stamping the pre-made papers with the patented compound with bleaching agents under heat and pressure.
Chemical Watermarking

No visible difference from a watermark to untrained eye

Considerably cheaper for shorter runs

Can be more expensive for large runs

100–120 lb. minimums

About 10,000 8 1/2 x 11 sheets
Engraving

Highly skilled craft dating back to the 16th century

Engraving conveys distinction and craft

Finely detailed, raised letters with slight indentations on the reverse side of the paper
Engraving

Origins:

Official documents and announcements were penned by hand in monastic schools.

Letterpresses were used for printing books, but illustrations were still done by hand.

The introduction of engraving made it possible to reproduce the beautiful handwriting and ornate book illustrations.
Engraving

Contrasting thick and thin lines, creating a three-dimensional quality

Lettering is raised, some lines are raised more than others

Heavy lines are more pronounced, while thin lines are more delicate, creating multilevel effect
Engraving

Process:

Composition of the image—wording, lettering style, design and layout—is determined

First step in the engraving process, transferring the image to a copper plate
Engraving

Photoengraving: plate is treated with a photo-sensitive coating, exposed to light, and then etched in an acid bath, creating what’s called the engraving die.

Hand-tooling by an engraving artist may be required after etching
Engraving Tools
Die is now secured on the press, ink is added to only the engraved areas, and any excess ink is wiped away.

Pressure forces the paper into the cavity of the die and raises the surface of the paper, with the ink adhering to the raised surface.

Raised impressions also can be **blind embossed**, which means they are stamped in the paper without ink.
Separate Impressions:

Multiple colors, blind embossing, and engraving on same piece: each process is done in a separate pass.

Each color is stamped in a separate impression.

Blind embossing done last to prevent the image from being flattened.
Engraving

Time Frame: May take a little longer than other printing methods

Preparation of engraving plates still demands a certain amount of hand work

Inks are hand-mixed, and each stamped piece is inspected by hand
Engraving

Proof should be ready within 3 working days from the date the engraver receives mechanicals.

Delivery of the completed project should fall within 7 days.

Fee for creating die is a one-time cost.
Engraving

Inks:

Specially formulated ink used in the engraving process affords you and the — opaque: hides whatever lies beneath it

i.e.: color of the paper specified

Inks can be matched to any color or shade specified

Match the color when the ink is dry

Color variations may occur when printed in thin lines or across broad areas, or when screened
Engraving

Ink finish may be glossy or matte

Metallic inks work well, alternative to foil stamping. Sit above the surface of the paper, they create a lustrous look

Unique effect with metallic engraving inks: polished look created by burnishing, or bumping the image against an inkless die in a second pass

Inks compatible with laser printers
Engraving

Designing for Engraving:

Typography: any size, weight, or face can be combined with any other

Type as small as 4 point even those with the most delicate serifs

Very fine lines may appear thicker in reproduction due to the stressing of the paper during the stamping process
Letterheads are by far the most common designs produced today

Process not limited to basic typographic images and logos
Engraving

Paper needs to stand up to the pressure, up to two tons per square inch, frequently, the paper is subjected to more than one impression.

Coated or laminated sheets are more likely to crack, and lesser quality papers may actually break through.

Critical factor is not thickness, but tensile strength, or cohesiveness.

Best performer for engraving and embossing is cotton paper.
Engraving

Screen will not be a tone screen, as in offset printing, formed from intersecting lines cut by the engraving artist below the surface of the die that will retain the ink.

Crosshatch and stippling simulate halftones.
Engraving

Visit a quality engraving shop

Understand processes and capabilities

Work closely with the engraver, as early in the project

Engraver can give advice on production feasibility and warn of any pitfalls

Client involvement and understanding of process will ensure that the standards will be maintained with client managed reorders
Embossing

Use of pressure and a metal die to create a raised letter or image on paper
Embossing

Embossing

Beveled Edge

Multi-Level

Rounded Edge

Sculptured

Single-Level
**Embossing**

**Preparing Art:**

Provide an EPS file for the embossing art.

Name it clearly, label all layers precisely. (color-coded layers indicating levels, dimensions and types of edges)

If the EPS file is placed in your document to show position, be sure it is indicated by layer name and by using a PMS spot color you are NOT using anywhere in the document.

Include it on your mark-up
Embossing

Select a paper with ample bulk, suppleness and strength to allow for maximum relief and sharp details.

Space type out slightly to allow room for beveling.

Avoid small type, rules thinner than two points, type with pointed serifs and tight groupings of small elements.

Keep design away from the edge of the sheet to prevent puckers & wrinkles.
Embossing

Proofing:

Ask for a proof or a sample of an emboss on the actual paper stock.

Look for sharp well-defined edges and make sure there are no shadows.

Hold the paper up to a light and check for pinholes and ruptures.
Hand Embossing

Custom hand embosser is about $75–100

Same design specs apply to order die
Thermography

Produces a dimensional effect similar to engraving.

Images are given a raised appearance by dusting a fine resinous powder (matte, gloss or semigloss) over slow-drying ink, then applying heat to melt and fuse the resin onto the ink.
Thermography
Thermography

Preparing Art:

Maximum therm press size is usually 11 x 17

Provide an EPS file, name it clearly,

Label all layers, including therm layer

Use a PMS spot color you are NOT using anywhere in the document to indicate the area to be affected

Label it on your mark-up
Thermography

Any lithographic ink colors including match colors can be used. However, heat and resin powder may alter some ink shades.

Consult your thermographer before selecting colors. Ask to test for the right combination.

Screen or break-up large, solid areas to avoid resin blistering.

Avoid very small type and intricate details, resin expands when it melts.
Thermography

Keep out of fold areas.

Thermographed letterheads may be affected by the heat-fusion of laser printers, so consult your thermographer for specific instructions.

Thermographic presses are typically made for one or two colors. For jobs with more than two colors, consider lithographing the image, then thermographing with the use of clear varnish to trap the resin powder.
Thermography

Request proofs on actual paper.

Make sure edges and lines are clean and crisp.

Check to see that all lines are clearly raised and have dimension.

Resin powder should not be evident in the unprinted areas.

A bumpy “orange peel” effect should not be pronounced.
Foil Stamping

Foils made of metal or other materials available in various colors, typically combined with embossing or debossing.

The foil, made of a metal or other materials available in various colors, is carried on a plastic sheet and transferred through a stamping process onto paper.

Foils can include patterns, snakeskin, pearlized, marble, holograms, or clear.
Foil Stamping

Provide well-defined, line art (EPS).

Avoid tight kerning, super-condensed type and spacing images too close together. Foil tends to fill in between narrow spaces.

Stamp away from the sheet’s edge to avoid puckers and wrinkles.
Foil Stamping

Some foils can be stamped on top of one another.

If using combination dies, the entire embossed image must be stamped.

Foil can be laid over or under lithography, but special wax-free inks may be required.

Use the standardized foil color guide prepared by the Foil Stamping and Embossing Association.

(http://www.fsea.com/)
Foil Stamping

Proofing:

Ask for a proof or a sample on the actual stock.

Check for feathering, peeling, scuffing, unevenness and color changes.

Make sure edges are crisp with no filling in of letters or tiny details.

Remember that pigment foils are not opaque.
Foil Stamping

Printing:

Avoid heavy ink coverage, inks containing wax, silicone or plastic and offset sprays that repel foil bonding.

Foils, including metallics, can be recycled.
Die Cutting

Using a metal-edged die or laser, shapes are cut into paper.

This may be for the purpose of creating a decorative pattern or for functional needs such as making a pocket folder.
Mechanical Die Cutting

Art Preparation:

Provide well-defined line art at actual size (EPS). Indicate die-cut areas on a separate layer in the file. Label the layer: DIE LINE DOES NOT PRINT

Use a spot color that is not used otherwise for the die line art in the file for clarity.
Mechanical Die Cutting

Don’t place cuts too close together or use too many, particularly on a lightweight paper.

Die-cutting on the edge of lightweight paper may fray unless protected.

For letterhead, use a minimum of 24 lb. writing grade for crisp cuts. Position cuts for letterheads and envelopes away from the feeding direction of printers so they won’t snag or tear.

Ask for a die guide/line for accurate fit.
Laser Die Cutting
Laser Die Cutting

Art Preparation:

Provide well-defined line art at actual size. Same as mechanical die art prep.

The laser scan area is 5” x 9-3/4”.

Larger images must be broken into segments and scanned in multiple passes.
Laser Die Cutting

Laser die-cuts will show a slight smoke discoloration around the cut edges on the side exposed to the laser beam.

This “browning” is quite visible on light-colored papers.

Some designs can be overprinted with a block of color or flopped so the reverse side of the paper is on top.
Laser Die Cutting

As a rule, the less dense the material, the easier it is to laser-cut. Dense papers with high clay and mineral content such as high-gloss stock do not perform well.

Allow a 3-1/4” x 4” clearance on one side of the sheet for the laser vacuum grab device. No embossing, scoring or foils should appear in this area, but printing is acceptable.
Laser Die Cutting

Unlike mechanical die-cutting, the amount of detail in the artwork will not affect laser cost.

For text-weight stock, the laser can handle cut-in lines as small as .012”, and for cover stock as small as .024”.
Laser Die Cutting

Proofing:

Ask the laser die-cutter to test the paper stock you are considering.

Actual proofs are rarely provided.
Laser Die Cutting

The laser die-cutter attaches a press sheet to an art board and uses a clear acetate overlay to show where the die-cut holes will be.

This sheet should be checked for die-cut positions, size and design.
Thermographic Ink

example: January 2001 Wired magazine featured yellow to green, body temperature, thermo ink cover
January 2001 Wired magazine cover

Room temperature

After application of heat through hand
Flocking
Flocking Machine
Flocking

Watermarks
Engraving
Embossing
Thermography
Foil Stamping
Die cutting
Crazy Ideas
Scratch-n-sniff ink
Glow In the Dark Ink

Watermarks
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