

BETTER RESULTS ON PRESS

by mohawk papers

How do I get better results on press?

The key to successfully completed printed projects is communication. Every project has its own set of details to cover between the designer, printer and paper merchant. Mohawk Paper Mills recommends that you call your paper representative early in the design process. Their experience will help you select a stock which is appropriate for your project. Paper reps can also provide samples and promotions, dummies, and printing tips for particular grades.

Choosing a printer

Most salespeople show samples. This is a perfect opportunity to gain more insight. What were the critical areas in the sample and how did they achieve the results? Ask for samples showing the specific techniques you'll be using in your project, such as silhouettes, knock out type, or color cross-overs. Because communication is the key to success, you should be comfortable with your salesperson's knowledge and understanding. Ask about any specifics you're interested in: what line screen is generally used; do they have an in-house bindery? Do they mix their own inks; do they have digital presses? Tour the pressroom. Look for an organized and clean plant. The pressroom and warehouse should be temperature and humidity controlled. Ask about quality control systems and techniques. Are there accommodations for customer okays?

Releasing the project

Keep in mind that you are buying a custom made product. Your expectations should be clearly defined in the beginning. Discuss critical areas of your project and show results you like. Ask your printer for a production schedule that includes when you are to receive proofs, when they are to be returned, press date and delivery dates.

Inform the printer of your paper selection, including color, weight and finish. Every department from prepress through bindery should set up your job based on your paper choice. Proper planning by these departments will ensure better final quality. Get a paper dummy from your printer, paper mill or merchant. It should be used as a guide for folding and binding.

Ask about what kind of proofs will be supplied. Many printers work direct-to-plate, making film unnecessary. Digital proofs are being used for both loose color, type and position. Digital proofs save time and money, and can usually be made on the actual paper you plan to print on.

If working with specialty inks or a critical color match, ask for ink drawdowns on your stock. This is especially important if using a cream or colored stock.

Confirm delivery dates for the job. Request finished samples for your OK before the job ships. Give packing and shipping instructions with addresses and choice of carriers.

It is a trade custom for printers to supply and bill within 10% over or under the requested quantity. This can usually be kept within 5% for projects with a high unit cost.

It is best to get most communication in writing. For example, after a phone conversation with the printer about an alteration, fax a follow up confirmation. Request a cost and time estimate before changes are made.

On press

You should have all final proofs, original art and ink swatches/drawdowns to check against on press. Use at least a 12-power magnifying loupe for close inspection. Above all, take your time. Make a list of what to look for and follow it step by step. Make one or two changes at a time. Circle hickies last. Sign and date three sheets: one for the printer, one for you, and one for the client. Have your printer slip sheet a complete set to take with you.

- > For solids, all inks should be laying down smoothly. Densities should be even across the sheet and match between forms.
 - > Check by eye and densitometer. Is there any mottling? Ask if the density can be maintained consistently throughout the run.
 - > Are images dark or plugged in? Examine the dot gain targets and dot shape. Look at the type for crisp edges.
 - > Check position. Rule out a sheet with trims and scores. Have the sheet folded and trimmed to size. Is it backed up properly? Are the crossovers aligned?
 - > Check registration and fit. Are two colors overlapping, causing a dark line, or not touching, causing the paper to show? Look at the targets, the edges of images and any knock out and screened type.
 - > Color match and four-color process review. Compare the proof and ink swatches to the press sheet. To check color and image crossovers, have the printer cut the sheet for flat, side-by-side comparison. Use the experience of the press operator and production manager for color shift options. Move one color at a time and keep track of your moves on each press sheet. Concentrate on the critical areas of color like flesh tones. Keep in mind that the color on press may never exactly match the color proof. Your goal should be to make the images look as good as possible. Ask about expected dry back on the sheet. If you're concerned if the colors will look lighter or darker, quickly dry a sheet with a blowdryer or microwave oven.
 - > Check for flaws such as broken type, odd scratches, hickies, spots and ghosting.
 - > Review for overall impact and legibility.
- Remember, the key to success on press is communication. Make sure your printer understands what you expect—and you understand their capabilities.

This information is provided for general reference only. Printing is both an art and a highly technical enterprise loaded with variables. Your printer may break all the rules and still come up with extraordinary results.

What should I look for on a press check?

The most important key to success on press is communication. Make sure your printer understands what you expect – and you understand their capabilities. Here are things to look for when on press.

- > Check paper stock – are they running what you specified?

- > Turn some printed sheets over early in the run and check side to side print quality as well as opacity.

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- > Color match and four-color process review. Compare the proof and ink swatches to the press sheet. Have the printer cut the sheet for flat, side-by-side comparison.

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What do I need to know about four-color printing on uncoated paper?

It is essential to keep in mind the physical characteristics of uncoated papers when planning your printing job. Uncoated papers are absorbent, so inks, varnishes and coatings perform differently than on coated papers. New technology in the pressroom and pre-press area has enabled designers to use premium uncoated papers in exciting new ways. With current pre-press technology, the natural surface of these papers becomes a perfect background for four-color process printing.

Separations

Good, well planned separations are crucial for successful printing on uncoated paper. Because inks soak into the paper, precise halftone dots spread and deform—a feature called dot gain. By opening the separation, the actual dot size is decreased and the space surrounding the dot is increased. Opening the separation allows the press operator to print to normal ink densities. This results in truer color fidelity, image brightness and detail. Opening the separation also allows the use of finer line screens—175, 200, even 300.

Depending on the color densities in a transparency and where you want to hold detail, the critical areas to be opened will vary from the highlights to the shadow areas. A separation made for coated paper holding a 1-3% dot in the highlight areas would appear dull on uncoated paper. Completely eliminating the highlight dots up to 4% for uncoated paper, and reducing the dot in the 6% highlight areas to 2-3% will produce brighter highlights on an uncoated sheet. A 50% middletone dot on a separation for coated paper should be reduced by at least 5% for uncoated paper. This will give you more clarity and definition on press. A 90-95% shadow dot for coated paper should be reduced to 85% for the deepest tones.

Keep paper shade in mind when reviewing color proofs. For warmer stocks like a cream white, you might want to reduce yellow, particularly in skin tones. For a shade like blue white, you might want to reduce the cyan. These changes are best done in scanning, although slight adjustments can be made on press. Many printers now proof on actual printing stock, which makes it easier to anticipate the effect of paper shade on printed color.

Printing

Printing on uncoated paper can be as straight-forward as printing on coated papers if the separations are properly prepared. The adjustments will allow the press to carry more ink, thus increasing color saturation, clarity and contrast.

After a wet press sheet has been approved, all ink colors should be increased by 5 to 15 points based on densitometer readings. This increase will help compensate for any dryback. Density readings for both wet and dry press sheets should be taken and recorded for reference later in the run, or for anticipated re-runs.

Inks

Process inks for uncoated paper or quick setting inks, if back-up time is limited, are suggested. Most ink manufacturers offer these. Uncoated paper normally needs more drying time than coated paper so stacks should be kept small—500 to 700 sheets—to prevent offsetting.

Depending on the image, you may achieve better results with the addition of fluorescent ink to the magenta and yellow process colors. The fluorescents will increase the perceived reflective light of the paper surface thus increasing brightness and clarity. Adding 10-20% fluorescent magenta to process magenta will enhance red, violet purple, magenta and orange. The addition of fluorescent yellow to process yellow brightens yellows, oranges, reds and greens. Contact your ink supplier for assistance.

Paper

Mohawk papers are formulated to strike the delicate balance between ink holdout and ink receptivity. Printers choose Mohawk's uncoated papers because they provide superior ink holdout and are dimensionally stable. There is an extensive range of uncoated papers on the market, all manufactured to varying quality standards. It is vitally important to specify not only that you are choosing an uncoated paper, but also the manufacturer and the grade.

Mohawk Navajo and Options are made with Inxwell®, a proprietary process that provides greater ink holdout and opacity. Please read Printing Tips for Inxwell Papers before printing these grades.

What do I need to know about press coatings?

Press coatings are used to create visual effects and to seal inks and prevent rub-off. Three different press coatings are used in commercial sheetfed printing: varnish, aqueous coating, and ultra-violet coating (UV). All three are available in matte, dull or satin, and gloss formulations. It is essential to understand the characteristics of your paper when specifying a coating. Uncoated papers are absorbent, so coatings perform differently than on coated papers.

Varnish

Varnish is a petroleum-based sealant applied by a standard inking unit in the press. It is the most economical coating. Varnish is available in matte, dull or gloss and can be applied on the entire press sheet or in selected areas. Varnish is applied on the last unit, or as a second pass, to seal the offset inks and provide rub protection.

On coated papers, varnish provides a difference of sheen where it is applied. For instance, a gloss varnish on a dull coated stock will make the paper look glossy. In this case, varnishes are often specified only on the printed image, called a spot varnish, so that photographs look very glossy on the matte surface.

On uncoated papers, varnishes are widely used for rub protection. They will not provide a visual effect, no matter what kind or how many layers of varnish are applied. However varnishes will darken ink colors—making solid blacks even blacker. Always use a matte or dull varnish on uncoated papers. A gloss varnish has a greater likelihood of appearing uneven, or mottled, accentuating the natural highs and lows of the paper.

Varnishes can yellow paper over time. Varnishes can also be tinted with pigments to provide very light and transparent colors for text and graphics.

Varnishes are the most flexible coating. They may be used on any weight stock and be applied over ink without fear of bleeding. For projects that require gluing (envelopes, pocket folders, book covers), please check with the bindery whether it is necessary to knockout (not use) the varnish where the glue is going to be applied.

Aqueous coating

Aqueous coating is a water-based sealant applied by an inking unit of the press or a special coater tower. Aqueous coating is available in matte, dull, satin, and gloss and provides better rub protection than varnish. Printers prefer using aqueous coating which dries immediately allowing for quicker back-ups.

The visual effect of aqueous coating will be the same as varnish on both coated and uncoated papers. Again, only specify matte or dull aqueous on uncoated papers, as gloss may mottle. Aqueous coatings are typically used to cover the entire press sheet. Spot aqueous coating is available although it requires expensive blankets. However, aqueous coating is clear and should not yellow the paper so specifying a spot aqueous may not be necessary.

Since aqueous coating is water-based, some printers will only use it on 100 lb. text and heavier papers to avoid the potential of the paper curling on the edges (as it absorbs the water). The volume of the aqueous coating can be adjusted on press to maximize the

paper performance.

Unlike varnish, certain pigments may bleed with aqueous coating. The ink supplier may be able to provide alternative for problematic pigments. For projects that require gluing (envelopes, pocket folders, book covers), please check with the bindery whether it is necessary to knockout (not use) the varnish where the glue is going to be applied.

Ultra-violet coating

Ultra-violet coating is a highly reactive, cross-linking system in which the vehicle is dried by exposure to UV radiation. UV varnish is applied inline on a UV press; UV coating is applied by silkscreen, offline. It provides the best rub protection but also is the most expensive of all the coatings.

UV is available in matte, dull, satin and gloss, although gloss is usually all that is specified. UV coating/varnish is glossier than all of the other coatings—UV applied by silkscreen provides the ultimate gloss. UV is used on a full range of coated papers. 80 text and heavier weights of paper can be UV coated, however, cover weights are preferred. UV can be used on smooth, uncoated papers. Pre-testing is highly recommended as the paper will need to be sealed before the UV is applied—which can be cost prohibitive.

UV can be easily specified as spot or overall coverage. This coating application can deepen the color of the printed area. Drying is virtually instantaneous when exposed to the correct level of UV light so projects can move quickly into the bindery. Like the other coatings, consult the bindery for projects requiring gluing.

What do I need to know about embossing?

Embossing creates a magnificent graphic element by allowing designs to be raised, or depressed, in the paper. Text and cover papers are molded with heat, pressure and an embossing die. The effect is sensual, setting the communication apart by creating a third dimension.

High quality text and cover papers work best for embossing. Text and cover papers have the necessary strength to withstand the pressure and stress of the embossing process. Because the embossed area is smoothed-out, a textured paper like Mohawk Tomohawk and Ultrafelt will provide an even greater textural contrast.

Types of embossing

Embossing pushes the paper surface forward, causing a raised image. Debossing is done using the same process but the surface is depressed. The following terms apply to both embossing and debossing.

- > A blind emboss is an embossed image that is not stamped over a printed image or with a foil. The color of the image is the same as the paper.
- > A registered emboss is an embossed image that exactly registers to a printed or foil stamped image.
- > A combo emboss refers to an embossed image that is also foil stamped.
- > Glazing refers to an emboss that appears polished. Notably on dark-colored stocks, the heat and pressure is substantially

increased to smooth and shine the surface. Using a very high temperature, light colored papers can be scorched so that the paper changes color. Successfully done with extreme caution, this process actually burns the paper

The specifications for an emboss include:

- > The number of levels the image requires—single, multi or sculptured.
- > The depth of the emboss. Text and cover papers on average can withstand 2.5 times the caliper of the paper; therefore a bulky cover weight can produce a greater embossing height.
- > The shape of the edge of the die: flat, round, or beveled. The angle of bevel should also be specified, from 300 to 800. The depth of the emboss may depend on the steepness of the angle to prevent paper tears. The selection of a beveled, round, or flat edge will create very different effects, especially for type and geometric shapes.
- > The smoothness of the embossed image.

Metal dies

Three metals are used for embossing dies: magnesium, brass, and copper. The shape of the embossed image and the length of the run determine which metal is used. Magnesium is used for short runs and for large letters and images. Magnesium allows for special hand tooling. Brass dies give the embosser the most latitude. Brass is used for fine lines; sculptured images; combo foil stamping and embossing; and for those images that need extensive hand tooling. Brass dies are made by machine or by a semi-photographic process. The image is transferred onto the metal photomechanically to use as a guide like a drawing for hand tooling. Copper dies are used for designs between the parameters of brass and magnesium. A drawback to using copper is that tooling is not possible.

Choosing the right paper

Embossing focuses the viewer on the paper like no other graphic technique. Mohawk's text and cover papers are known to emboss beautifully; offering strength, bulk, and an extensive range of textures and colors. The embosser has three variables once the paper is chosen: pressure, heat, and die depth. The craftsman should strive to meet the preferred depth of the emboss and smoothness without creating any ruptures or pinholes in the image.

Recycled paper

In general, the less recycled fiber in the stock, the better. Fibers that have been processed repeatedly are shorter and weaker. A paper with a high recycled content can cause consistency problems when exposed to extreme heat and pressure levels. Mohawk's recycled papers are made to withstand the demands of embossing.

Preparing artwork

Art should be prepared slightly larger. Type size, style and spacing should be increased to compensate for the added dimension. Type should be bold without any pointed or small serifs. Rules should be at least two points thick. Line art should be prepared as if it were going to print a solid color. For multi-level or sculptured embossing dies, use color-coded layers to indicate the different levels. Your embosser will follow your multi-level suggestions as much as possible. If the embossed image is going to register to a printed image,

supply the die maker with one of the dominant printing negatives. The emboss should be at least .25 inches away from the edge of an oversized sheet to avoid wrinkles and puckers. If the embossing will take place on a finished piece, allow .5 inches from the edge.

Embossing is a custom craft. Thorough specifications and samples will result in success. Your embosser and paper merchant can provide embossed paper samples and recommendations.

What do I need to know about printing on heavy covers?

Nothing adds impact and substance to your project like a thick, sturdy cover. With careful planning, the end-results can be spectacular and well worth the extra time and money. The following guidelines should be followed for 120 lb. covers and up-- what we consider as a "heavy cover." Most often, these covers are "double-thick" meaning two sheets of lighter weight papers have been laminated together. This method provides the cover with the best printing surface and finishing properties.

Communication, planning and testing are essential when using a heavyweight cover. Please review the following guidelines and discuss them with your printer and/or bindery to understand any technique and equipment conflicts before you print your project.

Cutting

There are three fundamental factors to remember when cutting heavy weight covers. The first is lift size, which should be adjusted according to the size of your cutter. The second is clamp pressure, which in most cases needs to be decreased according to the precision pressure scale on your cutter. Lastly, a blade angle of 24°-25° is preferred, but you can compensate for a lesser angle by adjusting clamp pressure and lift size.

Folding and Scoring

In order for heavy covers to fold properly, there must be a proper crease or "score". It is highly recommended to score and fold with the paper grain. Use a rounded rule and channel matrix for best results.

To make a score that will fold cleanly, you must establish the correct relationship between the paper's caliper, the rule thickness and height, and the width of the creasing channel (matrix). A quick test is recommended to prevent any bursting or cracking on the final piece. As a general rule of thumb, the correct creasing channel is determined by multiplying the paper's caliper by two and then add the width of the creasing rule. (Note each 1 pt. of rule equals .014 inch). Mohawk recommends a minimum 2 pt. rule for all scores both with and against the grain. Sometimes a wider score must be added--but too much width can be worse than too little, causing the sheet to fold unevenly on one side of the score rather than the center. A double, parallel score can be used to keep it straight. We recommend that all scoring and die-cutting be performed on a platen (flatbed) die-cutter to help minimize the potential for cracking. Cylinder letterpress scoring can be difficult with heavyweight covers. If possible, run the score to the end of the press sheet, ensuring that the piece has a complete score.

Also be sure to decrease pressure points that are caused by folding. If the paper breaks near a folded corner, try sanding or shaving down the ends of the creasing matrix where the miter joint occurs and leave a little space between the ends by slightly backing off the miters.

Perforation

A perforation with the grain will tear easier than against the grain. A perforation placed in a glued area on a heavily calendered paper, like Mohawk Navajo, will add porosity for increased glue adhesion.

Embossing

Embossing heavy covers requires an increase in pressure and a deeper embossing die. It's necessary to review your artwork, paper selection, and deadline with the embosser and/or die maker before the die is made. The embosser will plan accordingly and approve the relative placement of the emboss to folds or gluing on the piece.

A broad area can be embossed much deeper than fine lines. A brass die will improve the depth and are used for fine type. Test various heights with your embossing die supplier for the best results.

Moisture Retention

As with all printing papers, maintaining the paper's physical properties is critical. Proper local atmospheric conditions are important to ensure a trouble-free run. Temperature and humidity should be maintained at 70-75 degrees with a relative humidity of 35-50%.

Avoid the use of infrared heat on press, especially if a score and fold will run through an area with heavy ink coverage. Wrap the paper with plastic in between operations to help maintain the original moisture content. This is essential if the paper is transported to an outside bindery for finishing.

Set-Off

Because of their weight, heavy covers have a greater potential for set-off issues on press. Spray powder, with a large particle size, must be used. Powders should run at a minimum of 45 microns, which will separate the sheets for greater air circulation and better ink drying. Judiciously determine the lift size by the amount of ink on the form.

What do I need to know about converting envelopes?

A principal decision in envelope design is whether to print before or after conversion. Here are some guidelines to help you evaluate your choices:

Printing after converting

Printers generally prefer printing converted envelopes without bleeds. Bleeds can only be positioned on three sides of an envelope, leaving one of the short dimension edges for the gripper of the press. Non-bleed images and addresses may be printed on the back flap.

Screens or printed text may sometimes appear heavier on the seams, where the double thickness of paper and glue create a raised area. Depending on your artwork, it may be best to choose a side-

seam or diagonal-seam envelope.

Printing prior to conversion

In printing an unconverted envelope, it's possible to bleed solids or screens on all four sides of the outside and inside of the envelope and flap. Bleeds on the inside of the envelope are common for both dramatic effect and provide security through added opacity. Always contact your envelope convertor before printing to find out if there are any special requirements for areas that will be glued.

Aligning seams

Because of the variability in die-cutting and folding, avoid designs that require an exact register across an envelope's seam.

Stamping and embossing

Unlike converted envelopes, unconverted envelopes allow you to foil-stamp and emboss a design without leaving a debossed image on the opposite side of the envelope.

Layout

To avoid costly mistakes and structural problems, be sure your printer asks for an envelope layout guide and instructions from the paper merchant or envelope converter. Be sure to leave enough time in the schedule for the extra steps and communications that conversion requires.

Laser printing on envelopes

Test your envelope in the laser printer before running to avoid jamming and creasing caused by envelope thickness.

Spot tacking of the seal flap can occur when the glue is exposed to the intense heat and moisture generated in the fusion chamber of the laser printer. If the flap starts to stick, open the door alongside the fusion chamber while printing. If tacking continues, place a small, low velocity electric fan near the open chamber door to circulate fresh air through the chamber.

Convertors

Envelopes are manufactured by convertors who sell to paper merchants. Some printers also have envelope converting equipment. You should consult with both early on in the planning process.

Availability

Because of the large number of possible paper/envelope size combinations, it is not possible for any merchant to inventory a complete selection of envelopes. Merchants and envelope convertors stock a small subset of popular sizes - typically No. 10 commercial, A2, A6, etc. in cream or white stock. However, any text weight can be converted into any size or style as long as you plan ahead. A good rule of thumb is to allow three weeks for non-standard envelope orders.

It is wise to contact your paper representative early in the process to ensure that the envelopes arrive by your press