

PRINTtips

A White Paper from Bart Nay Printing • 713-468-8602 • www.BartNayPrinting.com

Going Green With Paper

Printing is not a particularly environmentally friendly business. Our presses and platemakers depend on chemicals to work properly; our press plates contain material that doesn't belong in a landfill; the inks that perform best on press are based on petroleum products; and the papers we print on have a harsh manufacturing process.

We are also leaders in environmental responsibility. We mitigate the environmental impact of the printing process by properly disposing of chemicals, we cooperate with governmental regulatory agencies, and we keep informed about new paper products that are environmentally friendly.

Recycled paper

Recycled paper that has been manufactured from recovered waste paper is one such product. Called *scrap paper*, the waste paper comes from three primary sources:

- *Pre-consumer waste* is paper that that was discarded before reaching a consumer.
- *Post-consumer waste* is paper that has been used by a consumer as well as old magazines, old telephone directories and residential mixed paper.
- *Converting waste* (also called *mill broke*) is paper scraps and other trim from the papermaking process. Converting waste is used internally at the paper mill.

Recycling is not new. As early as the mid-19th century, when the demand for books and writing material began to outstrip the supply of linen rags used in papermaking, discarded books were recycled to make new paper. A significant date in the United States is 1993, the first year when more paper was recycled than put in landfills and when packaging replaced printing as the single largest category of paper use (41%). In 2006, over 54% of all paper consumed in the United States was recovered for recycling.

While in its early phase, recycled paper could present problems on press and often appeared less white than paper made from virgin fibers. Today, however, most recycled papers match the performance and look of non-recycled stock.

Common reasons cited for recycling are water and air pollution from the paper manufacturing process as well as energy consumption; saving landfill space; and forest preservation.



Debate continues on the net benefit of recycling on energy consumption, water and air pollution, and incinerating waste paper is being seen as an alternative to landfill.

Forest preservation in papermaking

Recently, forest preservation began gaining new visibility as an end in itself rather than an outgrowth of recycling. Paper manufacturing accounts for about 43% of wood use. About 16% of worldwide wood pulp production comes from trees raised specifically for that purpose and another 75% comes from second-, third- or subsequent generations of trees. Only about 9% of paper pulp comes from old growth forests.

If you are aware of forest preservation activities, you may have heard of the Forest Stewardship Council (FSC). In its own words, FSC is a *non-profit organization devoted to encouraging the responsible management of the world's forests. FSC sets high standards that ensure forestry is practiced in an environmentally responsible, socially beneficial, and economically viable way.*

The essence of FSC's mission is to verify that landowners and forest products companies are practicing forestry consistent with FSC standards, and to monitor the *chain of custody* of forest products – the movement of FSC-certified products from forest to pulp provider to paper mills to paper mills and to printers.

To date over 50 U.S. manufacturers of paper or packaging materials have become FSC-certified and have begun offering FSC-certified papers. FSC-certified papers are manufactured in the following categories: uncoated offset, coated offset, coated cover, fine text and cover, bonds and writing, digital and envelopes. For some papers, FSC is new grade of an existing stock and so must be specified when ordering the paper.

There are some minor drawbacks to using FSC-certified papers. As with all new products, availability may be an issue. A stock normally used for your printing project may not yet have an FSC-certified grade, and if available, may not be a stocking item for our paper merchant. Because FSC-certified papers must be physically segregated from non-certified stock throughout the chain of custody – including when the paper reaches our production floor – FSC-certified papers cost more than their non-certified counterparts. Thus you can expect a printing project that uses FSC-certified paper to be more expensive.

Paper classifications

Whether you are using FSC-certified, recycled or virgin-pulp paper for your printing project, it helps if you understand paper grades when picking the stock. Papers are graded (*i.e.*, classified) by their use. Handily, the grade name suggests the use – either current or original – of the grade.

- **Bond:** originally used to print financial documents; now commonly used in copy machines, desktop printers and digital printers in all kinds of applications. *Writing grade papers* are sometimes considered a subset of bond papers and consist of finer paper used for stationery systems (letterheads, envelopes and business cards).
- **Coated:** used when *ink receptivity* (the way the paper receives the ink) is important, such as full color printing. Coated stocks are often referred to by the kind

of coating – cast, gloss, dull or matte. Coatings can be applied to one or two sides of the paper.

- **Text:** often used for announcements, booklets and brochures because of the range of interesting textures and colors available. May be treated with *surface sizing* to make the paper more resistant to water (and therefore easier to use on an offset press).
- **Book:** originally used to print books; now used for general printing as well as trade and textbooks. Book papers offer a wider range of weights and bulk than text papers. May be coated or uncoated.
- **Offset:** similar to coated and uncoated book except that surface sizing is added to resist moisture.
- **Cover:** heavier-weight complement to bond and text papers. Used for business cards, booklet covers, and other cover applications.

Other paper grades include index, tag, bristol, newsprint and lightweight papers. Some paper manufacturers also offer digital grade papers to distinguish them as suitable for high speed digital printers such as color copiers.

A word about coatings

When a coating is applied to paper during the manufacturing process, it affects how the sheet receives the ink, its degree of opacity (*i.e.*, show-through), and the amount of light reflected from the surface of the sheet. A matte-coated paper has a glare-free surface and is the least glossy; dull-coated has sheen rather than a shine; gloss is shiny with a high degree of light reflectance. A coated sheet also seems to have a higher subjective value in the mind of many people. (We often have customers tell us they prefer a coated sheet because it “seems more professional.”)

A coated paper is almost always preferred when printing in full color on an offset press. This is because the coating causes the paper surface to become smooth and glossy, which promotes low ink absorption, low *dot gain*, and consequently a sharper printed image. Similarly, paper formulated for digital printing has a treated surface to improve toner receptivity and is also made to endure the extremely high temperatures inside digital printers.

Even when a coated sheet has been used for printing, an additional coating may be applied after the image is on the paper. Two popular coatings are *aqueous* and *UV*. Both protect the printed image from scuffing and fingerprinting. Aqueous coating is available in matte or gloss (again referring to the amount of light reflected from the surface). UV coating is easily recognized by the almost plastic-looking surface, such as is seen on vacation picture post cards.

Select papers to enhance the printed product

Whether you want to make a “green” statement by using recycled or FSC-certified papers, in the end we recommend that you select the paper that is most likely to enhance the printed product. Allow us to recommend a selection of papers that we know will work successfully, and chose from among them. We will be happy to include recycled or FSC-certified in the selection as you direct. Just remind us when you call us.

a vocabulary of the **graphics** arts

Basis weight: the weight in pounds of one ream (500 sheets) of paper cut to a given standard size for its grade. For example, 500 sheets 23"x 35" of 20-lb. bond paper weighs 20 lbs.

Bond: originally, a cotton-content paper used for printing bonds and legal documents. Today the term also includes some writing and digital papers. Basis size is 17"x22".

Book: a general term for coated and uncoated papers used in graphic arts. Equivalent in weight to text papers. Basis size is 25"x38".

Brightness: the percentage of light in a narrow spectral range reflected from the surface of a sheet of paper. Not necessarily related to color or whiteness. An extremely bright sheet reflects back almost all light to the viewer.

Caliper: the measure of paper thickness expressed in mils (thousandths of an inch). A micrometer is used to measure caliper.

Cast coated: coated paper dried under pressure against a heated, highly polished drum to produce a high-gloss enamel finish.

Coated paper: paper with a surface coating that produces a smooth finish and enhances ink holdout in the printing process. Finishes range from matte to dull to gloss to cast coated.

Cover paper: heavyweight paper with good folding characteristics. Can be coated or uncoated. Basis size is 20"x26".

Ink receptivity: a characteristic of paper related to its capacity to keep ink on the surface rather than absorbing into the sheet. Also called *ink holdout*.

Opacity: a measure of the percentage of light passing through a sheet of paper. The more opaque the paper, the less show-through from printing on the sheet below. Basis weight, brightness, type of fibers, fillers and coatings all affect opacity. In general, opacity and brightness are inversely related.

There may be times when the best way to get your printing done is to use your desktop printer or office copier. In this case, you may want to keep these tips about folding in mind.

There are two types of folding – mechanical and hand. Mechanical folding is done by machine and involves feeding paper at high speeds through rollers to make a clean, tight fold. When you are printing only a few documents on your desktop printer and folding them by hand, you can approximate the characteristics of a mechanical fold by using the bowl of a spoon as a *folding bone*.

T H E *i* d e a

1. Select a teaspoon with a deep bowl.
2. Make the first (parallel) fold in the document.
3. Holding the teaspoon by the bowl, press the outside of the bowl against the fold and press the fold flat along its entire dimension.
4. Repeat for second and subsequent folds.

If you are folding uncoated stock, you can also soften the paper fibers with a mist of water prior to folding.

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TRICKS & tips

Although a coated sheet is recommended for any printing where ink receptivity is important, there is process that can achieve almost the same result on an uncoated sheet. The process is called *calendering* and it is the last operation on the papermaking machine before the paper is wound onto reels.

Calendering treats the surface of the paper to increase its smoothness and gloss, which then makes the uncoated sheet behave as if it was coated.

Supercalendering, a process more prevalent in Europe than the United States, is a subsequent operation that also uses a vertical stack of rolls that are alternately steel and cotton.

Calendered papers are known as *machine coated*. If you would like to compare a calendered sheet to one that has been coated, please call us and we'll send you a sample.

Q. *I'm interested in "going green" in my printing projects but I don't want to sacrifice print quality or overrun my budget. Can you provide any guidance?*

A. The best advice we can give you is to use common sense. Rather than automatically specifying recycled or FSC-certified paper for your printing projects, let us include those choices among the selection of papers we recommend for the project. What we recommend could change substantially depending on the nature of the project.

For example, it may be relatively easy to find an FSC-certified paper to use for routine printing such as an instructional

booklet or employee handbook. Paper manufacturers and merchants are beginning to stock frequently-requested papers to have them more readily available for delivery to printers.

But if your project requires an unusual paper, either for effect or function, let us include some non-recycled and non-FSC-certified among your choices. The selection process will go more smoothly and you'll get a better end result.

questions and answers