KEIGER

One in a series of monographs about our products and services designed to inform, guide and illuminate

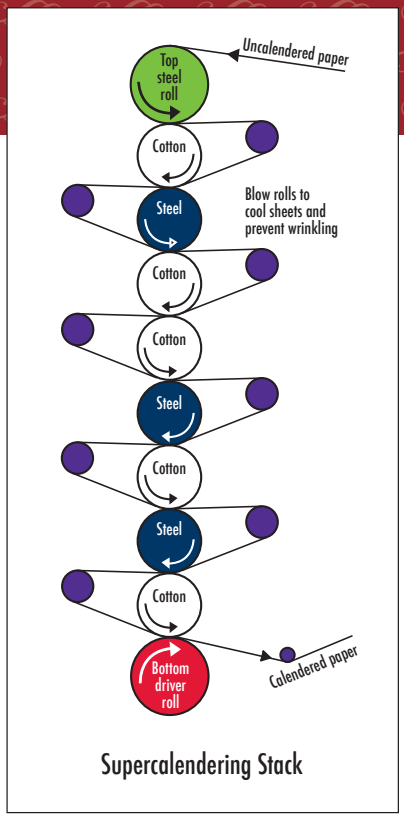
On Paper: Coatings and Finishes

Paper is the background for virtually all printing projects but is often taken for granted – once a color is chosen, the other characteristics of paper are sometimes overlooked – and its potential to enhance the aesthetic and functional quality of a design is wasted. An important paper quality to consider is the texture of its surface, and how that particular texture affects ink absorption, reflection of light, and overall appearance. Below we offer a brief description of how a sheet of paper is produced, with an explanation of the most common finishes and their strengths and weaknesses.

The Papermaking Process

Paper is made largely from cellulose fiber, plus additives such as binders, mineral fillers, rosin, and pigments and dyes. The main source of cellulose fiber is wood pulp from hardwood and evergreen trees, with fiber from seeds, grasses and other plants less frequently used. Sawdust and waste wood are also utilized; sources such as recycled paper and alternative fibers – kenaf, hemp, flax – are becoming increasingly important "earth-friendly" options. Machines grind these fibers into groundwood pulp for coarse papers like newsprint and tissue. Chemicals are added to produce a finer pulp for writing and higher quality papers. Most papers have an even coloration, but some have flecks or fibers added to the pulp to increase their visual interest. The pulp is then mixed with water, formed on wire screens, pressed to reduce the water content, and dried. At this point, if required, a coating is added.

A modern paper-making machine can be as large as 33 feet wide, 66 feet high and the length of two football fields.



Supercalendering Stack

In the next step, most paper is run through a series of steel rollers. This process, which gives a degree of smoothness and gloss to the surface, is called **calendering**. In a process called supercalendering, the steel rollers are alternated with soft cotton rollers, and a more highly polished paper is produced. Of the coated papers, the cast and gloss finishes receive the most calendering; in uncoated papers it is the smooth or super smooth. Other types of finishes are produced by pressing the damp paper against wire, cloth, or engraved rollers. These rollers produce an **embossed** finish that can resemble canvas, brick, leather, tissue, grooves, burlap, and other textures. Dye may be added to paper at the end of the production process as well – it can be marbled, or appear as a subtle geometric pattern. As the paper comes off the stack, it is wound onto large reels, which are then cut down into rolls, or trimmed into sheets to be packaged in cartons.

Coated Papers

Coating consists of materials, such as clay or chalk, which cover the surface of the paper and prevent ink from being absorbed. This ink holdout provides greater contrast and sharpness to the printed image. Coating also increases the brightness of the ink color and shiny appearance of the paper, and for all these reasons it is often chosen for crisp reproduction of photographs. A highly polished finish makes small type more difficult to read, however, and if a project requires a lot of text, a duller finish is preferable. Coated papers tend to crack when folded; scoring along the fold line beforehand helps prevent this.

Common Coated Finishes

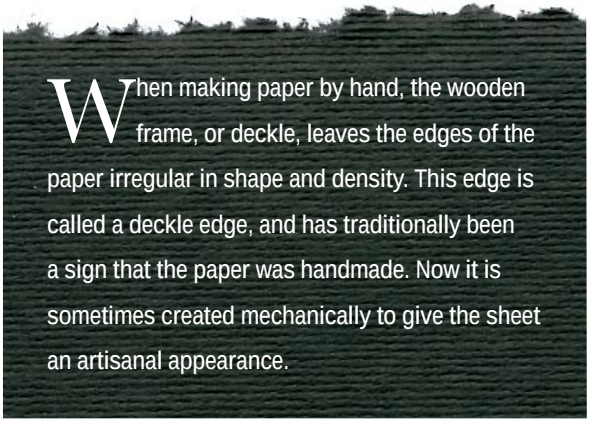
- **Matte** coating is a slightly thicker coating than dull. Matte paper is glare-free and handles like uncoated paper on press, but retains the fine image reproduction of a coated paper. Generally the least expensive of the coated papers, its surface is fairly soft and mars more easily than the others.
- **Dull** coating has just a bit more sheen than matte, and these papers are used when good ink holdout for sharp images is required, but when the glare of a high-gloss finish would be unadvisable, as in materials that require lengthy reading.

- **Gloss** coating is extremely reflective and smooth. This surface allows very little ink absorption, which provides bright colors and very sharp images. Gloss sheets are often chosen for reproduction of photos and art.
- **Cast** coated papers have a mirror-like shine and the hardest, smoothest surface of all coated papers. They are relatively heavy and opaque.
- **Metallic** coatings contain ground mica and other reflective materials that glitter and shine. They are usually more expensive papers but very eye-catching – the surface changes appearance as it reflects the light.

Uncoated Papers

These papers lack the coating that fills in the tiny hills and valleys in their surfaces. Therefore, ink tends to spread out and soak in; printed images may appear less sharp and colors less bright. Several different finishing processes produce textures that can offer a very elegant, understated look to a project.

Coated paper with a metallic and embossed finish



When making paper by hand, the wooden frame, or deckle, leaves the edges of the paper irregular in shape and density. This edge is called a deckle edge, and has traditionally been a sign that the paper was handmade. Now it is sometimes created mechanically to give the sheet an artisanal appearance.

Common Uncoated Finishes

- **Antique** finishes have a rough feel to the surface and do not reproduce photographs as crisply and clearly as other finishes.
- A **vellum** finish is not as rough as antique, but on both finishes an image will have a soft appearance due to ink absorption and spread on the paper surface.
- **Laid** finishes have a series of ribbed lines, produced by pressing wire across the surface, that offer a handmade, traditional look.
- A **linen** finish looks very much like a tightly woven fabric, imparting an elegant and refined quality – this finish comes from contact with linen cloth or an engraved roller. Ink may look lighter on linen paper.
- **Felt** finishes have a toothy, slightly dimpled texture and high opacity. This finish is made by

pressing sheets of felt against the damp paper. Their bulk makes felt papers a good choice for stamping and embossing.

- **Smooth** finishes have very little surface tooth but are still less slick than the coated paper finishes. They have the best ink holdout of all uncoated papers.

Paper companies produce sample books, sometimes quite elaborate, that showcase their lines of papers.

Every paper company has its own nomenclature for the types of paper it produces. One company's silk finish may be another company's satin. The names of the coatings and finishes described here, however, are fairly standard for the paper industry.

All of the paper types in this monograph perform beautifully on our offset presses or state-of-the-art digital press. As leaders in the technology of digital imaging, we have the experience necessary to take advantage of the many options available with this process. We offer our expertise to you with complete confidence in our capabilities as printers *and* as innovative marketing problem-solvers.

Uncoated paper with a laid finish and added flecks

Please call us with any questions you may have about our monographs. We are providing this information to increase your understanding of the printing process and its terminology. We look forward to working with you on your projects for truly outstanding results.

Go to www.keiger.com to find our monographs and information about our company, products, services, and resources.

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