TechTopics

CopiesOvernight INC.

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Coated Papers and Docutech Imaging

WHO SHOULD READ THIS BULLETIN:
Any person who specifies paper to be imaged via the Docutech process.

In many segments of the graphic arts community, coated printing papers are presumed to be the best choice for quality imaging. This is due to certain characteristics that optimize the offset printing process.

The xerographic process changes all the expected benefits. In the worst case, a job may be unprintable. At best, results will be very different than expected.

This issue of *TechTopics* will show how coated papers differ in response when the direct imaging process is used in place of conventional lithography.

What are Coated Papers?

Strictly speaking, coated papers are those containing a mixture of pigments (such as clay or calcium carbonate) and binders (like starch and latex) that have been applied to the surface during or immediately following the papermaking process.

The purpose of this coating is to help fill in the peaks and valleys of the paper to provide a smooth, flat printing surface.

Types

All coated papers fall roughly into three categories: matte, dull and gloss. The difference between the three is supercalendaring, the process of passing the newly coated paper through a series of rapidly rotating stainless steel rollers to polish the paper's surface.

Simply put, matte finish papers are coated, but not supercalendared; gloss finish papers are. Dull finish papers are very lightly supercalendared. Matte (and dull) finish papers have, as the name implies, a relatively dull surface. Gloss finish papers have a shiny surface.

Note: The term glossy is sometimes used to refer to all coated papers. This should be avoided, because of the obvious confusion that may result.

The type of finish in no way reflects the quality of the paper. Matte or gloss; each has its purpose. Quality of coated book papers is measured (in ascending order) as #3, #2, #1, and Premium #1.

The following information focuses on the differences between conventional printing and Docutech reproduction on coated papers.

Conventional Printing

Coated papers and conventional offset lithography seem to be made for one another. This is primarily due to the effective interaction of the ink on paper. Offset inks are absorbed into the paper. Harder and smoother surfaces control absorption better. Also, offset ink is transparent, allowing the surface characteristics of the paper to shine through. A premium coated sheet will cause the printed portion of the paper to appear as brilliant as the paper itself.

Note: Paper mills often include descriptions of the properties of paper with their swatch books. The descriptions usually refer to the use of paper in ofset printing. This information is useless for determing the suitablility for Docutech.

Docutech Imaging

The Docutech reacts differently because it uses dry carbon-based toner in place of ink. This toner is permanently fused to the paper using pressure combined with heat. This in and of itself creates challenges.

Ppaer mills are still grappling with the unique problems presented by this proces, just as when the offset process (which adds extra moisture to the paper) caused problems when it first became popular. Some papers are simply not up to the challenge of high speed digital imaging.

First, dry toner is not in any way absorbed into the paper, but instead merely rests on the surface of the paper. As a rule, the smoother the surface, the better the quality, but only up to a point.

The surface of a typical gloss coated paper is too slick for Docutech toner to adhere to properly. A common problem can be flaking, in which the toner actually chips off, leaving a clean white sheet behind!

Second, toner is opaque, which means that it reflects its own properties, not those of the paper beneath. This is very important. Quality Docutech imaging from Copies Overnight is indistinguish-able from offset when uncoated paper is used. Not so with coated!

While coated paper enhances the gloss of the offset ink, the same gloss serves to make Docutech toner look extremely flat by comparison to the paper surface itself.

Additional Considerations

A few more considerations related specifically to Docutech imaging:

- The high-speed process utilizes a silicone based oil as a fusing agent. Totally invisible on uncoated stock, this necessary chemical may sometimes leave barely perceptible horizontal streaks on coated papers.
- The heat plus pressure inherent in the high speed imaging process can actually break down the clay coating. This is especially a problem on longer runs.
- Virtually all paper manufacturers, as well as Xerox, maker of the Docutech, refuse to guarantee acceptable results when using coated papers on the Docutech.

The Solution

After conducting extensive experimentation, Copies Overnight has observed that each problem previously described decreases as gloss is reduced. For this reason, Copies Overnight recommends the obvious solution: when imaging coated papers, first look to a dull or matte finish.

General Considerations

Here are a few more points to ponder when considering specifying coated paper:

- Coated paper costs more than an equivalent uncoated bond or book weight paper.
- Gloss is a very bad choice for technical material since the glare can make them hard to read. What makes a fancy brochure attractive can be a detriment to a text filled book or manual.
- Lower brightness. In fact, many premium #1 coated papers have about the same brightness rating (85) as uncoated economy grade copy paper!
- A better measure of comparison between coated and uncoated paper is caliper (thickness), not weight. See the chart below.

Approximate caliper of papers (comparative)

50	60	70	80
60	70	80	90
70	80	90	
80	90	50	
90	50	60	
50	60	70	

- Forget colors. Only one paper mill, Appleton, makes coated paper in any shade beside white or cream. Appleton's are not suitable for Docutech imaging.
- Finally, remember that neither coated nor uncoated book paper is "better". The "better" paper is the one best suited to the task at hand.

The following is experpted from *The Basis of Quality in Paper* by Arthur B. Little.

"There is, in a word, no such thing as a general basis for quality in paper and no other possible basis for quality in the case of any particular paper than its suitability for its intended use. Good writing paper is bad blotting. Good newsprint is poor wrapping, etc. In no case can the properties of a good paper be defined until the specific use for which the paper is intended has been stated. The properties which confer high qualities upon a paper intended for one purpose are precisely those which condemn it for another. Stretch is a desirable property for a bag paper, it may be fatally objectionable in a paper for lithography. Opacity is a principal element in determining the quality of Bible paper. Transparency is equally important in glassine paper. Certain grades of book paper base their claim to quality mainly on the extent to which they bulk for weight."

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