Design tips & TRICKS

Prepared for Ovid Bell Press

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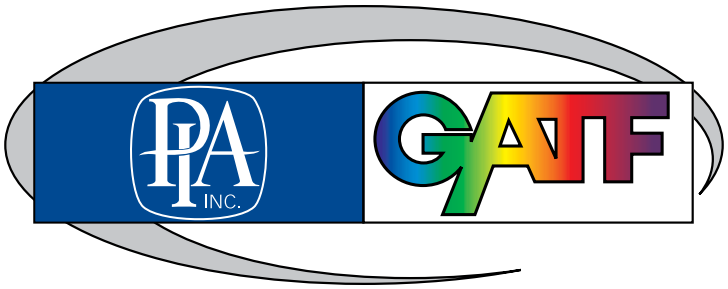

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Specifying Paper

When specifying paper for design, there are six major points to consider: surface texture, brightness, whiteness, color, opacity, and caliper.

- **Surface texture.** All paper can be categorized as being either coated or uncoated based on its surface texture. In the papermaking process, uncoated stock has been compressed between metal rollers (calendered) only to a limited degree, yielding vellum, antique, wove, and smooth surfaces (from rough to smooth, depending on the amount of calendering). Coated paper varies from roughest (matte) to smoother (dull) to smoothest (gloss), also depending on the amount of calendering.

- **Brightness and whiteness.** Brightness refers to the amount of light a sheet reflects (0–100%, with a crisp white sheet often exceeding 90%). Whiteness refers to the color of the reflected light (either yellow-white or blue-white, i.e., warm or cool). Brightness and whiteness affect readability (too much light tires your eyes when reading long blocks of text) and the crispness of photos (too little light reflected back makes photos seem dark or muddy).

- **Paper color.** Paper color changes the color of the ink, so always request printed samples. Colored stock is also more expensive than white stock because of the dyes used and because it is less in demand. Off-whites, referred to as cream, ivory, etc., are a good option for some jobs, but the names differ from paper mill to paper mill, and the appearance will change among paper batches produced at different times.

- **Opacity.** Opacity determines show-through. A sheet with high opacity will prevent solids, screens, and halftones from being visible through the opposite side of the sheet, which could otherwise be quite distracting. Colored sheets are usually more opaque than white sheets. This quality is rated on a 1–100 scale. Most sheets fall in the 80 to high-90 range.

- **Caliper.** Caliper is the thickness of paper when measured with a micrometer. It is related to bulk, which is a relative measure of the thickness as related to the basis weight of a sheet. Higher bulk will increase the overall thickness of a book. Therefore, it helps to know a paper's measure in pages per inch (caliper).

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Page Creation Basics

Trim size

- Definition according to PIA/GATF's Glossary of Graphic Arts Terms:
- The final dimensions and size of a page

Live Area

- Definition according to PIA/GATF's Glossary of Graphic Arts Terms:
- **Area** on a mechanical within which images will **print**. Also called safe **area**.

Bleed

- Definition according to PIA/GATF's Glossary of Graphic Arts Terms:
- Pictures, lines or solid colors that extend beyond the edges of a page so that when margins are trimmed, the image is trimmed even with the edge of the page

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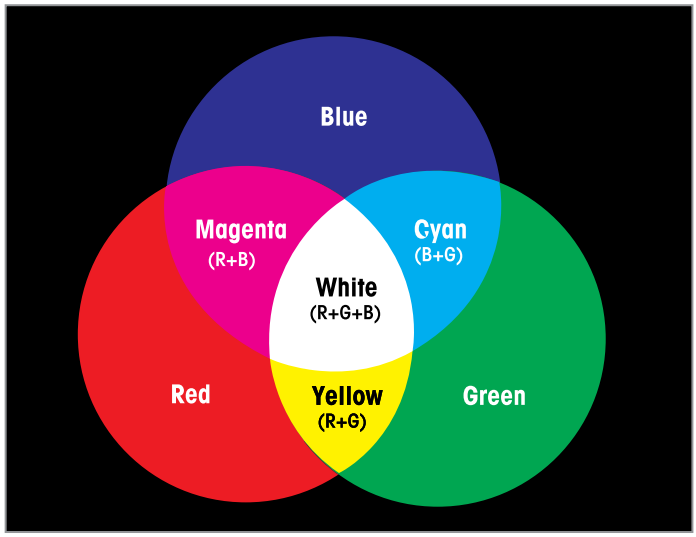
The Additive Color System

The best example that illustrates exactly how additive color works is if you think about how a projection TV works. The older-style projection TVs use red, green, and blue guns together to project an image to create a full-color picture. Sometimes you can see that the guns are misaligned, or "out of register," when you see the red image hanging off of one side of the projected picture or the blue hanging off the other.

The first thing you should notice with additive color begins with a black background—no color. What we can do is project red, green, and blue light against this black background and overlap each of the projected colors. When the red, green, and blue light are projected on top of each other, we see that there are secondary colors created that we call cyan, magenta, and yellow. When we project red, green, and blue light on top of each other, we get white light.

It seems strange or may not make sense that red, green, and blue light, when projected on top of each other, create white light. One way that you may be able to make better sense of this phenomenon is if you think of how a prism works, but in reverse. What we're doing here is putting that rainbow back together through the prism and getting white light again. Remember, all color is contained in white light!

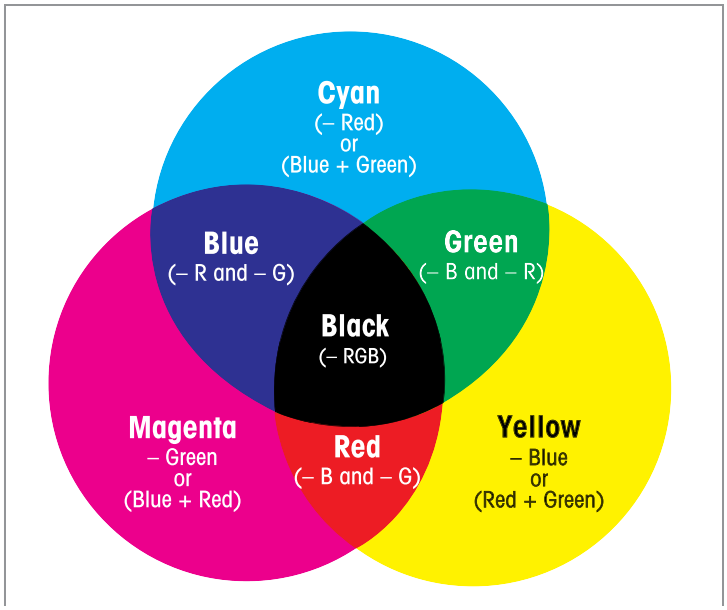


The additive primary colors are red, green, and blue and form the colors used in the lithographic process—cyan, magenta, and yellow.

The Subtractive Color System

We sometimes have a difficult time understanding how subtractive color works. This is probably because most of us were taught incorrectly at a very young age. The subtractive primary colors are cyan, magenta, and yellow, although most of us were probably taught that the subtractive primary colors are red, blue, and yellow. This is understandable since magenta appears red in color and cyan appears blue in color. This is the first obstacle that you must overcome: That cyan is not blue and magenta is not red.

The first difference you should notice when comparing additive color with subtractive color is the background: it's white. What is the white? The white is all colors reflected back to your eye and it is the paper. Unlike additive color, with subtractive color we already have all of the colors...they are in the paper. The printing inks serve as filters on the white paper and are printed on top of each other to create secondary colors. Simply stated, it is the paper that controls the color: The whiter the paper, the better the color will look when printed on press. Unfortunately, the paper usually represents the most expensive material cost associated with a job, so a less white (and less expensive) paper is chosen, and the color suffers.



The subtractive color system utilizes filters to individually subtract the three components of light—red, green, and blue.

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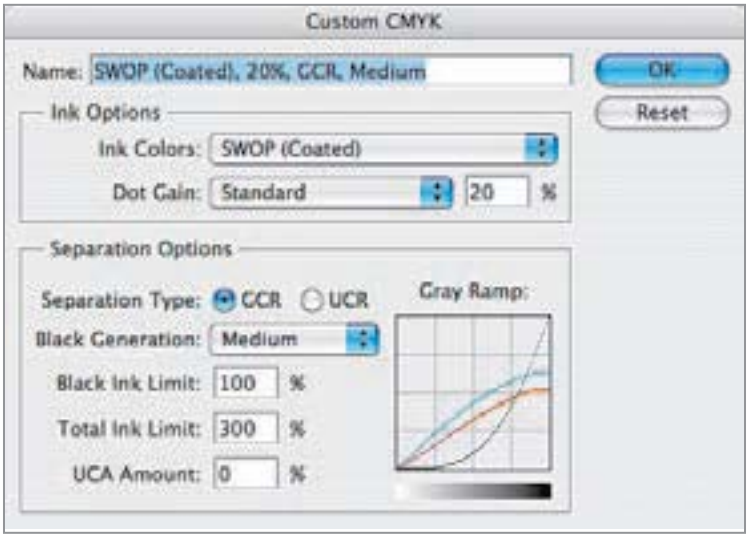
RGB to CMYK: Don't "Just Do It"

Many of the designers ask, "should I send images to my service provider in the RGB or CMYK color space?" In the past, the service provider would always request that the designer convert images to CMYK before sending them off to the printshop. This is not the best choice for a few important reasons.

First, you will get much better results if you color-correct images in the RGB color space. This is because the CMYK color space has a much smaller color gamut; simply stated, you have fewer colors to work with when correcting images in CMYK.

Second, converting images from the RGB to CMYK color space is more than just a mode change in Photoshop. When converting to CMYK, considerations are made for dot gain, inks, and the substrate.

If your service provider insists on CMYK images, or you do not know where the job will be printed, the best option is to use is U.S. Web Coated (SWOP) v2. Go to Edit>Color Settings in Photoshop, then under the Working Spaces section, choose U.S. Web Coated (SWOP) v2 from the pull-down menu.



When converting images from the RGB to CMYK color space, considerations are made for total area coverage, paper type, and dot gain.

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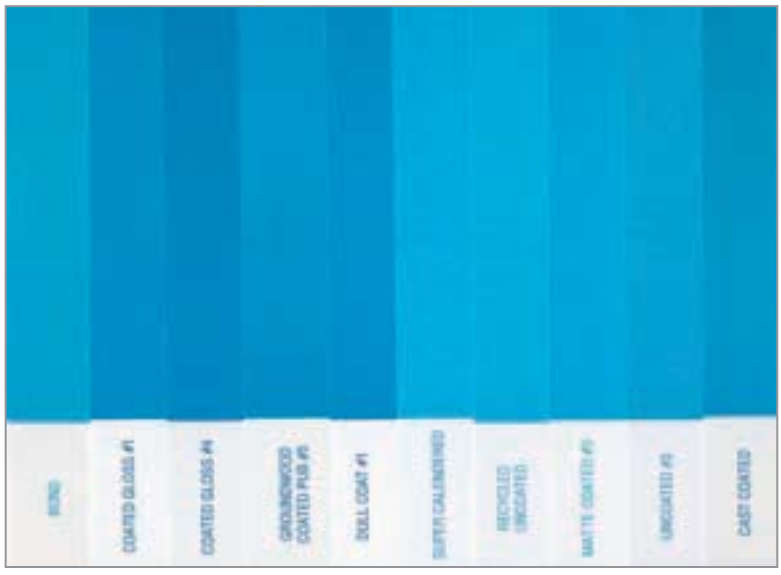
Paper and Color

Subtractive color refers to using cyan, magenta, yellow, and black inks on a white surround (usually paper) to reproduce full color. One component of the color reproduction process has the greatest influence on how good the color will look when printed on press: the paper. The whiter the paper is, the greater the color gamut that can be reproduced on press. That being said, the paper typically represents the most expensive material cost associated with a print job. To save money, many jobs are printed on less expensive paper that is not as white. As a result of this, the color suffers.



This graphic shows the same ink printed on various paper stocks. (image courtesy Flint Group)

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About PIA/GATF

The Printing Industries of America, Inc./Graphic Arts Technical Foundation (PIA/GATF), along with its affiliates, delivers products and services that enhance the growth, efficiency, and profitability of its members and the industry through advocacy, education, research, and technical information.

The 1999 consolidation of PIA and GATF brought together two powerful partners: the world's largest graphic arts trade association representing an industry with more than 1 million employees and $156 billion in sales and a nonprofit, technical, scientific, and educational organization dedicated to the advancement of the graphic communications industries worldwide.

Founded in 1924, the Foundation's staff of researchers, educators, and technical specialists help members in more than 80 countries maintain their competitive edge by increasing productivity, print quality, process control, safety, and environmental compliance by implementing new techniques and technologies. Through conferences, Internet symposia, workshops, consulting, technical support, laboratory services, and publications, PIA/GATF strives to advance a global graphic communications community.

In continuous operation since 1887, PIA promotes programs, services, and an environment that helps its members operate profitably. Many of its members are commercial printers, allied graphic arts firms, equipment manufacturers, and suppliers. To serve the unique needs of specific segments of the print and graphic communications industries, PIA/GATF has special industry groups, sections, and councils. Each provides members with current information on their specific segment, helping them to meet the business challenges of a constantly changing environment.

The PIA/GATF *Press* publishes books on nearly every aspect of the field; training curricula; audiovisuals; and research and technology reports. It also publishes *GATFWorld,* a bimonthly magazine providing articles on industry technologies, trends, and practices, and *Management Portfolio,* a bimonthly magazine that provides information on business management practices for printers.