



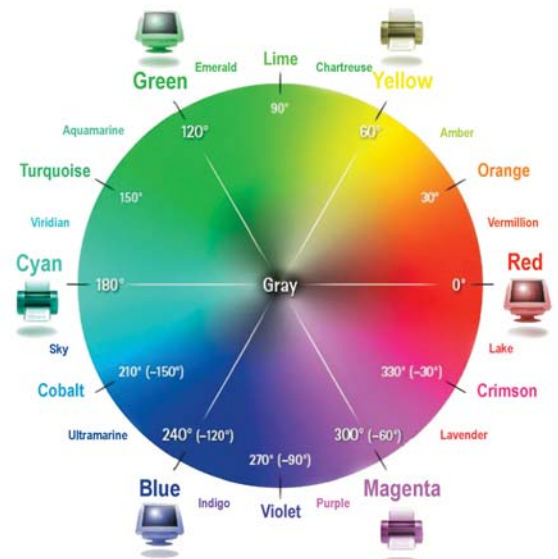
RGB versus CMYK



Color Theory:

In grade school art class you should have learned about color theory. Here is a quick refresher. When you combine colors like red and yellow you get orange. If you combine yellow and blue you get green. If you combine blue and red you get the color violet. ROY G BIV is an acronym the colors of the rainbow they stand for Red, Orange, Yellow, Green, Blue, Indigo, Violet.

When do you use RGB and when do you use CMYK? Why do you even have two color spaces? In both RGB and CMYK we use color theory to create colors on the screen and printing colors.



Let's start out with RGB it stands for Red Green Blue. RGB is the format for video monitors, projection, web images, and most digital photography. RGB is an additive color space which means that you add the red, green, and blue lights to your black monitor to make up all the colors.

The more light you add the whiter your screen becomes. RGB colors are expressed in numbers and their values range from 0 to 255 for 256 possible values for each of the red, green, and blue color colors. For example if the RGB values are zero you get black if the RGB values are 255 you get white. In theory at least when you multiply the RGB possible values of 256x256x256 you get a value of 16,777,216 possible colors. We can't distinguish all the colors but this gives us an awful lot of flexibility when we use RGB



CMYK stands for cyan, magenta, yellow, and black. Why K. for black originally K. stood for key it was used to register or basically lineup the four plates for CMYK color printing. CMYK is used for most conventional four color offset printing and some digital four color printing.

CMYK is the subtractive color space which means that you subtract light from a white piece of paper by adding more and more ink. The more ink input on the paper the blacker it becomes.



RGB versus CMYK



cyan + magenta + yellow + black

=

color image

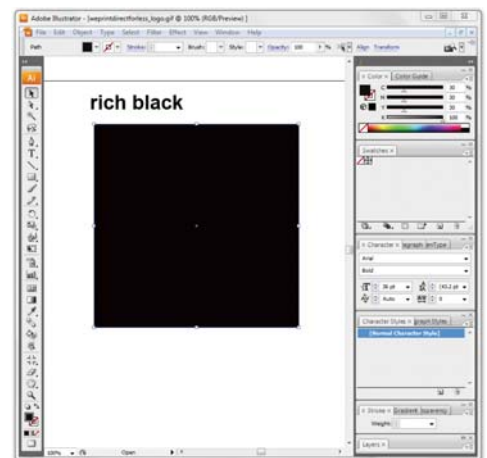
When you combine the 4 color printing plates together you get a full color image. Hence CMYK four color process printing.



CMYK is expressed in percentages for example white would be expressed 0% 0% 0% 0% or 0000 or the absence of any ink. Black is somewhat trickier in CMYK because there are a number different ways you can create it. You might try 000 100 perfect for easy-to-read text. Or 100 100 100 zero for a black using the other three colors and no black ink at all. However the problem is that too much ink on paper makes it difficult to handle and slow to dry. Total coverage is a way of expression of how much ink is on an area of a page if you printed 100% of cyan 100% magenta 100% of yellow and 100% black you could get a total coverage value of 400%. In our previous example if you would print 100% of cyan 100% magenta 100% of yellow and 0% black you would get a total coverage value of 300%. In 4 color process printing we've found that not going over 240% ink coverage is the best practice. When you need a solid black color for large coverage on a page at WePrintDirectforLess we prefer to use Rich Black.

Rich Black is a combination of all four inks which is 30% of cyan 30% magenta 30% yellow and 100% black this will give us a much darker black that can be achieved by just using K. or black alone. If you use another commercial printer other than WePrintDirectforLess you should inquire on how they build Rich Black.

You may be wondering if CMYK is used for printing why even have RGB? It's a great question. CMYK is rather limited in its ability to create color. In fact only 60 to 70% of vibrant and bright colors created in RGB can be reproduced in CMYK. The difference is RGB is created electronically with light on a monitor or some other display and CMYK is created with ink on paper.



RGB is vastly superior for color photography. It is more flexible to perform color edits and less likely to produce color artifacts. RGB is also the color model that most digital cameras use. Adobe Photoshop a professional photo editing software using RGB allows the user to take advantage of several more plug-ins to manipulate your photograph. By using RGB in your primary editing preserves the most colors and data.

When you print commercially you must convert your RGB art to CMYK. We recommend you to look at both the RGB and CMYK images in Photoshop to adjust your CMYK image to give you the least color shift.



Sending in a RGB image to a commercial printer can give you unpredictable results. Remember when you use an electronic RGB monitor you will not get the same results as the CMYK ink on paper model.

One other thing to consider is different monitors will yield different color outputs. For example there's a big difference using a CRT screen (Cathode Ray Tube), LCD screen (Liquid Crystal Display), or a LED screen (Light Emitting Diode). All three monitor types will give you a vastly different projected image.

With this in mind software and desktop printer manufacturers have come up with the acronym **WYSIWYG** or **What You See Is What You Get**. This is not the case when you convert your electronic art to ink on paper, it's just not the same medium. Mind you it will be close, however it will be a bit different hence a color shift. When you convert your RGB images to CMYK you have the power to adjust your images that more closely matches your desired output with the CMYK adjustments in Photoshop.

Logos can be at an entirely different problem. Many logos are designed with spot color. Spot colors are solid inks that have been premixed to produce that specific color. In North America we use the PMS or Pantone matching system for spot colors. Pantone produces color guides for artists, designers, and printers. Typically if your logo was created with spot colors it must be converted to CMYK.

Unlike solid ink spot colors CMYK images are produced with four inks using what we call screens. Screens are dots of ink. You can easily see this when you look at a most newspaper photographs up close and you will see dots of ink. the closer the dots of ink the darker that area of the image.

Use www.WePrintDirectforLess.com On Your Next 4 Color Printing Job

Here are the top 5 reasons you will great service and fantastic prices at WePrintDirectForLess.

1. Unlike 90% other commercial printers we specialize in 4 color process printing only. That means we don't have to set up and tear down our presses to accommodate spot Pantone colors or paper stocks. This us saves time and we pass those savings direct to you.
2. To give you the best 4 color results 95% of our jobs get printed on either high quality 14 point double sided glossy card stock or 100# double sided glossy text weight stock. We buy our paper stock in bulk. Then we pass those savings direct to you.
3. By uploading your 4 color art direct to us we are able to review it then email you a FREE PDF proof. Once you get it back and approve it your job gets placed in our production queue. This gives you quicker throughput. Then we pass those savings direct to you.
4. With our proprietary software and presses we gang our jobs and utilize every square inch of paper that we can. This not only is environmentally friendly but it also cuts waste. Then we pass those savings direct to you.
5. We charge up front for your printing jobs. Therefore we don't have to employ people to chase down accounts payable. Then we pass those savings direct to you.

At WePrintDirectForLess.com your source for high quality, low cost, 4 color printing, fast, we will and do save you money! Place an order today!