

MIXING COLORS ON THE COMPUTER:

Mixing colors on the computer can be quite frustrating, if those colors are expected to translate to a 4-color printing press. The name of the game here is "color compromise."

The problem is that the range of available colors in CMYK, or process, printing just isn't very big, compared to the range of colors the human eye can see, or that the computer can create.

The Blue and Red color ranges of process printing are especially hard-hit and the sad thing is that those are the two favorite colors of most people.

The good news is that the human eye is very forgiving when it sees something it recognizes. Our mind tends to reinterpret an off color, forcing it to appear as we expect it. This phenomenon won't turn yellow into blue, but it will reconcile colors that are "in the ballpark." For example, green grass printed on a printing press is something that our eye sees and accepts as realistic. But if we compare the printed grass to real grass, the color is probably not even close.

Another example is the deep blue of a clear summer sky. What graphic designer wouldn't kill to achieve that hue on the press? But it won't happen, because we can't even get close to it with process colors. That's OK though, because our eye forgives the off color, and reconciles it with what we expect to see, as long as it's "in the ballpark."

The lesson here is that designers of printed graphics must make do with what they've got, and strive to be flexible in their color decisions. That's not always easy, especially when a customer demands a perfect match to some real-world color.

That's happened at just about every printing plant on the face of the earth. A customer will come in with a product in hand; a product which he is very proud of, and which he wishes to reproduce on the press with 100% accuracy. He insists that the pressmen use the actual product as a color guide. He is deeply suspicious when told that an exact match is impossible. He may even get genuinely angry when told that his carefully selected product color simply does not exist in the world of process inks.

Eventually, reality must set in, and a color compromise must be reached.

How to identify colors that won't print well

In PhotoShop, choose View>Gamut Warning. This will highlight areas of an image that are out of CMYK's printable range, or gamut. You can then assess the damage; the result may be inconsequential, or it may be disastrous, depending on the importance of the color affected.

In PhotoShop, you can also use the color palette and the eyedropper tool to test a specific color. If it is out of gamut, a triangle with an exclamation point (!) will appear next to the color.

In QuarkXPress, there is no gamut warning, but you can see the result of changing colors from RGB or Pantone into CMYK by changing the Model in the Edit Color dialog box. If the color was previously saved, it will display the color before-and-after. You can then assess whether this change is acceptable. (Keep in mind that your monitor is still RGB, so it will only simulate the CMYK color.)

In Adobe Illustrator, a triangle with and exclamation point (!) will appear next to out-of gamut colors on the color palette, if the color selected is RGB. You can also use the palette options to convert the color to CMYK, and it will show how the color changes. (Again, keep in mind that your monitor is still RGB, so it will only simulate the CMYK color.)

In PageMaker, determining gamut is all but impossible. A work-around is to test the colors you create in another program, like Illustrator or PhotoShop.

Process Color Guides

A good investment is a commercially available CMYK color book. Several companies make them, including [Pantone, Inc.](#) These guides take the guesswork out of mixing colors, as they show actual printed swatches of a wide variety of CMYK screen mixes. They are also indispensable in helping you match real world colors to a close CMYK equivalent.