

Roses are Red and Violets are Blue—or are They?

With today's computers you can make rose blue and violets red if you want to with just a little movement of the a color slider. The hard thing is getting your roses to match to color of your computer monitor. So why is it that there is a shift in color when we go from the color monitor to the printer. You can even see the color shift on your desktop color printer.

Our computers can do so many amazing feats that we sometimes expect too much from them. The fact of the matter is that even though monitors can display millions of colors, our eyes can detect even more subtle differences. The color seen on your computer is not at good as real life. Also you are viewing light, not color reflecting off of a surface. And there are more differences.



CMYK when viewed on a monitor



CMYK when printed

Difference between RGB and CMYK

The difference is because your monitor displays colors based on an RGB (Red, Green and Blue) system and the printed piece is based on a CMYK (Cyan, Magenta, Yellow, and Black) system. The RGB system is used for monitors, cameras, scanners and television. RGB starts with a black ground and adds Red, Green and Blue light to create various colors.

Full color, or four color, printing starts with paper (usually white) and than uses four colored inks (CMKY— Cyan, Magenta, Yellow and Black) to create all the other colors. Art work is printed from screens made up of very small dots. When color is changed from and RGB system there is a shift in color to a CYMK system. This is the first reason why color changes.

Another reason is most monitors are not calibrated. Printing companies spend time and money making sure their color monitors match with the output of their color presses and even than they can't guarantee an exact match. They can get very, very close, but it will never be perfect. Out in the real world, monitor color varies from monitor to monitor. One person doesn't like a very bright screen and turns down the brightness of their monitor, the next person turns up the brightness on their monitor and so on all of this affects the color viewed on the monitor.



Since cameras work in an RGB system it is important to change your photos to the CMYK system when you are going to send them to a commercial printer. I know that most desktop printers will print out your photos without changing them to RGB, but when you are going for a higher quality look that offset printing provides, you have to work in a CMYK color system.

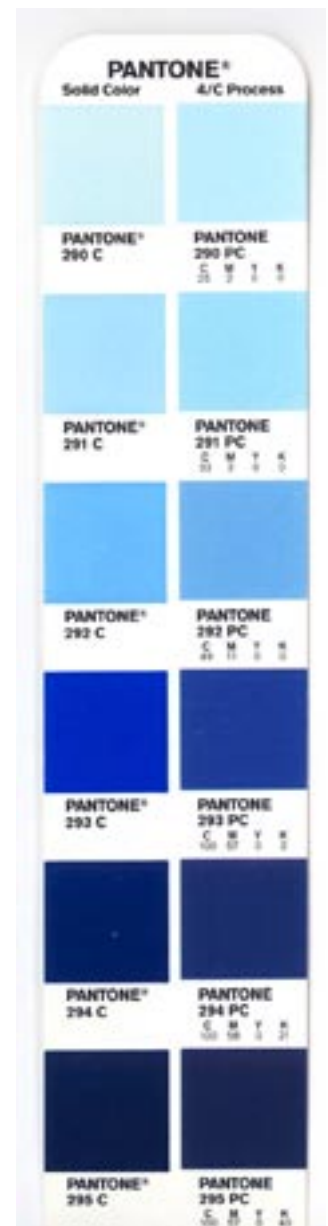
Computer Created Art

This holds true for art created in your computer. You want a soft mossy blue-green background with wine colored letters so you pick out pleasing color from your crayon box color palette and expect a good match from the printed piece. Well there is a very good chance you will not get a good match for all the reasons listed above. Colors seen on your monitor will reproduce differently when commercially printed. So what can you do?

The printing industry has created another color system to help in choosing colors. It is called PMS (Pantone Matching System). The Pantone company produces a series of color guides to show how inks will look when printed. In fact they produce 2 different systems based on whether you are printing with solid color inks or four color process inks.

If you are using only one or two different colors, you can get deeper, richer colors by using a two-color press and using inks that has been specially blended to match you PMS color.

You are thinking great, I want to print using a pretty blue that I picked out from a PMS color guide, I am all set. Next month you want to do a different piece and you use the same PMS color 293 and when you get the piece back from the printer and the doesn't match. That is because there are some colors that print differently when printed from a pre-mixed ink versus a color made from the four color printing process. Is it a big difference? That really depends on who is making the decision. If the blue is in your logo, it can matter more than if the blue is a background color.



So What can I do?

So with all of these different color systems and difference in color monitors what can I do. You have already taken the first step, you are now aware of potential problems. If color is important to your project, you can invest in a PMS color guide (www.pantone.com). For most printing projects, achieving exact color isn't a must. Most commercial printers are very good with achieving "pleasing" color and we know that colored printed pieces sell better than black-and-white pieces.

With so many inexpensive commercial four-color printers available today, it would be a shame if you limited your use of color because of "technical" difficulties. I suggest you don't shy away from using color. You can confidently know that your roses will still be red and your violets will still be blue (if you want them those colors), they just may not exactly match your monitor.