



Lesson 3 (page 1 of 3)

## DPI VERSES LPI

Lesson 3 is all about the difference between lines per inch and dots per inch and how they effect coloring. You will also learn how to achieve perfect colors and why they sometimes don't look the same on your screen as they do when they print, and what to do to make them the same. You will also learn how to use the two different drives to print the two types of graphics you will deal with in most of your printing programs. There are many types of printing programs but this will work with any of these types of programs. We have chosen to pick on Corel Draw.

First make 2 boxes in Corel Draw. Using your displayed color pallet choose the color orange. Color fill the first box with this color. Next click on paint bucket tool, or Fill Tool. Click on Models. Make sure that CMYK has been selected under Models. You will see that this color is 60 magenta and 100 yellow. Now click OK and go back to your second box. Select the second box and color fill it with the same colored orange. Now click back onto your Fill Tool. This time click on Fixed Palettes. Under the listing Palettes click on the Pantone Matching System Coated. Under the listing Reference you will see Old and New color. You will see that using the same exact color mix (100 yellow and 60 magenta) are now a much darker orange. This is a problem. If simple colors using the same color mixes are not displayed on your screen the same it is almost impossible to do what you need to do in your day to day work. Don't worry, we can fix it but first lets continue with the lesson. Click OK to display the so called new color. You can simply go back to Models and change this to Model CMYK this would do the trick and you can do this with any color and it would match, but there is a better way. All your color palettes are 8 bit CMYK.



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All your Pantone converted colors are 24 bit. This means that even after you convert a color to CMYK it is not the best color you can use. If you take that darker shade of orange and click on Bitmaps then click on Convert to Bitmaps an interesting screen appears. On this screen you will see the heading Color. If you click on your down arrow it will confirm what was stated earlier. Paletted Colos are all 8 bit. RGB Color is shown to you in 24 bit and CMYK color can be shown to you in 32 bit. 8 bit graphics are old and very weak. 24 bit graphics are better and designed to look great on your computer screen. These are not printing colors. 32 bit CMYK are the best graphic for everything you will want to use. One, they match what your printer is using and two, they are printing colors. Now click on 32 bit CMYK and click OK. Wow, now you color has changed and looks exactly like your first box. However, they are different. The difference is how they print. They will both print orange but the orange in 32 bit CMYK will print much deeper. Example: If you were printing red and when you transfer it onto gold metal you want the most saturation possible. If you printed regular 8 bit red converted into normal CMYK you would get red but it would be very ho hum. If you took that same red and converted it to 32 bit CMYK red it would be outstanding because it would be printing a much better graphic with a much deeper look. Understand that once you convert this color it is permanent. You can't just go back and change it. You will want to completely finish your art then convert the whole thing at the same time.



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Now for the last part of your process. After you have finished your art and converted it to 32 bit CMYK you will simple want to print it with the correct driver. You have two to choose from. PS and either HP or PCL5. The difference is the way your printer sees color. The correct way to print the orange box is with the HP 4500 or PCL5 driver set up the way we have suggested to do.

Raster graphics print in 600 DPI and Vector Post Script graphics print with 2400 Lines Per Inch. If you are looking at a color in 600 DPI you want to print at 600 DPI level. You want the color that is on your screen to come out like on your screen. You print this image with a driver that prints at 600 DPI level. If you print say Cyan at 600 DPI level it will come out Cyan. If you print that same

color at 2400 LPI it will come out 4x more saturated giving you Dark Cyan or green. This common factor can through off all your colors. If you are scen matching a color you want the color on your screen(600 DPI) to come out like on your screen. If you have a scanned in image saved as a JPEG you will be using a graphic the has its own program designed to correct the image as it prints. This means the if you scan in an image then save it as a JPEG you will be using an image that is designed to be printed in LPI. That means you will want to print this with the Post Script (PS) option or driver.