

Color Separation

257522_PixelRule.tiff ↗

Four Color Separation is the task of converting an image that is presently in the RGB representation into the CMYK color model. This is done because many color printers use the basic colors cyan, magenta, yellow and black to create other shades.

First, RGB will be transformed into CMY by subtracting the R, G, and B parts from 1 thus creating the complementary values of red, green and blue. Black is produced because the combination of cyan, magenta and yellow ink in equal proportions do not produce a true black. There is a maximum amount of black that can be created for a specific color. *[The process color with the smallest percentage is used to determine the black (K) substitution. Example: say you have the CMY color (60C, 45M, 30Y). The maximum amount of black that can be removed for this color is 30.]* This amount is represented on the x-axis (sometimes called the gray axis) in both curve views in the separation panel.

Fig.1.tiff ↗

[In the example mentioned, at most 30% black can be removed from the sample color. With the UCR curve shown above, 23% actually will be removed. This yields to the color triple (37C, 22M, 7Y)]

Fig.2.eps →

[The loss in the three process colors has to be compensated by adding black (K) ink. This is done with the Black Generation curve. It defines how much black (K) is produced for a given color. In the example stated, BG and UCR curves are equal, therefore 23% black will be produced for the sample color, resulting the color (37C, 22M, 7Y, 23K). BG and UCR curves don't necessarily have to be equal; depending on your printing device, you may need to add more (or less) black ink than you removed from the cyan, magenta and yellow process colors.]