

Four Color Process

DuraTech four-color process printing presents the opportunity to create detailed photographic-like reproductions. The advantage of using four-color process printing is the ability to achieve hundreds of shade of colors while only using four colors.

Spot color vs. four-color process

Spot color printing uses pre-formulated colors generally in conformity with the Pantone spot color system which consists of over 700 colors including metallic and iridescent colors which are not possible or practical to create with four-color process color printing. The critical factor when printing spot color is when two colors must touch each other when printed. If the colors do not match perfectly, a gap appears between the two colors. To prevent this it is necessary to overlap colors by a very small margin.

Four-color process printing uses four basic colors to create the specified color. These are generally referenced as CMYK. "C" represents cyan, "M" represents magenta, "Y" represents yellow, and "K" represents black. When creating a four-color image, it is not simply a matter of creating a film for each of these four colors. These four films create the colors when each is laid over the other. The number of dots representing each of the colors must vary in intensity (percentage) so the correct amount of ink is applied for each of the four colors in order to create the specified color. Thus cyan and magenta = purple, magenta and yellow = orange, etc.

The registration of these dots must be within a tolerance of 2 mil (2000th of an inch) or 50 microns for quality color output and within 5 mils for what might be referred to as "pleasing" color. This tolerance not only applies to the length and width of the image, but also within the "fill" of the image area.

To obtain a precise dot it is necessary to measure the dot percentage and compare the resulting measurement to the percentage it should be. This measurement is made using a reflective densitometer.

Most four-color process jobs use UV inks. This helps ensure the integrity of the dot in both dot gain and loss.

The acceptable viewing distance of any four-color process printed part is the distance where the dots "disappear" to the naked eye. The generally accepted formula is 240 divided by the lines per inch or dots per inch. So if you ran a part at 85 lines per inch your viewing distance would be $240 \div 85 = 2.82$ feet.

Art Requirements

In order to achieve superior screen printed clarity when using four-color process colors, it is essential that we start off with a great piece of artwork. Ideally any high-resolution computer file will work.

The software used is not as important as the resolution of the file. Any current PC or Macintosh program will work with Photoshop being the most commonly used. Other formats such as EPS or TIFF files are acceptable. Any fonts or linked images used in the file should be included when sending artwork. If the original file is created in another program other than the one sent and is linked to another file, provide the linked file as well.

If a computer generated file is not available the next best thing would be a sample or original photo or transparency. Low resolution files are not recommended as the quality of the finished product may not be visually acceptable.

If there is no artwork available in any format or a complete re-design is required, DuraTech can provide design services.

Summary

Four-color process printing opens up new design options and effects that cannot be recreated with conventional spot colors. With a little bit of imagination and a competent printer, impressive graphics can be produced that will enhance any image.