

Printing Terms

Bitmap - Also called a BMP or a raster image. A digital image that is pixel based and resolution dependent. Bit-mapped images lose sharpness and clarity when reduced or enlarged. These files are specified as a number of pixels wide by the number of pixels high. The number of bits per pixel determines the number of shades of grey or colors it can represent. Bitmaps come in many file formats, a few are GIF, JPEG, TIFF, BMP, PICT, and PSD. These types of images are created in paint programs, by scanning and by digital cameras. Bit-mapped files can also be placed or imported into a vector based file, but they remain raster images. ***For the promotional products industry, bit-mapped or raster images are not usually the preferred type of art for vendors to work with as they are more difficult to make adjustments such as re-sizing.***

CMYK - A color model where all the colors are made up of a combination of four process colors. CMYK is an abbreviation for cyan (a blue color), magenta (a red color), yellow and key (black).

Color Separations - The process of separating the areas of a piece of art to be printed into its component spot or process ink colors. Each color to be printed must have its own printing plate. For example, if a piece of art was to be printed in 3 spot colors, such as PMS 185C Red, PMS 288C Blue and Black, there would be 3 plates. Each of the 3 plates would contain only the elements to be printed in a specific color. Everything to be printed red would be on one plate or separation, everything blue would be on a second plate and everything to be printed black would be on the third plate. For 4 color process printing, the same 3 color art would be separated into 4 process (CMYK) plates. When printed, the 4 process colors would combine to represent the above red, blue and black colors. For many of the reproduction processes in the promotional products industry, spot color printing is preferred.

Continuous Tone- Images comprised of smoothly graduated tones, colors or shades, rather than solid blocks of color or dot patterns. All photographs and those illustrations having a range of shades not made up of dots are continuous tone images. An example of a continuous-tone device is a computer screen. Continuous tone pictures are printed through the use of halftones (dot patterns).

Die (Die Cutting) - Device for cutting, scoring, stamping, embossing and debossing a product or paper. Die-cutting is done using a formed, metal-edged pattern of the desired shapes (the die) to precision cut shapes. A custom-made die will increase the turn-around time and the cost of the order.

Digitizing - The process of converting analogue information, such as a piece of art, into a binary digital format that can be processed by a computer. The resulting information is a bit-mapped or raster image. An example would be using a scanner to convert artwork on paper into a digital format that can be used on a computer.

DPI - Abbreviation for Dots Per Inch. A term used to describe the resolution, or density of dots, of printed material or bit-mapped (raster) image files. In a one-inch measure, it is the number of dots that fit horizontally and vertically. The higher the original DPI, generally the crisper the image will appear. Often, the terms DPI, PPI (Pixels Per Inch) and LPI (Lines Per Inch) are used interchangeably. It should be noted that the DPI can be adjusted in a computer file and therefore may not truly represent the quality of the image. An example would be if you had a 72 dpi file and adjusted the DPI to 300. This would not improve the quality of the image. The existing information in the file would now be represented by more dots, thus a larger file size, but no improvement in quality. To illustrate the concept, say you had a cookie. If you smash the cookie into 3 pieces, there is still the same amount of cookie, nothing is added or taken away, but now the cookie is represented by more pieces. DPI is also used to describe the capabilities of various electronic devices such as printers, scanners and computer screens.

Encapsulated PostScripts (EPS) - A graphics file format used by many different computers and printers. It is very flexible since it uses an object-oriented language and is the industry standard supported by image setters.

Font - A complete set of characters of a specific style (letters, numbers, punctuation ,etc.) of a typeface. Serif fonts (such as Times Roman, Courier and Garamond) have curls, points or lines that appear at the bottoms and tops of the characters. Sans Serif fonts (also called Block fonts, such as Arial, Helvetica and Eras) are fonts without the serifs. A font file must be installed on a computer in order for it to correctly display. Font substitutions occur when a file contains fonts that not installed on the computer that is opening the file. ***Converting fonts to outlines or curves will alleviate font problems when sending art files. Once fonts are converted to outlines or curves, the text is not recognized as a font and can no longer be edited. If you want to be able to edit your text later, be sure to make a duplicate of your file before you convert the fonts to outlines/curves.***

File format - How information in a computer document is organized and encoded electronically. A computer program will be able to read and use only file formats that it recognizes. It could be thought of as the packaging for the information contained in the file. The file format does not necessarily have anything to do the quality of the contents. Several popular file formats are EPS, JPG, GIF, TIFF, PDF, BMP, AI, and CDR.

Four Color Process Printing - A technique of printing that superimposes dots of the 4 primary process colors (CMYK, which stands for: cyan, magenta, yellow and black) to simulate full-color continuous tone images. Also called color process printing, full color printing and process printing.

Grayscale - A computer image with no color that can contain up to 256 shades of gray and/or black and/or white. Imprint area The allowable portion of a promotional product reserved for the printed advertising message.

Graphics Interchange Format (GIF) - A bit-mapped (raster) based file format that also includes data compression and is a common format used for web graphics. Gif files may lose sharpness and clarity when the size is adjusted. They are best used for illustrations rather than color photographs since it is limited to 256 colors. ***The GIF file format is not intended to be used for print reproduction.***

Joint Photographic Experts Group (JPEG). A file format that uses a lossy compression technique designed to compress continuous tone images. During the compression some the information is discarded. Each time the file is saved, it loses information. Jpeg is a common format choice for use on the web. ***These files are not intended for print reproduction as they lose sharpness and clarity when reduced or enlarged.***

Gradient - A series of dots that change density gradually and smoothly. Example would be one color going from light to dark or a transition from blue to red.

Halftone (sometimes referred to as halftone screens or tints) - In the simplest terms, it is the use of dot patterns in artwork. Any shade of gray or a color that is between the darkest (such as black) and the lightest part of an image (such as white) is the halftone. Halftones) are used to transform continuous tone images into a series of dots in order to make the image printable. The halftone process creates patterns of small dots. When viewed from a sufficient distance, the human eye is unable to see the dots themselves. You get the illusion of grays or shades of color, which correspond to the density of dots in different areas. When printing spot colors, a halftone would be using dot patterns of various percentages to represent different shades of the ink color that are not 100% of the ink color. Halftone screen resolution is measured in lines per inch (lpi). Also referred to as the screen ruling, it is the number of lines of dots in one inch. The amount of detail and clarity of the printed image will increase with higher screen resolutions. The quality of halftone reproduction will vary depending on the printing method and its corresponding capabilities.

Imagesetter - A high resolution output device used by service bureaus and printers to prepare art from computer files for reproduction. It can output to paper, film or plates. ***Most support PostScript file language.***

Pixel (short term for picture element) - A single dot on a computer or television screen or in a graphic produced by a scanner or paint program. Pixels build the visual information used to display an image. The total number of pixels (PPI) determines the screen's or a bitmapped (raster) file's resolution.

Line Art (Line Copy) - High contrast image that consists of areas of pure black and pure white. Line art can contain text.

Line Per Inch (LPI) - The number of lines (rows) of dots per inch that create a halftone image. The greater the LPI, the more detail there will be in the printed image. Often, the terms LPI, PPI (Pixels Per Inch) and DPI (Dots Per Inch) are used interchangeably.

Process Colors (Inks) - The four primary ink colors used in four color printing, often referred to as CMYK. CMYK is an abbreviation for cyan (a blue color also known as process blue) , magenta (a red color), yellow and key (black).

Pantone Matching System© (PMS) - Sometimes called the Pantone Color Matching System©. Standard system used world wide for specifying and matching colors so consistent results may be obtained. PMS has over 700 colors it specifies. There are books and swatches available with the colors shown and the recipes for mixing the inks. The Pantone Matching System© was developed independently from any printers or ink manufacturer, thus not needing a specific brand of ink. Be aware that if the material being printed is a color, it can change what the chosen PMS color(s) will look like on the finished product. Also, there can be some color variation depending on the texture of the surface being printed.

Portable Document File (PDF) - A file format for the transfer of designs or information across multiple computer platforms. PDF documents are independent of the original application software, hardware, and operating system used to create those documents. These documents can be viewed using the free Adobe Acrobat Reader© software.

PostScript - An object-oriented page description language recognized by most printing devices. It is very versatile and is resolution independent, which means it can support the highest resolution of the printing device.

Point (Point Size) - In typesetting, a unit of measure for the size of a font. A point is a unit of height equaling 1/72 inch or 1/12 pica.

Pixels Per Inch (PPI) - The unit of measurement for determining the resolution of a computer or television display, printer, scanner or electronic bit-mapped (raster) file. PPI is determined by the number of pixels contained in a one square inch. Often, the terms PPI, DPI (Dots Per Inch) and LPI (Lines Per Inch) are used interchangeably

RGB (stands for Red, Green, Blue) – A common color model that mixes together, in various proportions, the three primary colors of light (red, green and blue) to produce all the other colors. Most computers and televisions display their pixels based on combinations of values of red, green and blue. It is also a popular color mode for Web graphics.

Registration In printing - The process of aligning elements so they appear in the proper location. If printing more than one color, the assorted plates must be registered so the colors appear in the correct areas to create the desired final look. Registration marks (sometimes called cross-hair lines) or pins can be used to line up each plate in a consistent manner.

Raster Image Processor (RIP) - RIP can be hardware or software used for printing. It translates a page description language (such as PostScript) into a high resolution bitmap (raster) information to use for printing.

Resolution Resolution - A measure of the density of dots in a bit-mapped (raster) file, It determines how sharp and clear an image is or will appear. In a one-inch measure, it is the number of dots (dpi) that fit horizontally and vertically. The higher the original DPI, generally the crisper the image will appear. It should be noted that what gives you a sharp looking image on a computer screen may not produce a sharp printed image. This is because to look sharp on a computer screen an image only needs a resolution of 72 dpi. **For print reproduction, usually a minimum of original 300 dpi is required for an image to look sharp.** If you have an image that is less than 300 dpi, adjusting the resolution up to 300 dpi or greater does not improve the quality, it only increases the file size by spreading the available information in the file across a greater number of pixels. Resolution is also be used to describe the capabilities of printers, scanners, monitors as well as files. Often, the terms DPI (Dots Per Inch), PPI (Pixels Per Inch) and LPI (Lines Per Inch) are used interchangeably to describe resolution and imply the quality or capabilities.

Proof - A representation or actual produced sample to show how the final product will appear before final production occurs This representation or sample is examined to be sure all the elements of the order are correct such as spelling, placement, colors etc. Any mistakes can be corrected prior to full production.

Raster Graphics Images - Pixel based images that consist of rows and columns of dots. Also called bit-mapped graphics. **Raster images can become distorted, ragged and blurry when reduced or enlarged.** Raster graphics are produced by paint programs, such as Photoshop®, by scanning and by digital photography and is resolution dependent.

Tagged Image File Format (TIFF) - A popular file format for storing bit-mapped (raster) images. **They may loose sharpness and clarity when reduced or enlarged.** These files may be placed, inserted or imported in to most desktop or drawing programs. Many different standards have been created for TIFF files and this may cause incompatibility issues. **This file format can be used for print reproduction if the specific file meets the printers requirements.**

Vector Graphics - Vector graphics is represented as a mathematical formula, often called object-oriented graphics. The art is constructed of points, lines, curves and shapes that are scalable to any size without losing details or clarity. Programs that enable you to create vector graphics are called drawing programs, such as Illustrator®, Freehand® and CorelDraw®. Vector images are more flexible, often require less memory and are not resolution dependent as compared to bit-mapped (raster) graphics. **Vector art is highly preferred for most promotional art reproduction.**