



GRAPHICS GUIDELINES

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IMAGE FORMATS

VECTOR IMAGE

Raster (AKA Bitmap)

Most images you see on your computer are composed of bitmaps. A bitmap is a map of dots, or bits (hence the name), that look like a picture as long as you are sitting a reasonable distance away from the screen. Common raster/bitmap file types include TIFF, JPEG, GIF, PICT, PCX, and BMP (the raw bitmap format). Because raster images are made up of a bunch of dots, if you zoom in on a raster, it appears to be very blocky. Vector graphics (created in programs such as Illustrator, Freehand, or CorelDraw) can enlarge without getting blocky.

Raster images cannot be broken out into spot colors for printing. They can be separated for offset printing only as CMYK, or run as simple grayscale.

File extension: .tif, .jpg, .gif, .pict, .png, .bmp, .pdf*, .eps*

Vector Graphic

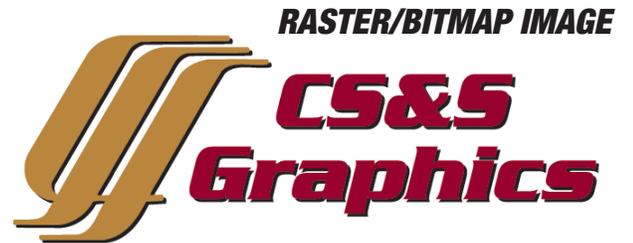
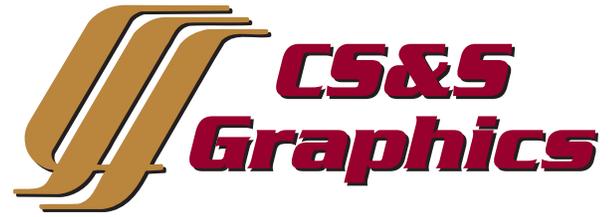
Unlike TIFs, JPEGs, GIFs, and BMP images, vector graphics are not made up of a grid of pixels. Instead, vector graphics are comprised of paths, which are defined by a start and end point, along with other points, curves, and angles along the way. A path can be a line, square, triangle, curved shape, etc. These paths can be used to create simple drawings or complex diagrams. Paths are even used to define the characters of specific typefaces.

Because vector-based images are not made up of a specific number of dots, they can be scaled to a larger size and not lose any image quality. If you enlarge a raster graphic, it will look blocky, or "pixelated." When you enlarge a vector graphic, the edges of each object within the graphic stay smooth and clean. This makes vector graphics ideal for logos, which can be small enough to appear on a business card, but can also be scaled to fill a billboard. Common types of vector graphics include Adobe Illustrator, Macromedia Freehand, and EPS files.

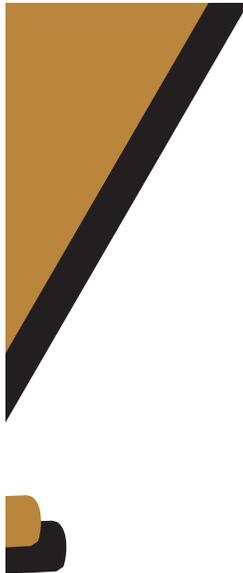
Unlike Raster images, Vector images may be separated for printing as specific spot colors, as well as CMYK.

File extensions: .ai, .eps*, .pdf*, .svg

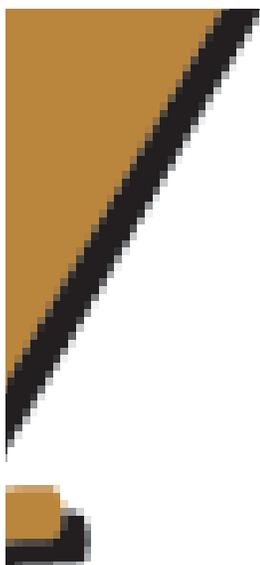
***.eps and .pdf files can be VECTOR and/or RASTER, depending on the program they were created in.**



VECTOR IMAGE 600%



RASTER/BITMAP IMAGE 600%



COLOR FORMATS

CMYK Color

CMYK – short for Cyan, Magenta, Yellow, and Key (Black) – often referred to as “process color” or “four color”, is a color model used in printing, and is also used to describe the printing process itself.

With CMYK printing, halftoning (also called screening) allows for less than full saturation of the colors; tiny dots of each color are printed in a pattern small enough that the human eye perceives a single color. In this way, a wide variety of colors can be produced.

CMYK or process color printing is contrasted with spot color printing, in which specific colored inks are used to produce the colors appearing on paper.

Comparisons between RGB displays and CMYK prints can be difficult, since the color reproduction technologies and properties are so different. A laser or ink-jet printer prints in dots per inch (DPI) which is very different from a computer screen, which displays graphics in pixels per inch (PPI). A computer screen mixes shades of red, green, and blue to create color pictures.

Multi-color Raster Images cannot generally be run as multiple spot colors, but must run as 4-color Process (CMYK) or simple Grayscale.

RGB files must be converted to CMYK to print correctly on an offset press.

Spot Color

In offset printing, a spot color is any color generated by an ink (pure or mixed) that is printed using a single run.

When making a multi-color print with spot color, every spot color used needs its own lithographic plate.

The dot gain, hence the screen angle and line frequency, of a spot color vary according to its intended purpose. Spot lamination and UV coatings are sometimes referred to as ‘spot colors’, as they share the characteristics of requiring a separate lithographic plate and print run.

The standard spot colors we use are PMS COLORS (Pantone Matching System) and include metallic, specialty, pre-mixed, and custom-mixed inks.

Vector-based images can typically be output to run as either Spot Colors or CMYK.

Grayscale

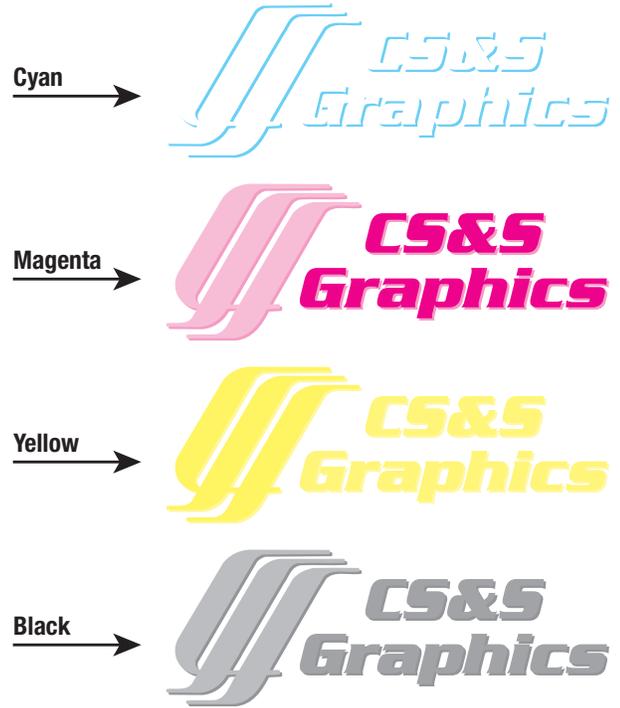
Grayscale is a range of monochromatic shades from black to white. Therefore, a grayscale image contains only shades of gray and no color.

Line Art

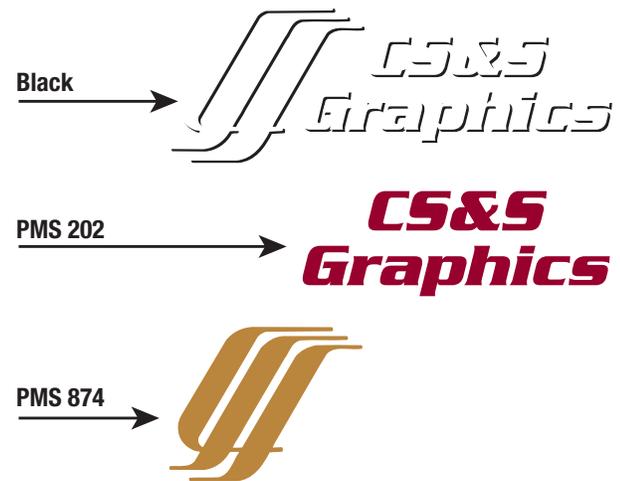
Line Art is a created (vector or raster) or scanned (raster) image that is solid black & white without any shades of gray.

When printed, Grayscale and Line Art may print in any spot color.

CMYK SEPARATION



SPOT COLORS SEPARATION



GRAYSCALE GRAPHIC



LINE ART GRAPHIC



IMAGE RESOLUTION

RASTER IMAGE, 300 DPI

LPI and DPI

LPI (Lines per Inch) is a measurement of printing resolution in systems that use a Raster halftone screen. Specifically, it is a measure of how close together the lines in a halftone grid are. Higher LPI indicates greater detail and sharpness.

Jobs printed on uncoated paper or newspaper typically require a coarse line screen (85lpi) because these papers absorb a lot of ink and the dots spread out (dot gain). High quality commercial printing is usually done on high quality coated paper, on which a much sharper dot can be produced (150-200lpi).

DPI (Dots per Inch) is a measurement of the resolution of an image both on screen and in print. DPI measures how many dots/pixels can be placed in a line within the span of 1 inch. In order to effectively utilize the entire range of available LPI in a halftone system, an image selected for printing generally must have 1.5 to 2 times as many Dots per Inch (DPI).

For instance, if the target output device is capable of printing at 150 LPI, an optimal range for a source image would be 200 to 300 DPI. Using fewer DPI than this would not make full use of the printer's available LPI; using more DPI than this could exceed the capability of the printer, and would be effectively lost. An image with a high DPI is considered "high-res" or "high-resolution", while one with a low DPI is called "low-res" or "low-resolution".

When scanning or creating solid art as Line Art, the necessary resolution is 1200 DPI.

Images on the Internet are typically 72 DPI, so are unsuited for printing purposes.

For purposes of printing, Raster/Bitmap images ideally need to be 300 DPI at full size, as we tend to print at 133 or 150 LPI. Enlarging a Raster Image will lower its quality, though one may be enlarged 25-50% without too much degradation of the image, so long as it is a high-resolution file to begin with.



RASTER IMAGE, 72 DPI



IMAGE BACKGROUNDS

When a Raster/Bitmap image is placed or imported into another file, it will typically appear with a white background if placed on top of another image or background. The exception to this are PNGs, GIFs, or specially prepared TIF image containing a clipping path, but this is a difficult and time-consuming process, so is generally only done with simple images.

Vector images, on the other hand, may generally be placed in another file without obscuring the background.

VECTOR IMAGE



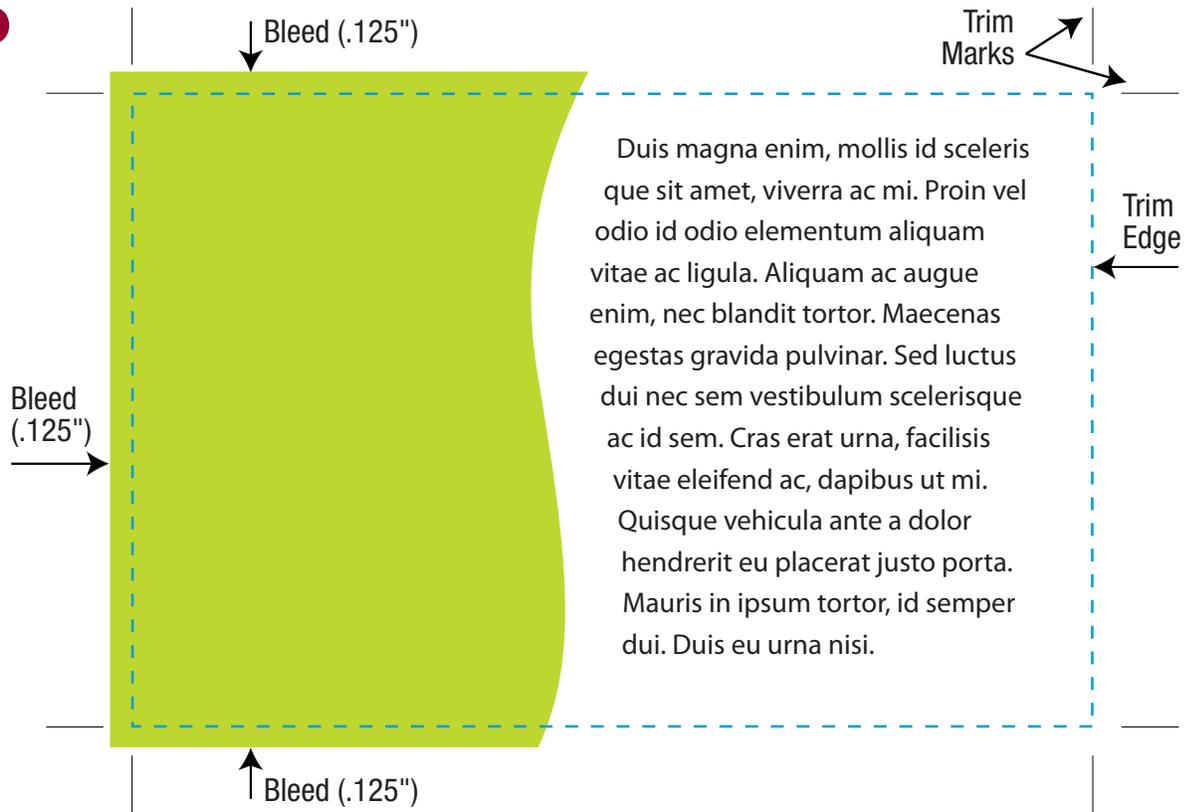
RASTER IMAGE



ART BLEED

What is Bleed?

When artwork is meant to go to the edge of a printed piece, that art needs to extend past the edge of the trimmed size. Standard Bleed is 1/8th of an inch (0.125"). Without this extra art, the final piece may have paper (white) showing at the edge once trimmed, where the printing did not hit perfectly.



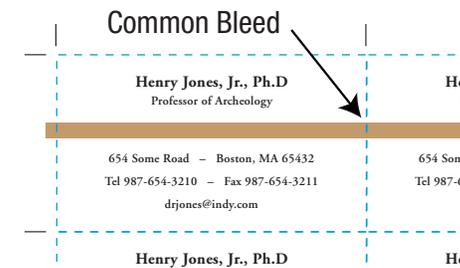
CORRECT BLEED:
Printed & trimmed with full bleed.



INCORRECT BLEED:
Printed (with slight shift) & trimmed with no bleed.

Common Bleed

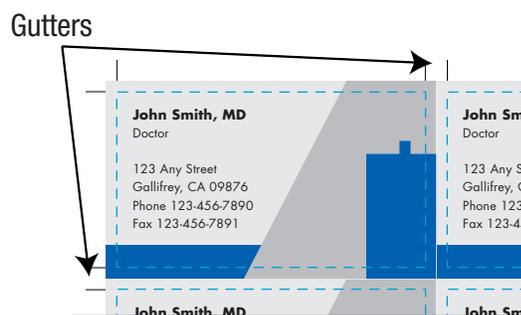
When artwork is set up multiple times, such as on Business Cards, if the artwork that bleeds is “common”, such as a solid background or a bar going across the middle of the card, artwork can butt against each other at the trim line.



COMMON BLEED:
Common bleeds on both sides do not require gutters.

Gutters with Bleed

Again using Business Cards as an example, if the artwork has bleed on only some edges, or the art that bleeds is a photo or graphic, then the set-up requires “gutters” between the individual art. Standard gutters are 1/4th of an inch (0.25"). This allows the .125" bleed of one card to butt against the bleed of another.



GUTTERS & BLEED:
Different bleeds on all edges make gutters necessary.

PRINT READY PDF FILES

Submitting a print-ready PDF (Portable Document Format) file has many advantages, can avoid common pre-press problems, and speed the processing time of your printing project. It is important, however, to create them correctly.

NOTE: To make a proper print-ready PDF, the art must have correct bleed, margin and the document size set to the final trim dimensions of the printed piece. All professional design programs should provide some built-in method to convert your art to a PDF file, as do Microsoft applications.

- Choose “**Press Quality**” in the Adobe pdf preset. **This should embed fonts and images as well as keep your high-resolution images at 300 dpi.** If you want, change “Downsampling” to “Do not Downsample” for each type of image listed.
- If your file needs to include a bleed, click “**Marks & Bleeds**” to enter a value of .125" for Bleed on all sides. Also under “Marks” choose “Crop Marks” and enter .125" as the offset.

SUPPORTED SOFTWARE

Graphic Design Applications: The following Graphic Design programs are specifically created for the purpose of professional design, layout and printing. Fonts and linked graphics need to be included with jobs submitted in these programs. A customer-supplied PDF proof or hard copy sample of what the file is supposed to look like is highly recommended.



1. Adobe Illustrator CC

Mac/PC

A drawing program for creating two-dimensional vector graphics.



2. Adobe InDesign CC

Mac/PC

For creating and editing complex page layouts.



3. Adobe PhotoShop CC

Mac/PC

Allows for complex raster/bitmap, photo and image manipulation.



4. Adobe Acrobat Pro

Mac: Versions up to 11.0 *PC:* Up to version XI

For viewing, creation, manipulation and management of files in PDF file format.



5. Quark XPress

Mac: Versions up to 7.0

For creating and editing complex page layouts.



6. Macromedia Freehand

Mac: Versions up to MX (Version 11)

A drawing program for creating two-dimensional vector graphics.

Microsoft Applications: Microsoft programs are a popular set of interrelated desktop applications, generally for home or office work. Any Microsoft files we receive for offset printing must be adjusted and formatted so they may be properly output. RGB is often the standard color setting in Microsoft applications, so conversion to CMYK is necessary for correct color. A customer-supplied PDF or hard copy sample of what the file is supposed to look like is highly recommended.

PLEASE NOTE: While we can usually produce excellent results from Microsoft files, please remember that these programs have not been created for Spot or 4-Color Process printing, but rather for home or office use, generally to be run to an ink-jet printer. Embedded graphics may print at a low resolution and color may shift. Text may re-flow when files are viewed on different computers. Fonts and linked graphics need to be included with jobs submitted in these programs.

A Print-Ready PDF can be created from Microsoft applications for submission.



1. Word

Mac: Version X *PC:* Versions up to 2013

A word processing program for text composition and proofing.



2. Excel

Mac: Version X *PC:* Versions up to 2013

A spreadsheet-creation application.



3. Powerpoint

Mac: Version X *PC:* Versions up to 2013

A presentation program widely used by business people, educators, students & trainers.



4. Publisher

PC: Versions up to 2013

A desktop publishing application for simple page layout and design.

FILE FORMATS

Vector AND/OR Raster/Bitmap

EPS (Encapsulated PostScript)*

An EPS is a DSC-conforming PostScript document with additional restrictions intended to make EPS files usable as a graphics file format. In other words, EPS files are more-or-less self-contained, reasonably predictable PostScript documents that describe an image or drawing, that can be placed within another PostScript document.

File extension: .eps **Image Format:** Vector AND/OR Raster/Bitmap

EPS is the standard graphic format for vector images. However, raster/bitmap images can also be saved as or in EPS files. Keep in mind that such files remain rasters despite the file format. EPS files can also include both vector and raster images within them — but the original raster file should be included along with the EPS.

PDF (Portable Document Format)*

PDF is a multi-platform file format developed by Adobe Systems. A PDF file captures document text, fonts, images, and even formatting of documents from a variety of applications. You can e-mail a PDF document to your friend and it ought to look the same way on their screen as it looks on yours, even if they has a Mac and you have a PC. To view a PDF file, you need Adobe Reader, a free application program distributed by Adobe Systems.

File extension: .pdf **Image Format:** Vector AND/OR Raster/Bitmap

While PDFs are an excellent format to receive print files in, not all PDFs are created equal. Despite the “universal” qualities of PDF files, color can change or shift, particularly if the original file was Word or another PC-based program. Live fonts should always be “embedded” when saving to this format. Also, depending on how the file was saved, PDFs can be low or high quality.

SVG (Scalable Vector Graphic)

SVG is a family of specifications of XML-based file format for describing two-dimensional vector graphics, both static and dynamic (interactive or animated). SVG allows three types of graphic objects: vector graphics, raster images, and text. While being primarily designated as a vector graphics markup language for the web, the specification is also designed with the basic capabilities of a page description language, like Adobe's PDF.

File extension: .svg **Image Format:** Vector AND/OR Raster/Bitmap

Generally used for web design; rarely used for printing purposes.

FILE FORMATS

Raster/Bitmap

TIFF (Tagged Image File Format)*

TIFF is a graphics file format created in the 1980's to be the standard image format across multiple computer platforms. The TIFF format can handle color depths ranging from 1-bit to 24-bit.

File Extensions: .tif, .tiff **Image Format:** Raster/Bitmap

TIF files are preferred for Raster images, as quality does not degrade when the file is re-saved, as can happen with JPEGs.

JPEG (Joint Photographic Experts Group)

A JPEG is a compressed image file format. JPEG images are not limited to a certain amount of color, like GIF images are. Therefore, the JPEG format is best for compressing photographic images. So if you see a large, colorful image on the Web, it is most likely a JPEG file.

While JPEG images can contain colorful, high-resolution image data, it is a lossy format, which means some quality is lost when the image is compressed. If the image is compressed too much, the graphics become noticeably “blocky” and some of the detail is lost. Like GIFs, JPEGs are cross platform.

File Extensions: .jpg, .jpeg **Image Format:** Raster/Bitmap

While JPEGs make smaller file sizes, this compression can cause the image to lose quality, so TIFs are a preferred format for printing purposes.

GIF (Graphics Interchange Format)

A GIF is a compressed image file format. GIFs are based on indexed colors, which is a palette of at most 256 colors. This helps greatly reduce their file size. These compressed image files can be quickly transmitted over a network or the Internet, which is why you often see them on Web pages. GIFs also retain transparent backgrounds.

File Extension: .gif **Image Format:** Raster/Bitmap

GIFs make for smaller files, but they do this by using a small color palette, possibly causing colors to change.

PNG (Portable Network Graphic)

This format was designed as an alternative to the GIF. Like GIFs, PNG files are lossless, meaning they don't lose any detail when they are compressed. They support up to 48-bit color or 16-bit grayscale and compress better than GIF files. PNGs also retain transparent backgrounds.

File extension: .png **Image Format:** Raster/Bitmap

Not a common format for printing purposes, but it is occasionally seen. Generally used for web design.

***EPS, TIF, & PDF are the best file formats for graphics embedded in print files, or sometimes for entire print documents. Native application files will retain their original Extension, such as: .ai for Illustrator, .indd for InDesign, .qxd (5.0 or earlier) or .qxp (6.0 or later) for Quark Xpress, .psd for PhotoShop, .doc for Word, .pub for Publisher, etc.**

SENDING US A FILE

Digital files can be sent to us using CD, DVD, or USB Flash Drive (AKA: Thumb Drive, Memory Stick). Files can also be sent via e-mail or through our FTP site, especially for larger file sizes.

Steps for uploading files via FTP

1. Go to: www.valleyoffset.com
2. Click on “**FILE SUBMISSION**” located on our home page.
3. Fill out the information fields, click “**SELECT FILE**” to attach your file, and click “**SEND IT**”.

Compressing files (Zip, Stuffit, etc.) before uploading is not required, but is a good idea if sending multiple files or a very large file.

JOB CHECKLIST

When submitting digital files for production, there are various things that should be included in order for a job to print correctly:

- 1. Application Information:** Specify what applications, version, and platform (Mac or PC) were used to create your finished files.
- 2. Graphic Files:** Include all image and graphic files imported into your document.
- 3. Font Files:** If there are live fonts in your art, be certain to provide both printer and screen font files, or convert the fonts in your document to paths (i.e. vector art); this can be done in programs like Illustrator, InDesign, and Freehand.
- 4. Image Resolution:** Resolution of raster images and scans should be a minimum of 300 DPI at the final print size. This is generally not an issue with vector files.
- 5. Page Bleed and Crops:** Make sure all bleeds extend 1/8" beyond the edge of the finished document, and that the document includes crop marks to indicate where that edge is.
- 6. Correct Color:** If you have a vector file that has been set up as CMYK or RGB and needs to run as spot colors, or if a raster image must match specific colors, please specify what those colors are. A Pantone Color Book is the best thing to refer to, and we have these on hand.
- 7. Hard Copy/Mock-up:** Include a PDF, laser proof, or mock-up of your art file, to serve as a guide for printing.

Will my file look the way it does on my screen? Yes, but...

Monitors use emissive RGB — red, green and blue phosphors to emit light that creates a screen image — and is used in TV sets and computer monitors. Most monitors have not been calibrated, so color may differ not just from screen to paper but also from computer to computer.

Due to RGB color, computer screens sometimes render colors brighter than on a printed piece. Photographic images may come close but spot color used in custom logos and illustrations often shifts.

Printing presses and digital printers use 4-color process — cyan, magenta, yellow and black inks to create color images. Spot or PMS color inks are simulated in RGB on screen and CMYK on laser prints, so neither medium accurately portrays a solid ink color.

Remember that the paper you select may also alter color. Coated paper will print brighter than uncoated; colored stocks are duller than white.

If precise color matching is critical, we recommend that you use PMS (Pantone) ink colors or order an Epson proof to check color.

JPG, GIF, PDF, EPS? Choosing the Proper Graphic File Formats for Print vs. Web

Using the proper graphic file format and resolution for a print job can mean the difference between a professional-looking document and one that looks blurry or is missing graphics. Graphic file formats for the Internet and offset printing are totally different animals. Do not interchange them!

Graphics File Formats for Offset Printing

Graphics for offset printing require much higher resolution than for websites. If you use a low-resolution graphic (i.e., a logo copied from a website) on an offset printing job, a fuzzy “bitmapped” image—or no image—will result.

Offset printed graphics can be one of two types: Vector-based or high-resolution raster. Raster images (which are color or grayscale digital photos and scans) must be at least 300 DPI (dots per inch) and in the TIF (Tagged Image File) or EPS (Encapsulated PostScript) file format. Your scans of black and white line art (images that do not contain any shades of gray) must be at least 1200 LPI. Be careful not to enlarge your raster graphics, because the pixels will also enlarge and become more noticeable.

Vector-based graphics are made of mathematically defined lines and curves. Because they are not made of pixels, these unique files can be scaled to any size without losing their crisp, smooth edges. Use professional drawing programs such as Adobe Illustrator or Macromedia Freehand to create these types of graphics for printing, saving them in the EPS format.

Color Ink Systems for Printing

Color files for offset printing must be specified with PMS or CMYK inks. Do not use RGB colors unless you are planning to print only to a color laser printer — but remember colors will not be exact.

Graphics File Formats for the Internet

Low-resolution raster graphics are used on the Internet. These graphics are made up of thousands of pixels (squares of color). Internet browsers will read JPG, GIF, PNG and SVG graphics, which are best scanned or sized at 72 LPI (lines per inch). Because of the limits of screen resolution, anything greater will result in larger file sizes and longer download times than necessary. All Internet graphics are limited to a special palette of 256 colors.

Scan your photos using RGB colors to the JPG file format. JPG file sizes are very small and compatible with nearly every graphical browser. This format is best suited for photographs and any image that contains a complex mixture of colors.

The GIF format is best suited for images with a limited number of distinct colors and graphics that have sharp, distinct edges (most logos, menus and buttons). A special GIF89a file format gives you the option to make the background transparent so you don't get a white rectangle behind the graphic.