

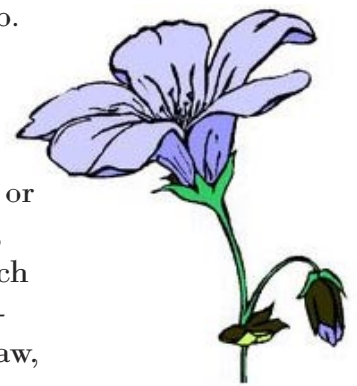
TIF., JPEG., GIF., EPS.,—**Making Sense Out of This Alphabet Soup**

Understand the basics of graphics file formats

If you use photos or clip art images in your desktop publishing projects or presentations, it helps to know a little about graphics file formats—which formats are used for which kinds of images, and the programs used to create and edit them.

It is also important to understand the differences between the various file formats so you can select the best format for your job. Using the correct file format can save additional expense when having your document professionally printed.

There are two basic categories of computer graphics—vector and bitmap. Vector graphics, also referred to as object-oriented, or draw, graphics, are created using geometric objects—lines, ovals, rectangles, and curves. A vector file stores information about each object, including its size, location, color, and so on. Popular programs for creating and editing vector graphics include Corel Draw, Adobe Illustrator, and Macromedia FreeHand.



Object-Oriented Images

Object-oriented graphics produce better business graphics because they have smooth curves and accurate shadings and colors. You can resize them to best fit your document without degrading quality. Drawing programs most often use object-oriented (vector-based) graphics. A vector drawing can be scaled to one inch or 10 feet, and will print at the maximum quality the printer is able to produce. And vector graphics typically take up much less disk space than bitmap graphics. Popular programs for creating and editing vector graphics include Corel Draw, Adobe Illustrator, and Macromedia FreeHand.

The quality of a printed object-oriented graphic depends on the printing resolution of your computer printer. The higher your printer resolution, the better the printed image will be.

Encapsulated PostScript (EPS)

Encapsulated PostScript (EPS) is a standard file format for importing and exporting vector graphics (PostScript files). An EPS file can contain any combination of text, graphics and images. Since it is actually a PostScript file, it is the most versatile file format that is available. EPS-files usually contain a small preview image that is used to visualize its content.

The preview image has a fixed resolution, which is usually 72 dpi. If you enlarge an EPS file in a document, the preview image is stretched and may become 'blocky' and lacking of detail. This does not necessarily mean that the EPS-data themselves will degrade in quality. As long as the EPS-file only contains text and vector z, scaling it does not affect its quality.

If you print a file containing an EPS-image on a non-PostScript printer, it is usually the preview image that gets printed. The preview image is ignored when you print to a PostScript device.

EPS files can be generated by all drawing applications as well as most layout applications. Image manipulation programs like Adobe PhotoShop can also save bitmap images as EPS-files. Some printer drivers are also capable of generating EPS-files as well as PostScript files.

The design world speaks primarily in PostScript—a language that allows programs to talk to output devices such as printers. When you print PostScript graphics on a non-PostScript printer, you'll get a rough, jagged-looking printout similar to the version you see on your PC screen. If you plan to use lots of vector clip art or appreciate fine fonts, consider making your next printer a PostScript compatible printer—some of the best clip art and fonts are available only in PostScript. You can buy a PostScript version of most popular laser or ink-jet printers for a little extra—or even add PostScript hardware or software to a printer you already have.

Bitmap graphics

Bitmap graphics are sometimes called raster, or paint, graphics. The most common formats—Joint Photographic Experts Group (JPEG or JPG), Kodak PhotoCD (PCD), and Tagged Image File Format (TIFF or



bitmapped black-and-white image



close-up showing pixels

Painting programs typically produce bitmapped images. A black-and-white bitmap graphic just as a black-and-white photograph is like a black-and-white checkerboard. Each square on the board is called a pixel. The information stored in your computer indicates whether a pixel is either on (white) or off (black). Color images are also created by turning pixels on or off. Each pixel will be either red, green or blue; other colors are made by using combinations of these three colors.

Bitmap graphics conform to a fixed size. As a result, when you alter the image by resizing, moving or rotating, the image can become distorted and the edges may become jagged or bitmapped.

TIFF (Tagged Image File Format)

A TIFF file is a versatile bitmap image. This format is most commonly used for storing scanned images. Once again, because it is a bitmapped image, a full color TIFF file of a photograph can require significant memory. However, because a color TIFF file provides specific color information for each pixel, it is one of the most common file formats used for color separation. TIFF is your best choice when preparing a piece to be printed.

TIFF files can store data in either PC or Mac but the files must be saved in different ways. TIF files can be used both for photos and documents, especially for archiving anything where quality is important. TIF files for photo images are generally pretty large. Large files size means lots of detail, and it's a good thing.

Some popular bitmap or paint programs are Adobe Photoshop and PhotoDeluxe, Paint Shop Pro, and Microsoft Picture It.

JPEG (Joint Photographic Experts Group pronounced Jay Peg)

There are situations for less serious purposes when the high quality image may not always be important or necessary. JPEG files are much smaller, and are suitable for non-archival purposes, like photos for read-only email and web page use, where small file size may be more important than maximum quality. The JPG file is wonderfully small, often compressed to perhaps only 1/10 of the size of the original data, which is a good thing when modems are involved. However, this fantastic compression efficiency comes with a high price. JPG uses lossy compression (lossy meaning “with losses to quality”). The image quality that is lost when the JPG data is compressed and saved can never be recovered.

JPG modifies the color values to be more convenient for its compression method. Tiny details don't compress well and can result in minor color changes and lost data. This allows amazing size reductions on the remainder, but when we open the file and expand the data to access it again, it is no longer the same data as before. This lost data can vary in degree but it is always unrecoverable. This is why most Images compressed for the web can never be used for professional printing.

Even worse, more quality is lost every time the JPG file is compressed and saved again. Instead just discard the old JPG file and start over from your TIF master, saving that change as the new JPG copy you need.

Many programs control this data compression through setting JPG Quality or JPG Compression, which is the same thing, except Quality runs numerically the opposite direction from Compression. High Quality corresponds to Low Compression.

Digital cameras also offer JPG quality choices too. The camera menu will have two kinds of resizing choices. I always choose the biggest file size, knowing I can always reduce the file size later if I want to use the photo on the web or in an email.

Graphic Interchange Format (GIF)

There have been raging debates about the pronunciation. The designers of GIF say it is correctly pronounced to sound like Jiff but most people pronounce it like Gift (without the t).

GIF is an excellent format for graphics that are used on the web. Graphic images (like logos or dialog boxes) use few colors (256 colors at the most). This limited color range is not important for a 2 or 3 color logo. A 16 color GIF is a very small file, much smaller, and more clear than any JPG, and ideal for graphics on the web.

For graphic art or screen captures or line art, GIF is the format of choice for graphic images on the web. Images like a company logo or screen shots of a dialog box should be reduced to 16 colors if possible and saved as a GIF for smallest size on the web. A complex graphics image that may look bad at 16 colors might look very good at say 48 colors (or it may require 256 colors if photo-like). But often 16 colors is fine for graphics, with the significance that the fewer number of colors, the smaller the file, which is extremely important for web pages.

GIF optionally offers transparent backgrounds, where one palette color is declared transparent, so that the background can show through it. The GIF File - Save As dialog box usually has an Option Button to specify which one GIF palette index color is to be transparent.

The smaller compressed file size of a GIF is an advantage when the image must be transmitted over a modem, but the resolution is usually only appropriate for on-screen viewing.

PDF (Portable Document Format)

A file format that is quickly becoming widely accepted is PDF from Adobe® Systems. PDF) was developed by Adobe to ensure compatibility between computer platforms. PDF can display vector and raster images; can be viewed on screen; and printed. For almost any software you use.

PNG - Portable Network Graphics

PNG file extension, the pronunciation 'Ping'. PNG is not so popular yet, but it's appeal is growing as people discover what it can do.

The big deal is that PNG incorporates special preprocessing filters that can greatly improve the lossless compression efficiency. This filter preprocessing causes PNG to be a little slower than other formats when reading or writing the file (but all types of compression require processing time).

PNG may be of great interest, because it's lossless compression is well suited for master copy data, and because PNG is a noticeably smaller file than TIF. Perhaps about 25% smaller than TIF, and perhaps about 10% to 30% smaller than GIF files.

Choose the Proper File Format

The quality of the image you'll see on paper will be determined by the type of graphic file you use. Most often, a TIFF file is your best choice when using a scanned image or photograph.

Remember, the higher your scanning resolution, the sharper the image will appear. At the same time, the higher the resolution, the larger the electronic file. A DPI (dots per inch) of 300 is considered a high resolution image. EPS files are best used for files created in an illustrator or drawing program.