



**GRC 101**  
INTRODUCTION TO  
GRAPHIC COMMUNICATIONS  
**DIGITAL IMAGE  
FILE FORMATS**

Information  
Sheet No.

702

## Which type works best for specific kinds of art?

You can gain more control over the quality and size of your images by picking the right format for the job. Selecting an inappropriate format can cause loss of image quality, significantly lengthen download times in web applications and even prevent it from being recognized by certain software, including web browsers.

Graphics files usually contain one of two types of data: raster—colored dots (or pixels) arranged in rows, and vector—images composed of lines, polygons, and text. Raster formats are ideal for photos, and vector formats are best for logos and diagrams. Vector formats use smooth outlines to create objects, maintaining quality even when an image is enlarged or reduced.

Basically, there are three factors to weigh when considering graphics formats: the output media (print or Web), the format's specific features, and your workflow. Typically, the only Web formats worth using are those supported by most current web browsers: GIF, JPEG, and SWF, however another relatively new format, PNG, is gaining in popularity. As it contains many of the most desirable features of both GIF and JPG for web work.

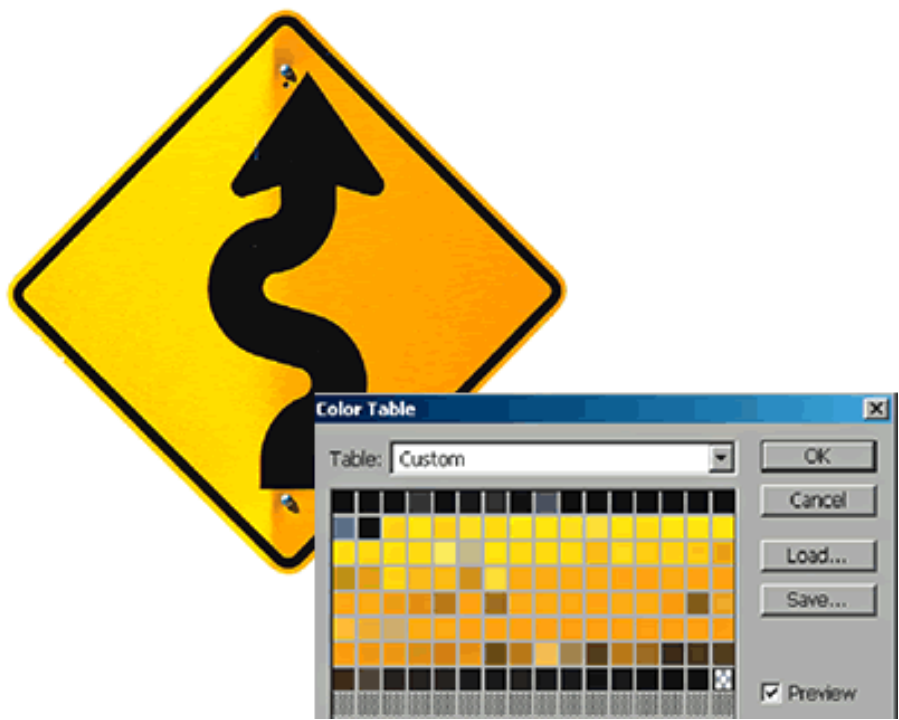
Large raster images are more download- and memory-friendly if they're compressed, but lossy compression schemes (such as JPEG) shrink images by discarding data. Also, some formats support simple transparency (where designated pixels are opaque or clear), and others offer gradient (or alpha channel) transparency effects.

Workflow is also crucial: You can't choose a format if your equipment doesn't support it. This information sheet will help you make better decisions when creating or using the various flavors of artwork, photos and other graphics.

**JPEG** is a full-color raster format supported by all popular Web browsers and digital cameras. It supports full color and its compression can produce very small files for speedy downloads. But JPEG employs lossy compression, so it can degrade image quality (notice the blocky interference pattern in the enlarged section). Each time you save a JPEG file you further degrade the image. Repeated opening and resaving of JPG images should not be done.



**GIF** is a Web-ready raster format. GIF files use a limited palette (256 simultaneous colors at most) but they often use fewer colors to reduce file size. Small color palettes (see the inset), lossless compression, transparent colors, and frame-based animation makes GIF a fine choice for Web graphics such as icons or logos.



**TIFF** is a great choice for raster images intended for print but cannot be viewed directly in any web browser. TIFF encompasses many different color modes. In addition to RGB color, TIFF supports 8-bit gray-scale or 32-bit CMYK data (for commercial offset printing). TIFF offers advanced features, including gradient transparencies, multiple layers, and several compression methods.



**PNG** (Portable Network Graphics) is gaining acceptance as a raster format for the Web. PNG supports palette-based and full-color images, plus lossless compression and a true alpha channel. The helmet in the image has a clear background as well as a soft, semitransparent drop shadow that can interact with other page elements. Note that not all browsers, particularly legacy browsers (v4.x and lower) can display PNG's multilevel transparency.



**Native files** are specific to particular programs and generally cannot be used in web pages. Proprietary formats support features essential to image development. The Photoshop file (PSD) shown here contains multiple layers, transparency masks, editable text, and automated shadows effects (as shown in the Layers palette).



**Vector**—or metafile—formats involve pictures composed of discrete objects. In the image, the blue highlighting of the fish on the left shows that the drawing comprises hundreds of individual shapes. On the Web, Macromedia Flash offers crisp text, smooth lines, and transparent objects, so it's a good choice for static images. The new FlashPaper output option lets you zoom in without degrading quality (see the inset).

