

About file compression

Many image file formats use compression techniques to reduce the storage space required by bitmap image data. Compression techniques are distinguished by whether they remove detail or color from the image. *Lossless* techniques compress image data without removing detail; *lossy* techniques compress images by removing detail. The following are commonly used compression techniques:

- **Run Length Encoding (RLE)** is a lossless compression technique supported by the Photoshop and TIFF file formats and some common Windows file formats.
- **Lemple-Zif-Welch (LZW)** is a lossless compression technique supported by TIFF, PDF, GIF, and PostScript language file formats. This technique is most useful in compressing images that contain large areas of single color, such as that contain large areas of single color, such as screenshots or simple paint images.
- **Joint Photographic Experts Group (JPEG)** is a lossy compression technique supported by JPEG, PDF, and PostScript language file formats. JPEG compression provides the best results with continuous-tone images such as photographs.
- **CCITT** encoding is a family of lossless compression techniques for black-and-white images that is supported by the PDF and PostScript language file formats. (CCITT is an abbreviation for the French spelling of International Telegraph and Telekeyed Consultive Committee.)
- **ZIP** encoding is a lossless compression technique supported by the PDF file format. Like LZW, ZIP compression is most effective for images that contain large areas of single color.

About file format

BMP

BMP is the standard Windows image format on DOS and Windows-compatible computers. The BMP format supports RGB, indexed-color, grayscale, and Bitmap color modes, and does not support alpha channels. You can specify either Microsoft Windows or OS/2 format and a bit depth for the image. For 4-bit and 8-bit images using Windows format, you can also specify RLE compression.

DCS

Desktop Color Separations (DCS), developed by Quark, is a version of the standard EPS format. The DCS 2.0 format supports multichannel and CMYK files with a single alpha channel and multiple spot channels: the DCS 1.0 format supports CMYK files without alpha channels. Both DCS 1.0 and DCS 2.0 support clipping paths.

EPS

The Encapsulated PostScript (EPS) language file, format can contain both vector and bitmap graphics and is supported by virtually all graphic, illustration, and page-layout programs. The EPS format is used to transfer PostScript language artwork between applications. When you open an EPS file containing vector graphics created in another application, Photoshop rasterizes the file, converting the vector graphics to pixels.

The EPS format supports Lab, CMYK, RGB, indexed-color, duotone, grayscale, and Bitmap color modes, and does not support alpha channels. EPS does support clipping paths.

EPS TIFF or EPS PICT Preview

These formats, which appear as options in the Open and Open As dialog boxes, let you open files saved in file formats that create preview but are not supported by Adobe Photoshop (such as QuarkXpress). An opened preview file can be edited and used like any other low-resolution file. EPS PICT Preview is available only in Mac OS.

GIF

The Graphics Interchange Format (GIF) is the file format commonly used to display indexed-color graphics and images in hypertext markup language (HTML) documents over the World Wide Web and other online services. GIF is a LZW-compressed format designed to minimize file size and electronic transfer time. The GIF format does not support alpha channels.

You can convert files to GIF format using one of the following methods:

- The File > Save As command lets you save a Bitmap-mode, grayscale, or indexed-color image in GIF format and specify an interlaced display. An interlaced image appears gradually in increasing detail as it is downloaded from the Web but can increase the pixel size. You cannot save alpha channels with the image.
- The GiF89a Export command lets you convert an RGB or indexed-color image to GIF89a format, specify interlacing, and define background transparency. The GIF 89a format supports single alpha channels.

JPEG

The Joint Photographic Experts Group (JPEG) format is commonly used to display photographs and other continuous-tone images in hypertext markup language (HTML) documents over the World Wide Web and other online services. The JPEG format supports CMYK, RGB, and grayscale color modes, and does not support alpha channels. Unlike the GIF format, JPEG retains all color information in an RGB image but compresses file size by selectively discarding data.

A JPEG image is automatically compressed when opened. A higher level of compression results in lower image quality, and a lower level of compression results in better image quality. In most cases, the Maximum quality option produces a result indistinguishable from the original.

PCX

The PCX format is commonly used by IBM PC-compatible computers. Most PC software supports version 5 of the PCX format. A standard VGA color palette is used with version 3 files, which do not support custom color palettes.

The PCX format supports RGB, indexed-color, grayscale, and Bitmap color modes, and does not support alpha channels. PCX supports the RLE compression method. Images can have a bit depth of 1, 4, 8, or 24.

PDF

Portable Document Format (PDF) is used by Adobe Acrobat, Adobe's electronic publishing software for Windows, Mac OS, UNIX, and DOS. You can view PDF files using the Acrobat Reader software included on the application CD-ROM. Identical to PostScript pages, PDF files can represent both vector and bitmap graphics, and can contain electronic document search and navigation features such as electronic links.

The Photoshop PDF form supports RGB, indexed-color, CMYK, grayscale, Bitmap, and Lab color modes, and does not support alpha channels. The format supports JPEG and ZIP compression, except for Bitmap-mode files, which use CCITT Group 4 compression when saved as Photoshop PDF. When you open a PDF created by another application, Photoshop rasterizes the file.

PICT

The PICT format is widely used among Macintosh graphics and page-layout applications as an intermediary file format for transferring files between applications. The PICT format supports RGB files with a single alpha channel, and indexed-color, grayscale, and Bitmap files without alpha channels. The PICT format is especially effective at compressing images with large areas of solid color. This compression can be dramatic for alpha channels with their large areas of white and black.

When saving an RGB image in PICT format, you can choose either a 16-bit or 32-bit pixel resolution. For a grayscale image, you can choose from 2, 4, or 8 bits per pixel. In Mac OS with QuickTime installed, four JPEG compression options are available.

PICT Resource (Mac OS only)

A PICT resource is a PICT file contained in a Mac OS file's resource fork—for example, an applications' splash screen or the contents of the Scrapbook. The PICT resource format supports RGB files with a single alpha channel, and indexed-color, grayscale, and Bitmap files without alpha channels.

Open a PICT resource by choosing File > Import > PICT Resource. When saving a file as a PICT resource, you can specify the resource ID and resource name. As with other PICT files, you also specify bit depth and compression options.

PIXAR

The PIXAR format is designed specifically for exchanging files with PIXAR image computers. PIXAR workstations are designed for high-end graphics applications, such as those used for three-dimensional images and animation. The PIXAR format supports RGB and grayscale files with a single alpha channel.

PNG

Developed as a patent-free alternative to GIF, the Portable Network Graphics (PNG) format is used for losslessly compressing and displaying images on the World Wide Web. Unlike GIF; PNG supports 24-bit images and produces background transparency without jagged edges; however, some older versions of Web browsers may not support PNG images. The PNG format supports grayscale and RGB color modes with a single alpha channel, and Bitmap and index-color modes without alpha channels. PNG uses the saved alpha channel to define transparency in the file; be sure to delete all but the desired alpha channel from your image before saving as PNG.

When saving in PNG format, you can select Adam7 to display the image in increasing detail as it is downloaded. You can also run the image through a filtering algorithm that prepares the image data for optimal compression:

- **None** compresses the image without a filter, and its recommended for indexed-color and Bitmap-mode images.
- **Sub** optimizes the compression of images with even horizontal patterns or blends.
- **Up** optimizes the compression of images with even vertical patterns.
- **Average** optimizes the compression of low-level noise by averaging the color values of adjacent pixels.
- **Paeth** optimizes the compression of low-level noise by reassigning adjacent color values.
- **Adaptive** applies the filter – Sub, Up, Average, or Paeth – best suited for the image. Select Adaptive if you are unsure of which filter to use.

PSB

In Photoshop, you can create and save files as large as 300,000 x 300,000 pixels, or over 2 gigabytes with up to 56 user-created channels. Your gonzo files can be saved in the **Large Document (PSB)** format, which is designed specifically to handle large documents. Files in this format can be opened and edited only in Photoshop CS or CS2.

Note: PSB documents are not yet printable documents; the largest printable document is 30,000 x 30,000 pixels. Which means if you have the space to store and work with PSB files, great, but you'll have to drastically lower the resolution in order to print them.

PSD (The Photoshop format)

Photoshop is the only format in which multiple layers and layer transparency are available. You'll also need to choose the Photoshop format if you want to save an image with adjustment layers, grids, guides or the ICC Color Management profiles; save in such image mode as Duotone or Lab Color; save editable type layers or layer effects; or save image setting created with Hue/Saturation or Channel Mixer.

RAW

The Raw format is a flexible file format for transferring files between applications and computer platforms. This format supports CMYK, RGB, and grayscale files with alpha channels, and multichannel, Lab, indexed-color, and duotone files without alpha channels. For more information on the Raw format, see online help.

Scitex CT

The Scitex Continuous Tone (CT) format is used for high-end image processing on Scitex computers. Contact Scitex to obtain utilities for transferring files saved in the Scitex CT format to a Scitex system. The Scitex CT format supports CMYK, RGB, and grayscale files, and does not support alpha channels.

CMYK images saved in Scitex CT format often have extremely large file sizes. These files are generated for input using a Scitex scanner. Files saved in Scitex CT format are printed to film using a Scitex rasterizing unit, which produces separations using a patented Scitex halftoning system. This system produces very few moiré patterns and is often demanded in professional color work—for example, ads in magazines.

Targa

The TGA (Targa[®]) format is designed for systems using the Truevision[®] video board and is commonly supported by MS-DOS color applications. The Targa format supports 32-bit RGB files with a single alpha channel, and indexed-color, grayscale, and 16-bit and 24-bit RGB files without alpha channels. When saving an RGB image in this format, you can choose a pixel depth.

TIFF

The Tagged-Image File Format (TIFF) is used to exchange files between applications and computer platforms. TIFF is a flexible bitmap image format supported by virtually all paint, image-editing and page-layout applications. Also, virtually all desktop scanners can produce TIFF images.

The TIFF format supports CMYK, RGB, and grayscale files with alpha channels, and Lab, indexed-color, and Bitmap files without alpha channels. TIFF also supports ZW compression.

When you save an Adobe Photoshop image in TIFF, you can choose to save in a format that can be read either by IBM PC-compatible or Macintosh computers. To compress the file automatically click the LZW Compression check box; compressing a TIFF file decreases its file size but increase the time required to open and save the file. Adobe Photoshop also reads and saves captions in TIFF files.

Photoshop Formats and their Extensions

Available formats **RGB** or **Grayscale** Mode

Photoshop	psd
BMP	bmp
CompuServe GIF	gif
Photoshop EPS	eps
JPEG	jpg
Large document Format	psb
PCX	pcx
Photoshop PDF	pdf
Photoshop 2.0	no extension
Photoshop Raw	raw
PICT File	pct
PICT Resource	rsr
Pixar	pxr
PNG	png
Portable Bit Map	pbm
Scitex CT	set
Targa	tga
TIFF	tif
Photoshop DCS 1.0	eps
Photoshop DCS 2.0	eps

Available formats **Lab** Color Mode

Photoshop	psd
Photoshop EPS	eps
Large document Format	psb
Photoshop PDF	pdf
Photoshop Raw	raw
TIFF	tif
Photoshop DCS 1.0	eps
Photoshop DCS 2.0	eps

Available formats **Duotone** Color Mode

Photoshop	psd
Photoshop EPS	eps
Large document Format	psb
Photoshop PDF	pdf
Photoshop 2.0	no extension
Photoshop Raw	raw

Available formats **CMYK** Mode

Photoshop	psd
Photoshop EPS	eps
JPEG	jpg
Large document Format	psb
Photoshop PDF	pdf
Photoshop 2.0	no extension
Photoshop Raw	raw
Scitex CT	set
TIFF	tif
Photoshop DCS 1.0	eps
Photoshop DCS 2.0	eps