ARTWORK GUIDE

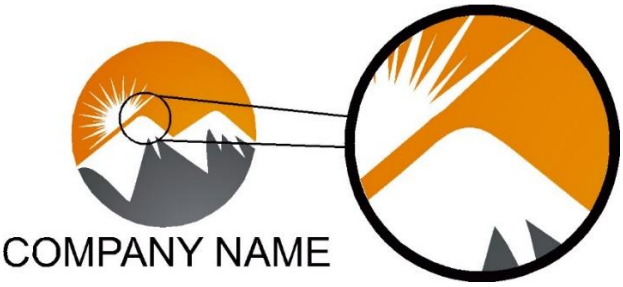
Understanding Vector & Bitmap Artwork Files

There are two basic types of digital artwork. Bitmap (Raster) and Vector. Both can be used for print files, but vector artwork has certain advantages. Logos and text, for example, benefit from crisp lines and scalability of vector art. Bitmap artwork is used for photographic images and its quality depends on the ppi (pixels per square inch) resolution.

Bitmap (Raster) Artwork

Most people are familiar with bitmap images. They are made up of a grid of tiny squares of colour, called pixels. If you zoom in close, you can see that a digital photo is composed of these tiny squares. Viewed at a distance, the pixels blend to create a picture.

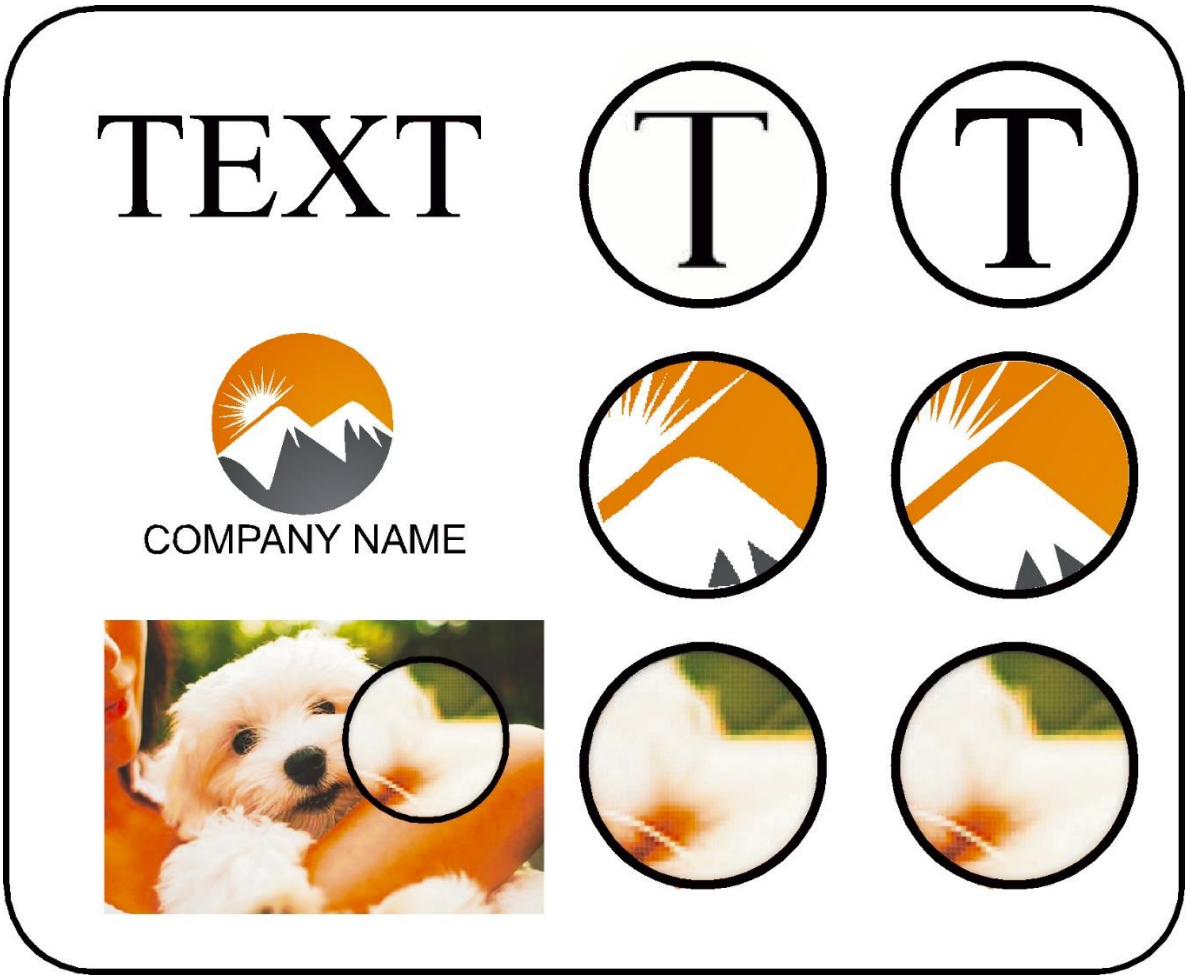
Vector Artwork



Vector artwork is created using illustration software such as Adobe Illustrator or CorelDraw. This software produces line art, text, and geometric shapes that are encoded mathematically. Vector files retain their sharpness at any magnification, whereas a bitmap will appear jagged/pixilated when enlarged. Therefore, we recommend using vector graphics whenever possible – the result is a crisp clear image no matter how large the print.

Comparing Bitmap & Vector Art

Now, let's compare the two different formats using the same image, so you can see how text, logo, and line art are sharper with vector graphics.



As you can see text and illustrations are much better with a vector file. Note the bitmaps can be embedded into vector files, but they retain the same resolution as the original photo/bitmap. For artwork that uses a combination of photos, illustrations/logos, and text, it is preferred to combine the elements into a vector file.

Please Continue Reading – However…

Not everyone has the time or interest to learn the details of artwork preparation. Know that we have your back! Contact us if you need help, or if you need us to create the artwork files for you. We have designers on staff who can assist. Additional artwork charges may apply.

Artwork File Formats:

Bitmap: .tif .psd .jpg .gif .png

Vector: .ai .eps .cdr .svg

Convert fonts to outlines/paths if possible

Certain production processes require vector files. Cut vinyl graphics and contour cut graphics need a vector path for our digital cutting systems to follow. Screen print colour separations, clear stickers with white or spot colour specification may also require vector only files. Please contact us if you need help with specialty artwork setups.

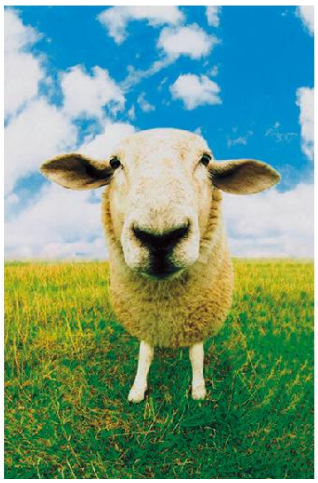
Bitmap Image Quality Explained

For photos and other complex visual imagery, bitmap artwork is needed. There are two main factors which affect the quality of the image – **Resolution & Compression**

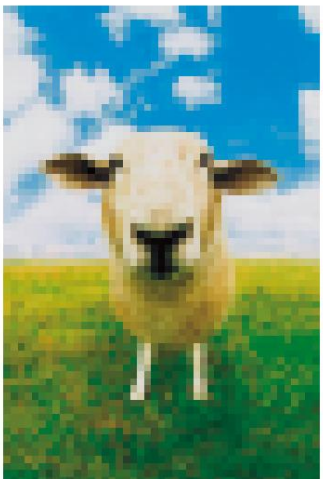
Resolution

The pixel per inch (PPI), often referred to as DPI, (dots per inch) describes the resolution of the image. A common resolution for print production is 300 ppi. Website graphics are often 72 or lower, which will be pixilated with enlarged.

Below is a visual to help you see the difference in resolution:



HIGH RESOLUTION

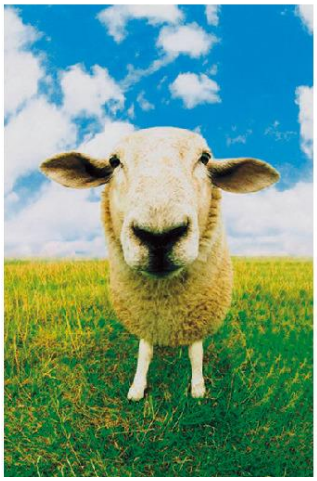


LOW RESOLUTION

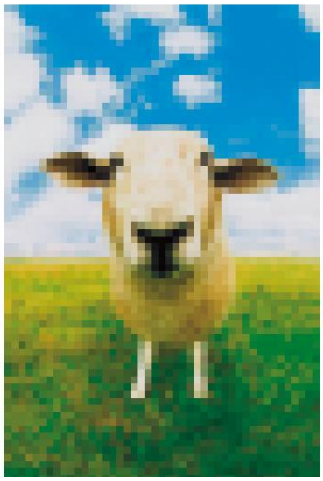
Appropriate resolution for print media depends on several factors including the detail in the graphic, and the size of the print. For small stickers with fine type, we recommend 300-600 ppi. For large displays and window graphics, 50 ppi us more than sufficient --- Larger graphics are viewed further away. High resolutions are not necessary, and they often produce gigantic file sizes that are difficult to manage.

Compression

Website graphics, jpgs in particular, are often compressed to save file size and improve download times. Compressing degrades the image quality. Random “artifacts” appear, halos along image edges, and colour fidelity us reduced. See the examples below.



NONE



HEAVY

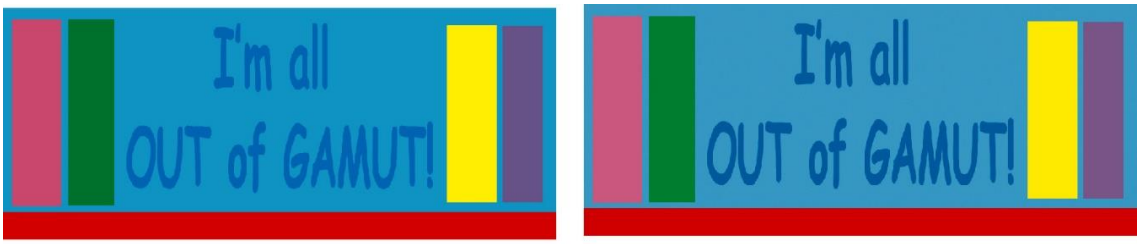
Artwork Colour Space Explained – CMYK vs. RGB

Please choose CYMK as you colour space for submitting artwork files. CMYK is the standard colour space for printing. Cyan, magenta, yellow, and black (K), are the basic colours required to print full colour images.

The CYMK mode in Illustrator and Photoshop attempts to mimic printed colour on your monitor. The difficulty is that monitor displays colour differently than printed paper. All displays use the RGB, or additive colour space. Because they are backlit, monitors and cellphones display colour more brightly than what is possible printing inks on a white surface.

GAMUT – Gamut is a term used to describe the range of colour that is possible in a given colour space. CYMK has a smaller gamut compared to RGB. Furthermore, different printers also have different gamut capabilities.

Extremely bright RGB colours for example, are not possible to print on any printer. In the illustration below, un-printable RGB values are converted to CYMK in Photoshop. The results are dramatic.



RGB converted to CMYK in Photoshop

Pantone Matching Systems (PMS)

Pantone colour matching system is a universal colour standard for matching colour across different printing methods. It uses physical colour swatches as a reference (just like at the paint store) to establish colour consistency from one print shop to another.

Pantone was founded in 1963 as an ink mixing system, pre-dating the digital era in graphics by over 2 decades. Graphics software has had to contend with displaying Pantone standards on a computer monitor as best as they can. Just like the CMYK and RGB display problem, PMS colours look different on screen.

When specifying colours, please use the **Pantone Solid Coated** (ex. 072C) for most products. Do not use the uncoated numbers (ex. 072U), unless you are adding a matte laminate. Note that the same PMS number looks quote different in the coated vs. uncoated PMS books:

Uncoated PMS Book
(matte)

Coated PMS Book
(satin/gloss)

Uncoated PMS Book
(matte)

Coated PMS Book
(satin/gloss)

Don't specify PMS numbers based on your monitor's display alone. If you don't have a physical Pantone book to compare with, your expectations might not be met.

Pantone and CMYK print Gamut. The Pantone system was originally developed as a system to mix pure pigment colours, and as such, is able to create brighter colours than what is possible with a CMYK digital printer. Our printers can hit 97% of PMS colours, but there are a few special cases where the colours won't be quite as bright as the PMS book.

That's Not Going to Work!!!

Myths & Misunderstandings

Can't you just pull my logo off my website? 99% of logos on websites are too low in resolution for printing.

Don't put a bitmap file inside a vector file and expect that it is now "vector". The jpg, gif, png, or tif will still be bitmap. It is simply embedded in a vector file.

You can't improve the quality of a low-resolution file by up sampling it in Photoshop. Example: Change the image size from 72 ppi to 300 ppi. This increases the file size but doesn't improve the image quality – there is no easy fix to a low-resolution file.

Can't you just auto-trace my logo? While there are some circumstances where this might work, most of the time auto-trace produces unwanted distortions and inaccuracies.

Changing the file name or extension doesn't change the file. You can't just turn a jpg into an ai by changing the extension.

A phot of your old sticker or your business card is not output ready artwork.

Why won't you print a Budweiser logo for my beer fridge? We respect copyright and do not print unauthorised artwork without consent from the copyright holder. Sorry, no Jets logo for the hood of your Camaro.

Google Images. Copy right issues aside, most images from Google Images searches are low quality.

PRINT SPECIFICATIONS

Follow the list of requirements below to produce reliable PDF files for print.

1. **Document Size:** The trim size of your file is the correct size i.e. hard hat decals should be sized at 3.5” x 2” and not centered within a letter sized page.
2. **Bleed:** If your file requires a bleed, it should include a minimum 0.125 of an inch for digital print.
3. **Crop Marks:** Trim marks need to be offset from the trim by .1667 of an inch. InDesign will allow you to add crop marks when creating a print ready PDF file in the ‘mark and bleed’ window of the PDF export dialogue box. Illustrator can add crop marks by creating a box the size of your trim area then clicking the object menu then ‘create trim marks’.
4. **Margins:** Unless a graphic element bleeds off the document, please do not place anything within .125 inches of the trim. Margin guides may be easily created when creating a new InDesign document or created by dragging guidelines from the rulers at the top and left sides of an Illustrator or Photoshop document.
5. **Spot Colours:** Spot colours should be converted to process (CMYK) before sending to us for digital printing. If the job requires precise colour matching convert spot colours to process and inform us of the target spot colour so we may compare the colour printed with a swatch book.
6. **Fonts:** All fonts must be embedded in the PDF. To avoid issues **fonts should always be outlined** before creating PDF files.
    a. **In Illustrator** click *Select > all* then click *Type > Create Outlines*
    b. **In InDesign** click *Edit > Select All* the click *Type > Create Outlines*
    c. **In Photoshop** flatten the image by clicking *Layer > Flatten Image*
7. **Image Resolution:** Images must be 300 dpi for the best printing
8. **Image Colour Mode: Images must be CMYK**, or greyscale. RGB images or documents may not reproduce as intended.
9. **Pages:** The PDF should contain the correct number of pages.
10. **Rich Blacks:** LARGE areas of black should use rich black; 75% CYAN, 67% MAGENTA, 67% YELLOW and 90% BLACK.
11. **Black Text:** Body or Copy Text should be 100% black. Do not use RGB blacks or registration blacks. Title text may be rich black.
12. **Remove un-used elements:** Remove any elements that will not print; objects outside of artboard, or invisible layers for example. This will not only help to avoid confusion, but it will create smaller PDF files.
13. **Transparency:** Transparencies and effects must be flattened prior to creating PDF file.
14. **Save as PDF/X-1A:2001:** In the save-as or export dialogue box that will be a choice under the Adobe PDF pre-set drop-down menu. This pre-set is the industry standard for print ready PDF files and produces the most reliable print ready PDF files

Open your PDF sand check that you have not forgotten anything, prior to sending us the file. If you have any questions or need assistance, please contact us and we will be happy to help. **Failure to prepare files as outlines above will result in delays to your production and/or additional costs.**