5STUDiO

PRINT - DISPLAY - EXHIBITIONS

RESOLUTION GUIDELINES

Using an unsuitable image resolution is one of the most common errors designers make when creating designs for print. The result is fuzzy print quality, termed "Pixelation". If you don't keep an eye on your image resolution right from the start you may end up having to completely recreate your design file from scratch.

WHAT IS RESOLUTION:

Resolution is a reference to the numbers of dots or pixels per square inch – termed DPI and PPI. Generally speaking, the higher the density of dots/pixels in each square inch, the higher the image quality.

WHY DOES RESOLUTION AFFECT THE IMAGE QUALITY?

You have no doubt heard yourself say 'It looks ok on my screen; why won't it print ok?' The answer is simply that screen resolution is lower than printing resolution. When your artwork is on screen, it is usually displayed at 72dpi. As a commercial printer, we print at 300dpi for small format print and 1440dpi for large format print. Therefore, if your low resolution, 72dpi artwork is printed at 300dpi or 1440dpi, your artwork will be pixelated. The best way to comprehend this is if you imagine watching an old black and white film on a top of the range TV, it wouldn't look as clear as Hollywood's latest blockbuster.

As monitor sizes and resolutions increase, they will be capable of displaying much higher quality imagery, but for now use 72dpi as the rule of thumb for viewing artwork on screen.

300 DPI On Screen

72 DPI On Screen

300 DPI When Printed

72 DPI When Printed

You will need to prepare your artwork to certain DPIs depending on which products you are purchasing. Please see the following guides:

SMALL FORMAT:

For our Small Format products, the best results are achieved when the resolution of all images are at least 300dpi at final print size.

Because small format print is intended to be viewed up close (i.e. handheld), an image lower than 300dpi resolution that looks fine on your computer screen will appear pixelated in print. Please note; simply increasing the DPI of an image in Photoshop will not improve its quality. If your artwork and the images contained within them are less than 300dpi resolution, we would always recommend you have your printed products redesigned.

Not sure how your artwork will look when its printed?

Within your PDF document, you can zoom in to the artwork. This will show the true resolution, even taking into account that your computer screen will have a lower resolution than a commercial printer. The general rule of thumb is to zoom in on your image by 300-400% to gain a good idea of how the image will look when printed.

LARGE FORMAT & DECOR:

Although the regular industry standard resolution for printing graphics is 300 dpi, when it comes to Large Format Printing, this ideal becomes unworkable, especially at very large sizes. For example, Photoshop will struggle to handle a 3-metre x 2 metre banner at 300 dpi without your computer crashing!

However, because Large Format Printing is intended to be viewed from a distance, it doesn't in general, carry the same expectation for perfect clarity when seen at very close proximity.

For Large Format Printing, **the best results are achieved when the resolution of the images are 125 DPI at final print size (full size).** In-fact images submitted at higher than 125 DPI will create large, unworkable file sizes without any visible gain in print quality and may delay the processing of your print.

We would not recommend printing artwork that does not meet the minimum criteria, thus failure to supply artwork that does not at least meet the minimum criteria, will cause your file to be rejected and may result in your turnaround time reset.

We have therefore created the following guide. The general rule of thumb is to use as high a resolution as you can without the project becoming unworkable, i.e. the maximum.

Quarter Size / 1:4 / 25% Scale: Minimum 300dpi – Maximum 450dpi - **RECOMMENDED**
Half Size / 1:2 / 50% Scale: Minimum 150dpi - Maximum 250dpi
Actual Size / 1:1 / 100% Scale: Minimum 75dpi – Maximum 125dpi

DISPLAYS, EVENTS & EXHIBITIONS:

Most of our Displays, Events & Exhibition products have downloadable templates. The majority of our downloadable templates for Displays, Events & Exhibitions are supplied at 25% of the finished size (so that files are workable). At 25% scale, all images should be supplied at a resolution of 300dpi for the best print finish.

If setting up artwork at a reduced size, please ensure that the resolution of your artwork is high enough so to allow for print-enlargement.

Quarter Size / 1:4 / 25% Scale @ Minimum 300dpi - Maximum 450dpi - **RECOMMENDED**
Half Size / 1:2 / 50% Scale @ Minimum 150dpi - Maximum 250dpi
Actual Size / 1:1 / 100% Scale @ Minimum 75dpi – Maximum 125dpi

DECOR:

For our range of digitally printable wallpapers, the best results are achieved when the resolution of the images are at least 125dpi at final print size (full size). However, it is also important to note that our digital wallpapers have a unique set of technical and creative considerations, especially for those using photographs or stock images (see raster images below).

When using photos or stock images it is important to make sure that your image is at **least one pixel per millimeter of wallpaper.** For example, if your wall is 4000mm wide (4meters) x 2000mm high (2meters), then your image needs to be at least 4000 x 2000 pixels. If you are unsure as to what this means, please email your Image and Wall Dimensions over to artwork@5studio.co.uk and one of our Graphic Design experts will check the resolution of your file in relation to the overall size of your wall.

RASTER VS VECTOR GRAPHICS

Graphics can be created as either Raster or Vector images. Understanding what they are and how they impact on print is crucial to ensuring the quality of your finished printed product.

Raster Graphics

The majority of pictures that we see on our computer screens are raster images. The selfie that you take on your mobile phone is an example of a raster image. Raster images are often called bitmap images because they are made of millions of tiny squares, called pixels.
A raster graphic, such as a gif or jpeg, is thus an array of tiny squares/pixels of various colors, which together form the image.

Because raster images are made up of pixels, they are susceptible to 'pixelation'. Just like photo-graphic images, when a raster image is blown up, it becomes blurry, jagged and rough. Why does this happen? Raster images are not designed to be enlarged. When raster images are enlarged, you can begin to see the individual pixels that comprise the image. Simply put, when raster images are enlarged and printed, you will be able to see the square outlines of each pixel (especially around edges where there are dramatic color contrasts).

To maximize the quality of a raster image, you must keep in mind that the raster format is resolu-tion-specific — meaning that raster images are defined to be displayed and printed at one specific size and resolution.

Common raster formats include .TIFF, .JPEG, .GIF, .PCX and .BMP files.

Vector Graphics

Vector images unlike pixel-based raster images are made up of thin lines and curves known as paths. Vector graphics are based on mathematical formulas and must be created in computer software such as Adobe Illustrator. Most created images (as opposed to natural images) meet these specifications, including logos and fonts.

Inherently, vector-based graphics are much more versatile, flexible and easy to use. The most obvious advantage of vector images over raster graphics is that each image can be sized and scaled repeatedly and limitlessly without losing resolution or beginning to look cloudy or pixelated when printed. Vector graphics print crisply even when they are enlarged. There is no upper or lower limit for sizing vector images.

You can identify a vector image by looking at its edges — a vector image will always appear smooth no matter how large you make it or how close you zoom in. Text is one of the most common types of vector image. No matter how much you increase a font's size, for example, its look never changes.

Furthermore, unlike raster graphics, vector images are not resolution-dependent. Vector images have no fixed intrinsic resolution, rather they display at the resolution capability of whatever output device (monitor, printer) is rendering them. Also, because vector graphics need not memorize the contents of millions of tiny pixels, these files tend to be considerably smaller than their raster counterparts.

The most common problem with using vector images is compatibility. Vector images are often saved as native files from the program used to create the image, such as Adobe Illustrator, which not everyone has the capability of using. We suggest, in order to achieve the best print quality possible, that you have your artwork professionally designed by a graphic designer

CHOOSING THE RIGHT FORMAT?

Raster Graphics

Raster images are best for digitized photographs and detailed graphics.

Almost all of the images you find on websites are raster images. Often these files are saved as low resolutions and are not suitable for print reproduction.

The most common reason behind a low resolution is because search engines have been used to search for assets/images. It's important to note that almost all of the images you find online or in search engines are raster images. If you are using a search engine for royalty free assets, we recommend using the resolution filters to find the highest resolution images, and, once the assets have downloaded, always double check the image file's properties, remembering that raster images are not suitable for enlargement, so your asset must be used at the size and resolution of its properties. Lastly, ensure that at quarter, half or actual size, your artwork including the asset(s) meets the recommended resolution for the print product you have chosen and/or purchased.

We would recommend you source high quality images from stock image sites such as Shutterstock (hyperlink to https://www.shutterstock.com) or Envato (hyperlink to https://elements.envato.com)

Whilst photos are a great way to make the potential customers aware of your products, locations and services in action, for those taking/shooting photos, it is important to ensure that the resolution of your image at full, half or quarter size meets the recommended resolution for the print product you have chosen and/or purchased. For the highest quality images, make sure you are taking good photographs. Do not overlook capturing images in RAW or keeping your ISO low, using a fast lens (preferably a prime lens) and working in well-lit areas.

For Large Format Printing, e.g. PVC Banners, we recommend ensuring that you have at least one pixel per millimeter. So for a 3m x 1m PVC Banner, your image needs to be at least 3000 x 1000 pixels.

Vector Graphics

For images which need to scaled to different sizes, use vector graphics. Because of the way images are created and saved, you will have more flexibility with making changes and be able to use your image at a variety of sizes.

Please note photographs are not vector graphics. Only illustrations that are made to look like photographs can be created in a vector workspace.
High-resolution, high-quality clip art is often developed and sold as vector images as well. You will get more flexibility and more for your money when you buy vector-based clip art rather than high-DPI images.

FAQ'S

Can 5 Studio UK improve the resolution of my design?
No, technically this is not possible. This will have to be done either by the graphic designer who created the artwork and/or in the design software that you have used to create the design.

I can't improve the resolution of my design. What can I do?
There are two options. You could either pay to have a new design professionally made or could print the artwork 'as is'. We would not recommend printing artwork that does not meet the minimum criteria for the reasons outlined in this document.

Ok. Do you offer a professional design service?
Unfortunately, we are currently unable to offer design services. Although our artwork team are highly skilled and knowledgeable in all aspects of design and print, they are responsible for checking all artwork sent to us to ensure the final printed product is immaculate. However, there is a possibility that in the near future we will make design services available.

Alternatively, we work with a number of graphic designers and design agencies, all of whom are tried and trusted by us to design 'print ready artwork'. If you would like us to put you in touch, please email info@5studio.co.uk. One of our team will be happy to pass on their details.