

ARE YOU CONFUSED ABOUT DPI AND PPI?

DPI (dots per inch) is an old term that has been applied to everything relating to resolution and the size of a digital image. However, different situations work with resolution in very different ways, and having a single term for all of them is just confusing.

PPI (pixels per inch) is now in common usage and is more specific for what the term entails. Unfortunately PPI is often referred to as if it is the resolution of the print output and this a further cause of confusion.

Don't, of course, confuse either with PDI - Projected Digital Image*, the acronym preferred by the PAGB to Digital Projected Image for obvious reasons.

PIXELS PER INCH

PPI will affect the quality of the print output if there are too few pixels per inch - the pixels will be very large and you will get a *pixelated* image with jaggy edges.

EXAMPLE

Suppose you have a 3000 x 2100 pixel image file. It could be printed at many different sizes. If you set the image to print at 100 PPI, then you'd have a 30 x 21 image but it may appear *pixelated*. If you set the image to print at 300 PPI, you would have a 10 x 7 image. Note that adjusting this value doesn't effect the number of pixels in the image file at all, it just changes how big the print will be.

You may hear various different numbers thrown around as to what an acceptable PPI for a print-out is. Many people think that 360 PPI is the *magic* number. However, a lot will depend on the size of the print. This is because you look at large prints from a further distance than a small print, so you may get away with a lower PPI and still have the image look fine.

I have found that, in general, you can print satisfactorily down to around 180 PPI. If the size of print you need takes you down to a PPI

under 180 you may be tempted to resample.

Resampling changes the number of pixels (and thus the file size) in order to match the print size. If you change the PPI with resampling, you will **throw away pixels** (if you set the PPI to a lower value) or you will **create pixels** (if you increase the PPI).

Creating pixels is a bad idea. They are generated by the software** and the quality of the print is diminished. **Throwing away pixels** is less damaging as long as you don't need the bigger size later. However, it will make little difference to your final print if you print with a higher PPI so why bother?

DOTS PER INCH

DPI only refers to the printer. Every pixel output is made up of different coloured inks (at least 4-6 colours, although good photo printers use more). The printer needs to be able to mix these inks to make up all the colours of the image. So each pixel of the image is created by a series of tiny dots (you could think of them as sub-pixels). Generally, the higher the DPI, the better the tonality of the image, colours should look better and blends between colours should be smoother. You'll also use more ink and the print job will be slower.

So a 1440 dpi printer mixes 1440 dots of ink in every inch to make up the colours. If you print at 360 PPI image, then every pixel would be made up of 16 smaller ink dots (1440 DPI x 1440 DPI / 360 PPI x 360 PPI). A lower DPI would have fewer ink dots making up each pixel, which could make the colour look worse. A higher DPI would have more ink dots for each pixel and should give more accurate colour.

In most circumstances, however, the loss of print quality you will see printing at a lower PPI is much less than the loss of quality caused by resampling. Make a print both ways and see what you think.

** If you need a very large print you could try Perfect Resize from our Corporate Sponsor, onOne Software, which is rather more clever than resampling in Photoshop.

* For Projected Digital Images (PDI) you have to resample to get a small enough file for projection. The screen image will look fine but it could only be printed very small. The PAGB recommends PDI for Projected Digital Images to avoid confusion with Dots Per Inch..