

Pixels, DPI and Image Quality

It looks fine on my screen. Can we print it?

A picture is worth a thousand words. Whether they are professional shots, computer-generated images or snaps from your digital camera, using pictures within your marketing communications is a complex but important business. While a great image communicates well, a poor image will hurt your image.

**So what is resolution anyway?
And what is the difference between digital and print?**

DIGITAL: IT'S ABOUT THE PIXELS.

For digital pictures, resolution refers to the number of pixels in the image. So four megapixels is 4,000,000 pixels. It is roughly equivalent to pixel width times pixel height of the image. For instance, a four megapixel image could be 2400x1600 pixels.

What does this mean? Well, the computer screen you look at all day is set at a particular resolution. The larger the screen, the higher you likely have your screen resolution set. If you have a smaller monitor, it may be set at 800x600 or 1024x768. If you have larger screen, it may be at 1280x1024 or even higher.

Now if your monitor is set to 1024x768, and you open up an image that is 640x480, it will only fill up a part of your screen. If you open up an image that is 2400x1600, however, you will find yourself moving the slider bar around to see all the different parts of the image. Some picture programs automatically resize the image to fit on your screen. Most of the time, however, you can find the option to view the image at 100%, which will show you the true size.

Smaller pictures can be stretched larger than 100%, but they'll start to look rough around the edges, or "pixilated."

PRINTING DIGITAL PICTURES

So you open a .jpg file or view your logo on your website, and it looks good. Can you reproduce that exact image in your brochure? If so, how big? Well, you can print it as big as you want but you will start to see the quality drop off. On your computer monitor, "inches" don't really exist. It's how many pixels you're seeing. But on paper, we need to pay attention to dots per inch (DPI).

For standard four-color lithography (how most marketing materials are printed), a minimum of 300 DPI is the ideal. As you go lower, your image quality will be reduced.

Megapixels	Resolution	Common Print Size (roughly 300dpi)
2 MP	1600 x 1200	4 x 6"
3 MP	2048 x 1536	5 x 7"
4 MP	2400 x 1600	6 x 8"
6 MP	3000 x 2000	7 x 10"
8 MP	3600 x 2400	10 x 14"



pixel

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PIXELS TO PRINT – ESTIMATING RESOLUTION NEEDED

Say we want to print an 8x10 picture at 300 dpi. What resolution must we have to do this? Well, remember we want 300 dots per inch. 300 times 8 is 2400 and 300 times 10 is 3000. Therefore, we would need a 2400x3000 image. 2400 times 3000 is 7.2 megapixels! It's also a file size that will be perhaps 10-18 megabytes.

The bottom line here is that the resolution of the image should meet the 300 DPI threshold in order for it to look its best in print. A picture saved off the web or used in a PowerPoint may only be about 300x300 pixels. Do the math again, and you get a printable size here of only 1"x1"!

There is so much more that could be discussed, such as RGB vs. CMYK, file compression, image correction and many other details. But knowing the basics outlined above can be very valuable and will save a good deal of time, money and frustration. As for the rest, unless you want to devote yourself to studying this broad subject in a lot of depth, you will probably want to leave it up to the professionals!