



Understanding photo resolution. A tutorial to teach the difference between photo resolution and effective resolution.

Photo resolution and effective resolution are subjects that self-publishers and designers may find confusing. There is a vast difference in reproduction of photos for print versus viewing online. Save time and money to prepare photos correctly for book printing production.

What we need to print your books

Book printing requires photo resolution at 300 pixels per inch (ppi) or larger, *and* at the size the image will be when we reproduce it.

- **Photo resolution** is the actual resolution of an image.
- **Effective resolution** is the resolution of an image after the dimensions are made larger or smaller to print on a page.



Name:	Coffe and hot choo
Format:	TIFF
Page:	1
Color Space:	CMYK
Status:	OK
Size:	19.7 MB (20656960)
ICC Profile:	Document CMYK
Actual PPI:	72
Effective PPI:	378
Dimensions:	2592 x 1936
Creator:	Microso...hoto Gall
Place Date:	Tuesday...cember 2
Layer:	Layer 1
Modified:	Tuesday...cember 2
Path:	D:\User... and hot c
Creation Date:	Friday, November 1
Scale:	19%
Transparency:	No

The effective resolution is the number to watch, and the one that counts. You can see in this image how just a 72 ppi photos can be used, because the dimensions are so large. When reduced, the effective resolution becomes 378 ppi. We need 300 ppi or greater.

Why web images don't usually work

An image meant for websites is seldom large enough for print production. When a web image is placed in InDesign, it has insufficient resolution. It needs to have smaller dimensions to achieve a higher photo resolution.

Use low photo resolution images if the photo dimensions are large enough

Let's say all your photos are 72 ppi, but they are a whopping 32 inches wide. It happens! This is where a little bit of math comes in, or just place the image in InDesign. Then, watch the effective resolution increase as you reduce the image to the page width, or smaller.

Image format

Images for web and monitors (always RGB):

A PNG format is meant for websites. They are usually 72 to 96 ppi. While we can convert a PNG for the correct format for book printing, TIF or JPG, we cannot legitimately change the photo resolution.

Photoshop allows you to artificially increase the resolution, but do not do it. It is called “rezing up”. Photoshop borrows a little bit from adjacent pixels. It cannot create photo resolution where there is none. There is still no substitution for the original scan or high resolution photograph.

Book printing and any high-quality printing (always CMYK):

Use TIFs or JPGs. TIF is the preferred format as it is stable. If you are working in less than the full version of **Photoshop**, JPGs may lose resolution when saved. If saved repeatedly, it is even worse!

Just remember, there is no substitution for the original scan or high resolution photo.

A low res image may look sharp on your monitor, because everything looks good on a monitor that only needs 72 ppi. But, 72 ppi won't print well. It will be pixilated.

Don't forget to convert RGB images to CMYK, or we can do it for you at an extra cost.

PDF proofs looks okay on my monitor. Why?

Even a low-resolution image may look good in a PDF, an RGB digital output device, or a desktop printer. But, we need to have images that will print well on sheet fed presses, and at the correct effective resolution.

Having said all this, I have found that 260 ppi photo resolution will print okay. If we cannot decrease the photo dimensions, or find a higher resolution photo to use, then a 260 ppi photo might work for you. It is best to see it in full-color proofs. We provide one set of physical full color proofs in our printing quotes.

A little history about how photos were once prepared for printing

PPI (pixels per inch) is like dpi (dots per inch), literally meaning the number of dots or pixels in an inch.

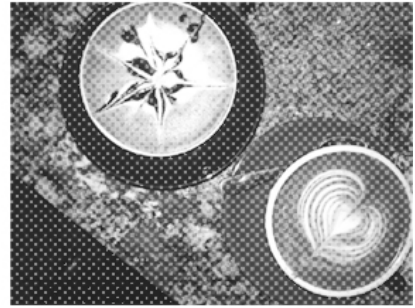
HISTORY - converting black and white photo to halftone for printing



Original, physical photo



Line art, NO halftone (NO!)



Halftone, before digital images

Before digital images, we would convert a continuous tone photograph to a halftone. Adding dots to the images made them print with more varied tones. If dots were not added, the result was more black and white, without mid-tones, or even a dot pattern.

- Newspapers print on uncoated stock, so ink spreads into the paper fibers. The dot pattern is coarse with fewer dots.
- Magazines print on coated stock. The dot pattern is finer with more dots, or higher photo resolution.

Because we are in the digital world, pixels are standard. But, dpi is still in our jargon and a holdover from decades before.