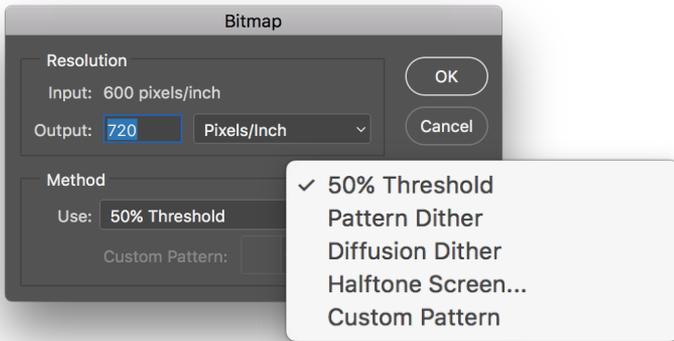


BITMAP FILES FOR SCREEN PRINTING

Screen printing requires high contrast images that will create either printing or non-printing areas on the screen when exposed to ultraviolet light. Digital images that have been converted to black and white using the bitmap mode in Photoshop are ideal for screen printing. There are three different methods you can choose from for converting your images to black and white, and which one you choose depends on the type of image you have and the qualities you are seeking in your final print.



The Bitmap dialog box: Image > Mode > Bltmap...

50% Threshold: For line art, images created with technical pens and India ink, or high-contrast graphic images, Most commonly used for screen printing. Set the output resolution to 720 Pixels/Inch.

Diffusion Dither: For tonal drawings, or photographic images where a less mechanical dot pattern is desirable. Also used for 'index color separations'. The output resolution will effect the size of the square dithered dots. If the resolution is too high, the dots will be too fine to print. To determine an appropriate resolution, divide the mesh by 1.6, 2.3, or 2.6 , to find a dot size you are happy with, that will not create a moire pattern with the screen. For example: A 225 mesh screen ÷ 1.6 equals an output resolution of 135.

Halftone Screen: Best for photographic images. Set the output resolution to 720 Pixels/Inch, and then set the lines per inch, the angle and the shape. The frequency, or how many lines of dots there are in a given inch, should be the screen mesh ÷ 5. The default angle used for screen printing is 22.5°, but if you are printing color separations, each bitmap will need a specific angle. Finally, the shape of dots preferred for screen printing, is ellipse.



GRAYSCALE FILE

Although the smooth gray tones look good, they will not work with screen printing.



50% THRESHOLD

Pixels are converted to either black or white. For line art, and other black and white images, it is best to have a resolution of 600 dpi or higher, to assure sharp images and smooth curves.



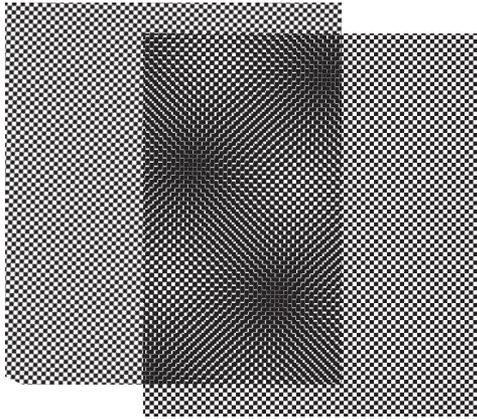
DIFFUSION DITHER

Square dots describe values through their frequency, or how they are grouped together.



HALFTONE SCREEN

Varying sized dots in a grid describe value. The overall size, shape, and angle of the dots are important to avoid moire patterns with screen printing.



Moiré patterns occur when two regular patterns overlap and create a third wavy, or rippling pattern. They occur with halftone and dither images that conflict with the screen mesh, and are typically very undesirable.

GENERAL FORMULAS, NUMBERS AND DEFINITIONS

Remember that these are not fixed rules.

ppi = pixels per inch (the resolution of your file)

300 ppi = typical file resolution for photographs

600-1200 ppi = file resolution for line art, black & white logos, etc.

dpi = dots per inch (pertains to printers)

lpi = lines per inch (lines of halftone dots)

Halftone lpi = screen mesh ÷ 5

Halftone lpi × 16 = ppi of bitmap file

Dither ppi = screen mesh ÷ 1.6, 2.3, or 2.6

Halftone Screen Angles:

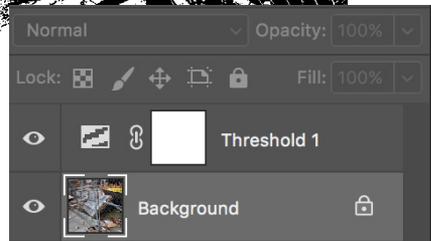
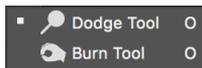
Black = 22.5°, Cyan = 112.5°, Magenta = 52.5°, Yellow = 82.5°

GETTING MORE FROM THRESHOLD

The Threshold setting in Photoshop is an easy way to create a high contrast black and white image to use for screenprinting. But you will often lose more information than you would like with this option. To pull more out of images with Threshold, create a Threshold adjustment layer, and then use the dodge and burn tools on the image layer to bring back more information. The dodge tool will help bring back details in the black areas, and the burn tool will help add details in the blasted out white areas.

CMYK			32 bits 4 Channels
RGB			24 bits 3 Channels
Grayscale			8 bits 256 Grays
Bitmap			1 bit / 0 or 1 Black or White

Although RGB is the default digital color space, printing relies on several other color spaces and image modes.



The image on the left was converted from Grayscale to a 50% Threshold Bitmap. The image on the right had a Threshold Adjustment Layer applied, and then the image was adjusted using the Dodge and Burn tools before converting to a bitmap, to bring out more information and detail by dodging dark areas and burning some light areas.