TIC
an except from

The Giant Book of Print on Demand

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NOTE

If this book is defective, please contact the company you purchased it from for a replacement copy.

Special references have been made to CreateSpace (CS). These have been indicated textually and by boxing notes in gray. Most of the concepts described are, in all other respects, applicable to other printers.

Check with your printer, CS or otherwise, about submissions requirements. CS guidelines are current at the time this book was first printed, fall, 2013.

Downloadable and printable worksheets are available free: http://www.12on14.com/

All color images are available in a free PDF: http://www.12on14.com/

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TIC/TAC

Total ink coverage (TIC), or total area coverage (TAC), or total ink density refers to the maximum total amount of ink on a page in one area. Because commercial color printing is typically made up cyan, magenta, yellow, and black, those four colors printed solid, 100% each, would total 400%. Here are a few commonly accepted ranges:

- Commercial offset printing: 320-340%
- Heatset web offset: 300-320%
- Non-heatset web offset (newspapers): 240-260%
- Inkjet devices: 300-350%

While CS can print up to 400%,* LightingSource sets the limit at 240%.

Some reasons fro avoiding a high TIC are:

- Wetting the paper too much (generally not applicable to heat set inks and digital printing)
- Thick layers of ink can cause the paper to pull apart in printing
- Colors in access of 240% are often muddy colors
- Problems with lamination (covers only)

I don't know if any of these are valid reasons for p-o-d books, but if the printer demands that the TIC is under some specific number then it should be.

Some advice might seem obvious but, arguably difficult; e.g. "avoid big blocks of dark color in your background and images" (http://www.newselfpublishing.com/TotalInkLimit.html, 31 July 2012). As a practical matter, this is not so easy.

C40 M100 Y100 K00 C100 M40 Y100 K00 C100 M100 Y40 K00
These are all 240%: not permissable

C00 M00 Y00 K100 C25 M25 Y00 K100 C25 M25 Y25 K100
These are 100%, 150% and 175%: all permissable

This means, also, that type cannot be Photoshop black if set in Photoshop, because it is 300%.

* I have had covers and interior pages printed in solid Photoshop black (C75 M68 Y67 K90) and registration black (C100 M100 Y100 K100) without problems by CS.

Of course, any of this from having your color in CMYK, to knowing the total ink coverage, and to being able to fix it, necessitates having Acrobat and/or Photoshop, or equivalent software.

The advice that most people probably follow—if for no other reason than it comes up on the first page of a Google search—is:

1. Open your image in Photoshop. If you have any other adjustments to make to your color space—such as I recommend in my article "Better Color from Print on Demand"—do them now. Otherwise, it's best to start with your graphic in an RGB version rather than in one already converted to CMYK.
2. Go to Edit > Convert to Profile, or in older versions, to Image > Mode > Convert to Profile. Under Conversion Options, use these settings:
   Engine: Adobe (ACE)
   Intent: Relative Colorimetric
   Use Black Point Compensation: Yes
   Use Dither: Yes
3. For the destination space profile, choose "Custom CMYK." If you get a warning about color management, click "OK." Then, in the new dialog box, enter these settings.
   Ink Colors: SWOP (Newsprint)
   Dot Gain: 25%
   Separation Type: GCR
   Black Generation: Medium
   Black Ink Limit: 100%
   Total Ink Limit: 238%
   UCA Amount: 0%

[from < http://www.newselfpublishing.com/TotalInkLimit.htm> by Aaron Shepard]

The first problem is that if your art work is in sRGB—the color mode of consumer cameras, scanners, PaintShop Pro, and GIMP, and the default color mode for Photoshop—there is a reasonable chance that it has out-of-gamut colors. Relative Colorimetric, as recommended above, preserves the in-gamut colors and it clips the out-of-gamut colors to the nearest in-gamut color on the gamut husk. This is a destructive conversion (rendering intent): it cannot be reversed. Whereas Perceptual rendering tries to preserve the relationship between all color by adjust them all, in-gamut and out-of-gamut color. This means that the in-gamut colors won't be as accurate. It is a non-destructive rendering intent: it can be reversed.*
The second issue with this method is that it is global: it effects the entire image.

In both instances, Relative rendering and using the custom CMYK, the net effect is to mute rich, saturated colors, and to distort what could be called the percep-

* This makes it preferrable if work is done on an image going back and forth between sRGB and CMYK, to take advantage of their relative strengths for color corrections.

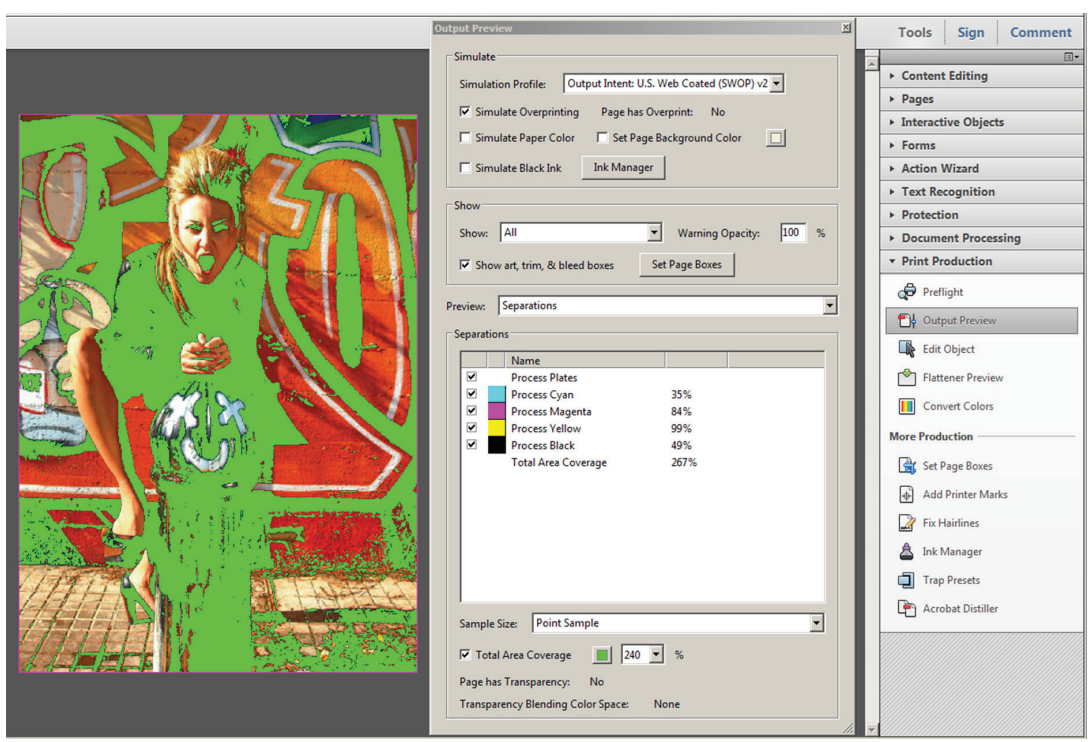
tual accuracy of the CMYK color values. Commercial printing rarely produces an image better than the original. If it is compromised at two corrective points, many images will never print as well as they could.

Of course, many people might not care, the sRGB color is in-gamut, or the ill-effects are imperceptible Given the ease of simply converting images globally, there is a lot to be said in behalf of this method. If, however, the colors shift in ways that alter the image too much, there is a second, more controlled process.

Convert the image to CMYK, using Perceptual Rendering Intent. Do any basic color corrections needed to improve the image: comparing it to its sRGB original.

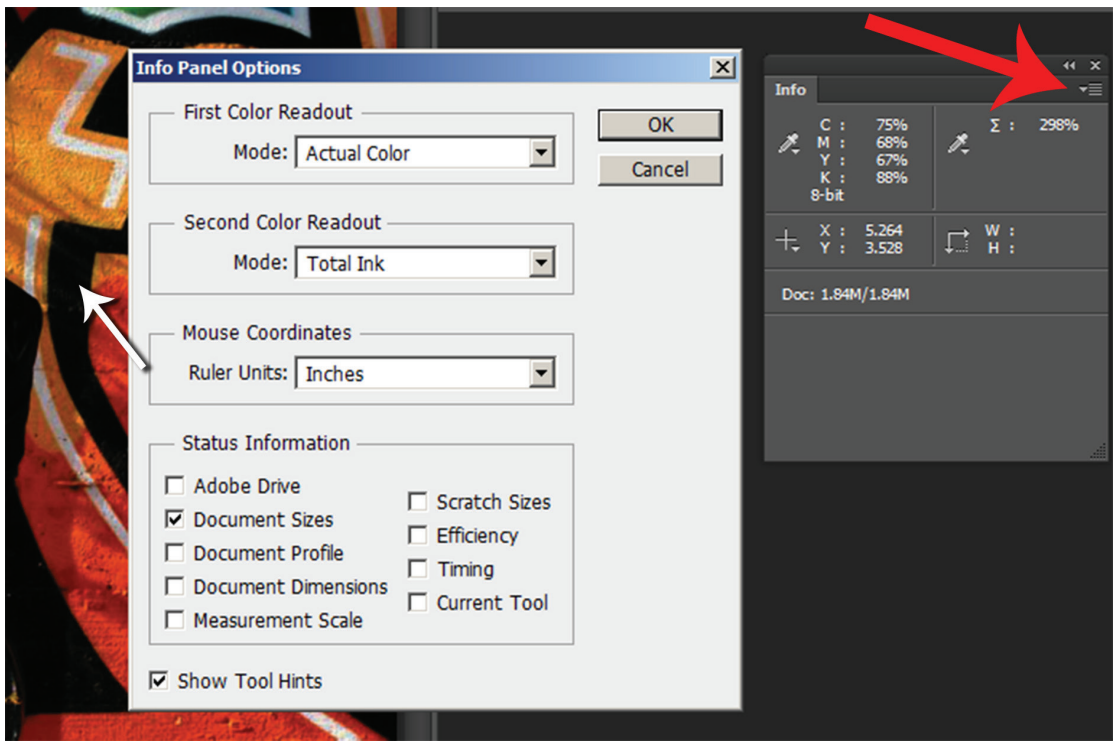
You can find out if you have too high an ink coverage by either:

- Open the a PDF of the image in Acrobat (not Reader).
- Tools > Print Production > Output Previewer
- Tick Total Area Coverage and set the maximum value.



The lime green can be changed to any other color; and the maximum ink coverage can be reset. I find it easier, in the following method, to save the image periodically as a PDF and then use this to quickly see where the problems are.

The other method, and both should be used, is to bring up the Info window, the click on the Info Panel Options button (red arrow), and set the second color to Total Ink.



To change the very dark blacks, for example, select them, here are several methods:

- Make a small selection of the black anywhere it is over 240% (check the TIC in the info window), then click Select > Similar.
- Use the Magic Wand Tool to select the black.
- Use the Select > Color Range then use, for example, set it to Sampled Color, use the eye droper

Then go open Layer > Adjustment Layer > Selective Color.

In this example, you would select Colors: Blacks, then you can reduce the Cyan, Magenta, and Yellow, while increasing the Black if necessary. You can watch the effect and by mousing over the image you can see the Total Ink Coverage in the info window. See image on page XXX.

In the following image, I had to work do the black, and other color areas, maybe

about six or so selections to arrive at an image that would pass the 240% limit (with a few dots of higher TIC), and would maintain the basic colors relationships in the original.

RGB Original

CMYK Conversion

Global TIC Fix

Controlled TIC Conversion

The first method (bottom left) is flat and less rich than the second method (about 20 minutes to adjust the TIC). Nothing was done to correct the color and a lot could

be done with more time (but that was not the point to this exercise).

Here is the PDF version of the Controlled TIC Conversion, with the TIC showing at 240% and above.

Whether every image is worth the time, I can't say. However, image preparation is important whether you correct for TIC, or sRGB to CMYK color issues. Because the printing can rarely if ever be better than the original, it is generally best to keep each state of the image at its best.

Because this is about using Photoshop, please use adjustment layers, they are non-destructive and permit infinite adjustments. Flatten a copy to use in your book.

Below is the Selective Color adjustment layer. The marching ants disappeared when the panel came up. The black values have been pushed to the to create purple, so you can see that the process is interactive and correctable.