

Colour to Black & White Conversion

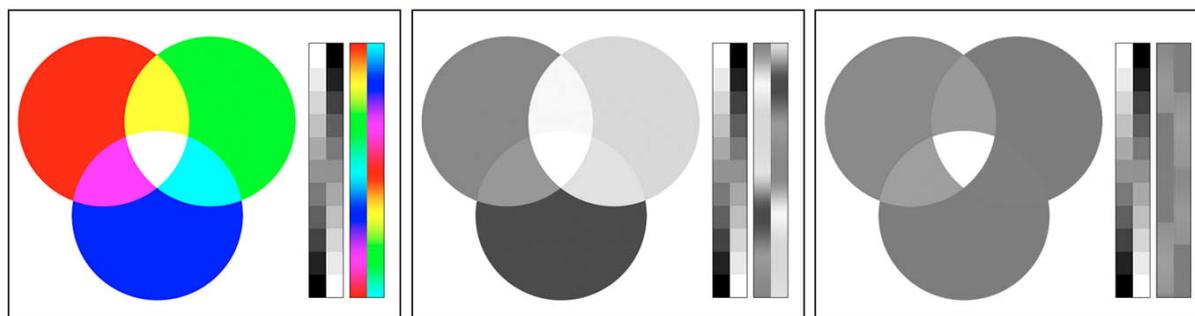
an article by David Summerhayes ©

How many of you think you know Photoshop pretty well? Did you know there are at least six different ways to convert RGB files to Grayscale? All are different and each give a slightly different result in interpreting colours to gray shades in relation to each other. No one way is right or wrong and each has its own particular applications and advantages.

Intrigued? Try this simple tutorial! First of all you will need to make a reference file. You can of course use your favourite printer reference photograph but I suggest you make one that has pure Red, Green, Blue, Cyan, Magenta and Yellow references – or why not try both! It's quite simple. Start with a new canvas of say 12cm square at 96dpi on a transparent background. Select a circle of about 6cm diameter. Double click the foreground colour to bring up the colour picker and type a value of 255 in the box marked R for red. S and B values should automatically jump to 100 and red should be displayed as the new foreground colour. Choose the paint bucket and fill the circle. Copy this layer twice and arrange the resulting three circles to intersect one another. Select the second layer and fill it with green. This time set values of R-0 G-255 and B-0. The third layer fill with blue, values R-0 G-0 and B-255. Set the 2 uppermost layer modes to screen and voilà, the intersections should now be Yellow Magenta and Cyan. Merge visible layers and save the file. This file is a pure colour reference. Each colour has a different hue but has the same value (brightness) and saturation. You could also place it in the corner of your favorite reference photo to see the effect on both.

Method 1 This is the easiest and most common. Go to image – mode then select grayscale. The result is pleasing with each tone represented by a different shade of gray. Blue being the darkest, yellow pale and the rest will fall in between. There is of course no control or choices to be had with this method. There seems to be a stigma about using this method but it is quick and produces a pleasing results. Save this file as method 1 to compare with the other methods later.

Method 2 Open the colour file again or go back a step in history. Go to image – adjust then select hue/saturation and slide the saturation slider all the way to the left. Surprised at the result? I certainly was! It is important to remember that all of the hues in this file have the same value. A photograph treated in this way wouldn't show such a dramatic result, as the values from highlight to shadow would vary greatly. However it is an interesting comparison to method 1. This method is often used as a quick way to make just a part of a colour file or a selection in an RGB file, black and white. Save the file as method 2.

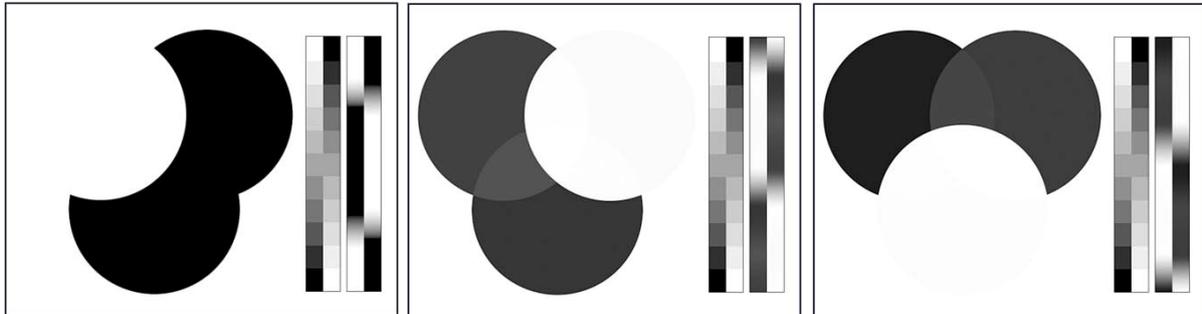


Colour original

Default convert to grayscale

Desaturated

Method 3 Another easy thing to do which will give you three choices is to go to the individual colour channels in the channels palette. Look at each channel by switching off the other 2 and copying the one that best fits the job. Another way to do this is to flatten the image and split the channels. In effect each channel is the equivalent to using a narrow cut tricolour printing filter. I think the Wratten equivalents are 25 red, 58 green and 47 blue. When shooting on B&W film, these would only be used when a very strong effect was desired. The same can be said for this digital equivalent. Also important to note; in digital imaging, the blue channel also often contains the most digital noise.



From left to right are the individual channels RED GREEN and BLUE. By using the channel mixer an almost infinite range of intermediate tones can be obtained.

Method 4 similar to method 3 it is possible to let Photoshop divide the colours up so you can choose a particular channel for your grayscale conversion. One of the best is changing you file to LAB colour and copying the Luminosity channel. This method is particularly useful to get the most out of dark tones such as deep green foliage or low key images. In extreme circumstances even the individual channels in a CMYK conversion may be useful.



Practical example – colour

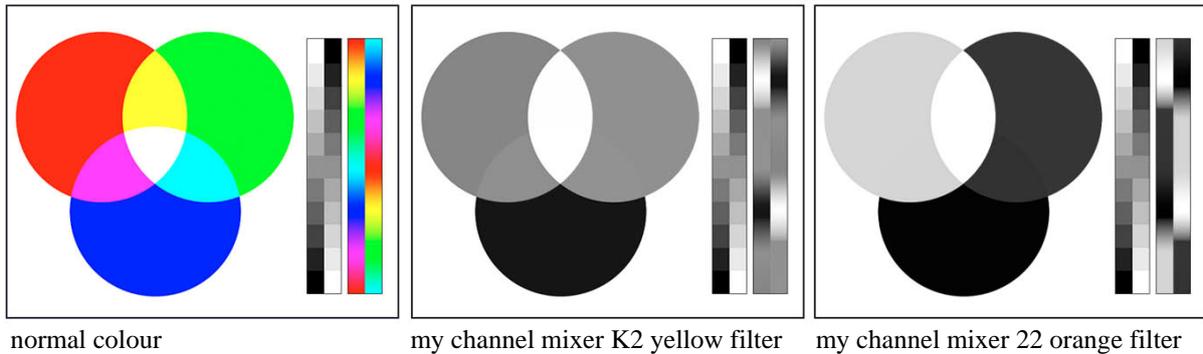
Luminosity channel from LAB

RGB desaturated

Method 5 This one uses the channel mixer to fine tune how each colour is represented as gray. Starting once again from the colour file go to the layers palette and choose a new adjustment layer – channel mixer. Click on monotone at the bottom left of the channel mixer window and start sliding sliders. You now have total control over how each channel is interpreted as gray but remember the percentage values from all of the channels must add up to 100% or you will get a density change in the overall image. Try opening the method 1 file and match the result from this channel mixer file. Have you complete control over the tones or have you completely lost control? Try values of Red +30, Green +40, Blue +10 and constant +20. It's close but not exactly the same.

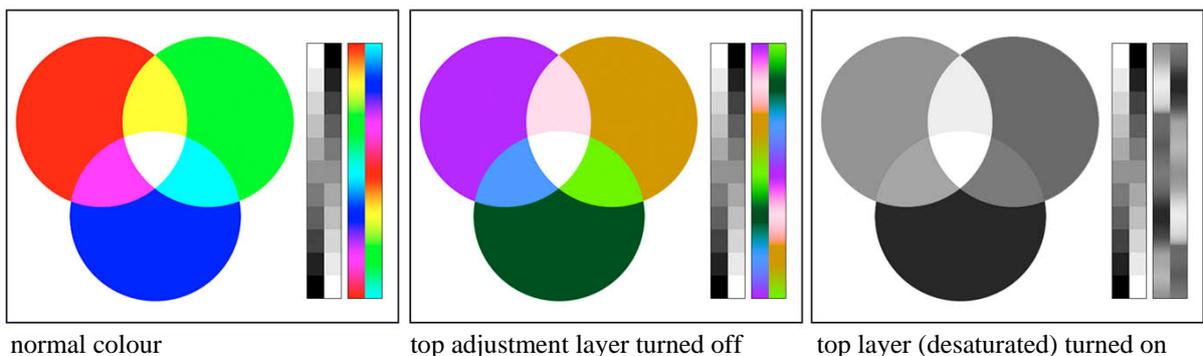
Not many of us have the time to experiment when we are trying to do a job but the advantage of this method is that values can be easily saved and later loaded up for very precisely repeatable results. In 2002 during a quite period I took a roll of B&W film, some Kodak colour patches, glass filters and some studio time and with a little scanning plus experimentation, managed to find and save settings to closely match all of my favorite filters. For example my Orange filter has values of Red +62 Green +42 and Blue -4. K2 yellow is

Red +42 Green +58. 25A red is Red +96 Green +10 Blue -6. These examples do look better if used on photographs rather than just colours. It is also interesting to note that while using an adjustment layer you can paint directly onto the layer mask to reveal colour information underneath. Interestingly, in 2006 Photoshop CS2 came with similar channel mixer presets – I still prefer mine though.



Method 6 This one is quite complex but very interesting. First of all make 2 Hue/Saturation adjustment layers. Name the top layer 'grayscale' and the middle layer 'filter'. Double click on the top layer thumbnail to bring up the Hue/Saturation dialog box. Slide the saturation all the way to the left and click OK. Select the middle layer and change the layer mode to 'Color'. Double click the 'filter' layer thumbnail to bring up the Hue/Saturation dialog box. Now when you slide the 'Hue' slider you should find you have an almost infinite number of variables and even finer adjustments if you choose to change the Hues of the individual colours instead of just the Master.

This is a great way to go if you are not really sure of the effect you want and you want to see all available possibilities. It is an interesting exercise, once you have found the result you want, to turn off the top layer and reveal what you have done to the colours of your image.



I hope the next time you want to make a B&W image from a colour file you give it some thought and tackle the job with new insight.