Topic 025

Filter Factors

Filter Factor

Filters change the dynamics of the light entering the lens and usually require you to alter your exposure to compensate for this fact. This is called the Filter Factor and each filter has a specific filter factor, so read up on these to learn how to use them.

If you use filters on your camera, this can have an effect on the white balance, depending on the filter type.

Polarizer’s are neutral – they don’t change the color balance, only the depth of color. Warm-up or other color-adjusting filters will, of course, change the color of the light.

The thing to make sure of here is that you don’t leave the camera set to auto white balance, because it will simply attempt to compensate for the changed light color.

Always choose an appropriate white balance preset before using a colored filter. One interesting alternative to a ‘straight’ colored filter is to use a colored graduate. This will add a color to the sky without changing the foreground colors.

A blue grad can add a sunny feel to an overcast day, while a yellow/orange grad can add drama to a stormy sky. With these, it’s wise to take your meter reading before you fit the filter.

Purpose of Using Filters

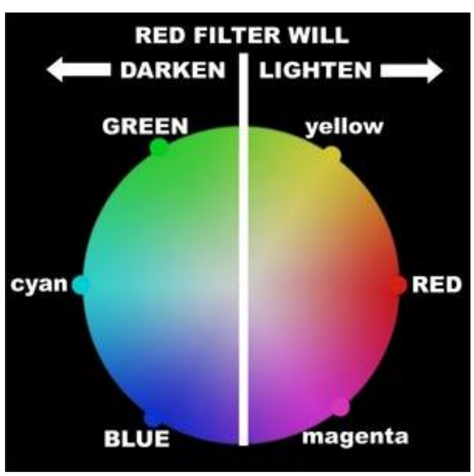
Color filters allow the black and white photographer to exercise some selective control over tone values. To this extent they can be an important tool in helping photographers realize their creative vision; to put on film what they see in their minds' eye. At times the use of filters is almost mandated by the limitations of the medium. For example, film users quickly learn that, despite being called "panchromatic", film is extra sensitive to (i.e., overexposes) the blue and ultraviolet (UV) light in skies resulting in the dreaded "white sky" effect. A filter may be needed to compensate for this bias.

Another problem in using the grey scale pallet is that, with exception of the blue bias mentioned above, objects of similar reflectance may have similar tone values in the resulting print. For instance, if we were photographing an apple tree and found that the green foliage and red apples have similar reflectance (similar reflected light meter readings) they might be almost indistinguishable in tone in a B&W print. In this case the photographer might choose to use a red filter to lighten the apples and darken the foliage or use a green filter to darken the apples and lighten the foliage.

With the exception of color correction filters, color filters are pretty much exclusively used by B&W photographers However, we share some other filters with color photographers. These filters might be to use to reduce haze, reflections or glare. We might also use neutral density filters to reduce the light reaching all or part of the film. These are discussed in more detail below.

How Filters Affect Tone Values

In a nutshell, a colored filter used with B&W film will lighten similar colors and darken opposite colors. The color wheel shown below provides a visual example of what is meant by similar and opposite colors. A red filter, for example, will darken the other two primary colors (blue and green) and will especially darken its complementary or opposite color (cyan) that is formed by combining green and blue. On the other hand, it will lighten red objects and to a lesser extent colors that contain red such as yellow, orange and magenta. Yellow filters will do a particularly good job of darkening blue objects but tends to lighten red and green objects and so on.



A filter lightens and darkens because it transmits some colors and absorbs (or filters) others. Obviously, because it absorbs light, using a filter will necessitate an increase in exposure. (The UV filter is an exception.) Logically, darker filters require more exposure compensation. Filter makers will suggest an amount of exposure compensation and this is discussed below. However, think of this as just a suggested starting point. The actual effect of a filter and the amount of exposure compensation it needs will depend on:

- ***The film being used***
- ***The color of the ambient light***
- ***The predominant color of the subject***.

 For example, making an image using a yellow filter and filling the frame with yellow sand dunes or "amber waves of grain" might require significantly less exposure compensation since less light will be absorbed by the filter.

The amount of exposure compensation is often expressed as a **"filter factor".** A filter factor of 2X means that you should multiply the (unfiltered) exposure by 2, a 2.5 filter factor means that you should multiply it by 2.5 and so on.