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# Filters for digital cameras

### What are Filters and Why Should You Use Them?

Filters are sheets of plastic, optical resin or glass that when added to the front of a camera lens, adjust the light passing through the lens. How the light is adjusted depends on the filter. Some filters add colour to the light, thus adds colour to the final photo. Warm-up filters, for example, add yellow-orange to a shot. Other filters are used to reduce the amount of light entering the camera. These filters are known as Natural Density (ND) filters.

To help us understand filters better - Why do you wear sunglasses? Besides from looking like a movie star, they help you see better in intense light, protect your eyes from harmful UV rays/wind/dust and reduce glare. Filters also serve a similar purpose – they can help reduce reflections, protect your lenses from potential damage, fully or partially reduce the amount of light that enters the lens and even enhance colors. At the same time, filters can actually hurt photographs if they are not properly used. A good analogy would be wearing sunglasses in a dark room. Therefore, not only do you need to know what filters to use, but you also need to know how to use them and in which situations. There are many different kinds of filters out there – from cheap UV filters to very expensive filters worth several hundred dollars. For today, I have researched on just the basic filters for photographers like myself, or us.

## By Jeff Meyer (Tech Radar)

Jeff states that there are 5 essential filters that one can't live without them.

So, don't rely on Photoshop for all your effects; get out there and have fun the traditional way with the five filters that every photographer should own. They will literally transform your images overnight.

1. **Skylight/UV/Clear Filter** – Digital sensors are less sensitive to UV light. But why still use one? To protect the front element of a lens from dust, dirt, moisture and potential scratches. High quality UV filters can be permanently mounted on lenses with minimum impact on image quality and does not affect exposure. These filters reduce the effect of ultraviolet lights outdoors, which can be seen as haziness on bright sunny days. **But it is still good to remember to clean the filter to prevent the dust or dirt from affecting your images.**

2. **Polarizing Filter** – Of all the filters a photographer can own, this one offers the greatest versatility in achieving creative effects. It increases saturation & contrast, enhances colors, darken blue skies (giving greater contrast bet. any sky and clouds), minimizes haze, reduces reflections in non-metallic surfaces and in turn, removes glare from

photos and thus, creates more naturally saturated colours. The effect created by a polarizing filter is something one cannot replicate in post production. By removing the reflection from some surfaces, it can allow the lens to see past say, a window full of reflections or dazzling surfaces of a pond.

There are two types of polarizing filters: linear (for film cameras) and the circular, which is used for digital cameras. When the circular is attached to your lens, you can still rotate it to change the direction in which light is polarized. The sky will look much more blue and the colours more vibrant and saturated.

**LIMITATIONS:** These filters are quite thick and may darken your image. To account for this, make sure to have your shutter speed still high enough take your photo hand held. They work best when in direct sunlight. ISO can be increased from 100 to 200 and set white balance to daylight. Polarizing filters only really work in sunlight; so put the filter away at night and during overcast days.

Please **take note** that the maximum polarization is achieved when the lens is pointed at right angles to the sun or 90 degrees from the sun (in any direction), rather than with the sun behind or in front of you. A simple trick is to form a pistol with your thumb and index finger, then point your index finger at the sun. Keep pointing at the sun and then rotate your hand clockwise and counter-clockwise. The maximum effect of polarization is where your thumb points in any direction.

When photographing landscapes, use polarizing filter to spike up the colours, darken the sky and reduce haze. It is a must when taking pictures of waterfalls, wet scenery with vegetation.

3. **Neutral Density Filter (ND)** – usually used for landscape or flash photography; They are neutral gray filters, the purpose of which is to primarily decrease the shutter speed without ruining your exposure. They reduce the amount of light hitting the sensor or entering the lens at once, which means to correctly expose, you will need a longer shutter speed or longer exposure. This filter is useful during daytime because of the abundance of light that cannot be reduced by stopping down the lens aperture and decreasing the ISO. Sometimes, it is nice to capture movement in your photo, but there is too much light and the shutter speed is too fast, even with a narrow aperture.

   In flash photography, if you were to photograph a model using 1/250, f2,8 on a bright sunny day with flash to create a dramatic effect, you would most likely get an overexposed image. You cannot increase your shutter speed because the flash sync speed limits you to 1/250 maximum so your only option is to stop down the lens aperture to a larger number. Let’s say f/11 instead of f/22, To get a bokeh effect, use the ND filter to reduce the amount of light that gets into the camera.

Think of it as a pair of sunglasses for your camera. It reduces the amount of light reaching the sensor without affecting the colours, hence the term “neutral”. ND filters comes in different densities or strengths most commonly reducing the stops by 1 to 3 stops. For most lighting conditions, **a three-stop filter known as 0.9 or ND8 is suitable**, though in very bright conditions, you might need an 8 or even a 10 stops filter.

4. **Graduated Neutral Density Filter (GND/ND grad)** – Balances the exposure between a bright sky and a darker foreground, particularly in landscapes and sunrise/sunset shots. A GND is like a pair of sunglasses with dark glasses at the top and clear glass at the bottom. They come in several different strengths and with different transitions between the dark and clear areas. It will help you to evenly expose your photos. For example: landscape has the sun in the background, the sky will become overexposed and the foreground becomes underexposed. Rather than defaulting to HDR, you can use a graduated filter, which will darken the sky and leave the foreground as it is.

   A **two-stop grad, aka 0.6 or ND4 grad**, is a good option in most uses. For shooting sunrise or sunsets with the sun in the frame, you may need something much stronger such as a three-stop (0.9 or ND8) grad to give a more balanced exposure.

5. **Variable or strong neutral density filter** – it is used when using long exposure shutter speeds or very shallow depth of fields effects in bright conditions. By rotating the front element of a variable ND filter, you can select and change the amount of light exposure you want, with just the one filter. In a fixed ND filter, you have to physically remove the filter and replace it with the appropriate type.

6. **Close-up Filter** – basically for macro photography; It allows a lens to focus closer on a subject, by shortening the focusing length or decreasing minimum focusing distance of the lens. This filter is a cheap way of converting your normal lens to a macro lens although your image quality is negatively affected. For best results it is best to use a macro lens. An example, most telephoto lenses need the subject to be at least a meter and a half away to focus. With this filter, you can reduce the distance to about 0.75m.

7. **Color/Warming/Cooling Filter** – any photography; corrects colours, resulting in a change in camera white balance. Some colour filters can subtract colours, blocking one type of colour and allowing other colours through. Their effects can be easily applied in post processing like Photoshop or Lightroom.

8. **Special Effects Filter** – can produce some cool effects which can be easily produced on post processing so it is losing its popularity

Filters to your cameras are what sunglasses are to your eyes. But just as sunglasses can distort your vision indoors, filters can equally degrade image quality as they can improve it. So it is important to know your stuff and use a good quality and the right filter

References:


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