

**UV filters** are supposed to block UV light. So, for the newcomers to photography let's first look at what UV light is and why you would want to block it.

The "traditional" visible spectrum runs from red to violet. Red light has the longest wavelength and violet the shortest. Light which has a longer wavelength than red is called infrared, and light which has a shorter wavelength than violet is called ultra violet or UV. The wavelength of light is measure in units of nanometers (abbreviated as nm), and 1nm is a billionth of a meter (that's a US billion or 1000 million, not a UK billion which is a million million!). Light shorter in wavelength than about 400nm is called ultra violet, light longer in wavelength than 700nm is called infrared.

So now we know what UV light is, why would be want to block it? Well the answer lies in the way that color film works. There are basically three color sensitive layers, one sensitive to red light, one to green light and one to blue light. The blue layer not only responds to blue light, but also to UV light, so if there is a lot of UV around the blue sensitive layer gets extra exposure and the final image takes on a blue color. Since film isn't normally sensitive to infrared, you don't need an infrared blocking filter. Interestingly though, digital sensors are infrared sensitive and most digital cameras have an infrared blocking filter built in.



Now there isn't usually a huge amount of UV around at sea level. There is some (that's what gives you a suntan or sunburn) but most of it is scattered by the atmosphere. However as you gain altitude, for example by going up a mountain, the amount of UV increases. Under these conditions a UV filter can prevent a blue cast in photographs.

Since UV filters look clear and neutral to the naked eye, some people also use them as a protective filter which they leave on their lens at all times. Some people think this is a good idea, other question the wisdom placing a \$20 filter in front of a \$1000 lens and potentially affecting image quality. Both schools of thought have some valid points. It's your choice.

So if you buy a UV filter, you'd expect it to block UV right? Well, sometimes you'd be wrong as the results of this test show. I've looked at the range between 350nm and 400nm for UV blocking since the glass used in almost all lenses will itself block any light with a wavelength shorter than 350nm, so you don't need help from a filter there.

## **How to Clean Your Lens and Filters?**

### **Avoid unnecessary cleaning of your lens**

Glass is relatively hard and durable. However, when advanced coatings and other chemicals are added to the lens, it becomes a surface that's more vulnerable to scratches and damage from chemicals and contact. Because of this, we want to try to keep our lenses and filters free of fingerprints and dirt, and avoid repeated physical interaction—this includes touching the lenses and—yes—cleaning.

When stored in your camera bag or on your shelf, judicious use of front and rear lens caps will help keep your optics clean. But, when you use your gear, it's going to get dirty. This cannot be avoided. Your lenses will benefit from an occasional cleaning of your camera bag innards, as dust and dirt will likely find a home inside your bag and attach itself to the lens.

### **Dust happens**

Dust is everywhere and everywhere is dust. It will get on and inside your lens. Lenses are manufactured in extremely clean factories, where manufacturers go to great lengths to try to eliminate dust from the environment. Even then, brand-new lenses may have dust between the lens elements.

Dust, however, is not the main enemy. A lens that sits on a shelf in your home for years and collects a thick layer of dust will, obviously, produce image-quality issues. But, a few specs of dust here and there on or inside the lens will have no effect on image quality. A few specs of dust on or inside the lens will have no effect on image quality. That statement was intentionally repeated.

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Trying to keep your lenses dust free through continual cleaning may serve to shorten the life of your lens, as you run the risk of scratching the lens surfaces every time you clean the glass.

### **Beware of rear smudges**

Oily fingerprints and smudges on the rear element will have the most dramatic impact on image quality, because of the way that the light is focused narrowly through the back of the lens.

The good news is that the rear element of the lens is less susceptible to dirt and oil because, when mounted on the camera, it isn't subject to kids' sticky fingers, your sticky fingers, or other environmental dangers.

Cleaning your optics is easy to do, even in the field

Here is a simple, three-step process for effective lens and filter cleaning:

1. Remove as much dust and dirt as possible from the lens with a blower or soft-bristled brush.
2. Apply a few drops of lens cleaning solution to a lens tissue or cleaning cloth.
3. Using a circular motion, gently remove oil, fingerprints, and grime from the lens surface, working from the center outward.