

Amateur Astronomy Filters

Eyepiece filters usually screw into the bottom of the eyepiece and come in sizes that fit both 1.25 inch and 2 inch eyepieces. These filters can enhance the contrast of low surface brightness objects like diffuse nebula. They can be used to enhance the surface features of the planets and Moon, reduce glare of very bright objects, and even enhance the definition of images. There are filters that reduce the effects of light pollution and those that allow the spectrum to pass through at only one frequency. Several are summarized below.

Solar Filter: This is the filter that will allow you to safely observe the closest star to the Earth - the Sun. These filters fit snugly over the front of the telescope and are made out of either coated glass, or a Mylar material.

Blue Filter: A Wratten #44A, 47B or 80A is used to detect high altitude clouds on Mars, white ovals and spots in the belts of Jupiter, and the zones of the clouds of Saturn, and to reduce the glare of the bright Moon. The 80A is the filter to have if you only buy one filter.

Green Filter: A Wratten #58 allows you to see more clearly the edges of the Martian polar caps and enhances the belts and the Great Red Spot in the clouds of Jupiter.

Yellow Filter: A Wratten #8, 12, or 15 can improve the markings in the clouds of Venus and enhance dust storms on Mars.

Orange Filter: A Wratten #21 is one of the most useful filters. It brings out details on Mars and enhances some zonal details on Jupiter, also darkens the blue sky so daytime observations of Jupiter, Venus and the Moon are much improved.

Red Filter: A Wratten #23A, 25, or 25A are used to enhance contrast on Mars, Jupiter, and Saturn. A red filter, however, is fairly dark, so it works best on larger aperture telescopes that give brighter images. Switching between red and blue filters can sometimes bring out subtle coloration on the surface of the Moon.

Polarizing Filter: Cuts down the glare when observing a nearly full Moon, making it easier to see ray structure. It will also cut down daytime glare. A "variable" Moon filter will allow you to dial in a specific amount of neutral density light reduction. For terrestrial photography with your telescope, this filter will reduce sky glare early in the morning and the late afternoon.

O-III Filter: A bandpass filter used to enhance the contrast of diffuse nebula by allowing the doubly ionized oxygen band through. Great for the Ring Nebula, M57, crucial for the Veil Nebula, and the North American Nebula.

Ultra-High Contrast Filter: A UHC bandpass filter is used to enhance the contrast of diffuse nebula. Allows the O-III light through and Hydrogen Beta. Great for the Swan Nebula.

Light Pollution Filter: LPR filters are designed to darken the background sky by blocking mercury vapor light transmission and enhancing transmission in the hydrogen beta, doubly ionized oxygen (OIII) and hydrogen alpha regions of the spectrum. The filter increases the contrast of deep-sky objects, emission nebulae in particular, with the background light-polluted sky.

Hydrogen Beta Filter: The only way to see the Horsehead Nebula and the California Nebula. This filter is highly specialized.

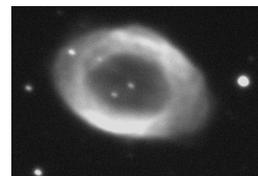
Hydrogen Alpha Filter: These expensive filters are essential if you want to observe and photograph solar prominences. This special filter transmits a very narrow slice of the spectrum, typically 1/5000 to 1/3000 of the visible spectrum's full width. The transmission window of these ultra-narrowband filters is generally centered on the bright hydrogen-alpha (H-alpha) line at a wavelength of 656.3 nanometers (6563 angstroms) in the red.



Horsehead Nebulae

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M57 – Ring Nebula



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