



K E O S C I E N T I F I C

Keo Scientific Filters



Keo Scientific Narrow-Band Interference Filters

We can provide imaging-quality narrowband (and wideband) interference filters custom-made to meet your particular scientific needs, anywhere in the 400-900 nm visible spectral range. Some popular wavelengths (and bandwidths) are 427.8 nm (3.0 nm), 557.7 nm (2.0 nm), 630.0 nm (2.0 nm), 777.4 nm (2.0 nm), and 865.0 nm (10.0 nm).

Optically, each filter is custom-made to function optimally within the optical column of our *Sentry*-line of imagers, taking into account the particular ray angles impacting the filter (as required by our proprietary optical design) and the precise temperature of the filter-wheel (the optical performance of these precision filters depends heavily on operating temperature).

Mechanically, our filters are designed to fit securely within the *Sentry* thermally stabilized filter-wheel.

We orders filters in fairly large quantities from filter manufacturers and are able to pass some of the quantity discount on to the end-user, thereby being able to provide the filters at a relatively low cost.

We provide both 3-inch and 4-inch diameter filters, depending on the type of imager that they are to be used with (*Sentry3* or *Sentry4*). The following is a list of general specifications that all our filters have in common:

Spectral

- Center Wavelength (CWL) Tolerance: $\pm 0.15 \times \text{FWHM}$ across clear aperture
- Full Width Half Maximum (FWHM) Tolerance: $\pm 0.20 \times \text{FWHM}$ across clear aperture
- Blocking Range and Density: 200–1000nm, > OD 5.0, << 0.001% maximum
- Peak Transmittance: 65–95% (dependent on CWL and individual filter; actual transmission data will be provided)
- 2- and 3-cavity designs, as required to meet these spectral specifications

Cosmetics

- Image Quality
- Fringes: No visible fringes when viewed in a black box with a 40W frosted incandescent bulb
- Scratch/Dig: 60/40 per MIL-PRF.13830B
- Pinholes: Maximum of one 0.004" pinhole per 20mm area. Maximum of 3 pinholes < 0.004" per 20mm area
- Bubbles: Treated as digs
- Stains: Combined area of stains < 10% of clear aperture

Dimensional

- Outside Diameter Tolerance: +0.000/-0.010", including out of round
- Thickness: 0.250 ± 0.030 "
- Substrate thickness: 0.230 ± 0.030 "
- Clear Aperture: 90% of OD

Optical

- A.R. Coating: None, unless specified
- Transmitted Wavefront: Unspecified
- Parallelism: 5 arcminutes, nominal.