Thin Film Optical Short Pass Filters

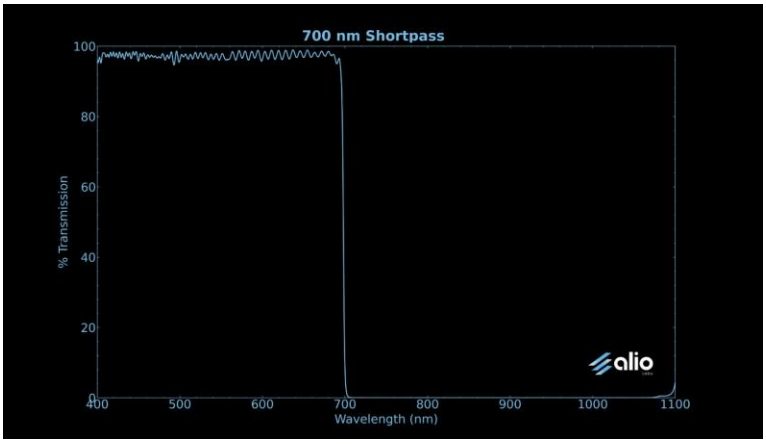
Ultra-steep edge filters deposited with proprietary Quadrode™ technology

PRODUCT OVERVIEW

Alio Labs thin film optical short pass filters deliver high transmission of shorter wavelengths with OD6+ blocking of longer wavelengths and ultra-steep transition slopes. Each filter is a multilayer dielectric interference stack deposited on optical-quality substrates using Alio Labs' proprietary **Quadrode™** plasma PVD technology, which controls layer thickness, refractive index, and stress at the sub-nanometer level. The result: up to 95 % average transmission, sharp transitions, deep blocking, and excellent environmental stability—ideal for fluorescence excitation, laser line cleanup, spectroscopy, and color separation.

KEY FEATURES

- OD6+ blocking in stop band
- Ultra-steep transition slopes
- Up to 95 % average transmission, 99 % peak
- Hard, environmentally durable coatings
- All-dielectric, hard-coated
- Custom cut-on wavelengths, 310 – 1800 nm
- Mounted or unmounted configurations
- Quadrode™ plasma PVD: exceptional uniformity & repeatability



Typical short pass — % transmission vs. wavelength

OPTICAL PERFORMANCE

Parameter	Specification
Cut-on wavelength	Custom, 310 – 1800 nm
Average transmission	Up to 95 %
Blocking	$OD_{av} > 6$ in stop band ($T_{av} < 10^{-6}$)
Slope (80 % → 10 %)	less than 1 % typical
Angle of incidence (AOI)	0° nominal (custom AOI available)
Surface quality	60-40 scratch-dig
Clear aperture	> 85 % of diameter (mounted parts)

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ENVIRONMENTAL & DURABILITY

Parameter	Specification
Operating / storage temp.	−40 °C to +85 °C / −65 °C to +100 °C
Humidity resistance	MIL-STD-810, Method 507 (95 % RH, 24 h)
Thermal cycling	MIL-PRF-13830B; −62 °C ↔ +85 °C, 10 cycles
Adhesion / abrasion	MIL-C-48497, severe tape & moderate abrasion
Solubility / cleanability	Insoluble in common solvents (acetone, IPA, methanol)
Coating type	Quadrode™ hard dielectric, plasma PVD
Substrate materials	Fused Silica, BK7, Borofloat, custom
Configuration	Mounted or unmounted; custom CWL / sizing on request

APPLICATIONS

- Fluorescence excitation in microscopy
- Laser line cleanup
- Color separation in imaging systems
- Quantum optics & photonics R&D
- Wavelength selection in spectroscopy
- Confocal & multi-photon imaging
- LIDAR & remote sensing
- Biomedical / clinical analyzers

ABOUT ALIO LABS

Alio Labs Inc. — Advanced thin film optics

Alio Labs designs and manufactures advanced thin film optics with proprietary automated deposition systems. Our **Quadrode™** platform delivers exceptional layer thickness control and run-to-run repeatability across a wide range of dielectric coating products.

Capabilities include narrow band filters, notch filters, long pass, short pass, wideband mirrors, hot/cold mirrors, and linear-variable thin-film optics in long-pass, short-pass, and bandpass configurations from 300–1800 nm.

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