



Home of the World's Finest Etalons and Laser Optics



TecOptics

... home

Fabry-Perot Etalons

Coated Laser Optics

Substrates

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Types of Planar Etalons and Typical Specifications*

Air-Spaced Etalons

Air-Spaced Etalons have appropriate grade fused silica (UV-visible or IR) substrates. Outside-face AR coatings and wedges on the substrates prevent extraneous interference patterns from forming. Spacers, optically contacted to the substrates, determine the parallelism of the mirrored surfaces and the etalon's free spectral range. Depending upon the application, the spacers can be fused silica or a low thermal expansion material such as Zerodur[®] or ULE.

Plate Material	Fused Silica
Spacer Material	Fused Silica, Zerodur [®] , or ULE
Flatness	1/100
Parallelism	1/100
Gap	5 μ m to 65mm
Clear Apertures	2mm to 100mm
Outside Diameter	Clear Aperture + 15%
Wavelengths	157nm to 3 μ m
Finesse	Up to 100
Coatings	Standard and Custom
Housing	Acetal or Aluminum

Solid Etalons

Solid Etalons typically have fused silica substrates with the material grade (e.g. UV-visible or IR) dependent on the spectral region. The faces are ground, polished, and figured typically to better than 1/100 flatness with similar quality parallelism between the faces. Dielectric (or, rarely, metallic) coatings provide the reflectivity necessary for the required finesse.

Material	Fused Silica
Flatness	1/100
Parallelism	1/100
Clear Aperture	2mm to 125mm
Diameters	3mm to 150mm
Thickness	50 μ m to 20mm
Wavelengths	157nm to 3 μ m
Finesse	Up to 50
Coatings	Standard and Custom
Housing	Acetal or Aluminum

MicroEtalons

Fiber optic communication requires extreme miniaturization of optical

Plate Material	Fused Silica
Spacer Material	Zerodur [®] or ULE

components. It is for applications such as DWDM (dense wavelength division multiplexing), line narrowing, and channel monitoring that TecOptics introduced its new line of MicroEtalons. Newly developed manufacturing techniques enable TecOptics to supply large quantities of these miniature air-spaced and solid etalons at low prices. Air-spaced versions have dimensions as small as 4.5mm x 2mm x 3mm while solid MicroEtalon cross-sections can be as small as 2mm. Finesse values can be greater than 100.

Flatness	1/100
Parallelism	1/100
Gap	100m to 3mm
Clear Aperture	2mm
Dimensions	Down to 4.5mm x 2mm x 3mm
Finesse	To 100
Wavelengths	All standard fiber optic regions
Housing	None

Deposited Etalons

To overcome the limit of the thinness of a solid etalon yet retain its mechanical strength, TecOptics offers its unique Deposited Etalons. On one side of a precision substrate our sophisticated coating plants sequentially deposit a mirror coating, a silicon dioxide spacer, and the other mirror coating. Deposited etalons' applications include intracavity laser wavelength tuning.

Substrate	Fused Silica
Spacer Thickness	2m to 25m
Clear Aperture	2mm to 100mm
Wavelengths	193nm to 2.5m
Finesse	To 50
Coatings	Custom Design
Housing	Acetal or Aluminum

* Note that for any etalon it is not always possible to attain all combinations of specifications simultaneously.

Ultra-Narrow Tuned Etalon Filters

Frequently, standard interference filters are not able to attain the resolution required for precision applications. TecOptics Tuned Etalon Filters fill this gap by adding an order of magnitude or more of resolving power. A normal narrow-band interference filter has a resolution of approximately 10%. By adding the Tuned Filter to the interference filter, the resolution improves to sub-angstrom levels. The basis of the Tuned Filter is our ability to fabricate etalon substrates and spacers with their thickness precisely tuned so an integral number of wavelengths matches the optical path length, including the mirror coatings, of the light inside the etalon. Their specifications are similar to the Air-Spaced and Solid Etalons above with the additional tight tolerance on spacer or plate thickness to tune the desired wavelength.

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