

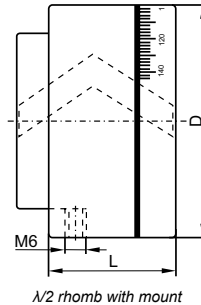
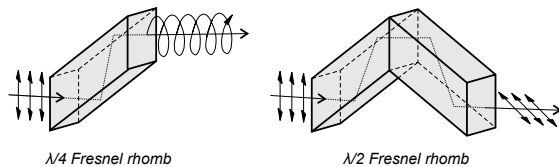
FRESNEL RHOMBS

- Rotate polarization, operates over a wide wavelength range
- $\lambda/2$ rhomb is two optically contacted $\lambda/4$ rhombs

Due to unequal phase shifts arising in orthogonally polarized components of an incident wave at total internal reflection, Fresnel Rhombs are used to alter the polarization type of radiation. They are designed so that two full internal reflections inside a rhomb provide $\pi/2$ phase difference between the orthogonally polarized components of radiation. Hence, if there is a 45° angle between the polarization of the linearly polarized incident plane, the emerging beam is circularly polarized, i. e. the rhomb effect is similar to that of a quarter-waveplate. Therefore, two identical Fresnel rhombs, installed in series, will provide $\pi/2$ phase difference similar to that of a half-waveplate, i. e. the device can rotate the beam polarization plane by 90° , leaving the beam direction invariable.

Due to the low dispersion of the refractive index of the materials being used Fresnel rhombs are achromatic over a wide spectral range.

Air-Spaced Fresnel Rhombs are available on request for high power applications.



SPECIFICATIONS

Material	BK7, UV FS
Operating spectral range	BK7: 400–2000 nm UV FS: 210–400 nm
Surface quality	20-10 scratch & dig (MIL-PRF-13830B)
Surface flatness	$\lambda/10$ @ 633 nm (all polished surfaces)
Retardation tolerance	$\pm 2^\circ$
Broad band AR coating	$R < 1\%$
Laser damage threshold	$> 0.5 \text{ J/cm}^2$, 10 nsec pulse, 1064 typical

Unmounted

Material	Catalogue number	Wavelength range, nm	Retardation	Clear aperture, mm	Price, EUR
BK7	481-0210	600–900	$\lambda/2$	10	368
	481-0410	600–900	$\lambda/4$	10	186
	481-0212	400–700	$\lambda/2$	10	368
	481-0414	400–700	$\lambda/4$	10	186
UV FS	481-1210	210–400	$\lambda/2$	10	491
	481-1410	210–400	$\lambda/4$	10	296

Fresnel rhombs with other dimensions and parameters or coatings as well as unmounted rhombs are available upon request.

Mounted

Material	Catalogue number	Wavelength range, nm	Retardation	Clear aperture, mm	Holder diameter D, mm	Holder length L, mm	Price, EUR
BK7	480-0210	600–900	$\lambda/2$	10	73	55	659
	480-0410	600–900	$\lambda/4$	10	65	25	336
	480-0212	400–700	$\lambda/2$	10	73	55	659
	480-0414	400–700	$\lambda/4$	10	65	25	336
UV FS	480-1210	210–400	$\lambda/2$	10	73	55	782
	480-1410	210–400	$\lambda/4$	10	65	25	446

Fresnel rhombs with other dimensions and parameters or coatings as well as unmounted rhombs are available upon request.

Mounting Suggestion

