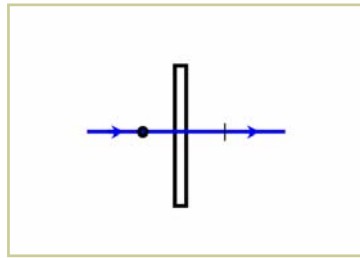


# Mica Waveplates



Mica can be used to retard the passage of the extraordinary ray resulting in a change of phase difference between the s- and p- states of polarization. Mica is a low bi-refrindex, laminar crystal, which is easily cleaved. By controlling the thickness of sheets of mica it is possible to achieve precise amounts of first-order retardation. A quarter-wave plate has a net retardation of  $\pi/2$  and changes the polarization state from linear to circular or vice-versa. A half-wave plate has a net retardation of  $\pi$  and rotates the plane of polarization by  $90^\circ$ .

These first-order waveplates are mica sheets with known amounts of retardation at a specific wave-



length. While  $\lambda/2$  and  $\lambda/4$  are the most commonly requested retardations, it is possible to supply these for any chosen retardation at any wavelength from 400 nm to  $2.5\mu\text{m}$ . The retardation tolerance is  $\lambda/50$ .

It is also possible to provide broadband multi-order mica waveplates, which work over a spectral range

of 400-2500 nm with a

retardation tolerance of  $\lambda/20$  @ 550 nm.

Mica waveplates are recommended for low power applications since the material has high absorption and some inhomogeneity.

They are normally provided as circular plates of 10, 20, 25, 30, 40 or 50 mm diameter. The mica sheets are cemented between protective glass discs. Each plate has two dots on the face of the protective glass indicating the direction of the crystalline optic axis. The nominal thickness of these plates is between 2.5 and 3.5 mm.

Mica waveplates may be optionally anti-reflection coated if required.

## Typical Specifications

Material:	Mica
Protective Material:	Optical glass
Transmitted Wavefront:	$2\lambda$ @ 550nm
Retardation - narrow band:	$\lambda/50$ @ $20^\circ\text{C}$
- broad band:	$\lambda/20$ @ 550nm / $20^\circ\text{C}$
Surface quality:	80-50
Diameter:	$\pm 0.25$ mm
Thickness:	$\sim 2.5 - 3.5$ mm
Clear aperture:	$>85\%$
A/R Coating (optional):	R $<0.25\%$ per surface

**To request a quote or to order, please specify:**

Quantity — Narrow or Broad Band — Diameter — Wavelength (if narrow-band)  
— Coating (if required)

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For a quotation — please phone, fax or email us with details of your requirements.