

Quarter Waveplates

The thickness of the quarter waveplate is such that the phase difference is 1/4 wavelength (ture-zero order) or some multiple of 1/4 wavelength (multiple order).

If the angle θ (between the electric field vector of the incident linearly polarized beam and the retarder principal plane) of the quarter-waveplate is 45, the emergent beam is circularly polarized. When a quarter waveplate is double passed, i.e. by mirror reflection, it acts as a half waveplate and rotates the plane of polarization to a certain angle. Quarter waveplates are used in creating circular polarization from linear or linear polarization from circular, ellipsometry, optical pumping, suppressing unwanted reflection and optical isolation.

Specifications:

- Materials: **Crystal Quartz**
- Optical Axis: Normal to flat edge on circumference of Retarder
- Angle of Incidence: 0°
- Retardation Tolerance : $<\lambda/500$
- Diameter Tolerance: $+0/-0.20$ mm
- Thickness: ≈ 1.0 mm
- Wavefront distortion: $\lambda/8$ over central 90% of aperture at 632.8 nm
- Parallelism: 1 arc second
- Surface Quality: 20/10 scratch and dig
- AR/AR Coating: Ultrahard antireflection coating on all air-quartz interfaces
- Coating Clear Aperture: Central 90% of diameter