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WAVEPLATES

SELECTION GUIDE

POLARIZERS • SPATIAL LIGHT MODULATORS • WAVEPLATES • LIQUID CRYSTAL DEVICES • OTHER CAPABILITIES

Why Choose Meadowlark Waveplates?

Industry-Leading Metrology – Our proprietary measurement techniques provide you with extremely accurate calibration measurements for every waveplate/retarder we ship.

High Quality and Precision – When selecting a waveplate, key performance features must be considered; examples of these include wavelength dependence, temperature sensitivity, acceptance angle, response time and aperture size. Our waveplate selection chart provides an at-a-glance view of our standard retarders; as always, Meadowlark solutions engineers are happy to assist you in the process of selecting a retarder that works best for your application.

Custom Solutions – Space flight retarders, superachromatic retarders from 500 to 1200 nm, retarders attached to beamsplitter cubes, retarder coatings applied to lenses and mirrors, variable retarders with switching speeds in picoseconds, ferroelectric liquid crystal retarders switching at low voltages from 50 to 100 microseconds, and more.

About Meadowlark Optics

Innovating since 1979 – Meadowlark Optics has provided world-class polarization optics and liquid crystal solutions for a variety of applications for 43 years. To ensure precision and top quality, our 20,000 SF headquarters and manufacturing facility boasts the latest in clean rooms, optical fabrication, and metrology equipment. Need help selecting the right product for your application? Contact one of our Solutions Engineers to discuss your requirements.

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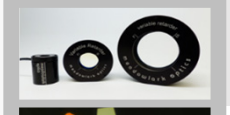
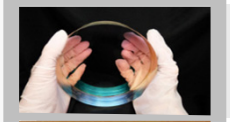
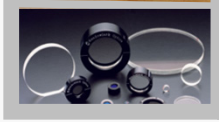
WAVEPLATE		FEATURES	WAVELENGTH	*TWD (P-V)	RETARDANCE ACCURACY	ACCEPTANCE ANGLE	BEAM DEVIATION
	**Precision**	• Most popular retarder type • Large, custom clear apertures available • Insensitive to small wavelength variations • True zero-order polymer	VIS – NIR	≤ λ/5	± λ/350	± 10°	≤ 1 arc min
	**Precision Achromatic**	• Industry-leading design • Excellent broadband operation • Custom wavelength ranges available	VIS – NIR	≤ λ/4	± λ/100	± 10°	≤ 1 arc min
	**Precision Superachromatic**	• Ultra-broad wavelength range • 420 to 1100 nm & 800 to 1700 nm • Custom wavelength ranges available • Custom retardances available	VIS – NIR	≤ λ/2 – 1λ	± λ/50	± 10°	≤ 2 arc min
	**Dual-Wavelength**	• Low order • Wide angular field • Broad wavelength coverage	VIS – NIR	≤ λ/4	± λ/100	± 5°	≤ 1 arc min
	**Wide Field**	• Unmatched off-axis performance • Ideal for uncollimated light applications • Standard and custom wavelength versions	VIS – NIR	≤ λ/2	± λ/250	± 30°	≤ 1 arc min
	**Liquid Crystal Variable**	• Unmatched versatility • Electrically controlled retardance • Custom retardance ranges available	VIS – MWIR	≤ λ/4	Tunable with ± λ/500 resolution	± 2° to 10° (Dependent on applied voltage)	≤ 2 arc min
	**Polymer Film**	• Very thin profile • Thermally stable • High volume scalable • AR coatings and custom retardances available	VIS – NIR	≤ 2λ per in.	± λ/300	± 6°	≤ 30 arc sec
	**Large Aperture**	• Outer diameter up to 6 inches • Clear aperture > 90% • Custom size, retardance and wavelengths • Polymer, quartz, sapphire, MgF_2 and liquid crystal	UV – MWIR	≤ λ to ≤ λ/5	Center: ≤ λ/100 to ≤ λ/350 Spatial Uniformity: ≤ λ/10 to ≤ λ/100	Design Dependent	Design Dependent
	****Bi-Crystalline Achromatic**	• Superior infrared performance • High power handling capability • Excellent broadband operation • Optic axis independent of wavelength	UV – NIR	≤ λ/4	± λ/100	± 1°	≤ 1 arc min
	****Compound Zero-Order Quartz**	• Tolerates high temperature • High CW laser damage threshold • Tip tunable retardance	UV – NIR	≤ λ/10	≤ λ/40	Above 300 nm: ± λ/300 Below 300 nm: ± λ/200	± 1°

*Meadowlark Optics chooses to specify Transmitted Wavefront Distortion as Peak-to-Valley (P-V). We believe P-V more accurately reflects the high and low points of the surface vs. RMS which uses an average.
**Bi-Crystalline Achromatic and Compound Zero-Order Quartz are custom products. Specifications listed are examples and will change based on design requirements.

- Polymer retarders offer much better field of view than either multiple-order or compound zero-order quartz retarders.
- Large clear apertures are cost effective using polymer retarders.
- Polymer retarders are less sensitive to wavelength change than multiple-order quartz retarders.
- Our achromatic and superachromatic retarders offer much lower retardance variation with wavelength than any other birefringent retarder.
- Zero-order polymer retarders are often lower in cost than compound zero-order quartz retarders.
- Liquid crystal retarders offer real-time, continuous control of retardance with no moving parts.
- We offer polymer and liquid crystal retarders in nonstandard sizes and for custom wavelengths and retardance values.
- Crystalline retarders are preferred for high power laser applications and can be designed for dual-wavelength operation.

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polarization solutions