



meadowlark optics

WAVEPLATES











SELECTION GUIDE



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



Over 45 Years of Photonics Innovation

WAVEPLATE	FEATURES	WAVELENGTH	*TWD (P-V)	RETARDANCE ACCURACY	ACCEPTANCE ANGLE	BEAM DEVIATION
	<ul style="list-style-type: none"> •Most popular retarder type •Large, custom clear apertures available •Insensitive to small wavelength variations •True zero-order polymer 	VIS – NIR	$\leq \lambda/5$	$\pm \lambda/350$	$\pm 10^\circ$	≤ 1 arc min
	<ul style="list-style-type: none"> •Industry-leading design •Excellent broadband operation •Custom wavelength ranges available 	VIS – NIR	$\leq \lambda/4$	$\pm \lambda/100$	$\pm 10^\circ$	≤ 1 arc min
	<ul style="list-style-type: none"> •Ultra-broad wavelength range •420 to 1100 nm & 800 to 1700 nm •Custom wavelength ranges available •Custom retardances available 	VIS – NIR	$\leq \lambda/2 - 1\lambda$	$\pm \lambda/50$	$\pm 10^\circ$	≤ 2 arc min
	<ul style="list-style-type: none"> •Low order •Wide angular field •Broad wavelength coverage 	VIS – NIR	$\leq \lambda/4$	$\pm \lambda/100$	$\pm 5^\circ$	≤ 1 arc min
	<ul style="list-style-type: none"> •Unmatched off-axis performance •Ideal for uncollimated light applications •Standard and custom wavelength versions 	VIS – NIR	$\leq \lambda/2$	$\pm \lambda/250$	$\pm 30^\circ$	≤ 1 arc min
	<ul style="list-style-type: none"> •Unmatched versatility •Electrically controlled retardance •Custom retardance ranges available 	VIS – MWIR	$\leq \lambda/4$	Tunable with $\pm \lambda/500$ resolution	$\pm 2^\circ$ to 10° (Dependent on applied voltage)	≤ 2 arc min
	<ul style="list-style-type: none"> •Very thin profile •Thermally stable •High volume scalable •AR coatings and custom retardances available 	VIS – NIR	$\leq 2\lambda$ per in.	$\pm \lambda/300$	$\pm 6^\circ$	≤ 30 arc sec
	<ul style="list-style-type: none"> •Outer diameter up to 6 inches •Clear aperture > 90% •Custom size, retardance and wavelengths •Polymer, quartz, sapphire, MgF2 and liquid crystal 	UV – MWIR	$\leq \lambda$ to $\leq \lambda/5$	Center: $\leq \lambda/100$ to $\leq \lambda/350$ Spatial Uniformity: $\leq \lambda/10$ to $\leq \lambda/100$	Design Dependent	Design Dependent
	<ul style="list-style-type: none"> •Superior infrared performance •High power handling capability •Excellent broadband operation •Optic axis independent of wavelength 	UV – NIR	$\leq \lambda/4$	$\pm \lambda/100$	$\pm 1^\circ$	≤ 1 arc min
	<ul style="list-style-type: none"> •Tolerates high temperature •High CW laser damage threshold •Tip tunable retardance 	UV – NIR	$\leq \lambda/10$	$\leq \lambda/40$	Above 300 nm: $\pm \lambda/300$ Below 300 nm: $\pm \lambda/200$	$\pm 1^\circ$

*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.

Why Choose Meadowlark Waveplates?

Industry-Leading Metrology – Our proprietary measurement techniques provide you with extremely accurate retardance 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, 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 waveplates from 400 to 1800 nm, waveplates attached to beamsplitter cubes, retarder coatings applied to lenses and mirrors, 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 over 45 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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