Retarder Selection Chart

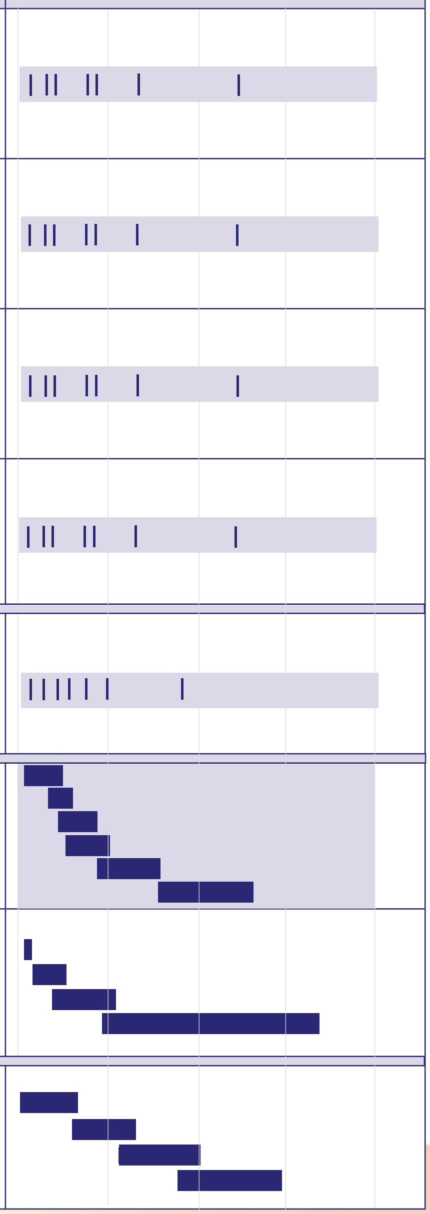
Retarder Selection

When selecting a retarder, key performance features must be considered. These features include wavelength dependence, temperature sensitivity, acceptance angle, response time and aperture size. Our Retarder Selection Chart provides an at-a-glance review of standard retarders.

Meadowlark Optics is a leader in retarder metrology among commercial companies. Our proprietary measurement techniques provide you with extremely accurate calibration measurements for every retarder we ship.

Meadowlark Optics engineers are happy to assist you in the process of selecting a retarder.

Retarder Type	Page	Product Features	Wavelength Range 500 1000 1500 2000
Precision	30	• most popular retarder type • large, custom clear apertures available • insensitive to small wavelength variations	
Commercial	32	• most economical retarder choice • insensitive to small wavelength variations	
Wide Field	33	• unmatched on-axis performance • ideal for uncollimated light applications • standard and custom wavelength versions	
Dual Wavelength	35	• low order • wide angular field • broad wavelength coverage	
Compound Zero Order Quartz	29	• tolerates high temperature • high CW laser damage threshold • tip tunable retardance	
Precision Achromatic	37	• industry-leading design • excellent broadband operation • custom wavelength ranges available	
Bi-Crystalline Achromatic	38	• superior infrared performance • high power handling capability • excellent broadband operation • optic axis independent of wavelength	
Liquid Crystal Variable	48	• unmatched versatility • electrically controlled retardance • custom retardance ranges available	



standard products   custom options

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- Polymer retarders offer much better field of view than either multiple-order or compound zero-order quartz retarders (Figure 2-4, pg. 26).
- Large clear apertures are cost effective using polymer retarders.
- Polymer retarders are less sensitive to wavelength change than multiple-order quartz retarders (Figure 2-4, pg. 26).
- By design, our achromatic retarders offer much lower retardance variation with wavelength than any other birefringent retarder (Figure 2-4, pg. 26)
- Zero-order polymer retarders are 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 retarder values.
- Multiple-order quartz retarders are preferred for high power laser applications and can be designed for dual-wavelength operation.

Retardance Accuracy	Reflectance (maximum per surface)	Beam Deviation (maximum)	Transmitted Wavefront Distortion (maximum at 632.8 mn)	Acceptance Angle	Clear Aperture (diameter)
± λ/350	0.5%	1 arc min	λ/5	± 10°	0.40, 0.70, 0.80, 1.20
± λ/50	0.5%	3 arc min	3λ	± 10°	0.40, 0.70, 0.80, 1.20
± λ/250	0.5%	1 arc min	λ/2	± 30°	0.40, 0.70, 0.80, 1.20
± λ/100	~ 4%	1 arc min	λ/4	± 5°	0.40, 0.70, 0.80
Above 300 nm: ± λ/300 Below 300 nm: ± λ/200	0.25%	10 arc sec	λ/4	± 1°	0.40, 0.80
± λ/100	0.5%	1 arc min	λ/4	± 5°	0.40, 0.70, 0.80
± λ/100	0.5%	1 arc min	λ/4	± 1°	0.40
tunable with ± λ/500 resolution	0.5%	2 arc min	λ/4	± 2° to 10° (dependent upon applied voltage)	0.37, 0.70 1.60

Polarizer and Retarder kits available, see page 42.