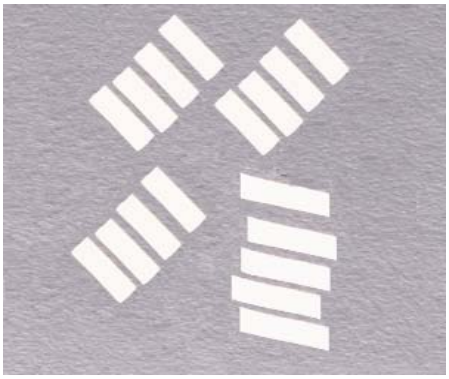
POLYWAVE ULTRA RETARDERS



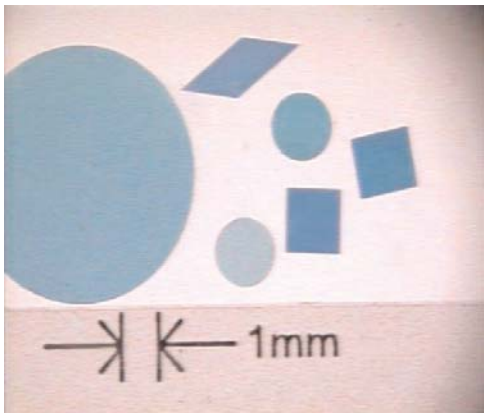
Meadowlark Optics' PolyWave Ultra Retarders

Polywave uses our expertise in precision polymer materials to enhance birefringence and provide an ultra-thin, micro-waveplate that opens doors to all kinds of new and existing applications. PolyWave has passed rigorous environmental testing with no change in retardance after many months of exposure to extreme conditions.

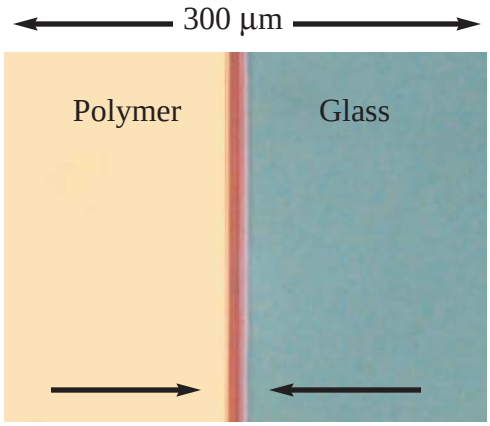
Meadowlark has the capability to produce these waveplates with edge dimensions of less than 1 mm and as thin as 8 µm. The edges can be cut to allow the retarder or waveplate to be used to within 15 microns of the edge.

Due to the high birefringence of the PolyWave material, the total thickness of a 1550 nm halfwave retarder is only approximately 15 microns.

Meadowlark Optics has been manufacturing polymer waveplates for over 20 years. Precision true zero-order polymer waveplates are one of our best selling products. Outstanding capabilities in metrology allow Meadowlark to produce high quality products for your polarization needs.



PolyWave 15 µm thick waveplates observed through a polarizing microscope.
Meadowlark has the capability to produce retarders with exceptional uniformity and cleanliness in many different shapes and sizes.



(Note: Edge defect < 15 microns)

The above picture demonstrates our capability for a precision edge cut that allows the parts to be used to within 15 microns of the edge.

meadowlark optics
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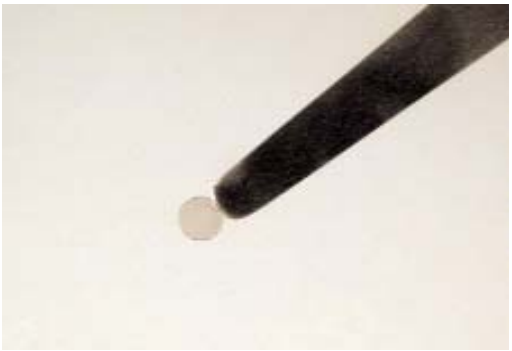
POLYWAVE ULTRA RETARDERS

Meadowlark Polymer Waveplate Sample Specifications

Attribute	Sample Specification	Notes
Retardance	λ/2 @ 1550 nm	Zero Order
Length	8 + 0.2 - 0 mm	
Height	1.5 + 0.2 - 0 mm	
Thickness	15 ± 1.5 µm	
Edge Perpendicularity	90 ± 5 degrees	
Edge Exclusion	< 15 µm	Vertical distance from edge to innermost defect caused by cutting
Flatness / Curling	< 1 mm	Lay waveplate on surface and measure maximum height
Fast Axis Orientation	45 degrees to edge	
Extinction Ratio	> 25 dB, (30 dB Typical)	@ C-Band center
Cleanliness - Surface particles 5-10 µm in size	< 2 in active area	Microscopic inspection
Reliability		
High Temperature Exposure	< 0.005 waves retardance change	125° C, Ambient Atmosphere, 72 hrs.
Accelerated heat and humidity	< 0.005 waves retardance change	122° C / 98% RH, 2 atm, 24 hrs.
High Storage Temperature Exposure	< 0.005 waves retardance change	85° C / 85% RH, 500 hours
Thermal Shock Exposure	< 0.005 waves retardance change	0 - 100° C, 15 cycles

These specifications illustrate Meadowlark capabilities to produce polymer waveplates. Call with your custom requirements.



Optimized Polymer

Applications:

- **PDL Correction**
- **Planar Lightwave Circuits**
- **Anywhere insertion loss due to thickness is a concern.**

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