Стеклянные поляризаторы Polarcor
Описание

По вопросам продаж и поддержки обращайтесь:

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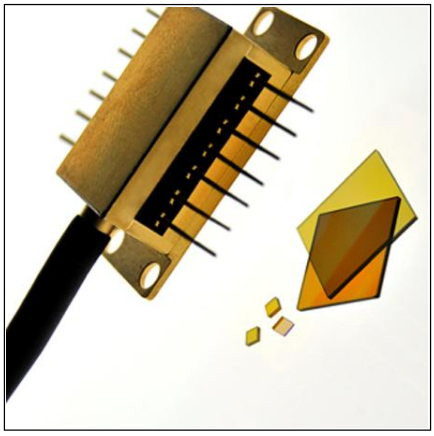
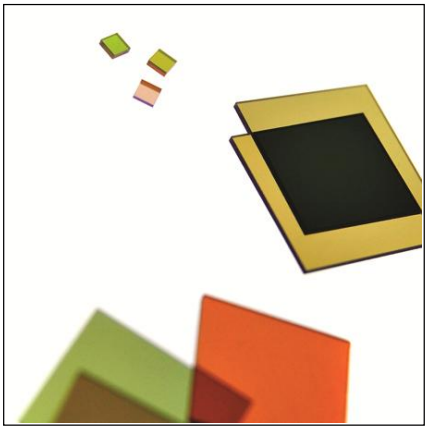
POLARCOR™ Glass Polarizers

Product Information

Specialty Materials

CORNING





Corning® Polarcor™ is a high performance glass polarizer, featuring excellent optical performance, compact size and unmatched durability, that meets the most stringent requirements of the telecommunications, aerospace and defense, medical and many other markets.

Polarcor is a keystone optical element in polarization-dependent isolators, optical modulators, polarimetry systems, ellipsometers, shutters and many other polarization-based devices. Polarcor is characterized by high extinction and low insertion loss throughout the 600 nm to 2300 nm wavelengths. The polarization mechanism (resonant absorption by elongated silver crystals within the glass material) ensures the elimination of stray light, by absorbing the unwanted polarization. Since Polarcor is a solid glass product it is extremely resistant to chemical, physical and thermal damage, while exhibiting excellent optical properties.

Polarcor can be used to:

- Create or block polarized light
- Reduce glare and suppress reflections
- Enhance contrast of images
- Modulate energy
- Control intensity and color
- Improve signal to noise ratio

Applications:

- Polarization-dependent optical isolators
- Infrared sensors
- Instrument filters
- Modulators
- Fiber polarizers
- Magnetic anomaly detectors
- Various fiber optic devices

Reliability

Polarcor has served the telecommunications market since 1984 and has been used in millions of optical isolators without any reported failures.

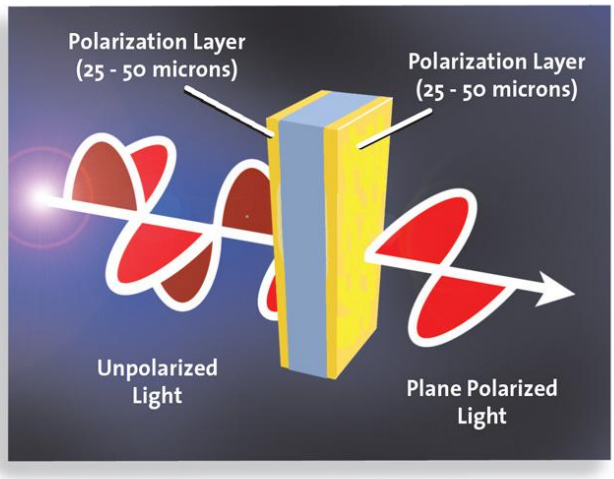
Typical Polarcor Performance

The table below shows typical performance for nominal wavelengths of 633 nm – 2100 nm.

$\lambda_{Nominal}$ (nm)	633	800	900	1060	1310	1480	1550	2100
Polarization Bandwidth (nm)	630 - 700	740 - 860	840 - 960	960 - 1160	1275 - 1345	1460 - 1500	1510 - 1590	2000 - 2100
Contrast **Extinction Ratio (dB)**	> 10,000:1 > 40	> 10,000:1 > 40	> 10,000:1 > 40	> 10,000:1 > 40	> 100,000:1 > 50	> 100,000:1 > 50	> 100,000:1 > 50	> 10,000:1 > 40
Transmittance (%) **Insertion Loss (dB) without AR-Coating**	> 76.5 < 1.16	> 84.0 < .76	> 87.0 < 0.60	> 88.5 < 0.53	> 90.5 < 0.43	> 90.5 < 0.43	> 90.5 < 0.43	> 90.5 < 0.43
Transmittance (%) **Insertion Loss (dB) for 2 sides AR-Coated**	> 83.9 < 0.76	> 91.3 < 0.39	> 94.3 < 0.25	95.7 < 0.19	> 98.5 < 0.06	> 98.5 < 0.06	> 98.5 < 0.06	- -
Refractive Index @ $\lambda_{Nominal}$	1.5210	1.5161	1.5138	1.5123	1.5088	1.5061	1.5051	1.5020
Reflectance R (%) per each side*	< 0.4	< 0.4	< 0.4	< 0.4	< 0.25	< 0.25	< 0.25	-
Thickness (mm)	0.50	0.50	0.50	0.50	0.50 & 0.20	0.50 & 0.20	0.50, 0.20 & 0.15	0.50
Thickness Tolerances	±0.05 mm for product with 0.5 mm thickness and ±0.03 mm for products with 0.2 mm and 0.15 mm thickness.							

* This is the measured reflectance of a witness sample at 0º ± 5º AOI (Angle of Incidence) with randomly polarized light and where the incident media is air. The witness sample is a substrate such as BK7 material coated along with Polarcor™ parts and it is used for spectral and durability tests.

Wavelength Bandwidth (nm)	Polarcor™ W I D E Band™	
Polarization Bandwidth (nm)	600 - 1100	1275 - 1635
Contrast **Extinction Ratio (dB)**	> 10,000:1 > 40	> 100,000:1 > 50
Transmittance (%) **Insertion Loss (dB) without AR-Coating**	> 60.0 < 2.20	– –
Transmittance (%) **Insertion Loss (dB) for 2 sides AR-Coated**	> 66.0 < 1.8	> 98.5 < 0.06
Refractive Index @ Wavelength Bandwidth	1.5218 – 1. 5107	1.5083 – 1.5034
Reflectance R (%) per each side*	< 1.0	< 0.2
Thickness (mm)	0.50	0.50 & 0.2
Thickness Tolerances (mm)	±0.05 mm for product with 0.5 mm thickness and ±0.03 mm for products with 0.2 mm and 0.15 mm thickness.	



Typical key specifications for Polarcor™ UltraThin™

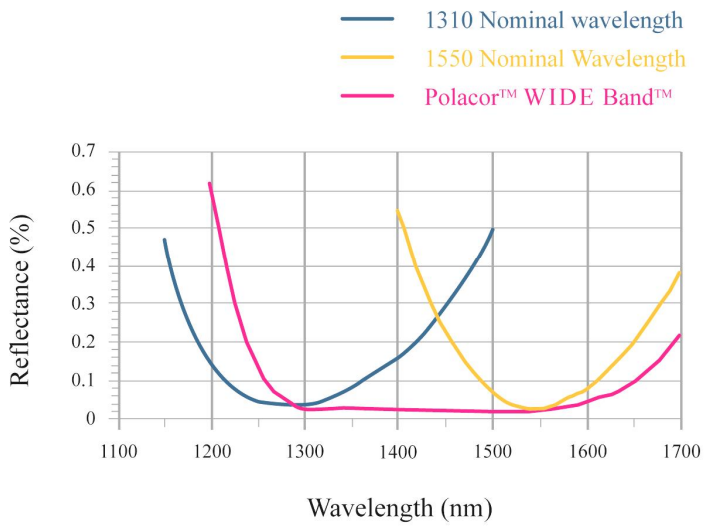
$\lambda_{Nominal}$ (nm)	1060	1310	1550
Polarization Bandwidth (nm)	960 - 1160	1275 - 1345	1510 - 1590
Contrast **Extinction Ratio (dB)**	> 200:1 > 23	> 200:1 > 23	> 200:1 > 23
Transmittance (%) **Insertion Loss (dB) without AR-Coating**	> 88.5 < 0.53	> 88.5 < 0.53	> 88.5 < 0.53
Thickness (µm)	30 ±10	30 ±10	30 ±10

All Polarcor™ UltraThin™ products are offered without AR-Coating.

Thermal Properties	Value	Unit
Coefficient of Thermal Expansion	65 x 10^{-7}	/ ºC or / K
Mechanical Properties		
Young's Modulus	58.6	GPa
Poisson's Ratio	0.21	
Knoop Hardness	480	Kg/mm^2

Key Benefits

- Low insertion loss in polarization-dependent isolators
- High isolation
- Performance durability and stability in harsh environments
- Ability to handle high power applications
- Flexible designs:
  - As small as 1.0 mm x 1.0 mm and up to 30 mm x 30 mm at 0.2 mm and 0.5 mm thicknesses
  - Square, rectangle, hexagon and round shapes
- With or without anti-reflective coatings
- Variety of Polarization Axis Angles relative to the edge of the part (such as +45º, -45º, +30º, -30º, etc)
- Wavelength ranges from 600 nm to 2300 nm
- Large acceptance angles allow customers greater packaging design flexibility



The graph at the left shows typical reflectance spectrum for Polarcor at nominal wavelengths of 1310 nm and 1550 nm, and for Polarcor™ W I D E Band™.

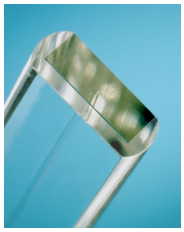
Polarcor™ UltraThin™ Glass Polarizers
Product Information

CORNING
Discovering Beyond Imagination

Photonic Materials

PI202
Issued: October 2005
Supersedes: February 2005

Polarcor™ UltraThin™ is a 30-micron thick glass polarizer that provides greater versatility for managing polarization in components throughout a telecommunications network and for developing high performance, cost effective components. The durability of Polarcor UltraThin is similar to that of the standard Polarcor product. UltraThin is unique due to the thinness of the material, allowing low loss fiber-to-fiber and fiber-to-device coupling without expensive micro lenses.



UltraThin™ attached to ferruled SMF

Product Description

Polarcor is made from a highly durable borosilicate glass containing elongated silver crystals aligned along a common axis. It has served the telecommunications market since 1984 and is the polarization material of choice for polarization dependant isolators used in DFB lasers for telecommunications networks. In the standard 200 and 500-micron thick product, polarization occurs within 25 to 50 microns of each surface; in the UltraThin product, polarization occurs throughout the entire body of the glass. UltraThin serves as a linear polarizer to reduce signal-to-noise ratio.

Performance

Key Performance Parameters of Corning UltraThin	
Thickness	30 microns +/- 10 microns
Wavelength and Bandwidth	1310 nm (1275-1345 nm) 1550 nm (1510-1590 nm)
Standard Size	1 mm x 2 mm
Extinction	> 23 dB
Refractive Index (n)	n @ 1310nm = 1.511, n @ 1550nm = 1.510
Transmission	> 98%, excluding surface reflective losses

Performance

- Low insertion loss
- High extinction
- Large clear aperture (80% of edge dimension)
- High transmission
- Monolithic glass polarizer

Enabling

Key Benefits

- Low loss fiber-to-fiber coupling
- High performance
- Ease of alignment
- Ease of integration
- Device miniaturization
- Durability

Applications

- Modulators
- Fiber polarizers
- Polarization clean-up

Figure 1

Calculated Coupling Loss for Two Single-Mode Fibers Separated by UltraThin with Index of 1.510 at 1550 nm

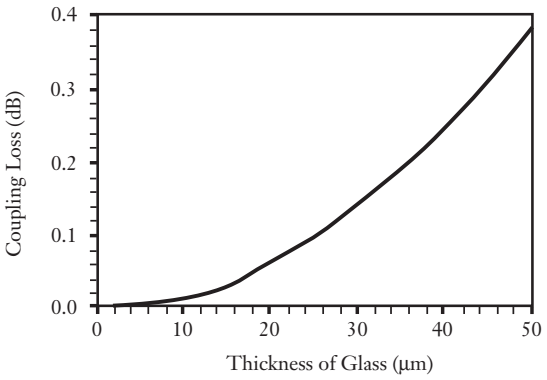


Figure 1. This chart shows the excess coupling loss at different UltraThin thickness' (varying gaps) when deploying UltraThin between two fibers.

Figure 2

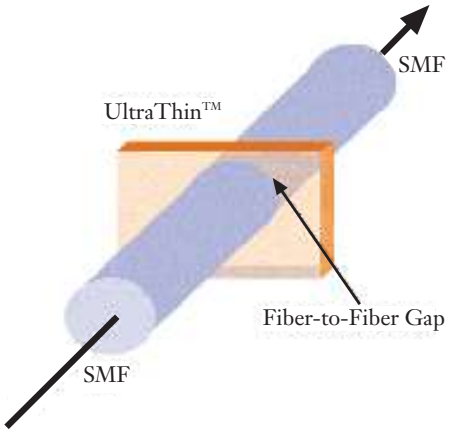


Figure 2. This schematic diagram illustrates UltraThin placement in the gap between two single-mode fibers.

Ordering Information

Please specify the following when ordering:

- Wavelength and Bandwidth (nm) — 1310 nm _____ 1550 nm _____ Other _____
- Quantity (pieces) — Please specify _____
- Application — Please specify _____
- Other Special Requirements — Please specify _____

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