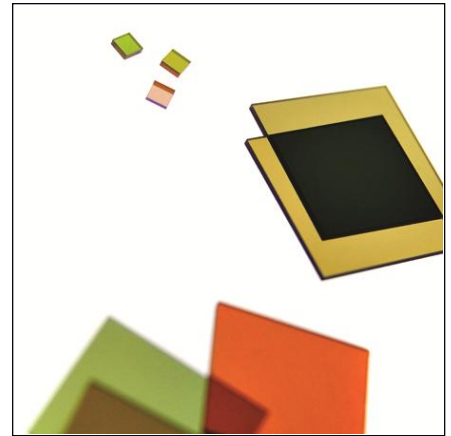
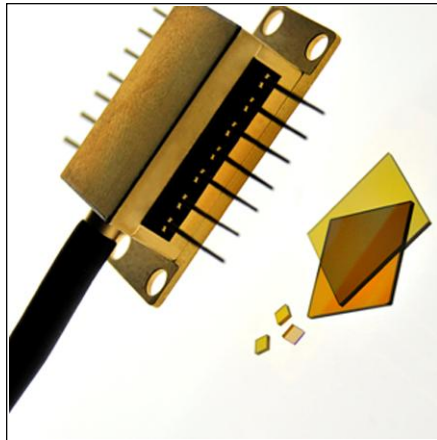


POLARCOR™ Glass Polarizers

Product Information

Specialty Materials



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.

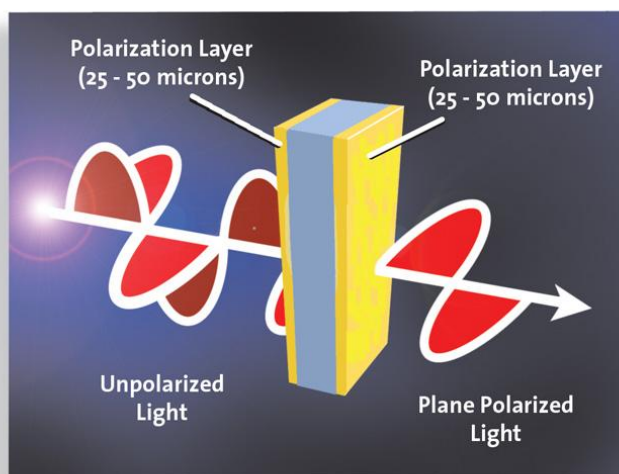
Typical Polarcor Performance

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

λ_{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 @ λ_{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 $0^\circ \pm 5^\circ$ 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 B a n d™	
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™

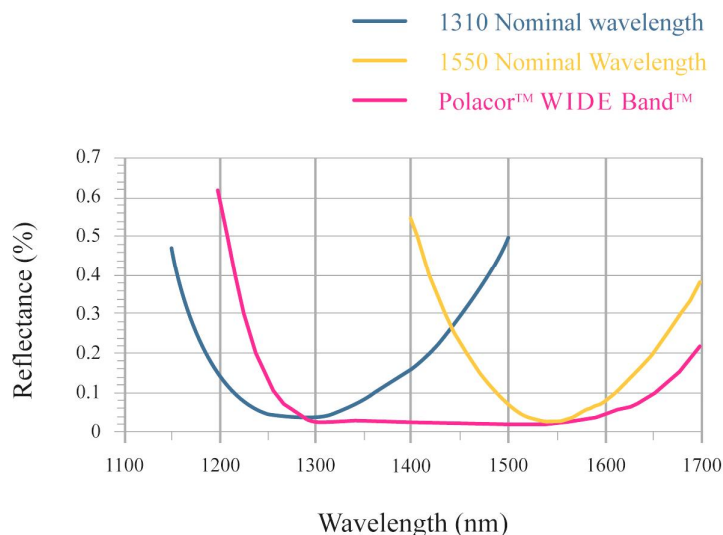
λ_{Nominal} (nm)	1060	1310	1550
Polarization Bandwidth (nm)	960 - 1160	1275 - 1345	1510 - 1590
Contrast	> 200:1	> 200:1	> 200:1
Extinction Ratio (dB)	> 23	> 23	> 23
Transmittance (%)	> 88.5	> 88.5	> 88.5
Insertion Loss (dB) without AR-Coating	< 0.53	< 0.53	< 0.53
Thickness (μm)	30 \pm 10	30 \pm 10	30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

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

Thermal Properties	Value	Unit
Coefficient of Thermal Expansion	65 x 10 ⁻⁷	/ °C 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 +45°, -45°, +30°, -30°, 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™.

Corning Incorporated

Advanced Optics
1 Riverfront Plaza
Corning, NY 14831 USA
Tel: +1 607 974 4812
Fax: +1 607 974 6718
Email: thin@corning.com
Web: www.corning.com

Corning China (Shanghai) Regional

Headquarters-Shenzhen Branch
Room 2201-2202A Tower Two
Kerry Plaza, No. 1 Zhongxinsi, Futian,
Shenzhen 518048, China
Tel: 86 755 8282 5678
Fax: 86 755 8282 5670

Corning Korea Company Ltd.

10th Floor, Kukje Center Building
191, Hangang-Ro 2-Ka
Yongsan-Ku, Seoul, 140-702
Korea
Tel: 82 2 796 9500
Fax: 82 2 796 9300

Corning International K.K.

Akasaka Intercity 6th Floor
1-11-44 Akasaka, Minato-ku,
Tokyo, 107-0052
Japan
Tel: 81 3 3586 1052
Fax: 81 3 3587 0906

Corning International Taiwan Co., Ltd.

Room #1203, 12F, No. 205
Tun Hua North Road
Taipei, 105, Taiwan
Taiwan
Tel: 886 2 2716 0338
Fax: 886 2 2716 0339

Corning GmbH-Corning International

Abraham-Lincoln Strasse 30
D65189 Wiesbaden
Germany
Tel: 49 611 7366 100
Fax: 49 611 7366 143