



## **Advanced Photonic Solutions for All Your Applications Needs**



**We are more than components provider, we are solutions provider, we do sample/special order and OEM order, Here are our case examples:**

- **Low cost fiber optic faceplates for LCD applications**
- **Low cost fiber optic faceplates for CCD applications**
- **Fiber optic inverter for consumer products**
- **Small 5x25mm calcite prism for communication applications**
- **Very small wedge angle Wollaston polarizer**
- **20mm clear aperture calcite beam displacer**
- **50mm clear aperture Wollaston polarizer**
- **Very low cost penta-prisms**
- **Low cost Sapphire and Germanium wafer**
- **Broadband(1300nm~1600nm) AR coating C-Lens**

# Calcite Crystals

## Description

Calcite is a natural crystal that has high birefringence, wide spectral transmission and availability in reasonably sized rhombs. It's a negative uniaxial crystals and mostly used as visible, near IR, and also UV polarizers. Advanced(AD) Photonics will provide you a wide variety calcite crystal with guaranteed low price. We have unique technique to change yellow calcite to colorless, which will result in a 15%~20% increase in transmission below 420nm.

## Physical and Optical Properties

Transparency Range	230~2300nm
Crystal Structure	Rhombohedral
Density	2.7 g/cm <sup>3</sup>
Hygroscopic Susceptibility	Low susceptibility to moisture
Mohs Hardness	3.0
Thermal Expansion Coefficient	$\alpha_{\perp}=24.39 \times 10^{-6}/k$ ; $\alpha_{\parallel}=5.68 \times 10^{-6}/k$
Crystal Class	Negative uniaxial with $n_o=n_a=n_b$ , $n_e=n_c$
Refractive index, birefringence( $\Delta=n_e-n_o$ ) and walk-off angle at 45°C ( $\rho$ )	$n_o=1.6557$ , $n_e=1.4852$ $\Delta n=-0.1705$ , $\rho=6.20^\circ$ @ 630nm
	$n_o=1.6629$ , $n_e=1.4885$ $\Delta n=-0.1705$ , $\rho=6.20^\circ$ @ 1300nm
Sellmeier Equation	$n_o^2=2.69705+0.0192064/(\lambda^2-0.01820)-0.0151624\lambda^2$ $n_e^2=2.18438+0.0087309/(\lambda^2-0.01018)-0.0024411\lambda^2$

## Calcite Grades

- **Laser Grade:** less than  $\lambda/10$  peak-peak wavefront distortion over the clear aperture and free of scatter when examined by He-Ne laser
- **UV Grade:** colorless material with high transmission in UV range and free of fluorescence under UV lamp
- **Optical Grade:** slight striae and scatter when examined by He-Ne laser
- **Standard Grade:** Wavefront distortion of less than one wave peak-peak and many conspicuous scatter center when examined by He-Ne laser

## Standard Size Catalog

- ✓ <20x20x20mm (<25g)
- ✓ >20x20x20mm (<70g)
- ✓ >25x25x25mm (>70g)
- ✓ >30x30x30mm (>100g)
- ✓ >40x40x40mm (>200g)
- ✓ >50x50x50mm (>400g)
- ✓ >60x60x60mm (>600g)
- ✓ >70x70x70mm (>1kg)

## AD Photonics ([www.adphotonics.com](http://www.adphotonics.com))

Contact Email: [business@adphotonics.com](mailto:business@adphotonics.com)

## Product Information

- Raw materials
- Semi-finished
- Finished Polarizer

# Calcite Polarizers

## Description

Advanced(AD) Photonics can provide low cost calcite polarizers with high quality, based on manufacturing facility in China. We can make standard specification polarizers or high performance calcite prism based on customer's requirement.

## Standard Specifications

- Calcite grade: Optical, Laser and UV
- Wavelength Range: 350-2300nm  
220-2300nm
- Surface quality: 40-20 scratch and dig  
20-10 scratch and dig
- Dimensions Tolerance: ±0.1mm
- Beam Deviation: <3 arc minutes
- Extinction Ratio: <1×10<sup>-5</sup>
- Surface Flatness: λ</4 @ 633nm

## Calcite polarizers

- ✓ Glan-Thompson Polarizer
- ✓ Glan-Taylor Polarizer
- ✓ Glan-Laser Polarizer
- ✓ Rochon Polarizing Beam-splitter Prism
- ✓ Wallaston Polarizing Beam-splitter Prism
- ✓ Beam Displacer

Price Information of Standard Products(for reference)								
Calcite Polarizer	5mmx5mm	10mmx10mm	10mmx15mm	15mmx15mm	15mmx20mm	20mmx20mm	20mmx20mm	20mm
Wollaston Prisms	\$220	\$280	\$300	\$430	\$450	\$800	\$860	
Glan Laser prisms	\$220	\$280	\$300	\$430	\$450	\$800	\$860	
Glan-Taylor prisms	\$220	\$280	\$300	\$430	\$450	\$800	\$860	
Glan-Thompson Prisms L/A=3.0	\$280	\$350	\$370	\$550	\$600	\$1200	\$1200	
Beam Displacer	\$200	\$250	\$280	\$380	\$400	\$750	\$800	

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## Product Information

- Low price and high quality
- Delivery time: 5 weeks
- We accept small and large quantity order

# Fiber Optic Faceplates and C-Lens

## Description

Advanced(AD) Photonics is a professional special optical materials and fiber optics modules/subsystems provider. We can provide various of fiber optic faceplate product, a fused fiber array with broadly used in CCD coupling, CRT / LCD displays, image intensification, remote viewing, field flattening and x-ray imaging, and opto-electronic applications. We can also supply C-lens, which has advantages of low cost and insertion loss, comparing with Gradient index lens. C-lens has broad applications in fiber optic communication and laser industry.

## Fiber Optic Faceplates

- NA: 0.25~1.0
- Transmittance: >70%
- Single Fiber Diameter: 3~80 $\mu$ m
- Plate size (mm):  $\phi$ 18~150
- Low distortion
- With or Without EMA

## Applications of Faceplates

- ✓ Image Intensifiers
- ✓ CCD coupling
- ✓ Light sensors
- ✓ CRT/LCD display
- ✓ Virtual Reality

## C-Lens specifications

- Lens material: Glass like
- Transmission: >99% (900nm~1700nm)
- Polarization preservation: 0.99
- Thermal expansion coefficient:  $<6 \times 10^{-6}/^{\circ}\text{C}$
- Max operating temp: 400 $^{\circ}\text{C}$
- Acid and Alkaline resistance: Excellent
- Maximum power: >600MW
- Coating : standard, broadband AR coating

## Applications of C-Lens

- ✓ Fiber Collimator
- ✓ Isolator
- ✓ Switch
- ✓ MEMs
- ✓ Collimator Array
- ✓ Laser Assembly

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# Crystal Quartz Products

## Description

Advanced(AD) Photonics can provide low cost crystal quartz products with high quality, based on manufacturing facility in China. We can make quartz waveplates, optical isolators and quartz depolarizers.

## Quartz Waveplates Specifications

- Material: Crystal Quartz
- Surface quality: 10-5 scratch and dig
- Wavefront distortion:  $\lambda / 10$
- Dimensions Tolerance:  $\pm 0.2\text{mm}$
- Retardation tolerance:  $\lambda / 500$
- Parallelism: 3arcsec
- AR coating:  $R < 0.25\%$  per surface

## Quartz Plates Specifications

- Material: Crystal Quartz
- Surface quality: 20-10 scratch and dig
- Wavefront distortion:  $\lambda / 4$
- Dimensions Tolerance:  $\pm 0.2\text{mm}$
- Parallelism: 5arcsec
- AR coating:  $R < 0.5\%$  per surface

## Quartz Waveplates

- ✓ Zero order waveplates
- ✓ Air-space zero order waveplates
- ✓ Multiple order waveplates
- ✓ Qual wavelength multiple order waveplates
- ✓ Rochon Polarizing Beam-splitter Prism

## Quartz Plates

- ✓ Optical Isolators
- ✓ Birefringent Filters
- ✓ Depolarizers

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# Prisms, Mirrors and Windows

## Description

Advanced(AD) Photonics can provide low cost crystal quartz products with high quality, based on manufacturing facility in China. We can make quartz waveplates, optical isolators and quartz depolarizers.

## Prisms Specifications

- Materials: BK7A or UV Fused Silica
- Surface quality: 10-5, 20-10 scratch and dig
- Wavefront distortion:  $\lambda / 8$
- Dimensions Tolerance:  $\pm 0.2\text{mm}$
- Angular Deviation: 3 arcmin
- Bevel: 0.3mm(typical) x 45°

## Prisms

- ✓ Right Angle and Knife Edge Prisms
- ✓ Dove Prisms
- ✓ Rhombic Prisms
- ✓ Penta Prisms
- ✓ Retro-reflectors/Corner Cubes
- ✓ Porro Prisms
- ✓ Equilateral Prisms
- ✓ Precision Wedge Prisms

## Mirrors

- Material: UV Fused Silica or BK7A
- Surface quality: 10-5 scratch and dig
- Surface Flatness:  $\lambda / 10$
- Dimensions Tolerance:  $\pm 0.2\text{mm}$
- Thickness:  $\pm 0.1\text{mm}$
- Parallelism: <3 arcmin
- Clear Aperture: >90%
- Durability: To MIL-C-675

## Windows/wafers

- ✓ Sapphire Windows
- ✓ Germanium Windows
- ✓ Zinc Selenide Windows
- ✓ Fused Silica Windows
- ✓ BK7 Windows
- ✓ Sapphire Wafers
- ✓ Germanium Wafers

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