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PBW127-106 - November 22, 2017

Item # PBW127-106 was discontinued on November 22, 2017. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

CO_2 LASER BREWSTER POLARIZER

- **10.6 µm Brewster Polarizer**
- **Zero Beam Displacement**
- **Compatible with Ø1/2" Lens Tubes**

PBW127-106

A PBW127-106 is shown within a SM05L30C slotted lens tube that is mounted onto a KS05RS kinematic rotation mount.

OVERVIEW

Features

- Two ZnSe Plates at Brewster Angle with Polarization Coating for 10.6 µm
- Chevron Configuration Corrects for the Displacement of Transmitted Beam
- Can be Mounted in Ø1/2" Kinematic Mounts with the SM05P05 Adapter

This Thorlabs' CO_2 Laser Polarizer is designed specifically as a Brewster polarizer for CO_2 lasers (10.6 µm). Each polarizer is composed of two zinc selenide windows with a polarizing coating on the outside face of each window, making this device bidirectional. The polarizer is then housed in a Ø1/2" cylindrical mount. The ZnSe windows are arranged in a chevron configuration within the cylindrical mount, resulting in no spatial offset to the transmitted beam, while the reflected s-polarization beam is ejected through slots in the cylindrical mount. The zero spatial offset allows this polarizer to be inserted and removed from a system without significantly affecting the downstream beam path. The movie to the right illustrates a beam propagating through the polarizer.

This polarizer is compatible with the SM05P05 (Ø1/2") adapter, allowing the Brewster polarizer to be mounted on any SM05- (0.535"-40) mount. Additionally, the Brewster polarizer may be mounted into a slotted lens tube, such as the SM05L30C. The image at the top of the page and to the right shows the PBW127-106 in an SM05L30C

Animation showing light propagation through a Brewster Polarizer

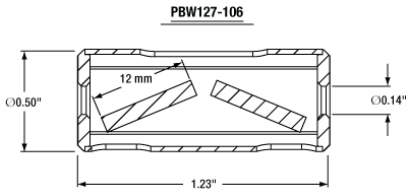
Specifications	PBW127-106
Design Wavelength	10.6 µm
Polarizer Length	1.23" (31.3 mm)
ZnSe Plate Dimension (H × W)	26 mm × 12.1 mm (1.02" × 0.48")
Dimensional Tolerance	±0.25 mm (±0.01")
ZnSe Plate Thickness	2.0 mm (0.08")
Thickness Tolerance	+0.00 mm/-0.10 mm (+0.00"/-0.004")
Polarizer Clear Aperture	Ø0.14" (3.5 mm)
Polarizing Coating	$T_p \geq 95\%$, $R_s \geq 97\%$
Angle of Incidence[a]	67.4°
Extinction Ratio[b]	≥1500:1
Surface Quality	40-20 Scratch-Dig
Surface Flatness	λ @ 633 nm

- The angle of incidence between laser beam and ZnSe windows. See *Graphs* tab for more information
- The extinction ratio (ER) is the ratio of maximum to minimum transmission of a linearly polarized input. When the transmission axis and input polarization are parallel, the transmission is at its maximum; rotate the polarizer by 90° for

minimum transmissir

slotted lens tube mounted on a KS05RS kinematic rotation mount.
The slotted lens tube gives the option to block or unblock the beam ejected from the polarizer. However, caution should be exercised when blocking portions of the CO_2 beam in order to avoid potential damage to other parts.

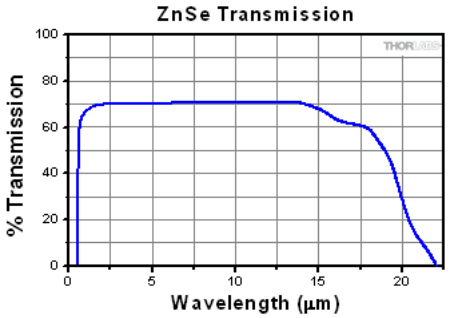
As a result of its design, this polarizer offered here is sensitive to impact, and care should be exercised when handling this device. Dropping a polarizer may adversely affect its performance or crack the ZnSe windows. Additionally, when handling optics, one should always wear gloves. This is especially true when working with zinc selenide, as it is a hazardous material. For your safety, please follow all proper precautions, including wearing gloves when handling this polarizer and thoroughly washing your hands afterward.



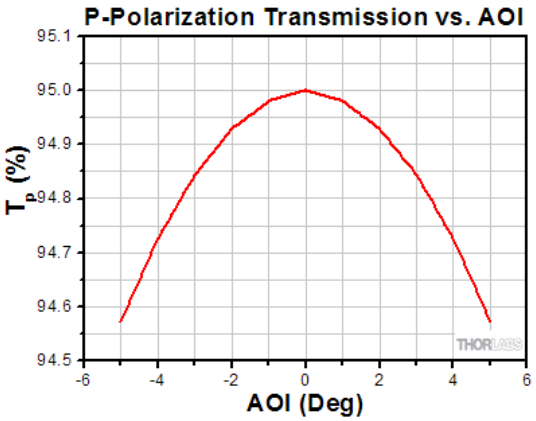
Click to Enlarge

GRAPHS

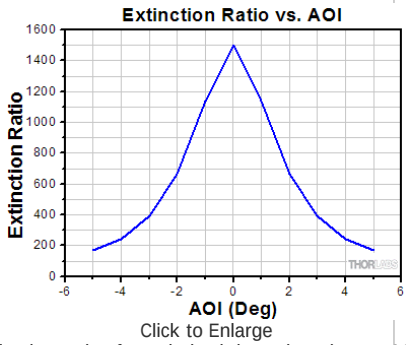
ZnSe Transmission Data



Click to Enlarge
The transmission curve above was obtained using a 6.3 mm thick, uncoated sample of ZnSe; the incident light was normal to the surface. Please note that this is the measured transmission, including surface reflections.



Click to Enlarge
Percent transmission of p-polarized throughput beam. AOI is measured from the normal of the polarizer's face plate.



Click to Enlarge
Extinction ratio of p-polarized throughput beam. AOI is measured from the normal of the polarizer's face plate.

Part Number	Description	Price	Availability
PBW127-106	Ø1/2" ZnSe Brewster Window Polarizer, 10.6 µm	$1,739.00	Lead Time