

# Polarizer

## Brewster Angle Polarizer

### VLBP Series High-Power Brewster Angle Polarizers

- Ultra-High Damage Threshold
- Superior Extinction Ratio
- Surface Quality
- Substrate Options



One Platform Many Possibilities

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## Overview

### Product Overview:

The Venuslab VLBP Series are thin-film plate polarizers optimized for use at the **Brewster Angle (approx. 56°)**. Unlike standard absorptive polarizers, these optics utilize high-efficiency dielectric coatings to separate S-polarized and P-polarized light with minimal absorption, making them ideal for intra-cavity laser applications and high-power beam steering.

When oriented at the Brewster angle, the P-polarized component is transmitted with high efficiency ( **$T_p > 98\%$** ), while the S-polarized component is reflected ( **$R_s > 99\%$** ). This design eliminates the need for optical cement, significantly increasing the laser induced damage threshold (LIDT) compared to cemented polarizing cubes.

### Application Note:

Mounting Tip: To achieve maximum extinction ratio, precise angular alignment is required. These polarizers are best mounted in kinematic rotation mounts to fine-tune the angle to the exact Brewster condition.

## Technical Specifications

### Technical Specifications (VLBP-HP Series)

Specification	Value / Description
Surface Flatness	/10 @ 632.8 nm (over clear aperture)
Wavefront Distortion	/10 @ 632.8 nm
Surface Quality	10-5 Scratch-Dig (High Precision Laser Grade)
Extinction Ratio	$T_p / T_s > 1000:1$
Transmission Efficiency	$T_p > 98\%$ (at design wavelength)
Reflection Efficiency	$R_s > 99\%$ (for S-polarization)
Parallelism	1 arc min
Angle of Incidence	$56^\circ \pm 3^\circ$ (Brewster Angle)
Damage Threshold	$\sim 20 \text{ J/cm}^2$ @ 10ns, 10Hz (See specific model)
Coating	High-Power Dielectric AR Coating
Clear Aperture	> 90% of Diameter
Cleaning Recommendation	Solvent cleaning (Alcohol/Acetone mixture) with lens tissue.

### Technical Specifications (VLBP-STD Series)

Specification	Value / Description
Substrate Material	H-K9L (N-BK7 Equivalent)
Surface Flatness	/10 @ 632.8 nm
Surface Quality	10-5 Scratch-Dig
Extinction Ratio	$T_p / T_s > 500:1$
Transmission Efficiency	$T_p > 95\%$
Reflection Efficiency	$R_s > 99\%$
Angle of Incidence	$56^\circ \pm 3^\circ$ (Angular tuning required)
Damage Threshold	$5 \text{ J/cm}^2$ @ 10ns, 10Hz
Coating	Standard Dielectric Coating

## Selection Chart

### High-Power Laser Line Polarizers

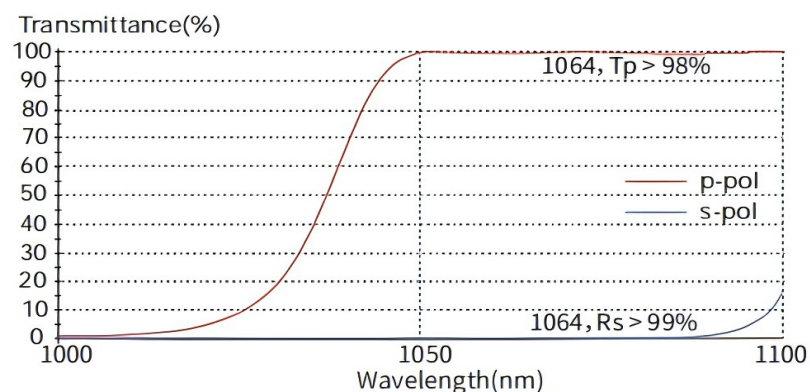
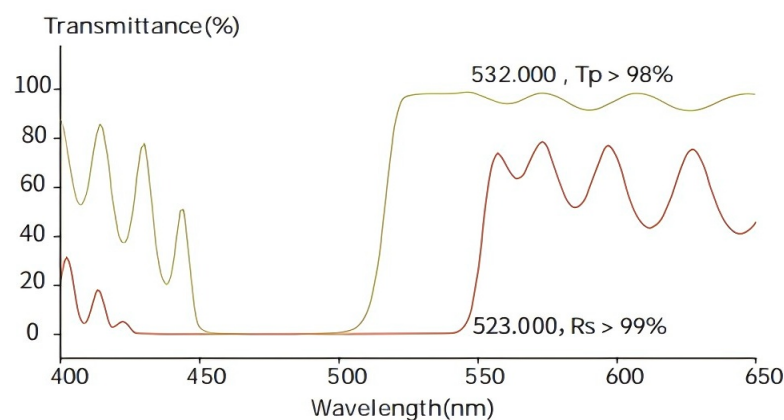
Model	Substrate	Dimensions (mm)	Wavelength (nm)	LIDT (Damage Threshold)
VLBP-25.4-532-HP	BK7 (K9)	Ø25.4 x 5	532 nm	20 J/cm <sup>2</sup> @ 10ns
VLBP-30-532-HP	BK7 (K9)	Ø30 x 4	532 nm	20 J/cm <sup>2</sup> @ 10ns
VLBP-50-532-HP	BK7 (K9)	Ø50 x 5	532 nm	20 J/cm <sup>2</sup> @ 10ns
VLBP-25.4-1030-Q	Quartz (JGS1)	Ø25.4 x 5	1030 nm	15 J/cm <sup>2</sup> @ 10ns
VLBP-50.8-1030-Q	Quartz (JGS1)	Ø50.8 x 6	1030 nm	15 J/cm <sup>2</sup> @ 10ns
VLBP-25.4-1064-HP	BK7 (K9)	Ø25.4 x 5	1064 nm	20 J/cm <sup>2</sup> @ 10ns
VLBP-30-1064-HP	BK7 (K9)	Ø30 x 4	1064 nm	20 J/cm <sup>2</sup> @ 10ns
VLBP-50-1064-HP	BK7 (K9)	Ø50 x 5	1064 nm	20 J/cm <sup>2</sup> @ 10ns

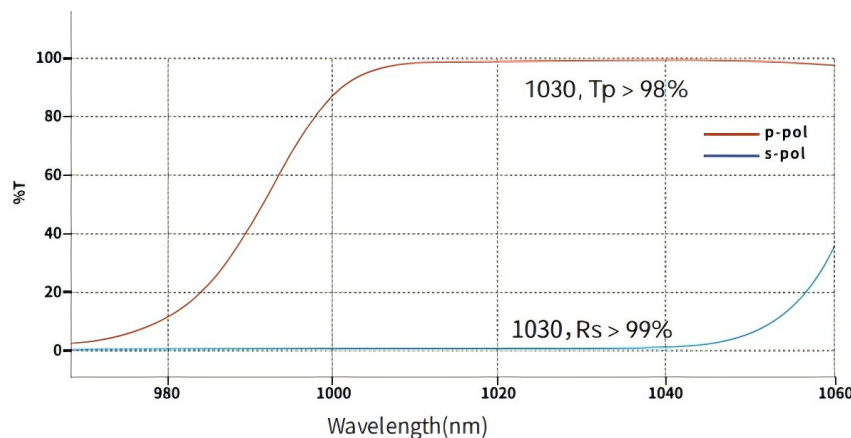
### Standard Telecom Polarizers

Model	Substrate	Dimensions (mm)	Wavelength (nm)	LIDT
VLBP-25.4-1550-STD	BK7 (K9)	Ø25.4 x 5	1550 nm	5 J/cm <sup>2</sup> @ 10ns
VLBP-30-1550-STD	BK7 (K9)	Ø30 x 4	1550 nm	5 J/cm <sup>2</sup> @ 10ns
VLBP-50-1550-STD	BK7 (K9)	Ø50 x 5	1550 nm	5 J/cm <sup>2</sup> @ 10ns

## Reference Curve

### Performance @ Brewster Angle (56°)





## Service & Support

We are dedicated to delivering exceptional optoelectronic solutions to every client. From precision manufacturing and secure delivery to full-lifecycle technical support, we are here to ensure a seamless and reliable experience at every step.

### 1. Warranty Policy

#### Quality First, Worry-Free Operation

**Warranty Period:** We offer a **two-year** warranty service for all of our core optoelectronic products, effective from the date of shipment.

**Coverage:** We provide free repair or replacement services for malfunctions caused by material defects or workmanship errors under normal operating conditions.

**Rapid Response:** Upon receiving a warranty claim, we guarantee to initiate the assessment process within **24 hours** to minimize your equipment downtime.

### 2. Technical Support

#### Expert Team, Full-Process Guidance

**Technical Consultation:** Our team of senior optical engineers provides **24/7 online support** to assist with installation, commissioning, optical path alignment, and parameter optimization.

**Scheduled Maintenance:** We offer full-lifecycle maintenance recommendations, including firmware upgrades, optical component cleaning guidelines, and precision calibration services.

**Training Services:** We provide customized remote or on-site operational and safety training to ensure your team can operate the equipment efficiently and safely.

### 3. Logistics & Delivery

#### Precision Packaging, Global Reach

**Professional Packaging:** Given the fragile nature of optical instruments, we utilize industrial-grade shockproof, anti-static, and moisture-proof vacuum packaging to ensure zero damage during transit.

**Logistics Partners:** We partner with top-tier global logistics providers (**DHL / FedEx / UPS / SF Express**) to offer reliable shipping with real-time tracking.

**Shipping Insurance:** All shipments are fully insured to eliminate logistics risks.

### 4. Compliance & Certification


#### Strict Standards, Total Compliance

**Quality Certification:** Our manufacturing process is **ISO 9001 certified**, and our products comply with international standards such as **CE** and **RoHS**.

**Export Compliance:** "Committed to environmental responsibility, all our products comply with **RoHS 2.0** and **REACH** standards, ensuring safety and global compliance."

## Explore Series

Model	Substrate	LIDT (Damage Threshold)	Dimensions (mm)	Wavelength (nm)
VLBP-25.4-532-HP	BK7 (K9)	20 J/cm <sup>2</sup> @ 10ns	Ø25.4 x 5	532 nm
VLBP-25.4-1064-HP	BK7 (K9)	20 J/cm <sup>2</sup> @ 10ns	Ø25.4 x 5	1064 nm
VLBP-25.4-1030-Q	Quartz (JGS1)	15 J/cm <sup>2</sup> @ 10ns	Ø25.4 x 5	1030 nm
VLBP-25.4-1550-STD	BK7 (K9)	5 J/cm <sup>2</sup> @ 10ns	Ø25.4 x 5	1550 nm

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