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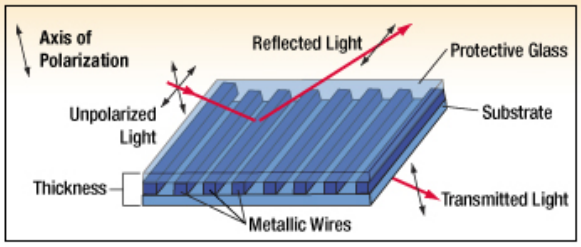
WP25L-UB - November 21, 2024

Item # WP25L-UB was discontinued on November 21, 2024. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

WIRE GRID POLARIZERS ON GLASS SUBSTRATES

- **Polarizes Wavelengths from 420 to 700 nm or 250 nm to 4 µm**
- **High Transmission and Extinction Ratio**
- **Protective Glass Cover**



WP50L-UB
50.0 mm x 50.0 mm

WP25L-UB
25.0 mm x 25.0 mm

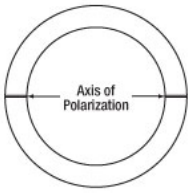
WP12L-VIS
12.5 mm x 12.5 mm

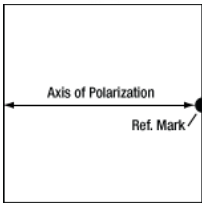
WP25M-VIS
Ø25.0 mm

OVERVIEW

Features

- Large Field of View
- Available Extinction Ratios
  - >683:1 (WP12L-VIS, WP25L-VIS, WP50L-VIS)
  - >800:1 (WP25M-VIS)
  - Up to 10 000:1 (-UB)
- Available Polarization Range:
  - 420 - 700 nm (-VIS)
  - 250 nm - 4 µm (-UB)
- Multiple Sizes Available
  - 12.5 mm x 12.5 mm (Unmounted)
  - Ø25 mm (Mounted)
  - 25 mm x 25 mm (Unmounted)
  - 50 mm x 50 mm (Unmounted)





How to Determine the Polarization Axis

These polarizers consist of an array of parallel metallic wires sandwiched between a fused silica (-UB) or Eagle XG®* (-VIS) glass substrate. Featuring high transmission and operating temperatures up to 200 °C (unmounted), wire grid polarizers are an alternative to both traditional film-based polarizers and holographic wire grid polarizers. Additionally, our -VIS wire grid polarizers have an antireflection coating deposited on the back of substrate as well as on both sides of the cover glass.

Since the wire grid is prone to damage, the protective glass cover serves to reduce this risk. In addition, the glass surfaces may be cleaned, which extends the typical working lifetime when compared to unprotected wire grid polarizers.

Wire grid polarizers transmit radiation with an electric field vector perpendicular to the wire and reflect radiation with the electric field vector parallel to the wire. The direction of polarized transmitted light is marked by a small dot on the square polarizers and by a line on the round polarizers (see diagrams to the right). Due to surface reflections, the reflected beam contains both polarizations. Please note that the mark on these wire grid polarizers indicates the axis of polarization and not the orientation of the wires (see the diagrams to the right).

Click to Enlarge
[APPLIST]
[APPLIST]
Variable Polarizing Attenuator Made with Two WP50L-VIS Polarizers

*Eagle XG® is a registered trademark of Corning, Inc.

POLARIZER GUIDE

Polarizer Selection Guide

Thorlabs offers a diverse range of polarizers, including wire grid, film, calcite, alpha-BBO, rutile, and beamsplitting polarizers. Collectively, our line of wire grid polarizers offers coverage from the visible range to the beginning of the Far-IR range. Our nanoparticle linear film polarizers provide extinction ratios as high as 100 000:1. Alternatively, our other film polarizers offer an affordable solution for polarizing light from the visible to the Near-IR. Next, our beamsplitting polarizers allow for use of the reflected beam, as well as the more completely polarized transmitted beam. Finally, our alpha-BBO (UV), calcite (visible to Near-IR), rutile (Near-IR to Mid-IR), and yttrium orthovanadate (YVO_4) (Near-IR to Mid-IR) polarizers each offer an exceptional extinction ratio of 100 000:1 within their respective wavelength ranges.

To explore the available types, wavelength ranges, extinction ratios, transmission, and available sizes for each polarizer category, click *More [+]* in the appropriate row below.

Wire Grid Polarizers	More [+]
Film Polarizers	More [+]
Beamsplitting Polarizers	More [+]
alpha-BBO Polarizers	More [+]
Calcite Polarizers	More [+]
Quartz Polarizers	More [+]
Magnesium Fluoride Polarizers	More [+]
Yttrium Orthovanadate (YVO_4) Polarizers	More [+]
Rutile Polarizers	More [+]

a. Click on the graph icons in this column to view a transmission curve for the corresponding polarizer. Each curve represents one substrate sample or coating run and is not guaranteed.
b. Mounted in a protective box, unthreaded ring, or cylinder.
c. Available unmounted or in an SM05-threaded (0.535"-40) mount that indicates the polarization axis.
d. Available unmounted or in an SM1-threaded (1.035"-40) mount that indicates the polarization axis.
e. PBS519: Average T_P:T_S > 1000:1
f. Available unmounted or mounted in cubes for cage system compatibility.
g. Calcite's transmittance of light near 350 nm is typically around 75% (see *Transmission* column).
h. Available unmounted or in an unthreaded Ø1/2" housing.
i. The transmission curves for calcite are valid for linearly polarized light with a polarization axis aligned with the mark on the polarizer's housing.
j. The 1064 nm V coating corresponds to a -C26 suffix in the item number.
k. Available unmounted or mounted in a protective box or unthreaded cylinder that indicates the polarization axis.

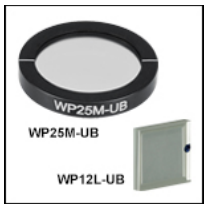
Visible Wire Grid Polarizers: 420 - 700 nm

Specifications				
Item #	**WP12L-VIS**	**WP25M-VIS**	**WP25L-VIS**	**WP50L-VIS**
Substrate	EAGLE XG®[a]			
Polarization Wavelength Range	420 - 700 nm			
Extinction Ratio[b]	>683:1	>800:1	>683:1	
AR Coating[c]	420 - 670 nm	400 - 700 nm	420 - 670 nm	
Transmission[d]	>82%	>82% ± 2.5%	>82%	
Size	12.5 mm x 12.5 mm	Ø25.0 mm	25.0 mm x 25.0 mm	50.0 mm x 50.0 mm
Dimensional Tolerance[e]	±0.2 mm	+0.0/-0.1 mm	±0.2 mm	
Clear Aperture	10.5 mm × 10.5 mm	Ø19 mm	21.0 mm × 21.0 mm	48.0 mm × 48.0 mm
Thickness	1.53 ± 0.20 mm	3.5 ± 0.10 mm	1.53 ± 0.20 mm	
Angle of Incidence	±20°			
Thermal Expansion[f]	31.7 x 10^{-7}/°C			
Surface Quality	80-50 Scratch-Dig			
Operating Temperature	-40 to 200 °C[g]	-40 to 93 °C	-40 to 200 °C[g]	

a. Eagle XG® is a registered trademark of Corning, Inc.
b. The extinction ratio is the ratio of maximum to minimum transmission of a linearly polarized input and is measured at normal incidence. When the transmission axis and input polarization are parallel, the transmission is at its maximum; rotate the polarizer by 90° for minimum transmission.
c. The coating is deposited on the back of the substrate and on both sides of the cover glass. The reflectance is <1% in the range specified at normal incidence, with <1.5% reflectance for 0° ± 18° AOI.
d. At 450 nm, 550 nm, 650 nm at Normal Incidence
e. Length or Diameter
f. Applicable to Polarizer and Cover-Glass Only (Not Gasket)
g. For 5000 Hours

Part Number	Description	Price	Availability
WP12L-VIS	**12.5 mm x 12.5 mm Wire Grid Polarizer, 420-700 nm**	**$158.00**	**Today**
WP25M-VIS	**Customer Inspired! Ø25.0 mm Mounted Wire Grid Polarizer, 420-700 nm**	**$319.56**	**Today**
WP25L-VIS	**25.0 mm x 25.0 mm Wire Grid Polarizer, 420-700 nm**	**$222.14**	**Today**
WP50L-VIS	**50.0 mm x 50.0 mm Wire Grid Polarizer, 420-700 nm**	**$699.67**	**Today**

Ultra Broadband Wire Grid Polarizers: 250 nm - 4 µm



Specifications				
Item #	**WP12L-UB**	**WP25M-UB**	**WP25L-UB**	**WP50L-UB**
Substrate	Fused Silica			
Polarization Wavelength Range	250 nm - 4 µm			
Extinction Ratio[a]	250 nm - 4 µm: >10:1 300 nm - 4 µm: >100:1 600 nm - 4 µm: >1000:1 2.25 µm - 4 µm: >10 000:1			
Transmission (@ 450 nm)	>75% ± 2.5%	>70% ± 2.5%	>75% ± 2.5%	
Typical Performance Graphs[b]	Transmission  Reflectance  Raw Data			
Size	12.5 mm x 12.5 mm	Ø25.0 mm	25.0 mm x 25.0 mm	50.0 mm x 50.0 mm
Dimensional Tolerance[c]	±0.4 mm	+0.0/-0.1 mm	±0.4 mm	
Clear Aperture	10.5 mm × 10.5 mm	Ø19 mm	21.0 mm × 21.0 mm	48.0 mm × 48.0 mm
Thickness	2.2 mm ±0.3 mm	3.5 mm	2.2 ±0.3 mm	
Angle of Incidence	±20°			
Thermal Expansion	5.5 x 10^{-7}/°C			
Surface Quality	80-50 Scratch-Dig			
Operating Temperature	-40 to 200 °C	-40 to 93 °C	-40 to 200 °C	-40 to 200 °C

a. The extinction ratio 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 transmission.
b. Click icons to see the full graph. The data presented above was taken from a single production run. Performance will vary from lot to lot.
c. Length or Diameter

Part Number	Description	Price	Availability
WP12L-UB	**12.5 mm x 12.5 mm Wire Grid Polarizer, 250 nm to 4 µm**	**$924.21**	**Today**
WP25M-UB	**Customer Inspired! Ø25.0 mm Mounted Wire Grid Polarizer, 250 nm to 4 µm**	**$1,227.13**	**Today**
WP25L-UB	**25.0 mm x 25.0 mm Wire Grid Polarizer, 250 nm to 4 µm**	**$1,143.97**	**Today**
WP50L-UB	**50.0 mm x 50.0 mm Wire Grid Polarizer, 250 nm to 4 µm**	**$1,967.19**	**Today**