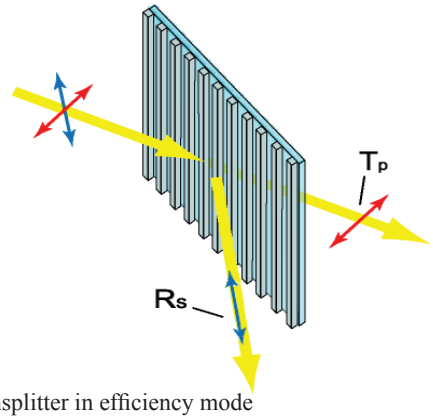
Optics

Wire-Grid Polarizing Beamsplitter

PBS PBF Series Datasheet



Beamsplitter in efficiency mode

Applications

- Display
  - Projection
  - Near-to-eye
  - Heads-up Display
- Pico-Projectors
- Analytical Instrumentation

ProFlux® Beamsplitter

PBS02- General Purpose

- Lower cost
- For many applications with less stringent imaging requirements.

PBF02- Improved Flatness

Designed specifically for imaging applications where image quality is critical.

- Thicker flat borofloat substrate starting material, 3λ/in flatness
- Improved wavefront of finished product

PBF-UF- Ultra Flat

Controlled cut part flatness <2λ/in

- Ultra flat starting material
- Controlled wavefront of finished product

ProFlux® beamsplitter Nanowire® Technology is optimized to operate at 45°, providing durable polarizing beamsplitters. These beamsplitters can be used for a variety of both imaging and non-imaging applications for display products and scientific instruments. The ProFlux polarizing beamsplitter's wide angular aperture, excellent performance and exceptional reliability offer an excellent design choice.

Made with highly durable materials, ProFlux provides pure polarization that gives a high contrast and bright image for the life of the projector. The ProFlux polarization mechanism aligns ideally with the LC display and has excellent polarization uniformity even over large apertures, providing bright, high contrast, long-lasting displays.

Features	Benefits
Nanowire Technology	Brightness and contrast uniformity
	Excellent for optical designs with f/# < f/2.0
	Wavelength and AOI independent
Inorganic	High reliability
	High heat resistance
Optical Flatness	Improved Wavefront Error for better channel alignment

Substrate Specifications

	PBS	PBF	PBF-UF
Glass:	Display Grade Glass	Schott Borofloat®	Schott Borofloat®
Thickness:	0.7 ± 0.07mm	1.6 ± 0.1mm	1.6 ± 0.1mm
Index of Refraction:	435.8nm: 1.598 643.8nm: 1.5078	588nm:1.472	588nm: 1.472
Thermal Expansion:	37.6 x 10^{-7}/°C (0-300°C)	37.6 x 10^{-7}/°C (20-300°C)	37.6 x 10^{-7}/°C (20-300°C)

General Specifications

	PBS	PBF	PBF-UF
Finished Part Flatness:	Not controlled	Improved	Best, <2λ /in
Wavelength Range:	420-700nm	420-700nm	420-700nm
AR Coating:	Optional	Optional	
Dimensional Tolerance:	± 0.2mm	± 0.4mm	± 0.4mm
Edge Exclusion:	2mm	2mm	2mm
Transmission Axis (TA):	Referenced to long side of part on all product types		
TA Tolerance:	± 1°	± 1°	± 1°
Angle of Incidence:	45° ± 15°	45° ± 15°	45° ± 15°
Maximum Temperature:	200°C > 5000 hrs	200°C > 5000 hrs	200°C > 5000 hrs
RoHS:	Compliant		

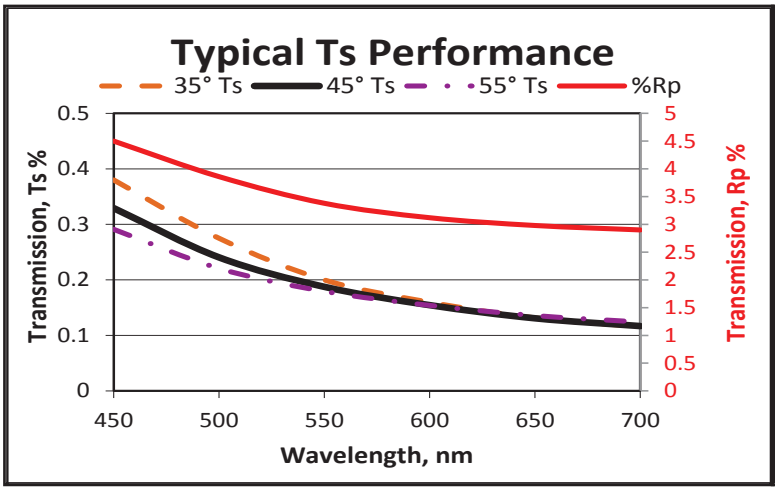
MOXTEK®

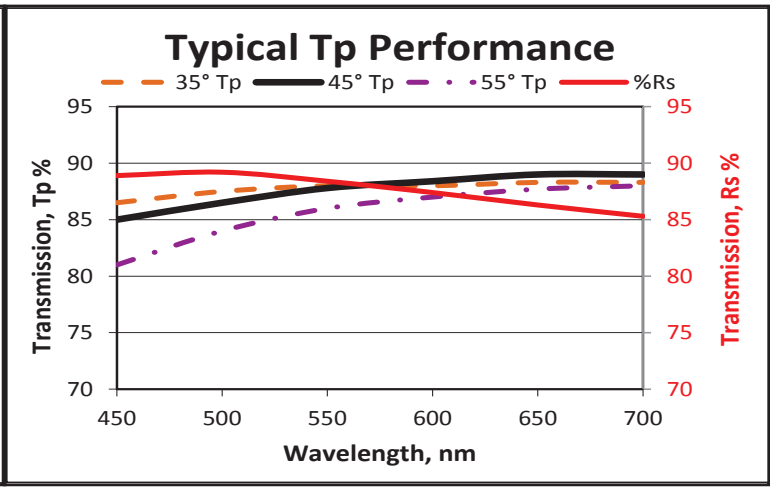
ProFlux Nanowire® Technology

Design Consideration

To obtain the best transmission and contrast, the beamsplitter should be used to transmit the p-polarization, using the standard definition of p-polarization and s-polarization. It is possible to use the beam splitter in the orthogonal orientation (transmission of the s-polarization), but with reduced efficiency and contrast. In a projection system it is recommended that the wire-grid surface be positioned to face the imager and projection lens to ensure the reflection is from the front surface of the beamsplitter.

Typical PBS and PBF Performance at 45°





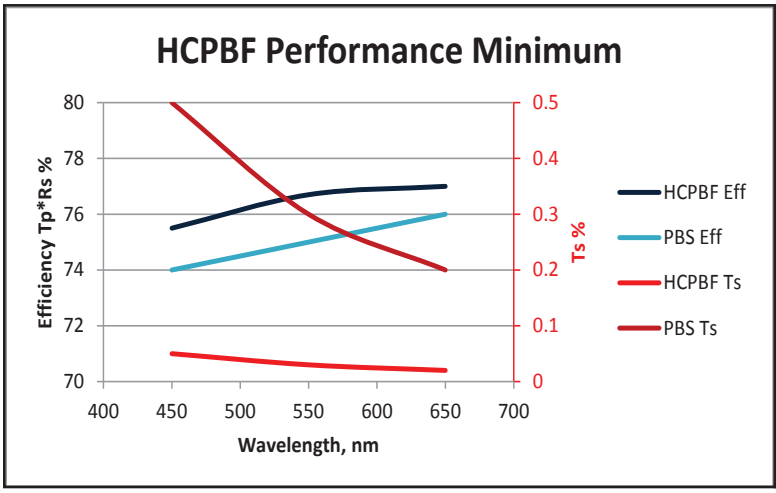
HCPBF Specifications

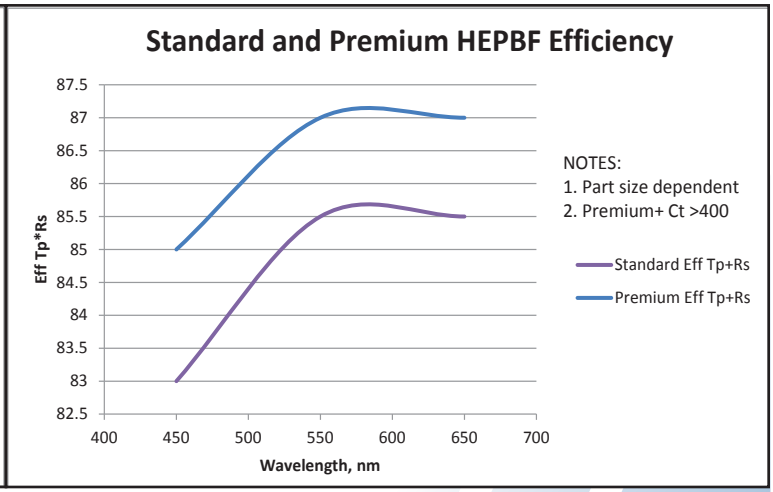
Tp Min			Ts Max			Rp Max			Efficiency Min		
450nm	550nm	650nm	450nm	550nm	650nm	450nm	550nm	650nm	450nm	550nm	650nm
83.0	85.5	85.5	0.05	0.05	0.05	3.0	3.0	3.0	75.5	76.7	77.0

Typical HCPBF and HEPBF Performance at 45°

Plot showing typical HCPBF (high contrast polarizing beamsplitter on a flat substrate) performance comparison with standard PBF. The HCPBF offers an increase in contrast of approximately 10x (red curves) with improved transmission of about 2% (blue curves).

Plot showing typical HEPBF (high efficiency polarizing beamsplitter on a flat substrate) performance versus standard PBF. The HEPBF offers an improved efficiency of about 5%, providing a substantial increase in projection system brightness.





MOXTEK®
452 West 1260 North / Orem, UT 84057
Phone 801.225.0930 / Fax 801.221.1121
www.moxtek.com
info@moxtek.com