



Optically Flat Polarizing Beamsplitter (PBF02 Series)

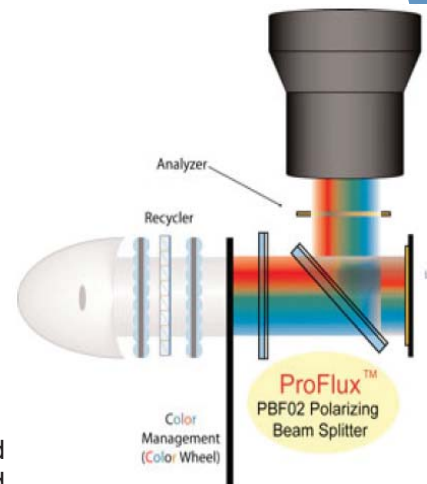
ProFlux™ Optically Flat Polarizing Beamsplitters are the best available

Optimized for use at 45°, these beamsplitters deliver good transmission and excellent contrast. Optically flat polarizing beamsplitters are a specific product engineered for imaging applications. The quality of both the transmitted and reflected wavefront meets the requirements of imaging applications in scientific instruments and displays.

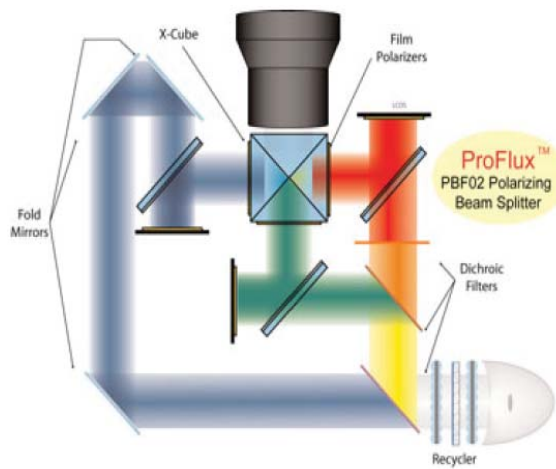
The benefits of the ProFlux™ Optically Flat Polarizing Beamsplitter in such applications are:

- Large angular aperture
- Clean polarization state that is fully compatible with the analyzer polarizer
- No stress birefringence in reflection
- Very high image contrast

Recommended uses include 1, 2, and 3 panel LCOS projection displays and 3 panel transmissive projection displays. The performance of all LCOS and transmissive displays will be improved with ProFlux™ beamsplitters. They should be specified in all applications requiring high light intensity or brightness, long service life, exceptional contrast or large angular apertures.



1 Panel LCOS Engine



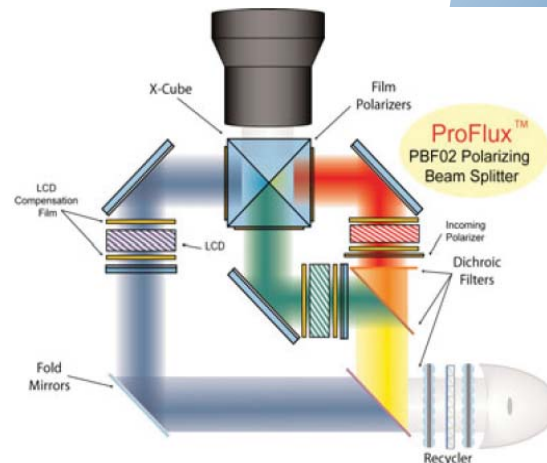
3 Panel LCOS Engine

depolarization from stress birefringence in the substrate.

Because the PBS has no depolarization over wide angular apertures, this system can provide bright, high contrast uniform images. Experimental systems have demonstrated the potential for 10,000:1 contrast. Actual system contrast will be limited by the LCOS or HTPS panel performance. The cleanup analyzer is required because the reflection of the PBS is not as high as the transmission contrast.

To illustrate the application of the ProFlux™ Optically Flat PBS, we will examine the single panel LCOS optical system. This system consists of a lamp, color management system such as a wheel, an LCOS panel, an analyzer polarizer, and the ProFlux™ Optically Flat PBS. Other necessary components such as lenses have been omitted for clarity.

The PBS is operated with the image reflecting from the front surface of the beamsplitter to avoid tilted-plate astigmatism and to avoid



3 Panel HTPS Engine



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Design Consideration

The information contained on this page should help the optical engineer with design and modeling of ProFlux™ in a light engine. The physical data information to the right gives the designer information regarding the substrate material including flatness. It is recommended that the MicroWire™ film be positioned to face the imager and the projection lens to ensure the reflection is from the front surface of the beamsplitter.

Typical Performance at 45°

Figure 1 shows the reflectivity of a typical optically flat PBS

Figure 2 shows the reflectivity of the unwanted p-polarization of a typical optically flat PBS

Figure 3 shows the transmissivity of a typical optically flat PBS

Figure 4 shows the transmission of the unwanted s-polarization of the PBS

Physical Data

Substrate Material

Glass:	Schott Borofloat
Thickness:	1.6± 0.1 mm
Flatness:	1.5λ Power 1.5λ Astigmatism over 25.4mm Diameter
Index of Refraction:	1.472 @ 588nm
Thermal Expansion:	37.6 x 10 ⁻⁷ /°C (20 - 300°C)
Scratch/Dig:	As Polished
Dimensional Tolerance:	± 0.4 mm

Figure 1. Reflectivity (Rs)

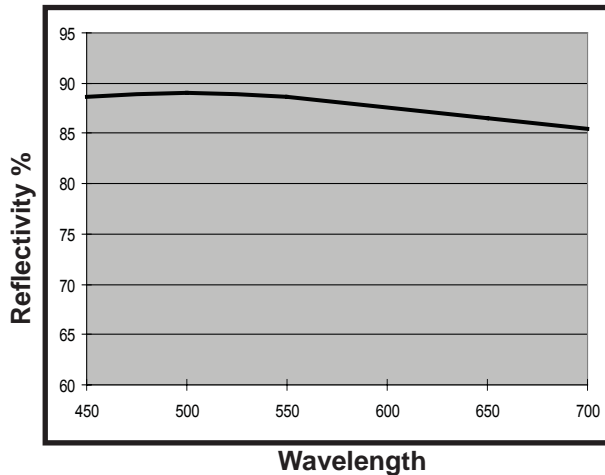


Figure 2. Reflectivity (Rp)

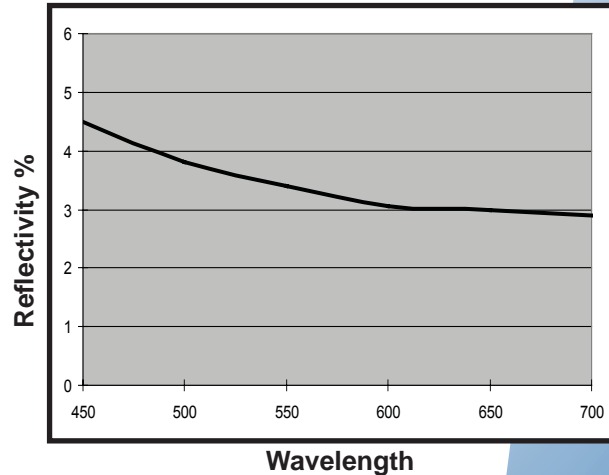


Figure 3. Transmission (Tp)

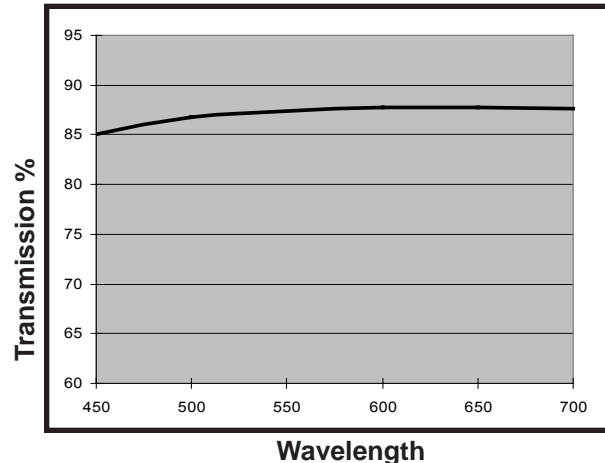


Figure 4. Transmission (Ts)

