

# Polarizing Fiber: Bow-Tie Style

## T-HB830Z

### Description

T-HB830Z polarizing fibers deliver high polarization extinction ratios and broad, stable operating windows for demanding applications. The HB830Z, with bow-tie geometry, boasts extreme birefringence with polarization beat lengths approaching 0.5 mm and can provide 100 nm of practical, usable bandwidth. Thus, this fiber allows for a wide variety of packaging and sourcing options: cabled or coiled, narrow linewidth laser or broadband ASE source.

Coiling our HB830Z PZ fiber to smaller diameters will result in a narrowing of the polarization window and a shift in center wavelength to shorter wavelengths. Coiling the PZ fiber can result in a better polarization extinction ratio, though can lead to greater loss. If loss is too high, the coil is too tight; conversely if the polarization extinction ratio is too low, the coil is not tight enough. For performance stability, it is recommended to use 4 - 10 m of fiber. However, due to the high birefringence of the PZ fiber, the polarization window will still be broad; giving the user a wide variety of packaging and deployment options.

### Specifications

Geometrical & Mechanical	
Cladding Diameter	80 ± 1 µm
Coating Diameter	170 ± 10 µm
Core-Cladding Concentricity	≤1 µm
Coating Material	Dual Acrylate
Operating Temperature	-40 to 85 °C
Proof Test Level (1.4 GN/m <sup>2</sup> )	1% (100 kpsi)

Optical	
Numerical Aperture	0.14
Attenuation	≤0.02 dB/m @ 830 nm
Operating Wavelength <sup>a</sup>	830 nm
Cutoff Wavelength <sup>b</sup>	400 - 600 nm
20 dB Fast Edge <sup>a</sup>	≤790 nm
3 dB Slow Edge <sup>a</sup>	≥860 nm
Mode Field Diameter (Nominal)	4.1 - 7.7 µm @ 830 nm
Beat Length	≤1.04 mm @ 830 nm



- Typical polarizing performance with deployment conditions of 5 m length in 89 mm (3.5") diameter coils. Bandwidth may be increased depending on deployment conditions (See figure below)
- Strongly dependent upon fiber deployment condition

## Performance Plots

