



SM Fiber

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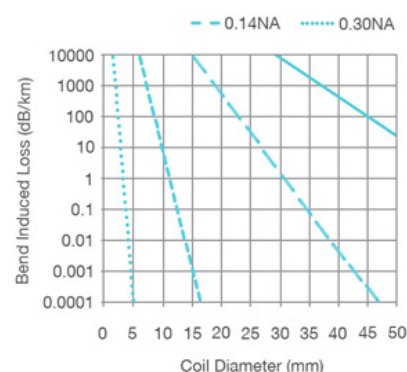
Datasheet

Polyimide Coated SM Fiber

Fibercore's range of Polyimide coated, bend-insensitive Single-Mode (SM) fibers are specifically designed for use in harsh environments. The fibers target micro-seismic "fracking" sensors, distributed temperature and pressure sensors used in Oil & Gas exploration and process optimization. These fibers are also an excellent choice for embedded Fiber Bragg Grating (FBG) strain and temperature sensor applications.

Polyimide is a high performance polymer, which can withstand short-term temperatures as high as 400°C and continuous temperatures of 300°C, allowing the fiber to survive in high temperature wells and thermally cured embedding processes.

The fibers are available in a range of Numerical Apertures (NAs) from 0.13NA up to 0.31NA. Low NA fibers are designed for low attenuation applications where long lengths of fiber are used in a straight deployment state, for example in Distributed Temperature Sensing (DTS) systems. High NA fibers allow dramatically reduced bend losses for coiled deployment states, for example in coiled seismic/acoustic sensors.



Advantages:

- Engineered for high temperature applications up to +300°C
- High NA variants for extremely low macro and micro bend losses
- Reduced cladding options for high reliability coils and reduced package volume
- Photosensitive core designs for FBG inscription

Typical applications:

- Downhole sensors
- Geophones
- DTS, Distributed Acoustic Sensing (DAS), Distributed Strain Sensing (DSS) and Distributed Pressure Sensing (DPS)
- Embedded sensors
- FBGs
- Biomedical in vivo sensors
- High temperature sensors

Related Products:

- SM Fiber for Visible Through to Near IR (SM)
- High Temperature Acrylate Coated Fiber (SM-HT)
- Pure Silica Core SM Fiber (SM-SC)
- Photosensitive Fiber (PS)

Product Variants:

- **SM1500(4.2/125)P** Bend insensitive and highly photosensitive high temperature fiber for coiled and FBG sensors in high temperatures
- **SM1500(6.4/125)P** Highly Germanium doped fiber for sensor applications up to +300°C
- **SM1500(7.8/125)P** High temperature bridging fiber for use up to +300°C
- **SM1500(9/125)P** Polyimide coated transmission and distributed sensing fiber
- **SM1500SC(9/125)P** Polyimide coated, Hydrogen darkening resistant pure silica core fiber for high temperature and Hydrogen rich environments
- **SM1500(4.2/50)P** Bend insensitive Polyimide coated fiber for high reliability miniature coils
- **SM1500(4.2/80)P** High temperature bend insensitive and photosensitive fiber for embedded and coiled sensors
- **SM1500(5.3/80)P** Bend insensitive coiled sensor fiber for micro-acoustic "fracking sensors"
- **SM1500(6.4/80)P** Reduced cladding diameter coiled sensor fiber for micro-acoustic "fracking sensors"
- **SM1500(7.8/80)P** "Bridging fiber" for reduced splice losses between sensor fibers and telecoms fibers
- **SM1500SC(7/125)P** Pure silica core, bend insensitive, Polyimide coated fiber for high temperature applications



Specifications

	SM1500(4.2/125)P	SM1500(6.4/125)P	SM1500SC(7/125)P	SM1500(7.8/125)P	SM1500(9/125)P	SM1500SC(9/125)P
Operating Wavelength (nm)	1550					
Cut-off Wavelength (nm)	1350 - 1520		1400 - 1500	1350 - 1520		1190 - 1290
Numerical Aperture	0.29 - 0.31	0.19 - 0.21	0.17 - 0.19	0.15 - 0.17	0.13 - 0.15	
Mode Field Diameter (μm)	4.0 – 4.5 @1550nm	6.0 – 6.8 @1550nm	6.7 - 7.6 @ 1550nm	7.4 – 8.6 @1550nm	8.5 – 9.9 @1550nm	8.3 – 9.6 @1550nm
Attenuation (dB/km)	≤2.5	≤0.75	≤0.7		≤0.6	≤0.8
Proof Test (%)	1 or 2 (100 or 200 kpsi)					
Cladding Diameter (μm)	125 ± 2					
Core Cladding Concentricity (μm)	≤0.75					
Coating Diameter (μm)	145 ± 5					
Coating Type	Polyimide					
Maximum Temperature (°C)	300 Long Term / 400 Short Term					

	SM1500(4.2/50)P	SM1500(4.2/80)P	SM1500(5.3/80)P	SM1500(6.4/80)P	SM1500(7.8/80)P
Operating Wavelength (nm)	1550				
Cut-Off Wavelength (nm)	1350 - 1520				
Numerical Aperture	0.29 - 0.31		0.23 - 0.25	0.19 - 0.21	0.15 - 0.17
Mode Field Diameter (μm)	4.0 – 4.5 @1550nm		5.0 – 5.6 @1550nm	6.0 – 6.8 @1550nm	7.4 – 8.6 @1550nm
Attenuation (dB/km)	≤3.0	≤2.5	≤1.5	≤0.75	≤0.7
Proof Test (%)	1 or 2 (100 or 200 kpsi)				
Cladding Diameter (μm)	50 ± 2	80 ± 2			
Core Cladding Concentricity (μm)	≤1.0	≤0.75			
Coating Diameter (μm)	71 ± 5	95 ± 5			
Coating Type	Polyimide				
Maximum Temperature (°C)	300 Long Term / 400 Short Term				

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