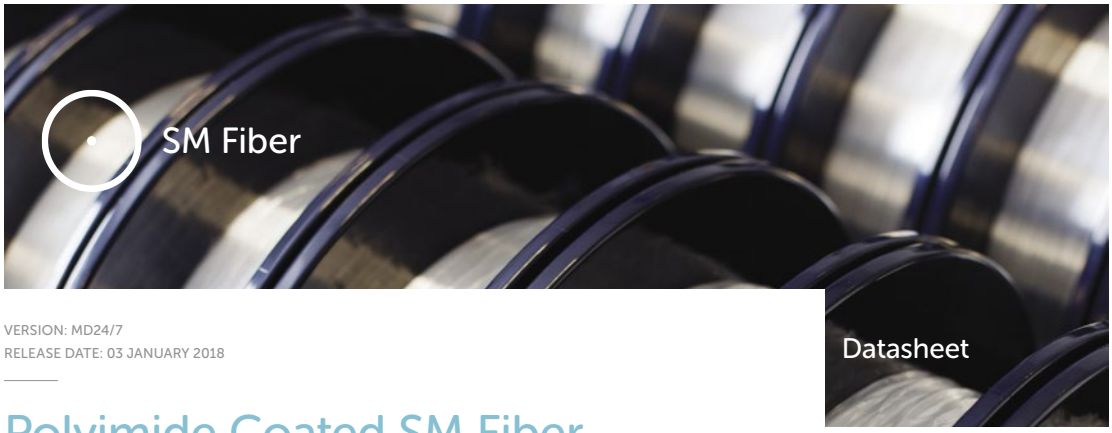
Fiber Optics

FIBERCORE

LASER COMPONENTS




Datasheet

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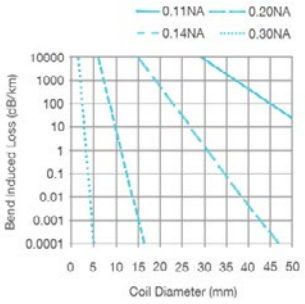
# Polyimide Coated SM Fiber




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
- Fiber Bragg Gratings (FBGs)
- Biomedical in vivo sensors
- High temperature sensors

### Related Products:

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

### Product Variants:

- **SM1250(10.4/125)P** Single-mode fiber designed for use at 1310nm and 1550nm with polyimide coating
- **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
- **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



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## Specifications

| | SM1250(10.4/125)P* | SM1500(4.2/125)P | SM1500(6.4/125)P | SM1500(7.8/125)P | SM1500(9/125)P |
|---|---|---|---|---|---|
| Operating Wavelength (nm) | 1260 - 1650 | 1520 - 1650 | | | |
| Cut-Off Wavelength (nm) | 1190 - 1330 | 1350 - 1520 | | | |
| Numerical Aperture | 0.11 - 0.14 | 0.29 - 0.31 | 0.19 - 0.21 | 0.15 - 0.17 | 0.13 - 0.15 |
| Mode Field Diameter (µm) | 9.6 - 11.2 @1550nm | 4.0 - 4.5 @1550nm | 6.0 - 6.8 @1550nm | 7.4 - 8.6 @1550nm | 8.5 - 9.9 @1550nm |
| Attenuation (dB/km) | ≤0.7 @1310nm<br>≤0.6 @1550nm | ≤2.5 @1550nm | ≤0.75 @1550nm | ≤0.7 @1550nm | ≤0.6 @1550nm |
| Proof Test (%) | 1 or 2 (100 or 200 kpsi) | | | | |
| Cladding Diameter (µm) | 125 ± 1 | | | | |
| Core Cladding Concentricity (µm) | ≤0.75 | ≤0.5 | ≤0.75 | | |
| Coating Diameter (µm) | 155 ± 5 | | | | |
| Coating Type | Polyimide | | | | |
| Operating Temperature (°C) | -55 to +300 | | | | |

| | 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) | 1520 - 1650 | | | | |
| 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 | | 5.1 - 5.6 @1550nm | 6.0 - 6.8 @1550nm | 7.4 - 8.6 @1550nm |
| Attenuation (dB/km) @1550nm | ≤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 | ≤0.5 | ≤0.5 | | ≤0.75 |
| Coating Diameter (µm) | 71 ± 5 | 102 ± 5 | | | |
| Coating Type | Polyimide | | | | |
| Operating Temperature (°C) | -55 to +300 | | | | |

* Special easier to strip polyimide coating available for window stripping, for applications such as FBGs.



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