



Verrillon® VHS500 Series Fibers

Verrillon Harsh Environment Fibers from AFL are available in a number of designs. VHS500 is a pure silica core single-mode design available with all Verrillon harsh environment coating combinations, including Polyimide, Silicone-PFA, Silicone-MTA, MTA and Carbon, which can be applied in conjunction with any of these polymeric coatings. Typically, these fibers are used in downhole distributed sensing techniques for temperature, pressure, acoustics and seismic, as well as in data logging and imaging applications.

Our carbon-coated optical fibers provide exceptionally high levels of hermeticity compared to commercial fibers. We provide extensive data that demonstrates the performance of our fiber in simulated well conditions. In addition, we provide one-stop shopping for customers requiring single or multi-count cabled hermetic fibers in metal jacketing tubes and polymeric configurations.

Consistent with our founding principles, we specialize in application-optimized fibers, providing our customers unmatched flexibility in their system design and performance.

Applications

- Downhole in oil & gas
- Cabling processes with tight bending requirements
- Harsh environment applications
- Tight bend fiber installations

Features

- Optimized for 1550 nm Single Wavelength Operation
- Pure Silica Core chemistry for improved performance in hydrogen-rich environments
- Greater than 50x bend loss improvement at 1550 nm over standard SMF
- MFD compatible with standard SMF for ease of splicing and minimal splice loss
- Available with all Verrillon harsh environment coatings

Specifications

| PART NO. | SMF-60-CP-125-1 | SMF-60-P-125-1 |
|---|--|---|
| Description | 125/155 μ m Carbon/Polyimide coated Single-mode fiber, 0.12 NA, 100 kpsi, 1550 nm Operating Wavelength | 125/155 μ m Polyimide coated Single-mode fiber, 0.12 NA, 100 kpsi, 1550 nm Operating Wavelength |
| PARAMETER | VALUE | |
| Material | | |
| Hermetic Coating | Carbon | — |
| Coating | Polyimide | Polyimide |
| Geometry | | |
| Clad Diameter (μ m) | 125 \pm 2 | 125 \pm 2 |
| Clad Non-Circularity (%) | \leq 3 | \leq 3 |
| Core/Clad Offset (μ m) | \leq 1.5 | \leq 1.5 |
| Coating Diameter (μ m) | 155 \pm 5 | 155 \pm 5 |
| Polyimide Coating Concentricity ¹ (%) | \geq 80 | \geq 80 |
| Optical | | |
| NA (nominal) | 0.12 | 0.12 |
| Attenuation ² @ 1550 nm (dB/km) | \leq 0.8 | \leq 0.8 |
| Cutoff Wavelength (nm) | \leq 1530 | \leq 1530 |
| Mode Field Diameter ³ @ 1550 nm (dB/km) | 10.0 \pm 0.7 | 10.0 \pm 0.7 |
| Mechanical | | |
| Proof Test (kpsi) | \geq 100 | \geq 100 |
| Operating Temperature ($^{\circ}$ C) | -65 to +300 | -65 to +300 |

¹ (Min. Wall/Max. Wall) x 100

² Measured on loose coil

³ Petermann II Definition

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Specifications

| PART NO. | SMF-60-CSPFA-125-3 | SMF-60-CSPFA-125-7 |
|--|--|--|
| Description | 125/700 μm Carbon/Silicone/PFA coated Single-mode fiber, 0.12 NA, 100 kpsi, 1550 nm Operating Wavelength | 125/250 μm Carbon/Silicone/PFA coated Single-mode fiber, 0.12 NA, 150 kpsi, 1550 nm Operating Wavelength |
| PARAMETER | VALUE | |
| Material | | |
| Hermetic Coating | Carbon | Carbon |
| Primary Coating | Silicone | Silicone |
| Secondary Coating | PFA | PFA |
| Geometry | | |
| Clad Diameter (μm) | 125 ± 2 | 125 ± 2 |
| Core/Clad Offset (μm) | ≤ 1.5 | ≤ 1.5 |
| Combined Coating Diameter (μm) | 700 ± 50 | 250 ± 50 |
| Optical | | |
| NA (nominal) | 0.12 | 0.12 |
| Attenuation @ 1550 nm (dB/km) | ≤ 0.8 | ≤ 0.8 |
| Cutoff Wavelength (nm) | ≤ 1530 | ≤ 1530 |
| Mode Field Diameter ¹ @ 1550 nm (dB/km) | 10.0 ± 0.7 | 10.0 ± 0.7 |
| Mechanical | | |
| Proof Test (kpsi) | ≥ 100 | ≥ 150 |
| Operating Temperature (°C) | -40 to +200 | -40 to +200 |

¹ Petermann II Definition

Specifications

| PART NO. | SMF-60-CMTDA-125-1 |
|--|--|
| Description | 125/245 μm Carbon Mid-Temp Dual Acrylate, Pure Silica Core, Single-mode fiber, 0.12 NA, 100 kpsi, 1550 nm Operating Wavelength |
| PARAMETER | VALUE |
| Material | |
| Hermetic Coating | Carbon |
| Coating | Mid-Temp Dual Acrylate |
| Geometry | |
| Clad Diameter (μm) | 125 ± 2 |
| Core/Clad Offset (μm) | ≤ 1.5 |
| Coating Diameter (μm) | 245 ± 15 |
| Optical | |
| NA (nominal) | 0.12 |
| Attenuation @ 1550 nm (dB/km) | ≤ 0.8 |
| Cutoff Wavelength (nm) | ≤ 1530 |
| Mode Field Diameter ¹ @ 1550 nm (dB/km) | 10.0 ± 0.7 |
| Mechanical | |
| Proof Test (kpsi) | ≥ 100 |
| Operating Temperature (°C) | -40 to +150 |

¹ Petermann II Definition