Verrillon®
VHS500 Series Harsh Environment Fibers

Verrillon VHS500 is a pure silica core single-mode design with entirely fluorinated cladding available with all Verrillon harsh environment coating combinations, including Polyimide, Silicone-PFA, Silicone-MTA, MTDA 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.

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

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

Applications

- Downhole in Oil and Gas Industry
- Cabling processes with tight bending requirements
- Harsh environment, hydrogen-rich applications
- Tight bend fiber installations

Specifications

PART NO.	SMF-60-CP-125-1	SMF-60-P-125-1
Description	125/155 µm Carbon/Polyimide coated Single-mode fiber, 0.12 NA, 100 kpsi, 1550 nm Operating Wavelength	125/155 µm 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 (µm)	125 ± 2	125 ± 2
Clad Non-Circularity (%)	≤ 3	≤ 3
Core/Clad Offset (µm)	≤ 1.5	≤ 1.5
Coating Diameter (µm)	155 ± 5	155 ± 5
Polyimide Coating Concentricity[1] (%)	≥ 80	≥ 80
Optical		
NA (nominal)	0.12	0.12
Attenuation[2] @ 1550 nm (dB/km)	≤ 0.8	≤ 0.8
Cutoff Wavelength (nm)	≤ 1530	≤ 1530
Mode Field Diameter[3] @ 1550 nm (dB/km)	10.0 ± 0.7	10.0 ± 0.7
Mechanical		
Proof Test (kpsi)	≥ 100	≥ 100
Operating Temperature (°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