



Verrillon® VHS100 Series Fibers

Verrillon Harsh Environment Fibers from AFL are available in a number of designs. Starting with fiber design, we offer both single-mode and multimode optical fibers having coatings and coating combinations, including Polyimide, Silicone-PFA and Carbon, which can be applied in conjunction with any of these outer coatings. Typically, these fibers are used in down-hole data logging, distributed sensing and imaging applications.

Verrillon 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 addition, we provide one-stop shopping for customers requiring multi-count cabled hermetic fibers, if required, in metal jacketing tubes.

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

Features

- Equivalent to 'standard' telecom SMF
- Optimized for 1310/1550 nm Dual Wavelength Operation
- Carbon coating provides exceptional resistance to H₂ and moisture ingress
- Wide range of protective coatings available

Specifications

PART NO.	SMF-1-P-125-2	SMF-1-P-125-3	SMF-1-CP-125-3
Description	125/155 μm Polyimide, Single-mode fiber, 0.12NA, 150 kpsi	125/155 μm Polyimide, Single-mode fiber, 0.12NA, 100 kpsi	125/155 μm Carbon/Polyimide, Single-mode fiber, 0.12NA, 100 kpsi
PARAMETER	VALUE		
Material			
Hermetic Coating	—	—	Carbon
Coating	Polyimide	Polyimide	Polyimide
Geometry			
Clad Diameter (μm)	125 ± 2	125 ± 2	125 ± 2
Core/Clad Offset (μm)	≤ 0.5	≤ 0.5	≤ 0.5
Coating Diameter (μm)	155 ± 5	155 ± 5	155 ± 5
Polyimide Coating Concentricity ¹ (%)	≥ 80	≥ 80	≥ 80
Optical			
NA (nominal)	0.12	0.12	0.12
Attenuation ²			
@ 1310 nm (dB/km)	≤ 0.7	≤ 0.7	≤ 0.7
@ 1550 nm (dB/km)	≤ 0.6	≤ 0.6	≤ 0.6
Cutoff Wavelength (nm)	1250 ± 50	1250 ± 50	1250 ± 50
Mode Field Diameter ³			
@ 1310 nm (μm)	9.2 ± 0.6	9.2 ± 0.6	9.2 ± 0.6
@ 1550 nm (μm)	10.4 ± 0.8	10.4 ± 0.8	10.4 ± 0.8
Mechanical			
Proof Test (kpsi)	≥ 150	≥ 100	≥ 100
Operating Temperature (°C)	-65 to +300	-65 to +300	-65 to +300

¹ Measured as (Min. Wall/Max. Wall) x 100

² Measured on Zero Tension spool

³ Petermann II Definition

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Specifications

PART NO.	SMF-1-CMTDA-125-1
Description	125/245 μ m Carbon/ Mid-Temp Dual Acrylate coated, Single-mode fiber 0.12NA, 100 kpsi
PARAMETER	VALUE
Material	
Hermetic Coating	Carbon
Coating	Mid-Temp Dual Acrylate
Geometry	
Clad Diameter (μ m)	125 \pm 2
Core/Clad Offset (μ m)	\leq 0.5
Coating Diameter (μ m)	245 \pm 15
Optical	
NA (nominal)	0.12
Attenuation ¹	
@ 1310 nm (dB/km)	\leq 0.5
@ 1550 nm (dB/km)	\leq 0.3
Cutoff Wavelength (nm)	\leq 1250 \pm 50
Mode Field Diameter ²	
@ 1310 nm (μ m)	9.2 \pm 0.6
@ 1550 nm (μ m)	10.4 \pm 0.8
Mechanical	
Proof Test (kpsi)	\geq 100
Operating Temperature ($^{\circ}$ C)	-40 to +150

¹ Measured on loose coil

² Petermann II Definition

Specifications

PART NO.	SMF-1-MTDA-125-1
Description	125/245 μ m Mid-Temp Dual Acrylate coated, Single-mode fiber, 0.12NA, 100 kpsi
PARAMETER	VALUE
Material	
Coating	Mid-Temp Dual Acrylate
Geometry	
Clad Diameter (μ m)	125 \pm 2
Core/Clad Offset (μ m)	\leq 0.5
Coating Diameter (μ m)	245 \pm 5
Optical	
NA (nominal)	0.12
Attenuation	
@ 1310 nm (dB/km)	\leq 0.40
@ 1550 nm (dB/km)	\leq 0.25
Cutoff Wavelength (nm)	1250 \pm 50
Mode Field Diameter ¹	
@ 1310 nm (μ m)	9.2 \pm 0.6
@ 1550 nm (μ m)	10.4 \pm 0.8
Mechanical	
Proof Test (kpsi)	\geq 100
Operating Temperature ($^{\circ}$ C)	-40 to +150

¹ Petermann II Definition

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Specifications

PART NO.	SMF-1-CA-125-2	SMF-1-CA-125-3
Description	125/245 μm Carbon/Acrylate coated, Single-mode Fiber, 0.12 NA, 200 kpsi	125/245 μm Carbon/Acrylate coated, Single-mode Fiber, 0.12 NA, 100 kpsi
PARAMETER	VALUE	
Material		
Hermetic Coating	Carbon	Carbon
Coating	UV Acrylate	UV Acrylate
Geometry		
Clad Diameter (μm)	125 ± 2	125 ± 2
Core/Clad Offset (μm)	≤ 0.5	≤ 0.5
Coating Diameter (μm)	245 ± 15	245 ± 15
Optical		
NA (nominal)	0.12	0.12
Attenuation ¹		
@ 1310 nm (dB/km)	≤ 0.6	≤ 0.6
@ 1550 nm (dB/km)	≤ 0.5	≤ 0.5
Cutoff Wavelength (nm)	≤ 1250 ± 50	≤ 1250 ± 50
Mode Field Diameter ²		
@ 1310 nm (μm)	9.2 ± 0.6	9.2 ± 0.6
@ 1550 nm (μm)	10.4 ± 1.0	10.4 ± 1.0
Mechanical		
Proof Test (kpsi)	≥ 200	≥ 100
Operating Temperature (°C)	-40 to +85	-40 to +85

¹ Measured on loose coil

² Petermann II Definition