Verrillon®
VHM3000 Series Fibers

Verrillon Harsh Environment Fibers from AFL are available in a number of designs. Starting with fiber design, we offer both singlemode 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 the their system design and performance.

Features

- 50/125 µm graded index multimode fiber, elite resistance level to H_2 ingression
- Suitable for use in mid to high temperature, hydrogen and harsh environments
- Carbon coating provides exceptional resistance to H_2 and moisture ingression
- Wide range of protective coatings available

Specifications

PART NO.	MMF-50-6-P-125-6	MMF-50-6-CP-125-6
Description	50/125/155 µm Polyimide coated, Graded Index, Multimode Fiber	50/125/155 µm Carbon/Polyimide coated, Graded Index, Multimode Fiber
PARAMETER	VALUE	
Material		
Hermetic Coating	—	Carbon
Coating	Polyimide	Polyimide
Geometry		
Core Diameter (µm)	50 ± 2.5	50 ± 2.5
Clad Diameter (µm)	125 ± 2	125 ± 2
Core Non-Circularity (%)	≤ 5	≤ 5
Clad Non-Circularity (%)	≤ 1	≤ 1
Core/Clad Offset (µm)	≤ 1.5	≤ 1.5
Coating Diameter (µm)	155 ± 5	155 ± 5
Polyimide Coating Concentricity[1] (%)	≥ 80	≥ 80
Optical		
NA (nominal)	0.20	0.20
Attenuation[2] @ 850 nm (dB/km) @ 1300 nm (dB/km)	≤ 3.0 ≤ 1.2	≤ 3.0 ≤ 1.2
Bandwidth @ 850 nm (MHz-km) @ 1300 nm (MHz-km)	≥ 300 ≥ 300	≥ 300 ≥ 300
Mechanical		
Proof Test (kpsi)	≥ 100	≥ 100
Operating Temperature (°C)	-65 to +300	-65 to +300

[1] Measured as (Min. Wall/Max. Wall) x 100   [2] Measured on loose coil

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Specifications

PART NO.	MMF-50-6-CSPFA-125-3	MMF-50-6-CSPFA-125-5
Description	50/125/700 µm Carbon/Silicone/PFA coated, Graded Index Multimode Fiber	50/125/400 µm Carbon/Silicone/PFA coated, Graded Index Multimode Fiber
PARAMETER	VALUE	
Material		
Hermetic Coating	Carbon	Carbon
Primary Coating	Silicone	Silicone
Secondary Coating	PFA	PFA
Geometry		
Core Diameter (µm)	50 ± 2.5	50 ± 2.5
Clad Diameter (µm)	125 ± 2	125 ± 2
Core Non-Circularity (%)	≤ 5	≤ 5
Clad Non-Circularity (%)	≤ 1	≤ 1
Core/Clad Offset (µm)	≤ 1.5	≤ 1.5
Combined Coating Diameter (µm)	700 ± 50	400 ± 50
Optical		
NA (nominal)	0.20	0.20
Attenuation[1] @ 850 nm (dB/km)	≤ 3.0	≤ 3.0
@ 1300 nm (dB/km)	≤ 1.2	≤ 1.2
Bandwidth @ 850 nm (MHz-km)	≥ 300	≥ 300
@ 1300 nm (MHz-km)	≥ 300	≥ 300
Mechanical		
Proof Test (kpsi)	≥ 100	≥ 100
Operating Temperature (°C)	-40 to +200	-40 to +200

[1] Measured on loose coil

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Specifications

PART NO.	MMF-50-6-CSMTA-125-6
Description	50/125/245 µm Carbon/Silicone/MTA coated, Graded Index, Multimode Fiber
PARAMETER	**VALUE**
Material	
Hermetic Coating	Carbon
Primary Coating	Silicone
Secondary Coating	Mid-Temp Acrylate
Geometry	
Core Diameter (µm)	50 ± 2.5
Clad Diameter (µm)	125 ± 2
Core Non-Circularity (%)	≤ 5
Clad Non-Circularity (%)	≤ 1
Core/Clad Offset (µm)	≤ 1.5
Combined Coating Diameter (µm)	245 ± 20
Optical	
NA (nominal)	0.20
Attenuation @ 850 nm (dB/km) @ 1300 nm (dB/km)	 ≤ 3.0 ≤ 1.2
Bandwidth @ 850 nm (MHz-km) @ 1300 nm (MHz-km)	 ≥ 300 ≥ 300
Mechanical	
Proof Test (kpsi)	≥ 100
Operating Temperature (°C)	-40 to +150