



Verrillon® VHM2000 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, Silicone-MTA, MTA and Carbon, which can be applied in conjunction with any of these outer coatings. Typically, these fibers are used in downhole 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

- 50/125 µm graded index multimode fiber, enhanced resistance level to H₂ ingress
- Suitable for use in low/mid-temperature, no/low hydrogen environments
- Carbon coating provides exceptional resistance to H₂ and moisture ingress
- Wide range of protective coatings available

Specifications

PART NO.	MMF-50-3-CP-125-3	MMF-50-3-P-125-3
Description	50/125/155 µm Carbon/Polyimide coated, Graded Index, Multimode Fiber	50/125/155 µm 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)	≤ 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)	-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-50-3-MTDA-125-3	MMF-50-3-CSMTA-125-3	MMF-50-3-CMTDA-125-3	MMF-50-3-CMTDA-125-4
Description	50/125/245 μm Mid-Temp Dual Acrylate coated, Graded Index, Multimode Fiber	50/125/245 μm Carbon/Si/Mid-Temp Dual Acrylate, Graded Index, Multimode Fiber	50/125/245 μm Carbon/Mid-Temp Dual Acrylate coated, Graded Index, Multimode Fiber	50/125/245 μm Carbon/Mid-Temp Dual Acrylate, Graded Index, Multimode Fiber, 200 kpsi
PARAMETER	VALUE			
Material				
Hermetic Coating	—	Carbon	Carbon	Carbon
Primary Coating	Mid-Temp Dual Acrylate	Silicone	Mid-Temp Dual Acrylate	Mid-Temp Dual Acrylate
Secondary Coating	Mid-Temp Dual Acrylate	Mid-Temp Dual Acrylate	Mid-Temp Dual Acrylate	Mid-Temp Dual Acrylate
Geometry				
Core Diameter (μm)	50 ± 2.5	50 ± 2.5	50 ± 2.5	50 ± 2.5
Clad Diameter (μm)	125 ± 2	125 ± 2	125 ± 2	125 ± 2
Core Non-Circularity (%)	≤ 5	≤ 5	≤ 5	≤ 5
Clad Non-Circularity (%)	≤ 1	≤ 1	≤ 1	≤ 1
Core/Clad Offset (μm)	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5
Combined Coating Diameter (μm)	245 ± 5	245 ± 20	245 ± 5	245 ± 5
Optical				
NA (nominal)	0.20	0.20	0.20	0.20
Attenuation				
@ 850 nm (dB/km)	≤ 2.5	≤ 3.0	≤ 2.5	≤ 2.5
@ 1300 nm (dB/km)	≤ 0.7	≤ 1.2	≤ 0.7	≤ 0.7
Bandwidth				
@ 850 nm (MHz-km)	≥ 300	≥ 300	≥ 300	≥ 300
@ 1300 nm (MHz-km)	≥ 300	≥ 300	≥ 300	≥ 300
Mechanical				
Proof Test (kpsi)	≥ 100	≥ 100	≥ 100	≥ 200
Operating Temperature (°C)	-40 to +150	-40 to +150	-40 to +150	-40 to +150

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Specifications

PART NO.	MMF-50-3-SPFA-125-1	MMF-50-3-SPFA-125-6	MMF-50-3-CSPFA-125-5
Description	50/125/700 μm Silicone/PFA coated, Graded Index, Multimode Fiber	50/125/250 μm 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
Primary Coating	Silicone	Silicone	Silicone
Secondary Coating	PFA	PFA	PFA
Geometry			
Core Diameter (μm)	50 ± 2.5	50 ± 3	50 ± 2.5
Clad Diameter (μm)	125 ± 2	125 ± 2	125 ± 2
Core Non-Circularity (%)	≤ 5	≤ 5	≤ 5
Clad Non-Circularity (%)	≤ 1	≤ 1	≤ 1
Core/Clad Offset (μm)	≤ 1.5	≤ 1.5	≤ 1.5
Combined Coating Diameter (μm)	700 ± 50	250 ± 50	400 ± 50
Optical			
NA (nominal)	0.20	0.20	0.20
Attenuation ¹			
@ 850 nm (dB/km)	≤ 3.0	≤ 3.0	≤ 3.0
@ 1300 nm (dB/km)	≤ 1.2	≤ 0.8	≤ 1.2
Bandwidth			
@ 850 nm (MHz-km)	≥ 300	≥ 300	≥ 300
@ 1300 nm (MHz-km)	≥ 300	≥ 300	≥ 300
Mechanical			
Proof Test (kpsi)	≥ 100	≥ 100	≥ 100
Operating Temperature (°C)	-40 to +200	-40 to +200	-40 to +200

¹ Measured on loose coil