



Verrillon® VHM4000 Series Fibers

Verrillon Harsh Environment Fibers 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 fiber provides exceptional 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 and 62.5/125 μm step index multimode fiber
- Suitable for use in high pressure, high temperature, high hydrogen and harsh environments
- Carbon coating provides exceptional resistance to H_2 and moisture ingress
- Wide range of protective coatings available

Specifications

PART NO.	MMF-50-5-P-125-5	MMF-62.5-5-P-125-5
Description	50/125/155 μm Polyimide coated, Step Index, Multimode Fiber	62.5/125/155 μm Polyimide coated, Step Index, Multimode Fiber
PARAMETER	VALUE	
Material		
Coating	Polyimide	Polyimide
Geometry		
Core Diameter (μm)	50 \pm 3.0	62.5 \pm 3.0
Clad Diameter (μm)	125 \pm 2	125 \pm 2
Core Non-Circularity (%)	\leq 5	\leq 5
Clad Non-Circularity (%)	\leq 1	\leq 1
Core/Clad Offset (μm)	\leq 1.5	\leq 1.5
Coating Diameter (μm)	155 \pm 5	155 \pm 5
Polyimide Coating Concentricity ¹	\geq 80	\geq 80
Optical		
NA (nominal)	0.20	0.22
Attenuation ²		
@ 850 nm (dB/km)	\leq 3.0	\leq 3.0
@ 1060 nm (dB/km)	\leq 1.3	\leq 1.3
@ 1300 nm (dB/km)	\leq 1.0	\leq 1.0
Mechanical		
Proof Test (kpsi)	\geq 100	\geq 100
Operating Temperature ($^{\circ}\text{C}$)	-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-50-5-CP-125-5
Description	50/125/155 µm Carbon/Polyimide coated, Step Index, Multimode Fiber
PARAMETER	VALUE
Material	
Hermetic	Carbon
Coating	Polyimide
Geometry	
Core Diameter (µm)	50 ± 3.0
Clad Diameter (µm)	125 ± 2
Core Non-Circularity (%)	≤ 5
Clad Non-Circularity (%)	≤ 1
Core/Clad Offset (µm)	≤ 1.5
Coating Diameter (µm)	155 ± 5
Polyimide Coating Concentricity ¹ (%)	≥ 80
Optical	
NA (nominal)	0.20
Attenuation ²	
@ 850 nm (dB/km)	≤ 3.0
@ 1060 nm (dB/km)	≤ 1.3
@ 1300 nm (dB/km)	≤ 1.0
Mechanical	
Proof Test (kpsi)	≥ 100
Operating Temperature (°C)	-65 to +300

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

² Measured on loose coil

Specifications

PART NO.	MMF-50-5-CMTDA-125-5
Description	50/125/245 µm Carbon/Mid-Temp Dual Acrylate, Step Index, Multimode Fiber
PARAMETER	VALUE
Material	
Hermetic Coating	Carbon
Primary Coating	Mid-Temp Dual Acrylate
Secondary Coating	Mid-Temp Dual 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
Coating Diameter (µm)	245 ± 5
Optical	
NA (nominal)	0.20
Attenuation ¹	
@ 850 nm (dB/km)	≤ 3.0
@ 1300 nm (dB/km)	≤ 1.0
Mechanical	
Proof Test (kpsi)	≥ 100
Operating Temperature (°C)	-40 to +150

¹ Measured on loose coil

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Specifications

PART NO.	MMF-105-1-P-125-150-2	MMF-110-1-P-121-140-1
Description	105/125/150 μm Polyimide coated, Low OH, Step Index, Multimode Fiber, 0.15 NA	110/121/140 μm Polyimide coated, Low OH, Step Index, Multimode Fiber, 0.22 NA
PARAMETER	VALUE	
Material		
Coating	Polyimide	Polyimide
Geometry		
Core Diameter (μm)	105 ± 5	110 ± 7
Clad Diameter (μm)	125 ± 3	121 ± 5
Core/Clad Offset (μm)	≤ 3.0	≤ 3.0
Coating Diameter (μm)	150 ± 5	140 ± 5
Optical		
NA (nominal)	0.15	0.22
Attenuation ¹ @ 808 nm (dB/km)	≤ 15	≤ 15
Mechanical		
Proof Test (kpsi)	≥ 100	≥ 100
Operating Temperature (°C)	-65 to +300	-65 to +300

¹ Measured on loose coil

Specifications

PART NO.	MMF-105-5-CA-125-250-22	MMF-105-5-CA-125-250-15
Description	105/125/250 μm Carbon/Acrylate coated, Low OH, Silica Core, Step Index, Multimode Fiber, 0.22 NA	105/125/250 μm Carbon/Acrylate coated, Low OH, Silica Core, Step Index, Multimode Fiber, 0.15 NA
PARAMETER	VALUE	
Material		
Hermetic Coating	Carbon	Carbon
Coating	Dual UV Acrylate	Dual UV Acrylate
Geometry		
Core Diameter (μm)	105 ± 5	105 ± 5
Clad Diameter (μm)	125 ± 3	125 ± 3
Core/Clad Offset (μm)	≤ 3.0	≤ 3.0
Coating Diameter (μm)	250 ± 10	250 ± 10
Optical		
NA (nominal)	0.22	0.15
Attenuation ¹ @ 808 nm (dB/km)	≤ 20	≤ 20
Mechanical		
Proof Test (kpsi)	≥ 100	≥ 100
Operating Temperature (°C)	-40 to +85	-40 to +85

¹ Measured on loose coil

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Specifications

PART NO.	MMF-200-1-A-240-400-1
Description	200/240/400 Acrylate coated, Low OH, Silica Core, Step Index Multimode Fiber, 0.22 NA, 100 kpsi Proof Test
PARAMETER	VALUE
Material	
Hermetic Coating	UV Acrylate
Coating	UV Acrylate
Geometry	
Core Diameter (µm)	200 ± 8
Clad Diameter (µm)	240 ± 6
Core/Clad Offset (µm)	≤ 3.0
Combined Coating Diameter (µm)	400 ± 25
Optical	
NA (nominal)	0.22
Attenuation @ 850 nm (dB/km)	≤ 10
Mechanical	
Proof Test (kpsi)	≥ 100
Operating Temperature (°C)	-40 to +85