



## Verrillon® VHM2000 Series Harsh Environment Fibers

Verrillon VHM2000 Series fibers are designed for mid-temperature range applications. In addition to the glass performance, VHM2000 coated with our hermetic carbon show an exceptional performance in hydrogen-containing applications. VHM2000 is available with a variety of coatings and coating combinations, including Polyimide, Silicone-MTDA and Carbon. Typically, these fibers are used in down-hole temperature and acoustic monitoring, data logging, distributed sensing and imaging applications.

### Features

- 50/125 graded-index multimode fiber for use in harsh environments
- Available with a wide range of protective coatings, depending on application requirements
- Suitable for use in mid temperature range applications, VHM2000 with carbon coating provides exceptional resistance to H<sub>2</sub> and moisture ingress
- High bandwidth (>300 MHz\*km) allow DTS measurements with extremely short spatial resolution

### 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
<b>PARAMETER</b>	<b>VALUE</b>	
<b>Material</b>		
Hermetic Coating	Carbon	—
Coating	Polyimide	Polyimide
<b>Geometry</b>		
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 <sup>1</sup>	≥ 80	≥ 80
<b>Optical</b>		
NA (nominal)	0.20	0.20
Attenuation <sup>2</sup> @ 850 nm (dB/km)	≤ 3.0	≤ 3.0
Attenuation <sup>2</sup> @ 1300 nm (dB/km)	≤ 1.2	≤ 1.2
Bandwidth @ 850 nm (MHz-km)	≥ 300	≥ 300
Bandwidth @ 1300 nm (MHz-km)	≥ 300	≥ 300
<b>Mechanical</b>		
Proof Test (kpsi)	≥ 100	≥ 100
Operating Temperature (°C)	-65 to +300	-65 to +300

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

<sup>2</sup> 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
<b>PARAMETER</b>	<b>VALUE</b>			
<b>Material</b>				
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
<b>Geometry</b>				
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
<b>Optical</b>				
NA (nominal)	0.20	0.20	0.20	0.20
Attenuation @ 850 nm (dB/km)	≤ 2.5	≤ 3.0	≤ 2.5	≤ 2.5
Attenuation@ 1300 nm (dB/km)	≤ 0.7	≤ 1.2	≤ 0.7	≤ 0.7
Bandwidth @ 850 nm (MHz-km)	≥ 300	≥ 300	≥ 300	≥ 300
Bandwidth@ 1300 nm (MHz-km)	≥ 300	≥ 300	≥ 300	≥ 300
<b>Mechanical</b>				
Proof Test (kpsi)	≥ 100	≥ 100	≥ 100	≥ 200
Operating Temperature (°C)	-40 to +150	-40 to +150	-40 to +150	-40 to +150

### 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
<b>PARAMETER</b>	<b>VALUE</b>		
<b>Material</b>			
Hermetic Coating	—	—	Carbon
Primary Coating	Silicone	Silicone	Silicone
Secondary Coating	PFA	PFA	PFA
<b>Geometry</b>			
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
<b>Optical</b>			
NA (nominal)	0.20	0.20	0.20
Attenuation <sup>1</sup> @ 850 nm (dB/km)	≤ 3.0	≤ 3.0	≤ 3.0
Attenuation <sup>1</sup> @ 1300 nm (dB/km)	≤ 1.2	≤ 0.8	≤ 1.2
Bandwidth @ 850 nm (MHz-km)	≥ 300	≥ 300	≥ 300
Bandwidth@ 1300 nm (MHz-km)	≥ 300	≥ 300	≥ 300
<b>Mechanical</b>			
Proof Test (kpsi)	≥ 100	≥ 100	≥ 100
Operating Temperature (°C)	-40 to +200	-40 to +200	-40 to +200

<sup>1</sup> Measured on loose coil