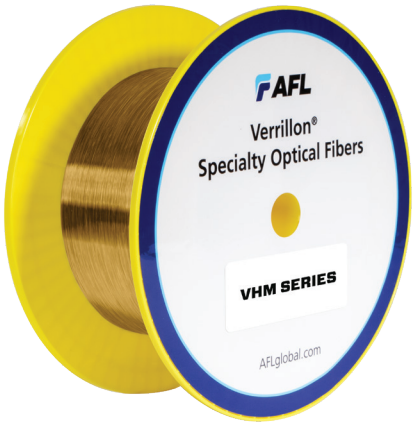

Verrillon®
VHM3000 Series Harsh Environment Fibers

Verrillon VHM3000 Series is a family of graded-index multimode fibers exhibiting exceptional resistance to hydrogen at high temperatures in hydrogen-rich applications. The true hydrogen resistance is a result of modified glass chemistry. Additionally, the graded-index design provides very high bandwidth for optimum DTS measurement in downhole applications. The VHM3000 Series is available with a variety of Verrillon coatings including Polyimide, Silicone/PFA and Mid-Temp acrylates. Typically, these fibers are used in down-hole monitoring, distributed sensing and imaging applications.

Features

- 50/125 graded-index multimode fiber for harsh environments such as oil wells
- Excellent resistance to hydrogen darkening at high temperatures and partial pressures of hydrogen
- High bandwidth allows sensor systems to achieve extremely short spatial resolutions
- Suitable for downhole temperature monitoring applications
- Excellent for DTS systems operating in the 1064nm spectral region
- Available in all Verrillon's harsh environments coatings including carbon coating

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)	≤ 3.0	≤ 3.0
Attenuation[2] @ 1300 nm (dB/km)	≤ 1.2	≤ 1.2
Bandwidth @ 850 nm (MHz-km)	≥ 300	≥ 300
Bandwidth @ 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

© 2014, AFL, all rights reserved. PP-6-00003, Revision 2, 4.27.2020
Specifications are subject to change without notice.

Verrillon®
VHM3000 Series Harsh Environment Fibers

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
Attenuation[1] @ 1300 nm (dB/km)	≤ 1.2	≤ 1.2
Bandwidth @ 850 nm (MHz-km)	≥ 300	≥ 300
Bandwidth @ 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

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)	≤ 3.0
Attenuation @ 1300 nm (dB/km)	≤ 1.2
Bandwidth @ 850 nm (MHz-km)	≥ 300
Bandwidth @ 1300 nm (MHz-km)	≥ 300
Mechanical	
Proof Test (kpsi)	≥ 100
Operating Temperature (°C)	-40 to +150

© 2014, AFL, all rights reserved. PP-6-00003, Revision 2, 4.27.2020
Specifications are subject to change without notice.