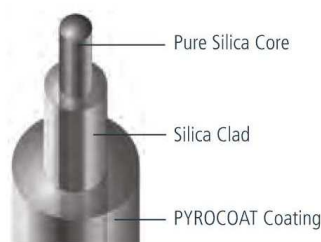


# Specification Sheet



## Step-Index Multimode GeoSil™-MM



GeoSil-MM fibers, made with a pure silica core, are step-index designs with a 50  $\mu\text{m}$  core and extreme resistance to hydrogen in the Raman band from 1014 to 1114 nm in DTS applications. The abrasion-resistant and chemically resistant PYROCOAT® polyimide coating allows performance to 300 degrees C.

### GEOSIL-MM

#### Optical Properties

Numerical aperture (nominal)	0.22
Attenuation @ 850 nm	$\leq 5.0$ dB/km
Attenuation @ 1300 nm	$\leq 4.0$ dB/km
Water content	Low OH

#### Dimensions/Geometric Properties

Core diameter	$50 \pm 3$ $\mu\text{m}$
Clad diameter	$125 \pm 2$ $\mu\text{m}$
Clad non-circularity	$\leq 2\%$
Core/clad offset	$\leq 3$ $\mu\text{m}$
Coating diameter	$155 \pm 5$ $\mu\text{m}$
Core non-circularity	$\leq 5\%$
Coating concentricity error	$\leq 4$ $\mu\text{m}$

#### Coating Descriptions

Coating material	PYROCOAT Polyimide
Operating temperature	-65 to +300°C

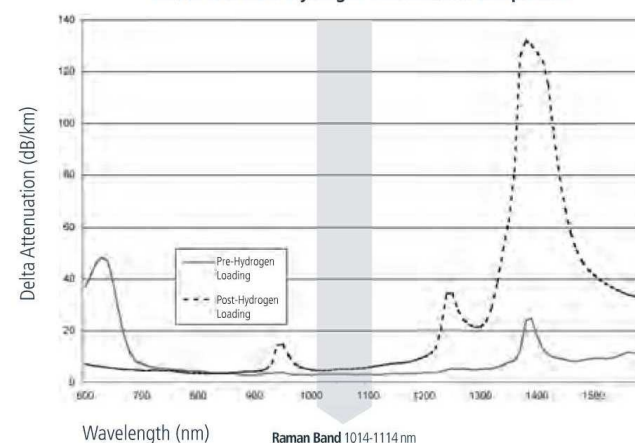
#### Mechanical and Testing Data

Bend radius:	Short-term	$\geq 10$ mm
	Long-term	$\geq 17$ mm
Proof test level		$\geq 100$ kpsi (0.689 GPa)

#### Typical Applications

Distributed temperature sensing • High-temperature DTS • Datacom in harsh environments • Local area networks with elevated temperature requirements

GeoSil MM Fiber Hydrogen Performance Comparison



#### Test Conditions:

- 100 psi pure hydrogen
- at 280°C
- for 350 hours

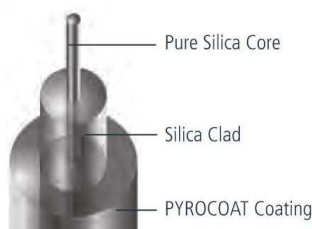
#### Comparison:

Performance of standard multimode graded-index fibers exceeds 100 dB/km in the Raman band.

# Specification Sheet



Single-Mode  
GeoSil™-SM



GeoSil-SM fibers, made with a pure silica core and high 0.17 NA, offer extreme resistance to hydrogen plus low bend loss. The abrasion-resistant and chemically resistant PYROCOAT® polyimide coating allows performance to 300 degrees C for mechanical reliability in the down-hole environment.

## GEOSIL-SM

### Optical Properties

Operating wavelength	1550 nm
Cutoff wavelength	1440 nm ± 60 μm
Mode field diameter @ 1550 nm	7.8 ± 0.5 μm
Attenuation @ 1550 nm	≤1.0 dB/km
Bend loss @ 1550 nm (1 turn on a 10 mm diameter mandrel / FOTP-62)	≤0.10 dB
Numerical aperture (nominal)	0.17

### Dimensions/Geometric Properties

Clad diameter	125 ± 2 μm
Coating/buffer diameter	155 ± 5 μm
Clad non-circularity	≤2%
Core/clad offset	≤1.0 μm
Coating diameter	155 ± 5 μm
Coating concentricity	≥80 %

### Coating Descriptions

Coating material	PYROCOAT Polyimide
Operating temperature	-65 to +300°C

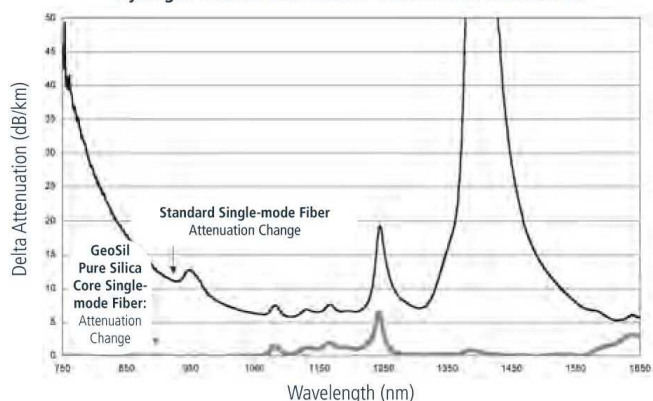
### Mechanical and Testing Data

Bend radius:	Short-term	≥10 mm
	Long-term	≥15 mm
Proof test level		≥100 kpsi (0.689 GPa) or ≥ 200 kpsi (1.38 GPa) by special order

### Typical Applications

Distributed temperature sensing • High-temperature DTS •  
Datacom in harsh environments • Local area networks with  
elevated temperature requirements

Hydrogen-Induced Attenuation: GeoSil-SM vs Standard SM



**H<sub>2</sub> Soak Test Parameters for this test:**  
300-hour Duration at 215°C under 1500 psi\*

\*pressure measured and held when H<sub>2</sub> chamber was ramped to the full 215°C temperature

#### Alternate Test Parameters:

GeoSil-SM fibers were also tested separately at 100 psi of hydrogen at 280°C for 350 hours. Result was no measurable change in attenuation at 1550 nm.