

Features

Improved Waveguide Resists Hydrogen Darkening

Benefits

Minimizes permanent losses due to hydrogen ingress in harsh conditions

Graded-Index 50/125 Fiber Structure

Compatible with most commercially available Distributed Temperature Sensing (DTS) interrogators; can also be fusion spliced to similar hydrogen insensitive core optical fiber, and traditional lead-in optical fibers

Carbon/Silicone/PEEK Coating System

Fatigue resistant glass structure with low friction, crush and elongation resistant outer coating resists chemicals and abrasion and is easy to mechanically strip

Product Description

This optical fiber is designed for distributed temperature sensing and communications in applications where hydrogen diffusion is a concern, and in temperatures up to 160 °C for long durations. The waveguide features a proprietary, hydrogen insensitive core structure to minimize the effects of hydrogen darkening, and also features a triple-layer coating system. The innermost layer is a thin carbon layer that effectively blocks hydrogen ingress to upper service temperatures. In addition, this carbon thin film reduces stress-fatigue by ensuring that no water can attack the surface of the silica cladding. The secondary layer of silicone dampens attenuation-inducing compression and is easily strippable. The tertiary PEEK layer provides a high Young’s modulus outer layer with excellent chemical and abrasion resistance, low thermal expansion, and is a zero halogen material providing low smoke and toxicity. This combination is suitable for long-term use up to 160 °C. In addition, this fiber structure is ideal for low temperature and cryogenic applications, operating indefinitely at low temperatures (~ up to 20 years, performance and reliability will vary depending on installation environment. Consult OFS for guidance).

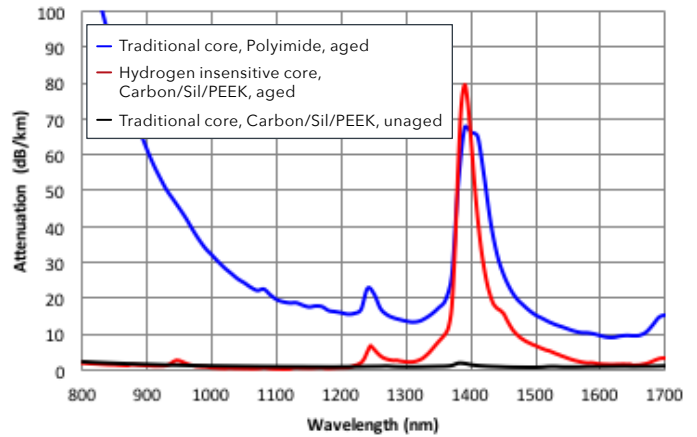
**LineaSens® Proprietary, Hydrogen Insensitive Core
GI MM 50 Optical Fiber (Carbon/Silicone/PEEK Coating)**

Specifications

Item Number	F80402
Description	GEO50-H Geophysical Graded-Index Optical Fiber - Hydrogen Resistant, Carbon/Silicone/PEEK
Type	Multimode Graded-Index
Numerical Aperture	0.20
Attenuation @ 850 nm	≤ 4.0 dB/km
Attenuation @ 1300 nm	≤ 2.0 dB/km
Bandwidth OFL @ 850 nm	≥ 400 Mhz-km
Bandwidth OFL @ 1300 nm	≥ 400 Mhz-km
Core Diameter	50 ± 3 μm
Clad Diameter	125 ± 1 μm
Cladding Non-Circularity	≤ 2.0%
Hermetic Carbon Layer	~ 300 to 400 Å
Primary Coating Diameter	450 ± 30 μm
Secondary Coating Diameter	700 ± 50 μm
Operating Temperature	-55 to +200 °C
Short Term Excursions (24 Hours)	Up to 410 °C
Coating Material	Carbon/Silicone/PEEK
Short-Term Bend Radius (Mechanical)	≥ 4 mm
Long-Term Bend Radius (Mechanical)	≥ 4 mm
Proof Test Level	200 kpsi (1.38 Gpa)
* NOTE: Hydrogen diffusion performance curve on right	

**Proprietary, Hydrogen Insensitive Core
Optical Fibers - Lower Sensitivity to H₂**

Aging Condition: 5% H₂/95% N₂, 1500 psi, 200 °C, 10 days



Hydrogen Ingression Performance

Hydrogen Concentration	Partial Pressure (PSI)	Temperature (°C)	Duration (Days)	H ₂ Induced Loss @ 1060 nm
5%	1,500	200	10	< 0.1 dB/km

For additional information please contact your sales representative.

You can also visit our website at www.ofsoptics.com or call 1-888-fiberhelp (1-888-342-3743) USA or 1-770-798-5555 outside the USA.

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