Optical Fibers for Sensing in Harsh Environments

NuSENSOR™ single mode and multimode fibers with superior thermal, chemical and hydrogen resistance enable distributed temperature and strain sensing in harsh environments. Our in-house pure silica core single mode and graded index multimode glass provide the highest immunity to hydrogen induced losses for the most demanding applications. Nufern’s proprietary carbon coating provides high levels of hermeticity to germanium doped fibers for temperatures up to 200°C and superior mechanical reliability. NuSENSOR™ fibers provide tight tolerance optical and geometric specifications measured at application critical wavelengths and are available with mid-temperature acrylate (150°C), silicone (200°C) and polyimide (300°C) coating for industry leading temperature and chemical resistance.
Optical Attributes

- Immune to the effects of H₂ ingress in typical sensing environments
- Minimal attenuation changes upon exposure to rated temperature
- Low intrinsic losses over critical wavelength ranges
- Same optical performance with various coatings

### COATINGS*

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<th>PRODUCT DESCRIPTION</th>
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*Silicone/PFA available upon request

Relative Performance of Pure Silica Core & Standard GI MM Fibers

Relative Performance of Hermetic & Non-Hermetic PSC GI MM Fibers

Mechanical Attributes

- Long lengths proof-tested to 100kpsi
- Excellent geometric tolerances for low signal artifact generation
- Negligible degradation in strength after exposure to H₂
- Hermetic Carbon enhances dynamic stress corrosion parameter

Applications

- Raman distributed temperature sensing
- Brillouin distributed temperature & strain sensing
- Fiber Bragg Grating (FBG) based point and Fabry-Perot sensors

Benefits

- Long unattended deployments or short cycle in-out applications
- Nufern’s investment in R&D insures leading technologies are designed into every product