

IXF-RAD-SM-1550-014-HT

Radiation Hardened Single Mode Fiber

Radiation hardened optical fibers are designed to mitigate the effects of Radiation Induced Attenuation (RIA) and extend the fiber's lifetime when used in radiative environments. Leveraging a decade of investments in R&D and research collaborations, Exail offers singlemode and multimode radiation hardened fibers for use in harsh environments with high radiation levels and/or extreme temperatures.



Benefits & Features

- Singlemode operation at 1550 nm
- Radiation-Hardened for high radiation levels
- Excellent radiation induced attenuation (RIA)
- High-temperature acrylate coating
- Operation up to +150 °C
- Matching radiation-tolerant (Ge-doped) fiber

Applications

- Sensing and monitoring in harsh environment
- Femtosecond FBG inscription
- Distributed Temperature Sensing (DTS)

Related Products

- IXF-RAD-SM-1550-0.14-PI
- IXF-RAD-SM-1550-014-AL
- IXF-SM-1550-125-014-HT

Related Publications

- [G. Mélin et al., "Radiation Resistant Single-Mode Fiber With Different Coatings for Sensing in High Dose Environments," in IEEE Transactions on Nuclear Science, vol. 66, no. 7, pp. 1657-1662, July 2019, doi: 10.1109/TNS.2018.2885820](#)
- [A. Morana et al., "Temperature Dependence of Radiation-Induced Attenuation of a Fluorine-Doped Single-Mode Optical Fiber at Infrared Wavelengths," in IEEE Transactions on Nuclear Science, vol. 70, no. 4, pp. 549-555, April 2023, doi: 10.1109/TNS.2023.3239986](#)

Parameters

Cutoff wavelength (nm)	< 1450
Attenuation @1550 nm (dB/km)	< 0.6
Mode field diameter @1550 nm (μm)	9 ± 1
Numerical aperture	0.14 ± 0.01
Core/Clad concentricity (μm)	< 1
Cladding diameter (μm)	125 ± 2
Coating diameter (μm)	245 ± 15
Proof test level (kpsi)	100
Radiation induced attenuation (dB/km) * 1 MGy (γ ray), 1550 nm, 23 °C	< 30

* Typical RIA @1550 nm for 1 MGy (γ ray) ~ 25 dB/km

Design parameters

Core material	Pure silica core
Coating material	High-temperature acrylate
Operating temperature range (°C)	-60 to +150

Exail reserves the right to change, at any time and without notice, the specifications, design, function or form of its products described herein.

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