

SPECIALTY OPTICAL FIBER

IXF-RAD-SM-1550-014-AL

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.

Aluminum coated fibers offer a wide operating temperature range, from cryogenic temperatures up to +400 °C. They are also hermetic to hydrogen, mitigating hydrogen darkening in hydrogen-rich environments.



Benefits & Features

- Singlemode operation at 1550 nm
- Radiation-Hardened for high radiation levels
- Excellent radiation induced attenuation (RIA)
- Aluminum coating
- Operating temperature up to +400 °C
- Hermetic to hydrogen and water vapor
- Solderable directly to connectors
- Matching radiation-tolerant (Ge-doped) fiber for low to moderate doses, IXF-SM-1550-125-014-AL

Applications

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

Related Products

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

Related Publications

- [G. Melin 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](#)

Parameters

Cutoff wavelength (nm)	< 1450
Attenuation @1550 nm (dB/km)	< 20
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)	165 ± 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	Aluminum
Operating temperature range (°C)	-269 to +400

Aluminum coated fiber



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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