

**RADATOX™  
OPTICAL FIBER CABLES  
RADIATION-RESISTANT  
APPLICATIONS**





# RADATOX™ OPTICAL FIBER CABLES

## RADIATION-RESISTANT APPLICATIONS

### APPLICATIONS

Designed for space and nuclear applications that require:

- ↗ Weight saving,
- ↗ Immunity to electromagnetic interference,
- ↗ High data rate.

### ADVANTAGES

- ↗ Lightweight.
- ↗ Electromagnetic immunity.
- ↗ Tight structure to optimize mechanical and optical performances as well as better connection.
- ↗ Resistance to harsh environment.
- ↗ Tensile strength : > 200 N.
- ↗ UV laser marking.
- ↗ Operating temperatures: -60 to 135 °C.
- ↗ Bend radius: 12.5 mm.
- ↗ Very low shrinkage allowing very stable performance after cabling.
- ↗ Easy cable stripping.
- ↗ Made in France.
- ↗ Compatible with:
  - MIL-DTL-38999 optical connectors,
  - SC, FC, LC, ST ...,
  - Axon' optical Micro-D connectors.

### Why optical fiber cables ?

More than high-data rate links, optical fiber cables are totally immune to EMI and the integrity of signals is not affected by electrical noise in the environment. The optical fiber is by nature a perfect electrical insulator, insensitive to discharges and does not carry them (no cross-talk possible). The optical fiber is specially designed to resist high irradiation. Fiber the opacification is avoided. Easy to integrate, Axopt™ optical cables are compatible with standard optical contacts and Micro-D connectors.



SPACE



NUCLEAR

### RADATOX™ OPTICAL FIBER CABLE

The optical fibre has a radiation resistance of 1 Mrad. An optional structure with an optical fibre having a radiation resistance of 200 MRad is also possible.

#### Normative qualification tests

- ↗ Outgassing tests according to ECSS-Q-ST-70-02 specification.
- ↗ Measurements of radiation-induced attenuation after gamma irradiation at 1 Mrad based on ECSS-Q-ST-70-06C specification.
- ↗ Some thermal and mechanical tests.
- ↗ The Radatox™ material itself has a 200 MRad radiation resistance and a very high ATOX (Atomic Oxygen) resistance.

### SINGLE FIBER OPTIC CABLES MULTIMODE 50/125 1.8 MM SPACE

#### SPACE & PF71368

1 FIBER	core/cladding	Silica Graded Index Multimode 50/125	125 ± 2 µm
	primary buffer	High temperature Acrylate	245 ± 15 µm
2 BUFFER		ETFE (Black)	0.90 ± 0.05 mm
3 BRAIDED SHIELD		Aramid Strength Member	1.15 mm nom.
4 OUTER JACKET		RADATOX® (white)	1.80 ± 0.1 mm
ATTENUATION		At 850 nm	5.0 dB/km max
		At 1300 nm	3.0 dB/km max
		Numerical aperture	0.20 ± 0.015
BANDWIDTH		At 850 nm	1500 MHz.Km min
		At 1300 nm	500 MHz.Km min
OPERATING TEMPERATURE			-60°C to 135°C

Space cables also available with optical fibre 9/125 & 62.5/125.

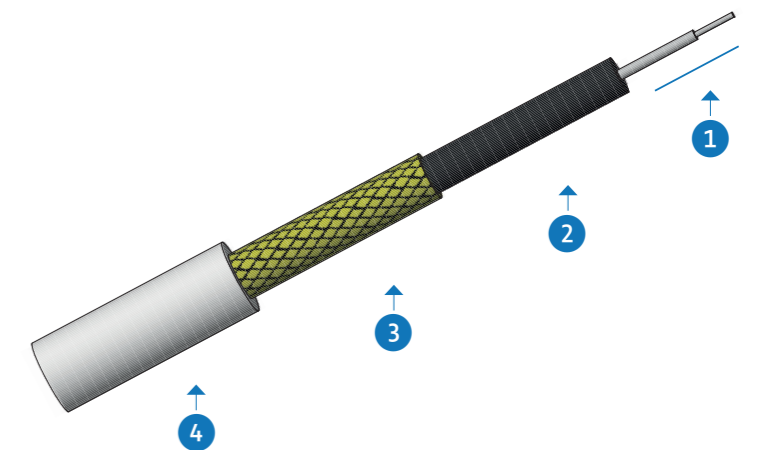
### RADATOX™ PROTECTION AGAINST OXYGEN ATOMIC & RADIATION

Materials used on spacecraft exteriors are exposed to a variety of environmental threats that can cause significant degradation.

**In Low Earth orbit (LEO)**, these threats include radiation, ultraviolet (UV) radiation, thermal cycling, micrometeoroids, orbital debris impact, and especially **atomic oxygen (ATOX)**.

In order to limit the effects of ATOX which erodes and damages materials including polymer insulated wires and cables, Axon' Cable has developed a new electrical insulation system called Radatox™.

- ↗ **10 times** more resistant to ATOX compared to typical perfluoropolymers (FEP, PFA, PTFE) which are highly sensitive to the combined effects of ATOX, UV, radiation and thermal cycling, limiting their use for long lifetime missions.
- ↗ 40% mass saving compared to solutions such as FEP, PFA or PTFE.
- ↗ Proven by independent laboratories to have superior ATOX performance.





## INTERNATIONAL PRESENCE

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Axon' Cable is a global leader in the design and manufacture of high-performance in-terconnect solutions for a wide range of industries, including aerospace, defence, medical, and industrial markets. With over 55 years of experience, Axon Cable has established itself as a trusted partner to its customers by providing innovative solutions that meet their most demanding requirements. From custom-designed cables and connectors to cable assemblies and harnesses, Axon Cable's expertise and state-of-the-art manufacturing facilities enable it to deliver reliable, high-quality products that are optimized for performance and reliability. With a commitment to excellence and a focus on customer satisfaction, Axon Cable is dedicated to driving innovation and advancing the state-of-the-art in interconnect technology.

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