

Aluminum Coated - Step Index Multimode Optical Fibers

◦ ENGINEERING ◦ DESIGN ◦ MANUFACTURING

Description

Aluminum coated step index multimode optical fibers are designed to operate in the UV-VIS and VIS-IR wavelength window. The fiber is supplied with a 99.99% Aluminum protective coating, capable of withstanding elevated temperatures in the range of -269°C to +400°C. Electrically conductive this type of coating provides the user with the ability to connectorize directly to the coating, resulting in a hermetically sealed assembly. Aluminum coatings offer excellent protection over a wider temperature range than conventional coatings. The Aluminum coating is chemically bonded to the Silica cladding enabling high performance terminations without pistoning. Along with an excellent stress corrosion susceptibility parameter beyond 100, it offers improved mechanical protection to the optical fiber when used in the most challenging environments. Combined with solarization resistant glass Aluminum coating is the ideal choice to preserve deep UV performance at short UV wavelengths. Step index multimode optical fibers are quality tested in accordance with the Telecommunications Industry Association (TIA) and Fiber Optic Test Procedures (FOTP). These fibers can also be tested to MIL-SPEC standards when necessary.

Principal Features

- High Operating temperature
- Sterilizable
- Radio Opaque
- Chemical corrosion resistance
- Solarization Resistant
- Radiation Resistant
- Cryogenic operating temperature
- Solderable directly to connectors
- Non-contaminating

Specifications

Physical Characteristics

Core Composition
Clad Composition
Core/Clad Offset
Coating Composition
Core Hydroxy (OH) Content
Clad/Core ratios

UV-Vis

Pure Fused Silica
Fluorine Doped SiO₂
≤ 1% of φ Core
99.99% Aluminum
1200 ppm (High OH)
1.1, 1.2, 1.4, 2.5

Vis-IR

Pure Fused Silica
Fluorine Doped SiO₂
≤ 1% of φ Core
99.99% Aluminum
0.7 ppm (Low OH)
1.1, 1.2, 1.4, 2.5

Optical Characteristics

Wavelength Range
Numerical Apertures
Typical Attenuation @ 850nm
Index of Refraction @ 850nm

200-1200nm
0.22 ± 0.02
≤ 20 dB/Km
1.45250

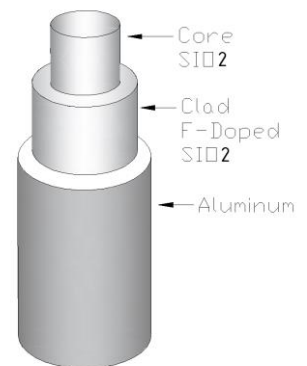
400-2400nm
0.22 ± 0.02
≤ 16 dB/Km
1.45250

Mechanical Characteristics

Proof Test Level
Median Tensile Strength
Corrosion Parameter
Young's Modulus
Operating Temperature Range
Bend Radius Short Term
Bend radius Long Term

≥ 100Kpsi
≥ 3.3GPa
≥ 100
71.7 GPa
-269°C to 400°C
200X fiber radius
400X fiber radius

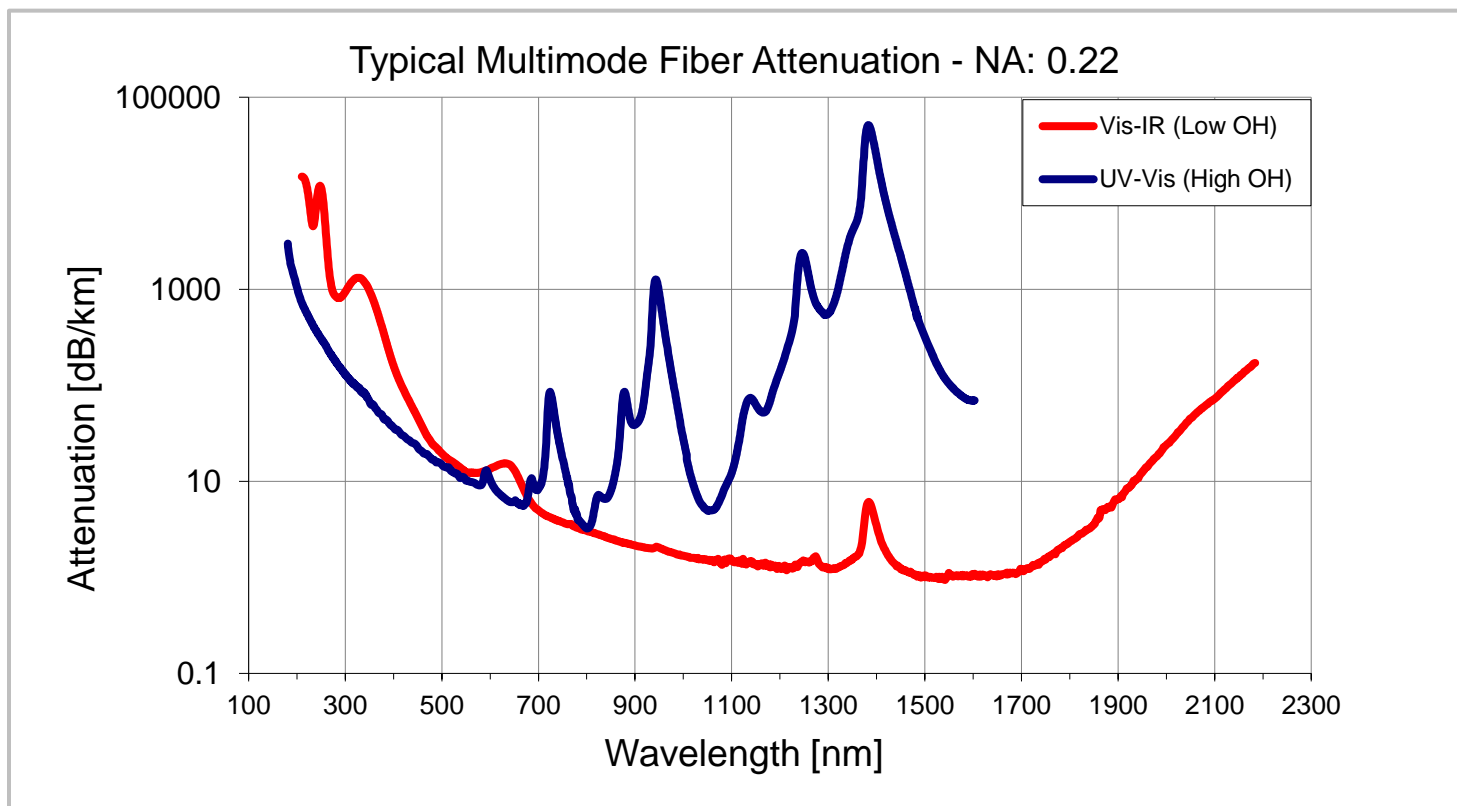
≥ 100Kpsi
≥ 3.3GPa
≥ 100
71.7 GPa
-269°C to 400°C
200X fiber radius
400X fiber radius



Applications

Aluminum Coated Step Index Multimode Optical Fibers are typically used in a variety of challenging applications such as: High temperature sensing, Down-hole sensing, Corrosive environments, High radiation environments, Turbine and jet engine monitoring, High power laser delivery systems, High vacuum devices, Aircraft, Missile, and Spacecraft sensing and measurement.

Spectral Attenuation



Tables Below Reflect Standard Aluminum Coated Fiber Geometries

Visible to IR Transmission (400-2400nm) Low OH			
Product Type	ϕ Core (μm) $\pm 2\%$	ϕ Clad (μm) $\pm 2\%$	ϕ Jacket (μm) $\pm 10\%$
Vis-IR 100/110/150A	100	110	150
Vis-IR 050/125/175A	50	125	175
Vis-IR 050/125/180A	50	125	180
Vis-IR 105/125/175A	105	125	175
Vis-IR 200/220/280A	200	220	280
Vis-IR 200/220/285A	200	220	285
Vis-IR 300/330/430A	300	330	430
Vis-IR 400/440/530A	400	440	530

UV to Visible Transmission (200-1200nm) High OH			
Product Type	ϕ Core (μm) $\pm 2\%$	ϕ Clad (μm) $\pm 2\%$	ϕ Jacket (μm) $\pm 10\%$
UV-Vis 100/110/150A	100	110	150
UV-Vis 050/125/175A	50	125	175
UV-Vis 050/125/180A	50	125	180
UV-Vis 105/125/175A	105	125	175
UV-Vis 200/220/280A	200	220	280
UV-Vis 200/220/285A	200	220	285
UV-Vis 300/330/430A	300	330	430
UV-Vis 400/440/530A	400	440	530

Notes:

- The items listed in these tables are standard configurations. Other configurations are available on special request.
- Solarization Resistant fiber is also available with Hydrogen Loading.
- Thicker Coatings are available for soldering applications.