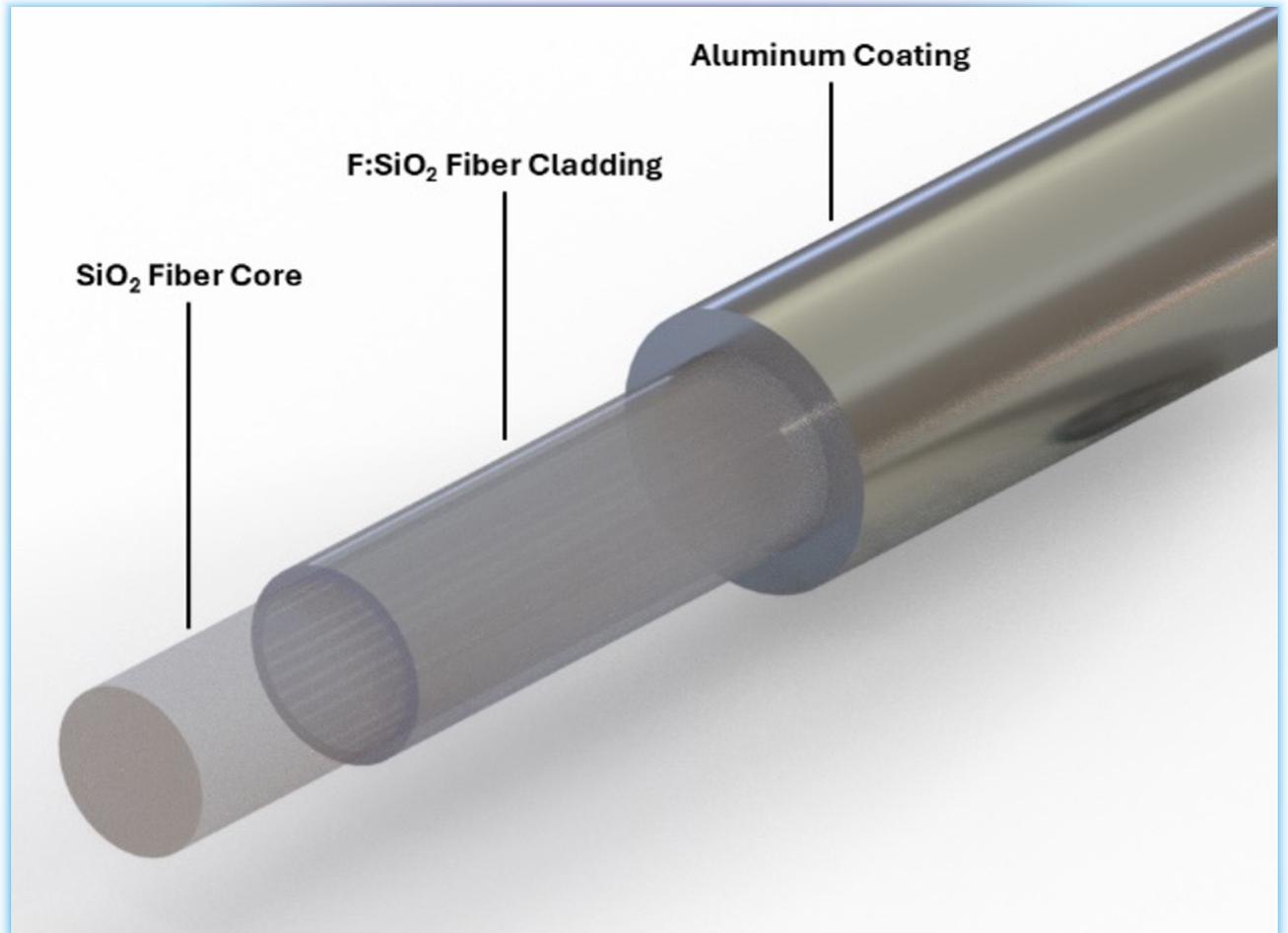


# Aluminum Coated Silica Fibers



Mir Photonics' Aluminum Coated Silica Fibers stand as the premier choice for applications that demand exceptional reliability under high temperatures, high vacuum, and other extreme environmental conditions. Designed for use where conventional polymer-coated fibers fail, these fibers deliver stable optical performance even in harsh industrial, scientific, and aerospace environments. Their aluminum coating enables efficient thermal management while ensuring long-term durability in applications exposed to heat, radiation, or aggressive sterilization processes.

These aluminum-coated fibers retain all the inherent benefits of standard silica-silica fibers, including excellent optical clarity, low attenuation, and chemical inertness. At the same time, the metallic coating significantly enhances mechanical strength and fatigue resistance, offering superior protection against micro-bending, vibration, and repeated mechanical stress.

With a broad optical transmission range from 220 to 2400 nm, these fibers support a wide variety of applications, depending on whether UV or NIR silica fiber cores are selected. This versatility makes them suitable for spectroscopy, sensing, medical, and industrial laser systems. Remarkably, they maintain consistent performance across an extreme temperature range from cryogenic conditions as low as  $-270^{\circ}\text{C}$  up to continuous operation at  $450^{\circ}\text{C}$ .

Specification of Standard Al-Coated Fibers	
Core/Cladding material Step Index	Pure Fused Silica Core / Fluorine Doped Silica Cladding
Graded Index	Germanium Doped Fused Silica Core / Pure Fused Silica
Fiber core diameters, $\mu\text{m}$	Single mode: 2.5 – 9; Multimode: 50; 62.5; 100; 200; 400; 600; 800; 1000
Al coating thickness, $\mu\text{m}$	15 – 150 (depending on fiber diameter)
Standard Numerical Aperture (NA)	0.22 $\pm$ 0.02
Available Numerical Aperture (NA)	0.12 $\pm$ 0.02   0.26 $\pm$ 0.02
Min operating temperature, $^{\circ}\text{C}$	-270
Max operating temperature, $^{\circ}\text{C}$	450
Humidity Range	Up to 100%
Minimal bending radius (long term)	200 x fiber outer diameter
Minimal bending radius (short term)	100 x fiber outer diameter
Tensile strength (short gauge), GPa	3.5 – 6
Two point bending strength, GPa	>10
Static fatigue parameter	>100

