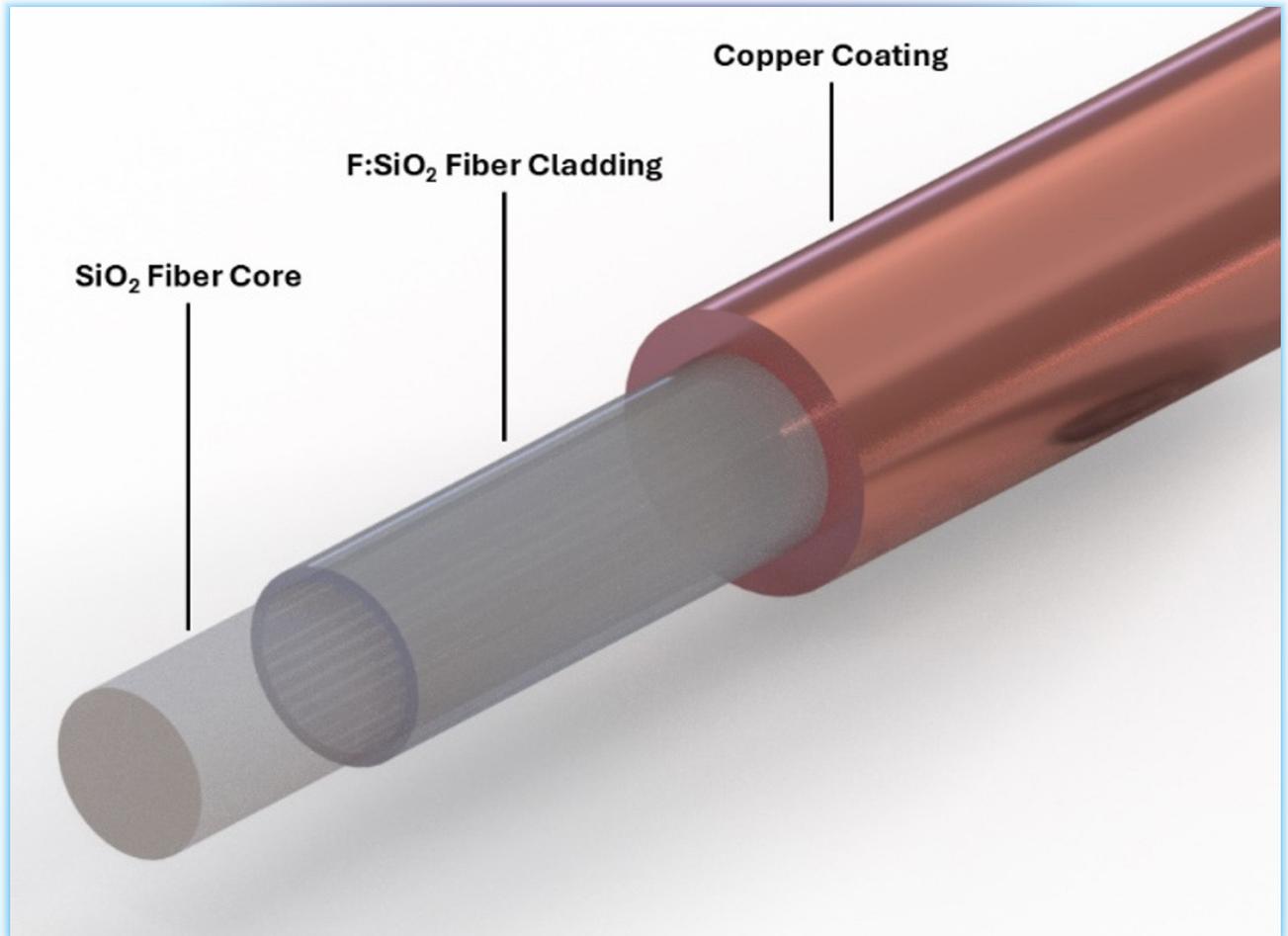


# Copper Coated Silica Fibers



Mir Photonics' Copper-alloy Coated Silica Fibers represent the pinnacle of fiber technology for applications exposed to extreme conditions, including very high temperatures, high vacuum, and harsh or demanding operational environments. Engineered to perform where conventional fiber solutions reach their limits, these fibers combine excellent optical stability with robust thermal and mechanical performance, making them well suited for industrial, scientific, and aerospace use cases.

These copper-alloy coated fibers retain all the key advantages of traditional silica-silica fibers. In addition, the metallic coating provides substantial improvements in mechanical strength and durability, as well as increased resistance to fatigue and mechanical stress when compared to polymer-coated fibers.

Their optical transmission spans a wide range from 220 to 2400 nm, depending on the choice of UV or NIR silica fiber cores, enabling use across a broad spectrum of optical and spectroscopic applications. Notably, these fibers maintain reliable performance across an extreme temperature range, from cryogenic levels down to  $-270^{\circ}\text{C}$  up to continuous operation at temperatures as high as  $600^{\circ}\text{C}$ , while also tolerating humidity levels of up to 100% without compromising optical or mechanical integrity.

Specification of Standard Cu-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: 4 – 9; Multimode: 50; 62.5; 100; 200; 400; 600; 800; 1000
Cu-alloy coating thickness, $\mu\text{m}$	15 – 50 (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, $^{\circ}\text{C}$	600
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

