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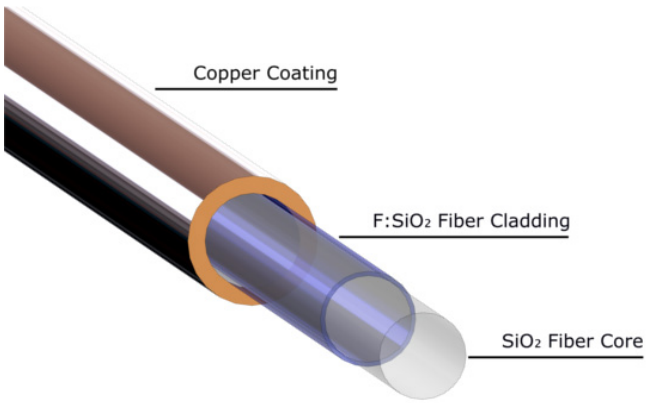
art photonics
broad spectra fiber solutions

# Cu-alloy Coated Silica Fibers

***art photonics'*** Copper-alloy Coated Silica Fibers are the optimal solution for applications in high temperature, vacuum and harsh environment conditions. Cu-alloy coated fibers have all benefits of silica-silica fibers. Additional significant advantages include a superior mechanical strength and better fatigue resistance compared to polymer coated fibers.
The transmission range spans 220 to 2400 nm depending on UV or NIR silica fiber core choice.
The working temperature range is from -270°C to 600°C; humidity – up to 100%.




**Applications:**

- High temperature environments
- Harsh Chemical environments
- Nuclear radiation resistant devices
- Down-hole sensing for oil and gas industry
- High Power Laser delivery
- Medical applications
- Soldered fiber bundles

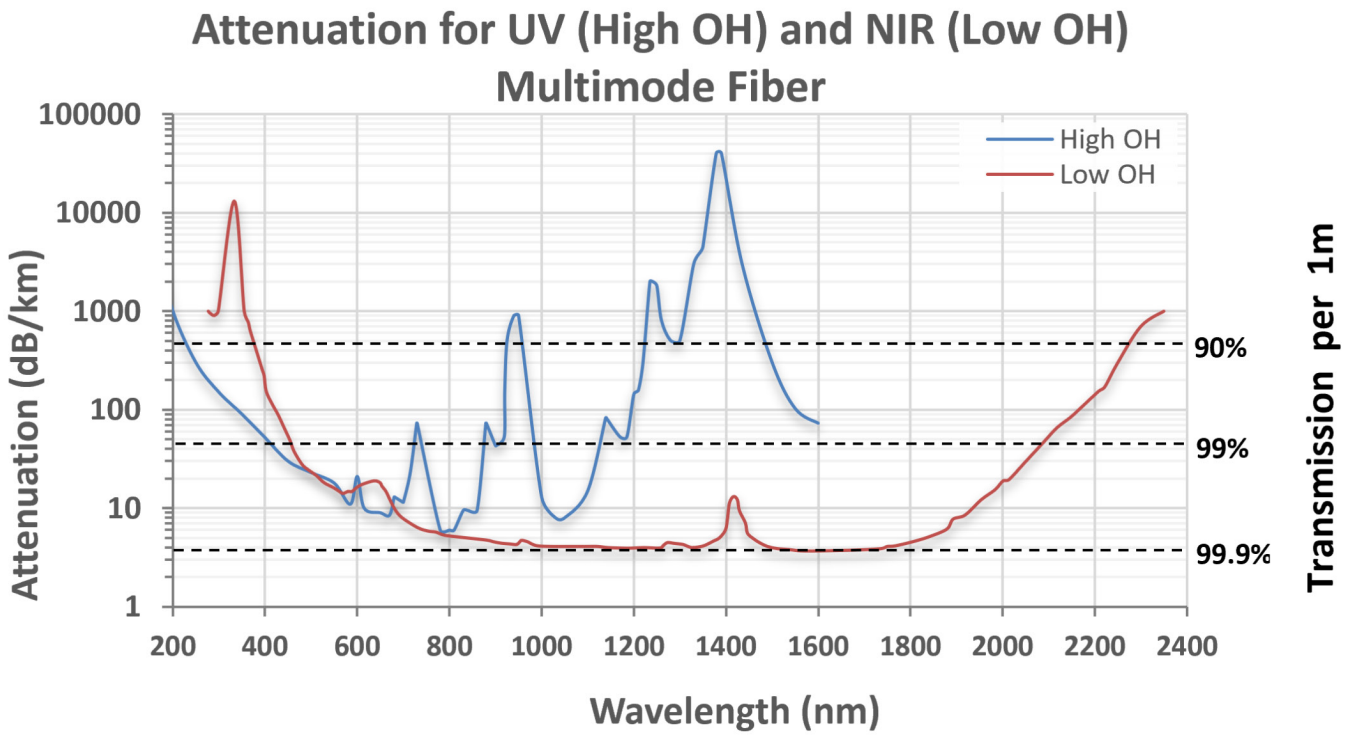
**Features:**

- Working temperatures* up to 600°C
- Excellent mechanical strength and flexibility
- No outgassing under high vacuum conditions
- Solderable into connectors (epoxy-free option)
- Effective heat rejection along metal coating
- Steaming, ETO, e-beam or gamma sterilizable

** Working temperatures range is valid for using in non-oxidizing atmospheres*

## Parameters of standard Cu-alloy coated fibers

| Code | Type | Core, µm | Cladding, µm | Coating Cu, µm | NA |
|---|---|---|---|---|---|
| 9/125 Cu | Single Mode | 9 ± 5% | 125 ± 2% | 165 ± 2% | 0.13 |
| 50/125 Cu | Graded Index Multimode | 50 ± 2% | 125 ± 2% | 165 ± 2% | 0.22 |
| 100/110 Cu | Step Index Multimode | 100 ± 2% | 110 ± 2% | 145 ± 5% | 0.22 |
| 200/220 Cu | Step Index Multimode | 200 ± 2% | 220 ± 2% | 270 ± 5% | 0.22 |
| 400/440 Cu | Step Index Multimode | 400 ± 2% | 440 ± 2% | 535 ± 5% | 0.22 |
| 600/660 Cu | Step Index Multimode | 600 ± 2% | 660 ± 2% | 745 ± 5% | 0.22 |




## Specifications

| | |
|---|---|
| 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, µm | 9; 50; 62.5; 100; 200; 400; 600 |
| Cu-alloy coating thickness, µm | 15 - 50 (depending on fiber diameter) |
| Standard Numerical Aperture (NA) | 0.22 ± 0.02 |
| Available Numerical Aperture (NA) | 0.12 ± 0.02<br>0.26 ± 0.02 |
| Min operating temperature | -270°C |
| Max operating temperature | +600°C |
| 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 |