

### Description

Waveguide's Single Mode (SM 9/125), metal coated fiber was designed to provide optimum performance in both the 1310nm and 1550nm wavelength operating ranges, with minimal dispersion in the 1310nm operating window. The fiber is supplied with either 24kt Gold or Aluminum coatings. These coatings are electrically conductive and provide the user with the ability to connectorize directly to the coating, resulting in a hermetically sealed assembly. Gold and Aluminum coatings offer excellent protection over a wider temperature range compared to conventional coatings. These types of metal coatings offer excellent stress corrosion susceptibility parameters, resulting in improved mechanical protection to the optical fiber, along with durability and robustness in harsh environments previously unseen in the industry.

Waveguide's Single Mode Fibers are quality tested in accordance with the Telecommunications Industry Association (TIA) Fiber Optic Test procedures (FOTP) as well as other industry standards.

### Specifications

<b>Physical Characteristics</b>	<b><u>SM 9/125/155 Gold</u></b>	<b><u>SM 9/125/175 Aluminum</u></b>
Core Composition	Ge Doped Silica	Ge Doped Silica
Mode Field Diameter @ 1310nm	9.2 $\mu\text{m} \pm 0.4\mu\text{m}$	9.2 $\mu\text{m} \pm 0.4\mu\text{m}$
Mode Field Diameter @ 1550nm	10.4 $\mu\text{m} \pm 0.5\mu\text{m}$	10.4 $\mu\text{m} \pm 0.5\mu\text{m}$
Core/Clad Concentricity Error	$\leq 0.5 \mu\text{m}$	$\leq 0.5\mu\text{m}$
Clad Diameter	125 $\mu\text{m} +1/-3$	125 $\mu\text{m} +1/-3$
Clad Non-Circularity	$\leq 0.07 \mu\text{m}$	$\leq 0.07 \mu\text{m}$
Coating Diameter	155 $\mu\text{m} \pm 10\%$	175 $\mu\text{m} \pm 10\%$
Coating Non-Circularity	$\leq 6\%$	$\leq 6\%$
<b>Optical Characteristics</b>		
Numerical Aperture	0.12 $\pm 0.02$	0.12 $\pm 0.02$
Attenuation @ 1310nm	$\leq 12 \text{ dB/Km}$	$\leq 16 \text{ dB/Km}$
Attenuation @ 1550nm	$\leq 10 \text{ dB/Km}$	$\leq 14 \text{ dB/Km}$
Group Index of Refraction @ 1310nm	1.467	1.467
Group Index of Refraction @ 1550nm	1.468	1.468
Cut off wavelength	1200-1330nm	1200-1330nm
Chromatic dispersion ( $\lambda$ 1285-1330)	$< 3 \text{ ps/nm}^2 \cdot \text{km}$	$< 3 \text{ ps/nm}^2 \cdot \text{km}$
Zero Dispersion Wavelength	1310 $\pm 10\text{nm}$	1310 $\pm 10\text{nm}$
Nominal Zero Dispersion Slope	$\leq 0.090 \text{ ps/nm}^2 \cdot \text{km}$	$\leq 0.090 \text{ ps/nm}^2 \cdot \text{km}$
<b>Mechanical Characteristics</b>		
Proof Test Level	$\geq 100\text{Kpsi}$	$\geq 100\text{Kpsi}$
Median Tensile Strength	$\geq 3.3\text{GPa}$	$\geq 3.3\text{GPa}$
Corrosion Parameter	$\geq 50$	$\geq 100$
Operating Temperature Range	$-269^\circ\text{C}$ to $700^\circ\text{C}$	$-269^\circ\text{C}$ to $400^\circ\text{C}$
Bend Radius Short Term	200X fiber radius (mm)	200X fiber radius (mm)
Bend radius Long Term	400X fiber radius (mm)	400X fiber radius (mm)
Lead time (Standard Lengths)	4-6 wks.	4-6 wks.

### Applications

Gold and Aluminum Coated Single Mode 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 vacuum devices, Aircraft, Missile, and Spacecraft sensing and measurement.