

Gold and Aluminum Coated

Fiberguide Industries

Metal Jacket Series

Technical Data

REFERENCE SUMMARY

Product Category:
Fiber

Mode:
Step Index, Multimode

Type:
Gold and Aluminum Coated

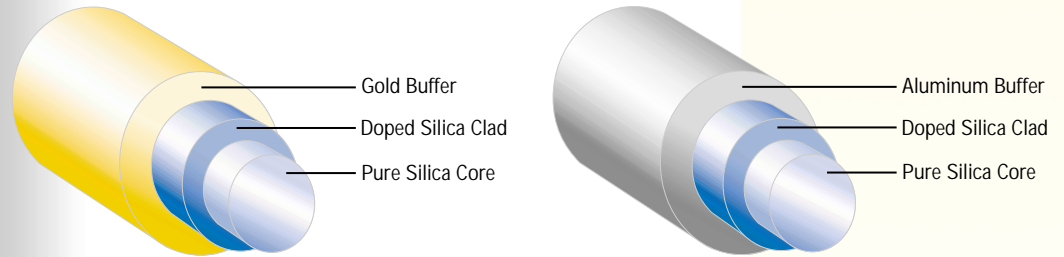
Trade Name:
Metal Jacket Series

DESCRIPTION

Optical fibers are typically manufactured from a preform consisting of a silica core which may be doped silica or pure silica and a cladding classically of silica having a lower refractive index than the core. An additional layer or coating/buffer is added to prevent the ingress of moisture and other contaminants which would lead to very early failure of the fiber, and preserves the initial tensile strength. These coatings/buffers are usually polymers of various types, such as Polyimide, Acrylate, Nylon, and Tefzel™.

Metal coated/buffered fibers were originally developed for ultra high reliability telecommunications applications. The metal coating preserves the high initial mechanical strength and provides resistance against static fatigue (the failure under long term tensile loading), and in particular Aluminum, a hermetic coating to the fiber. In addition to high strength, metal coated fibers can be used at very high temperatures. Aluminum coated optical fibers have a rated operating range of -269°C to +400°C. Tight buffered Gold coated fibers have a rated operating range of -269°C to +700°C. Aluminum and Gold coating can be applied on continuous lengths to a wide variety of multimode, step index, graded index, and single mode fibers.

FIBER CROSS SECTION



FEATURES & BENEFITS

Features	Benefits
• Extremely high tensile strength.	• Stronger than wire.
• High operating temperature.	• Gold – 700°C continuous. • Aluminum – 400°C continuous.
• Cryogenic operating temperature.	• -269°C continuous.
• Stress and chemical corrosion resistant.	• Sensing in hazardous environments.
• Radio opaque.	• Not transparent to radiation or x-rays.
• Aluminum buffer is hermetic.	• Bonded directly to clad.
• Solderable.	• Perfect for vacuum feedthroughs and laser diode pigtailling.
• Sterilizable using ETO, steam, e-beam, or gamma radiation.	• Use in reusable medical devices.
• No outgassing or oxidation.	• Maintain clean high vacuum environments.



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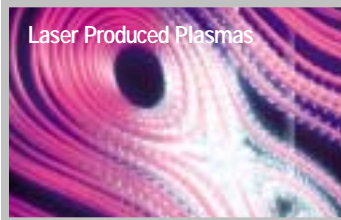
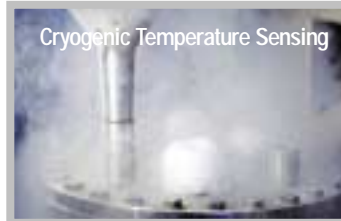
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APPLICATIONS

- Rocket, turbine, and jet engine monitoring
- Aircraft, missile and spacecraft sensing and measurement
- Radiation resistant sensors
- Ultra high vacuum devices
- High temperature and cryogenic temperature sensing
- Corrosive and caustic environments
- Material fatigue sensing
- Scanning near-field optical microscopy (SNOM)
- Down-hole sensing for oil and gas industry
- Allows time-resolved x-ray and optical streak camera data from laser-produced plasmas to be synchronized
- Chemical analysis

TYPICAL APPLICATIONS



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FIBER SPECIFICATIONS

- Standard Numerical Aperture (N.A.): 0.22 ± 0.02 (Full Acceptance Angle 25°)
- Available Numerical Apertures: 0.12 (Full Acceptance Angle 14°) 0.26 (Full Acceptance Angle 30°)
- Non-standard Sizes Available as Custom Run (Call For Details)
- Temperature Range:
Gold -269°C to $+700^\circ\text{C}$
– continuous
Aluminum -269°C to $+400^\circ\text{C}$
– continuous
- Proof Test:
Gold - 50 to 70kpsi
Aluminum - 100 to 150kpsi

Note: The fibers in the following table carry a designation "SFS" standing for "Standard Fluorinated Silica" and "AFS" standing for "Anhydrous Fluorinated Silica" followed by the core and cladding diameters (in microns) and concluding with the suffix "G" for Gold buffer and suffix "A" for Aluminum buffer.

FIBER SPECIFICATIONS

Gold Buffer Standard OH

Product Code	SFS50/125G	SFS105/125G	SFS200/220G
Core Diameter	$50\mu \pm 2\%$	$105\mu \pm 2\%$	$200\mu \pm 2\%$
Clad Diameter	$125\mu +1\mu/-3\mu$	$125\mu +1\mu/-3\mu$	$220\mu \pm 2\%$
Buffer Diameter	$155\mu \pm 10\%$	$155\mu \pm 10\%$	$255\mu \pm 10\%$
Operating Wavelength	180nm - 1100nm	180nm - 1100nm	180nm - 1100nm
Minimum Bend Radius			
-Recommended Short Term	12mm	12mm	22mm
-Recommended Long Term	24mm	24mm	44mm

Gold Buffer Low OH

Product Code	AFS50/125G	AFS105/125G	AFS200/220G
Core Diameter	$50\mu \pm 2\%$	$105\mu \pm 2\%$	$200\mu \pm 2\%$
Clad Diameter	$125\mu +1\mu/-3\mu$	$125\mu +1\mu/-3\mu$	$220\mu \pm 2\%$
Buffer Diameter	$155\mu \pm 10\%$	$155\mu \pm 10\%$	$255\mu \pm 10\%$
Operating Wavelength	400nm - 2400nm	400nm - 2400nm	400nm - 2400nm
Minimum Bend Radius			
-Recommended Short Term	12mm	12mm	22mm
-Recommended Long Term	24mm	24mm	44mm



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FIBER SPECIFICATIONS

Aluminum Buffer Standard OH

Product Code	SFS100/140A	SFS200/220A	SFS300/330A
Core Diameter	100 μ \pm 2%	200 μ \pm 2%	300 μ \pm 2%
Clad Diameter	140 μ +1 μ /-3 μ	220 μ \pm 2%	330 μ \pm 2%
Buffer Diameter	220 μ \pm 10%	308 μ \pm 10%	473 μ \pm 10%
Operating Wavelength	180nm - 1100nm	180nm - 1100nm	180nm - 1100nm
Minimum Bend Radius			
-Recommended Short Term	14mm	22mm	33mm
-Recommended Long Term	28mm	44mm	66mm

Aluminum Buffer Low OH

Product Code	AFS100/140A	AFS200/220A	AFS300/330A
Core Diameter	100 μ \pm 2%	200 μ \pm 2%	300 μ \pm 2%
Clad Diameter	140 μ +1 μ /-3 μ	220 μ \pm 2%	330 μ \pm 2%
Buffer Diameter	220 μ \pm 10%	308 μ \pm 10%	473 μ \pm 10%
Operating Wavelength	430nm - 2400nm	430nm - 2400nm	430nm - 2400nm
Minimum Bend Radius			
-Recommended Short Term	14mm	22mm	33mm
-Recommended Long Term	28mm	44mm	66mm

Fiberguide Industries Customization Program

Fiberguide Industries is a full service custom fiber and value-added assembly provider. If you have unique requirements, please contact us to discuss tailoring a product or design to optimize optical performance for your specific application.

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