

Solarization Resistant Silica/Silica (Standard OH)

Fiberguide Industries

Solarguide™

Technical Data

REFERENCE SUMMARY

Product Category:
Fiber

Mode:
Step Index, Multimode

Type:
Solarization Resistant
Silica/Silica (Standard OH)

Trade Name:
Solarguide™

DESCRIPTION

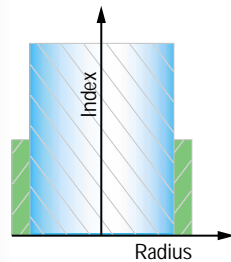
Solarization is a change in material characteristics due to illumination with ultraviolet ("solar") light. High intensities of UV illumination can cause photo-thermal damage in silica optical fibers, significantly increasing attenuation. Prolonged UV radiation, 190nm to 230nm, solarizes untreated fiber, reducing their UV transmittance significantly. The Fiberguide Solarguide™ series of fibers are perfect for long-life deep UV Spectroscopy, Lithography, Excimer laser delivery systems and for use with deuterium lamps and an extensive range of UV laser sources below 230nm.

Most spectroscopic applications using optical fibers have been constrained to wavelength ranges above 230nm, since standard silica fibers with an undoped core and fluorine doped cladding are continually damaged by exposure to deep UV light. This Solarization effect is induced by the formation of "color centers" with an absorbance band of 214nm. These color centers are formed when impurities such as Cl exist in the fiber core material and form unbound electron pairs on the Si atom, which is affected by deep UV radiation.

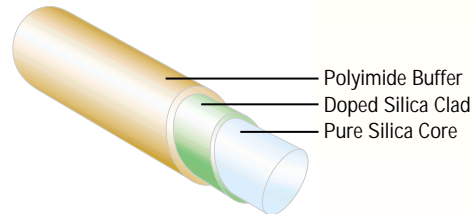
This advanced fiber manufacturing technology is made possible with recent availability of a prefabricated multimode, fused silica preform using the Plasma Outside Deposition ("POD") process, which facilitates the creation of highly fluorine doped cladding with a depressed index compared to fused silica and hydrogen loaded proving stability in the deep UV with a slightly increased attenuation and long term stability.



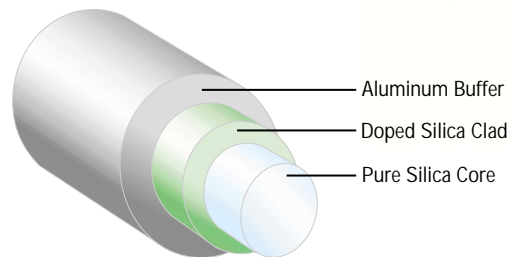
FIBER CROSS SECTION



Polyimide Coated



Aluminum Coated



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Fiberguide Industries, Inc., 1 Bay Street, Stirling, NJ 07980

Phone: 908-647-6601 Fax: 908-647-8464 info@fiberguide.com www.fiberguide.com

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FEATURES & BENEFITS

Features	Benefits
<ul style="list-style-type: none">• Step Index Profile.	<ul style="list-style-type: none">• Characterized by a uniform refractive index within the core and a sharp decrease in refractive index at the core-cladding interface so that the cladding is of a lower refractive index.
<ul style="list-style-type: none">• Polyimide Buffer/Coating.	<ul style="list-style-type: none">• Temperature rated from -190°C to +350°C.• Ideal for bundling fibers into larger area with minimal packing fraction loss.• Organic solvent resistant.• Radiation resistant.• Available with standard core diameters from 50µ to 600µ.
<ul style="list-style-type: none">• Aluminum Buffer/Coating.	<ul style="list-style-type: none">• Temperature rated from -269°C to +400°C.• Perfect for cryogenic applications.• Organic solvent resistant.• Radiation resistant.• Available with standard core diameters from 100µ to 300µ.
<ul style="list-style-type: none">• Optional Buffers/Secondary Coatings available.	<ul style="list-style-type: none">• Acrylate buffer with core sizes ≥ 1000µ.• Dual coatings.

APPLICATIONS

- Laser Surgery
- Medical Diagnostics
- Remote Spectroscopy for pollution analysis and chemical processing
- UV Photolithography
- Nuclear Plasma Diagnostics
- Photo initiated Chemistry
- UV curing
- Analytical instruments
- UV Illumination
- UV Raman Spectroscopy
- Excimer laser delivery systems

TYPICAL EXAMPLES



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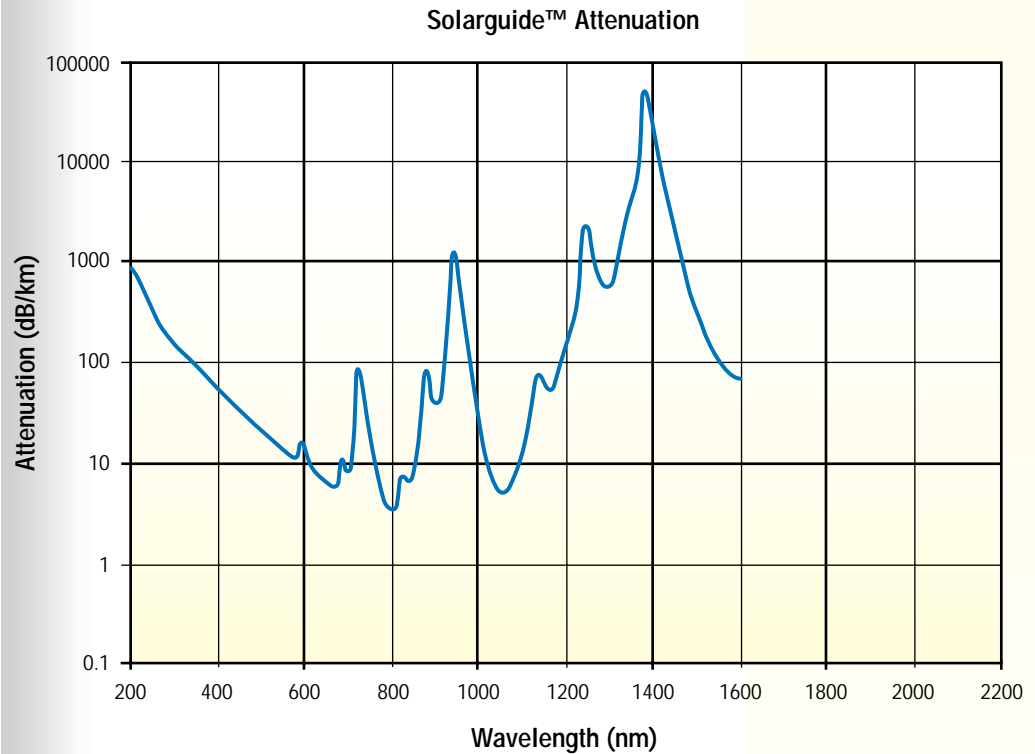
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SPECTRAL ATTENUATION (Typical)



FIBER SPECIFICATIONS

- **Temperature range**
 - Polyimide: -190°C to +350°C
 - Aluminum: -269°C to +400°C
- **Standard Numerical Aperture (N.A.)**
 - 0.22 ± 0.02 (full acceptance angle 25°)
- **Standard CDDR**
 - 1.1
- **Typical attenuation**
 - 219nm @ 800dB/km
 - 248nm @ 380dB/km
 - 308nm @ 120dB/km
 - 350nm @ 70dB/km
- **Recommended bend radius**
 - Short term: 130 x clad diameter
 - Long term: 260 x clad diameter
- **Proof tested using Bend Method**



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FIBER SPECIFICATIONS

Polyimide / Thermocoat Buffer

Product Code	UVS50/125THY	UVS110/110THY	UVS200/220THY
Core Diameter	50 μ \pm 2%	100 μ \pm 2%	200 μ \pm 2%
Clad Diameter	125 μ +1 μ /-3 μ	110 μ \pm 2%	220 μ \pm 2%
Buffer Diameter	145 μ \pm 5 μ	130 μ \pm 5 μ	245 μ \pm 5 μ
Core:Clad Concentricity	\leq 1.1%	\leq 1.1%	\leq 1.1%

Product Code	UVS300/330THY	UVS400/440THY	UVS600/660THY
Core Diameter	300 μ \pm 2%	400 μ \pm 2%	600 μ \pm 2%
Clad Diameter	330 μ \pm 2%	440 μ \pm 2%	660 μ \pm 2%
Buffer Diameter	355 μ \pm 10 μ	480 μ \pm 10 μ	710 μ \pm 15 μ
Core:Clad Concentricity	\leq 1.1%	\leq 1.1%	\leq 1.1%

Aluminum Buffer

Product Code	UVS100/110H2A	UVS200/220H2A	UVS300/330H2A
Core Diameter	100 μ \pm 2%	200 μ \pm 2%	300 μ \pm 2%
Clad Diameter	110 μ \pm 2%	220 μ \pm 2%	330 μ \pm 2%
Buffer Diameter	160 μ \pm 15%	308 μ \pm 15%	473 μ \pm 15%
Core:Clad Concentricity	\leq 1.1%	\leq 1.1%	\leq 1.1%

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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