

Hard Clad Silica (Standard OH)

Fiberguide Industries

Superguide™ SPCH

REFERENCE SUMMARY

Product Category:
Fiber

Mode:
Step Index, Multimode

Type:
Hard Clad Silica (Standard OH)

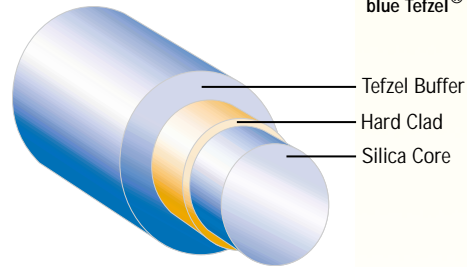
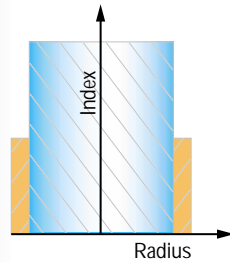
Trade Name:
Superguide™ SPCH
UV-VIS

DESCRIPTION

With numerical aperture (N.A.) of 0.39 and a hard polymer cladding that allows a high core-to-clad ratio, the Superguide™ SPCH is the low cost fiber of choice. The pure fused silica (SiO_2) used in the core of the Superguide™ fiber is made by reacting silicon tetrachloride (SiCl_4) with oxygen (O_2) using an oxy-hydrogen flame resulting in superior ultraviolet (UV) to visible (VIS) transmission as compared to its companion product Anhydroguide™, which has superior visible (VIS) to infrared (IR) transmission.



FIBER CROSS SECTION



Buffer - Available in clear or blue Tefzel® and clear nylon.



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FEATURES & BENEFITS

| Features | Benefits |
|---|--|
| <ul style="list-style-type: none"> • Certified by NAMSA under ISO Standard 10993-10. Biological Evaluation of Medical Devices, Part 10. | <ul style="list-style-type: none"> • Test for Irritation and Delayed-Type Sensitivity for accelerated 510K. |
| <ul style="list-style-type: none"> • Certified by NAMSA under ISO Standard 10993-11. Biological Evaluation of Medical Devices, Part 11. | <ul style="list-style-type: none"> • Tests for Systemic Toxicity for accelerated 510K. |
| <ul style="list-style-type: none"> • Certified by NAMSA under ISO Standard 10993-6. Biological Evaluation of Medical Devices, Part 6. | <ul style="list-style-type: none"> • Tests for Local Effects after Implantation for accelerated 510K. |
| <ul style="list-style-type: none"> • Certified by NAMSA under ISO Standard 18472. Sterilization of Healthcare Products - Biological and Chemical Indicators. | <ul style="list-style-type: none"> • Accelerated 510K. |
| <ul style="list-style-type: none"> • Hard Fluor-polymer coating. | <ul style="list-style-type: none"> • Protects the fiber during buffer stripping to prevent fiber breakage. Increases fiber strength and reduces static fatigue in humid environments. |
| <ul style="list-style-type: none"> • Superior concentricity and core-to-clad ratio. | <ul style="list-style-type: none"> • Allows for excellent connection alignment, fiber core positioning and high transmission bundles. |
| <ul style="list-style-type: none"> • Large numerical aperture (N.A.) fibers. | <ul style="list-style-type: none"> • 46° full acceptance angle, efficient light coupling, and exceptional transmission in tight bends. |
| <ul style="list-style-type: none"> • Strong bonding of the hard polymer to silica. | <ul style="list-style-type: none"> • Prevents relative movement of these materials in the fiber structure as the ambient temperature changes, sometimes referred to as "pistoning". |
| <ul style="list-style-type: none"> • Broad operating wavelength range. | <ul style="list-style-type: none"> • Excellent for Excimer Laser (193nm), Pulsed Dye (595nm), and HeNe (633). |
| <ul style="list-style-type: none"> • Sterilizeable by ETO or gamma. | <ul style="list-style-type: none"> • Single use or reusable medical devices. |
| <ul style="list-style-type: none"> • Hard polymer cladding is removable with acetone. | <ul style="list-style-type: none"> • Enables low-cost, highly reliable custom end designs. |
| <ul style="list-style-type: none"> • All dielectric, non-magnetic construction. | <ul style="list-style-type: none"> • Metal free. |
| <ul style="list-style-type: none"> • Radiation resistant. | <ul style="list-style-type: none"> • Just the right medium for your "hot" environment. |



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APPLICATIONS

Sensors/Industrial Controls/Illumination

- Make/Break
- Distance
- Temperature
- Liquid level
- Proximity
- Chemical analysis
- Biotechnology

Industrial/Scientific Diagnostic Instrumentation/Devices

- Spectrophotometer
- Gas/liquid chromatography
- Flame pyrometer
- Cytometry
- DNA sequencing

Medical/Dental

- Ruby (694.3nm)
 - Treatment of tattoos, pigmented lesions and hair removal
- Alexandrite (755nm)
 - Hair and tattoo removal
- Pulsed Dye (PDL) (595nm)
 - Treatment of vascular lesions
- Copper Vapor (CVL) (512nm)
 - Treatment of vascular lesions
- Excimer (Ar:F) (193nm)
- PRK and LASIK Laser (480nm)
 - Cardiac revascularization
 - Lithotripsy

- Argon Laser (514.5nm)
 - Retinal and inner ear surgery
 - Removal of port wine birth marks, facial spider veins, junctional nevi and cherry hemangioma
- KTP:YAG Laser (532nm)
 - Vascular lesions
 - Tattoos
- HeNe Laser (633nm)
 - Photodynamic therapy

Short-haul Data Transmission

- In-plant systems

Ordnance Initiation

- Carries signal for launch/detonation

TYPICAL EXAMPLES



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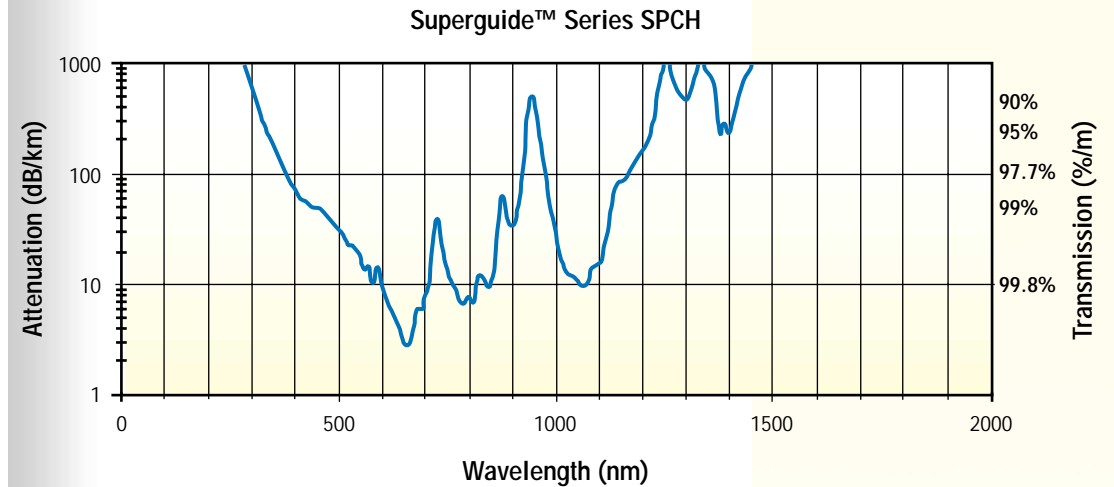
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SPECTRAL ATTENUATION (Typical)



FIBER SPECIFICATIONS

- Standard Secondary Buffer Coating: Tefzel® 750 Clear
- Numerical Aperture: 0.39 ± 0.02
(Full Acceptance Angle 46°)
- Certified To: 100kpsi
- Maximum Attenuation:
75dB/km @ 400nm
29dB/km @ 510nm
5dB/km @ 630nm
6dB/km @ 690nm
- Temperature Operating Range:
Nylon: -40°C to $+100^\circ\text{C}$
Tefzel®: -40°C to $+200^\circ\text{C}$
- Recommended Bend Radius:
Short Term: 100 x Clad Diameter
Long Term: 240 x Clad Diameter
- Proof Test Using Bend Method

Note: The fibers in the following table carry a designation "SPCH" standing for "Superguide Series Polymer Clad Hard", followed by the core and cladding diameters (in microns) and concluding with the suffix "Z" that designated clear Tefzel® buffer. See note below for other buffer colors and material options.



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FIBER SPECIFICATIONS

| Standard OH Product Code | SPCH200/230Z | SPCH300/330Z | SPCH400/430Z | SPCH600/630Z |
|--------------------------|--------------|--------------|--------------|---------------|
| Core Diameter | 200µm ± 5µm | 300µm ± 6µm | 400µm ± 8µm | 600µm ± 12µm |
| Clad Diameter | 230µm ± 5µm | 330µm ± 10µm | 430µm ± 10µm | 630µm ± 10µm |
| Buffer Diameter | 500µm ± 30µm | 650µm ± 30µm | 730µm ± 30µm | 1040µm ± 50µm |
| Maximum Core/Clad Offset | 5µm | 5µm | 7µm | 9µm |
| Maximum Power Capability | | | | |
| -CW ¹ | 0.2kW | 0.5kW | 0.8kW | 1.8kW |
| -Pulsed ² | 1.0MW | 2.3MW | 4.0MW | 9.0MW |

| Standard OH Product Code | SPCH800/830Z | SPCH1000/1035Z | SPCH1500/1550Z |
|--------------------------|---------------|----------------|----------------|
| Core Diameter | 800µm ± 16µm | 1000µm ± 20µm | 1500µm ± 35µm |
| Clad Diameter | 830µm ± 10µm | 1035µm ± 15µm | 1550µm ± 31µm |
| Buffer Diameter | 1040µm ± 62µm | 1400µm ± 70µm | 2000µm ± 100µm |
| Maximum Core/Clad Offset | 10µm | 10µm | 15µm |
| Maximum Power Capability | | | |
| -CW ¹ | 3.2kW | 5.0kW | 11.0kW |
| -Pulsed ² | 16MW | 25MW | 56MW |

NOTES

- 1 - Based on 1 MW/cm² for 1064nm ND:YAG laser and input spot size equal to 80% of the core diameter.
- 2 - Based on 5 GW/cm² for 1064nm ND:YAG laser with 10nsec. pulse length and input spot size equal to 80% of the core diameter.

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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