

Hard Clad Silica (Low OH)

Fiberguide Industries

Anhydroguide™ APCH

Technical Data

REFERENCE SUMMARY

Product Category:
Fiber

Mode:
Step Index, Multimode

Type:
Hard Clad Silica (Low OH)

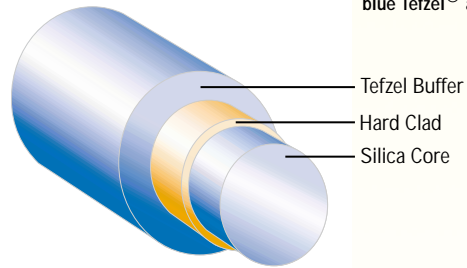
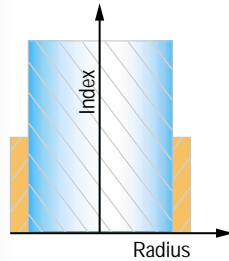
Trade Name:
Anhydroguide™ APCH
VIS-IR

DESCRIPTION

With numerical aperture (N.A.) of 0.39 and a hard polymer cladding that allows a high core-to-clad ratio, the Anhydroguide™ APCH is the low cost fiber of choice. The pure fused silica (SiO_2) used in the core of Anhydroguide™ fiber is made by reacting silicon tetrachloride (SiCl_4) with oxygen (O_2) using a plasma arc rather than an oxy-hydrogen flame. This ensures that the residual hydroxyl concentration (OH) will be low in the core material resulting in superior infrared transmission as compared with flame prepared silica that is used in the companion product, Superguide™, which has superior ultraviolet (UV) 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 Diode Laser (800-900nm), Erbium Laser (1540nm) and Holmium Laser (2100nm).
<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

- HO:YAG (2070nm)
 - Orthopedics for arthroscopy
 - Urology for lithotripsy
 - ENT for endoscopic sinus surgery
 - Spine surgery for endoscopic disc removal
 - Prostate removal (TURP)
- ER:YAG Laser (2940nm)
 - Dental
 - Tissue ablation
- Nd:YAG Laser (1064nm)
 - Hair removal

- Diode Laser (800-900nm)
 - Hair removal
 - Periodontal surgery
 - Treatment of leg and facial veins
- Variable Pulse YAG Laser (1064nm)
 - Skin resurfacing
 - Surgery and treatment of benign, pre-malignant and multiple pathologic skin conditions.

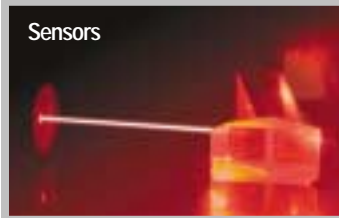
Short-haul Data Transmission

- In-plant systems

Ordnance Initiation

- Carries signal for launch/detonation

TYPICAL EXAMPLES



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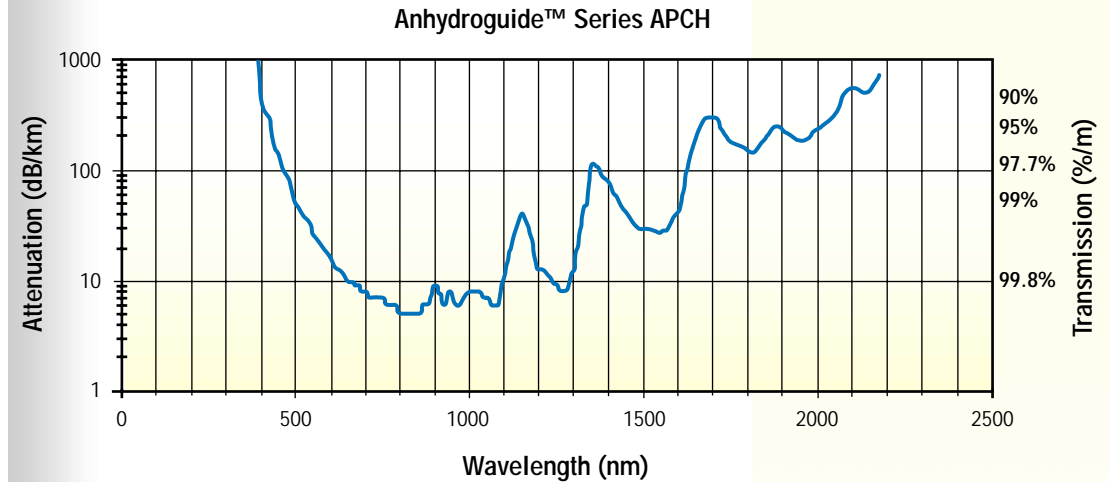
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SPECTRAL ATTENUATION (Typical)



FIBER SPECIFICATIONS

- Standard Secondary Buffer Coating: Tefzel® 750 Clear
- Numerical Aperture: 0.39 ± 0.02
(Full Acceptance Angle 46°)
- Certified To: 100kpsi
- Typical Attenuation:
5dB/km @ 810nm
6dB/km @ 1064nm
541dB/km @ 2100nm
- 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 "APCH" standing for "Anhydroguide 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

Low OH Product Code	APCH200/230Z	APCH300/330Z	APCH400/430Z	APCH600/630Z
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

Low OH Product Code	APCH800/830Z	APCH1000/1035Z	APCH1500/1550Z
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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