

Graded Index Silica/Silica

Fiberguide Industries

AGI™ Series

Technical Data

REFERENCE SUMMARY

Product Category:
Fiber

Mode:
Graded Index

Type:
Graded Index Silica/Silica

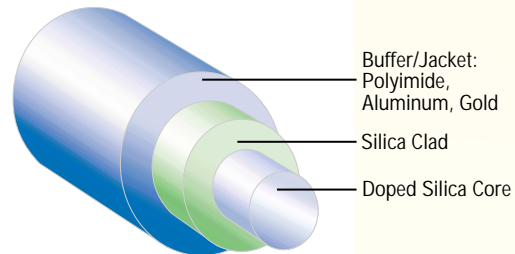
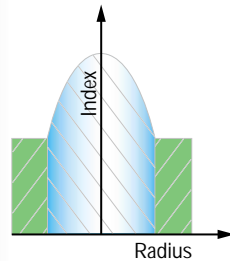
Trade Name:
AGI™ Series

DESCRIPTION

While graded index silica/silica fibers are available from a number of suppliers with standard polymer coatings, Fiberguide is unique in offering these fibers with high performance coatings of gold and polyimide.

Graded index is actually a compromise between step index multimode and single mode fibers, trading off bandwidth for ease of termination and light launch. The graded profile increases bandwidth over step index multimode, but the core sizes are still large enough for convenient termination and use of lower cost light emitting diodes. Graded index fiber remains a popular standard for use in medium distance (2-15km) data communication links. The construction is always silica core/silica clad based, with dopants (typically Ge, B, P, and F) used to adjust the refractive index in the graded profile. This fiber is used almost exclusively for medium distance data communication (local area networks) and shipboard applications, although it is sometimes used for fiber sensor systems. The relatively small core areas of the standard sized graded index fibers make them less useful for power delivery applications, however new special, larger core designs specifically for high power applications are available.

FIBER CROSS SECTION



FEATURES & BENEFITS

Features	Benefits
<ul style="list-style-type: none"> Substantially higher bandwidth versus length than step index fibers but less than single mode fibers. 	<ul style="list-style-type: none"> Modal dispersion causes light pulses to spread out as they travel down the length of a fiber, the more modes a fiber transmits, the more pulses spread out. This significantly limits the bandwidth of step index fibers.
<ul style="list-style-type: none"> Operates optimally with low modal dispersion at both 850nm and 1300nm. 	<ul style="list-style-type: none"> The parabolic profile results in continual refocusing of the rays in the core, and minimizes modal dispersion.
<ul style="list-style-type: none"> Relatively high source-to-fiber coupling efficiency. Low loss. Low sensitivity to microbending and macrobending. 	<ul style="list-style-type: none"> Improved bandwidth and transmission.
<ul style="list-style-type: none"> Smaller core than step index. 	<ul style="list-style-type: none"> Allows for higher bandwidth than 100µ core fiber.
<ul style="list-style-type: none"> Available with aluminum buffer. 	<ul style="list-style-type: none"> Temperature ranges from -269°C to +300°C continuous and up to 400°C intermittent.
<ul style="list-style-type: none"> Available with gold buffer. 	<ul style="list-style-type: none"> Temperature ranges from -269°C to +700°C continuous and up to 750°C intermittent.
<ul style="list-style-type: none"> Available with Polyimide buffer. 	<ul style="list-style-type: none"> Temperature ranges from -190°C to +350°C continuous and up to 400°C intermittent.



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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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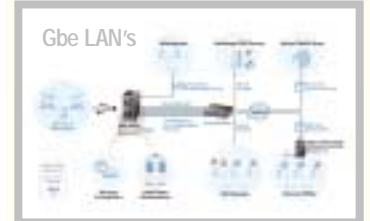
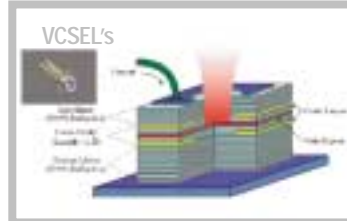
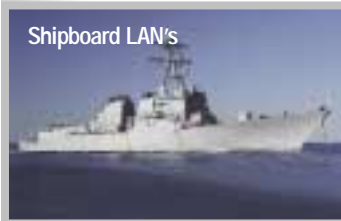
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APPLICATIONS

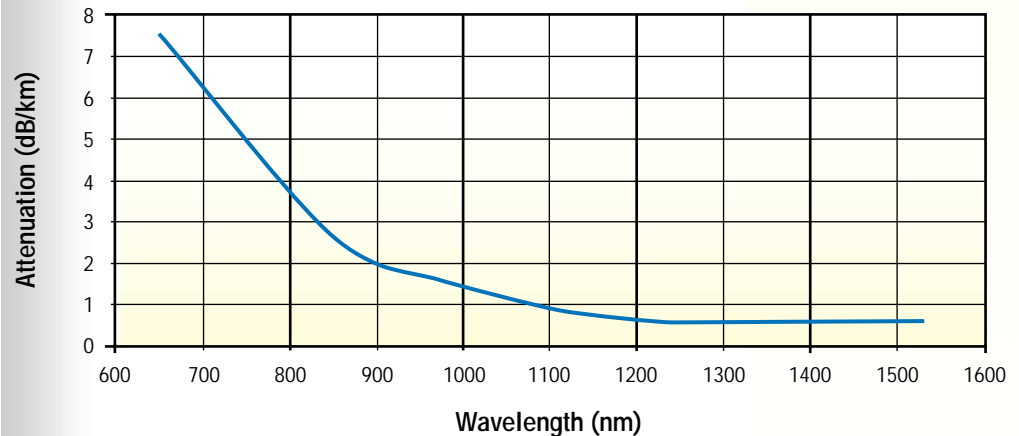
- Most common for Local Area Networks (LANs) and shipboard
- FDDI (Fiber Distributed Data Interface)
- Optimized for 850nm VCSELs
- Laser-rated for GbE LANs
- Industrial data communications
- CCTV Systems

TYPICAL APPLICATIONS



SPECTRAL ATTENUATION (Typical)

Anhydrous Graded Index 50/125 Attenuation



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FIBER SPECIFICATIONS

Note: The fibers in the following table carry a designation "AGI" standing for "Anhydrous Graded Index", followed by the mode-field diameter and cladding diameters (in microns) and concluding with the suffix "T" that designates Thermocoat/Polyimide buffer (145µm ± 5µm O.D.), suffix "A" that designates Aluminum buffer (195µm ± 15% O.D.), and suffix "G" that designates Gold buffer (155µm ± 15% O.D.).

Product Code	AGI 50/125	AGI 62.5/125
Core Diameter	50µm ± 3µm	62.5µm ± 3µm
Clad Diameter	125µm + 1µm/-3µm	125µm + 1µm/-3µm
Core/Cladding Concentricity	≤ 1.0µm	≤ 3.0µm
Cladding Non-Circularity	≤ 1%	≤ 2.0%
Numerical Aperture	0.200 ± 0.015	0.275 ± .015
Attenuation @ 850µm	≤ 2.7dB/km	≤ 3.0dB/km
@ 1300µm	≤ 0.8dB/km	≤ 0.8dB/km
Bandwidth-Length Product @ 850nm	≥ 200MHz-km	≥ 500MHz-km
@ 1300nm	≥ 500MHz-km	≥ 500MHz-km
Proof Test		
Polyimide:	50 to 70kpsi	
Aluminum:	100 to 150kpsi	
Gold:	50 to 70kpsi	
Temperature		
Polyimide:	-190°C to +350°C	
Aluminum:	-269°C to +400°C	
Gold:	-269°C to +700°C	

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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