BendBright™ A1 200 µm Single-Mode Optical Fiber - North America

Prysmian

Overview

BendBright™ A1 200 µm fiber encompasses all the features of ESMF Optical Fiber (Enhanced Single-Mode Fiber) and provides high resistance to macro-bend losses, particularly in the 1600 nm wavelength region.

With a smaller 200 µm coating diameter, BendBright™ A1 200 allows cable designers to drastically reduce cable diameters for most OSP cable designs. This feature not only increases fiber density in ducts, it reduces the size & weight of aerial cables and allows designers to increase fiber density in microduct and FlexRibbon designs.

BendBright A1 200 µm fiber is further enhanced with Prysmian's proprietary ColorLock™ coating. This coating enables optimum fiber performance, reliability and durability, even in harsh environments.

BendBright A1 200 µm fiber complies with or exceeds the ITU-T Recommendation G.652.D and G.657.A1, the IEC International Standard 60793-2-50 type B-652.D and B-657. A1 Optical Fiber Specification, Telcordia GR-20-CORE, ANSI/ ICEA S-87-640 and RUS 7CFR 1755.900.

Features and Benefits

Reduced Coating Diameter

- Reduction in cable diameter.
- Increased fiber counts in 1, 1 1/4, and 2" conduits.
- Increase fiber counts in microduct applications.
- Allows higher fiber counts in smaller microducts.
- Reduction in fiber management systems footprint.

Same glass and diameter (125 µm) as standard BendBright A1

- Compatible with standard cleaving and stripping tools.
- Can be single fiber spliced with similiar fusion splice program settings as BendBright or other G.657.A1 or G652.D fibers.

Low Bending Losses

- Up to 1/10th the bending loss of standard single mode fiber provides improved system performance.
- Low bending loss at 15 mm bend radius; 10 turn loss ≤ 0.25 dB at 1550 nm
- Specified down to a 10 mm bend radius; 1 turn loss ≤ 0.75 dB at 1550 nm
- Allows a smaller bend radius with small diameter cables such as patch cords and distribution cables.
- Improperly installed small diameter bends result in lower attenuation impacts on systems.
- Allow the use of smaller splice trays or closures.
- Provides lower bending losses at higher wavelengths such as 1625 nm which future proofs the network.
- Improves temperature cycling and mid-span express tube routing loss performance providing long-term attenuation stability.

Lower PMD of 0.06 ps/√km Link Design Value

- Extends the PMD distance performance, reducing regeneration costs.

Improved Geometrical Parameters

- Low splice loss and high splice yield.

Proprietary APVD™ Manufacturing Process

- Superior geometry, uniformity and purity.

Revolutionary ColorLock™ Coating Process

- Increased reliability, durability, and superior aging performance, resulting in lower maintenance and replacement costs. Makes color a component of the coating, thus enhancing fiber identification and colored fiber reliability. Consistent, vibrant color for ease-of-use and flexibility.

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TLS-DS-F-008-1021

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Performance Specifications

Maximum Attenuation	(dB/km)*
@ 1310 nm	0.34
@ 1383 nm **	0.31 – 0.34
@ 1490 nm	0.24
@ 1550 nm	0.20
@ 1625 nm	0.23

** Other values on request.*
*** Including H2-aging according to IEC 60793-2-50, type B.1.3.*

Attenuation vs. Wavelength	
1285 nm to 1330 nm	$= \alpha_{1310} \leq 0.03$ dB/km
1525 nm to 1575 nm	$= \alpha_{1550} \leq 0.02$ dB/km

Point Discontinuities
No point discontinuity greater than 0.05 dB at 1310 nm and 1550 nm

Attenuation with Bending			
Mandrel Radius (mm)	Number of Turns	Wavelength (nm)	Attenuation (dB)
10	1	1550	≤ 0.75
10	1	1625	≤ 1.5
15	10	1550	≤ 0.25
15	10	1625	≤ 1.0

Cutoff Wavelength	
Cable Cutoff Wavelength (λccf)	≤ 1260 nm

Mode Field Diameter	
1310 nm	9.2 ± 0.4 µm
1550 nm	10.4 ± 0.5 µm

Chromatic Dispersion	
1285-1330 nm	≤ |3| ps/(nm*km)
1550 nm	≤ 18.0 ps/(nm*km)
1625 nm	≤ 22.0 ps/(nm*km)
Zero Dispersion Wavelength (λo)	1304-1324 nm
Slope (So) at λo	≤ 0.092 ps/(nm²*km)

Polarization Mode Dispersion (PMD)	
PMD Link Design Value**	≤ 0.06 ps/√km
Max. Individual Fiber	≤ 0.1 ps/√km

*** According to IEC 60794-3, Ed 3 (Q=0.01%)*

Geometrical Specifications	
Glass Geometry	
Core/Cladding Concentricity Error	≤ 0.5 µm
Cladding Diameter	125.0 ± 0.7 µm
Cladding Non-Circularity	≤ 0.7%
Fiber Curl	≥ 4.0 m radius
Coating Geometry	
Coating/Cladding Concentricity Error	≤ 10 µm
Coating Diameter	200 ± 10 µm
Coating Non-Circularity	≤ 6%
Lengths	Up to 50.4 km

Mechanical Performance	
Minimum Proof Test	100 Kpsi (0.7 GPa); 1% strain equivalent
Tensile Strength	Median > 3.8 GPa (550 kpsi)
Dynamic Fatigue	Dynamic: Unaged & Aged*** n_d>20
Coating Performance Unaged & Aged***	Average Strip Force: 1 N to 3 N Peak Strip Force: 1.2 N to 8.9 N

***Aging: 0°C and 45°C, 30 days at 85°C and 85% RH, 30 days water immersion at 23°C, Wasp spray exposure (Telcordia)

Environmental Performance	
Environmental Test	Induced Attenuation at 1310, 1550 nm (dB/km)
Temperature Cycling (-60°C to +85°C)	≤ 0.05
Temperature Humidity Cycling (-10°C to +85°C, up to 98% RH)	≤ 0.05
Water Immersion (23°C ± 2°C)	≤ 0.05
Dry Heat (30 days, 85°C ± 2°C)	≤ 0.05
Damp Heat (30 days, 85°C, 85% RH)	≤ 0.05

Typical Specifications	
Effective Group Index	@ 1310 nm 1.467 @ 1550 nm 1.468 @ 1625 nm 1.468
Rayleigh Backscatter Coefficient (1 ns = pulse width)	@ 1310 nm: -79.4 dB @ 1550 nm: -81.7 dB @ 1625 nm: -82.5 dB

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