BendBright™ A1+ Bend Insensitive Single Mode Fiber - North America

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Overview

BendBright A1+ fiber significantly exceeds the macrobend performance requirements of G.657. A1. BendBright A1+ fiber provides this increased macrobend performance while maintaining optimal splice compatibility with the installed base of Standard Single Mode Fibers. BendBright A1+ fiber meets and exceeds the requirements of G.657.A1 and G.652D. BendBright A1+ provides low bending losses down to a minimum bend radius of 10 mm.

Features and Benefits

Low bending losses

- Low bending 1550 nm loss at 15 mm bend radius; 10 turn loss ≤ 0.05 dB. ITU G.657.A1 specifies 0.25 dB.
- Specified down to a 10 mm bend radius; 1 turn loss ≤ 0.50 dB @ 1550 nm. ITU G.657.A1 specifies 0.75 dB.
- Allows a smaller bend radius with small diameter cables such as patch cords and distribution cables.
- Mitigates losses caused by improper installations.
- 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 long-term attenuation stability by reducing losses related to temperature cycling and mid-span buffer-tube storage.

Full industry standards compliance

- Fully compliant to both ITU G.657.A1 BIF and G.652.D SMF industry standards.
- Fully compliant to both IEC 60793-2-50 B-657.A1 and B-652.D SMF fiber standards.
- Fully compliant with Telcordia GR20 & GR409.
- Fully compliant with all ICEA fiber cable standards including ICEA 640, 696, & 596.
- Compliant with RUS 7 CFR 1755.900 fiber requirements.

Full backward ITU G.652.D SMF compatibility

- Compliant with ITU G.652.D and IEC 60793-2-50 B-652.D low water peak SMF specifications.
- Compatible with equipment designed for G.652 fibers; fully transparent from a transmission perspective.
- Splice compatible with ITU G.652 SMF using standard single mode fiber machine settings.
- Full 1260-1625 nm low water peak compliance.

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TLS-DS-F-003A-0920

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Performance Specifications (Uncabled Fiber)

Maximum Attenuation	(dB/km)*
@ 1310 nm	0.32
@ 1383 nm **	0.32
@ 1490 nm	0.21
@ 1550 nm	0.18
@ 1625 nm	0.20

* Other attenuation values available.
** Post hydrogen aged.

Attenuation vs. Wavelength	
1285 nm to 1330 nm	= α_{1310} ± 0.03 dB/km
1525 nm to 1575 nm	= α_{1550} ± 0.02 dB/km

Polarization Mode Dispersion (PMD)	
Max. Value In Uncabled Fiber	≤ 0.1 ps/km$^{1/2}$
Link Design Value	≤ 0.04 ps/km$^{1/2}$

Optical Parameters	
Mode Field Diameter @ 1310 nm	9.2 ± 0.4 µm
Mode Field Diameter @ 1550 nm	10.4 ± 0.5 µm
Cabled Cut-Off Wavelength	≤ 1260 nm
Zero Dispersion Wavelength (λ)	1304 nm to 1324 nm
Chromatic Dispersion	
1550 nm	≤ 18.0 ps/(nm*km)
1625 nm	≤ 22.0 ps/(nm*km)
Zero Dispersion Slope	≤ 0.092 ps/(nm^2*km)
Point Discontinuity (1310 & 1550 nm)	≤ 0.05 dB

Attenuation with Bending			
Mandrel Radius (mm)	Number of Turns	Wavelength (nm)	Attenuation (dB)
10	1	1550	≤ 0.50
10	1	1625	≤ 1.5
15	10	1550	≤ 0.05
15	10	1625	≤ 0.30
25	100	1310, 1550, 1625	≤ 0.01

Dimensional Parameters	
Outer Coating Diameter	242 ± 7 µm
Coating/Cladding Concentricity Error	≤ 12 µm
Cladding Diameter	125.0 ± 0.7 µm
Cladding Non-Circularity	≤ 0.7%
Core-Clad Concentricity	≤ 0.5 µm
Fiber Curl	≥ 4.0 m radius

Mechanical Performance	
Minimum Proof Test	100 Kpsi (0.7 GPa); 1% strain equivalent

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
Accelerated Heat Aging (85°C ± 2°C)	≤ 0.05
Damp Heat (85°C, 85% RH)	≤ 0.05

Performance Characterization	
Effective Group Index of Refraction	@ 1310 nm 1.467 @ 1550 nm 1.468
Fatigue Resistance Parameter (n_d)	20
Rayleigh Backscatter Coefficient (1 ns = pulse width)	@ 1310 nm. -77 dB @ 1550 nm. -82 dB
Core Diameter	8.2 µm

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