BendBright™ XS 200 Single Mode Optical Fiber - North America

Prysmian

Overview

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

Prysmian BendBright™ XS fiber combines attractive features: excellent low macro-bending sensitivity, low water peak level and G.657.A2 + G.652.D compliance. Together they allow unlimited use of the whole telecom wavelength window (1260nm to 1650nm) for a great variety of applications. In addition, BendBright™ XS 200 µm offers a reduced outside diameter for drastic reduction of cables and fiber management systems footprints and weight. It can dramatically reduce the total cost of ownership of a networks while limiting the environmental impact of its deployment. Reduction of civil works, possibility to reuse existing ducts, lower costs of pathways fees are immediate benefits. The small fiber diameter opens up the uses of new cable designs and fiber counts not possible with 250 µm coated fibers.

BendBright™ XS 200 µm is similar in its optical and glass parts to the standard BendBrightXS. Size reduction has been obtained by reducing the coating diameter. Thanks to the quality of modern coatings no compromise had to be made to the overall quality of the fiber and to its performances. Notably Prysmian has carried exhaustive tests that proved its compatibility with the most popular installation tools and backward compatibility with legacy fibers.

BendBright™ XS 200 µm fully complies with or exceeds the ITU-T Recommendations G.657.A1, G.657.A2, G.657.B2 (2009) and G.652.D (2009). It satisfies all IEC testing requirements for dimensional, transmission, mechanical and environmental performances, except for a slightly reduced coating strip force. BendBright™ XS 200 µm has been demonstrated to be fully appropriate for cable manufacturing and field installation.

Features and Benefits

Reduced Coating Diameter

- Reduction of cable diameter.
- Increased fiber counts in 1, 1 ¼, 1 ½, and 2" conduits.
- Increased fiber counts in microduct applications.
- Reduction of fiber management systems footprint.

Same glass and diameter (125 um) as standard BendBright™ XS

- Compatible with standard cleaving and stripping tools.
- Can be single fiber spliced with similar fusion splice program settings as BendBright™ XS or other G6.652 fibers.
- Low loss splicing to BendBright™ XS and other G657.A11 or G652.D fibers.

Low Bending Losses

- Specified down to a 7.5 mm bend radius; 1 turn loss ≤0.50 dB @ 1550 nm.
- Allows a smaller bend radius with small diameter cables such as patch cords and distribution cables.
- Mitigates losses caused by improper installations.
- Allows 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.

Low Micro-Bending Loss Allows for Highly Demanding Cable Designs

Full Industry Standards Compliance

- Fully compliant to both ITU G.657.A2 BIF and G.652.D SMF industry standards.
- Fully compliant to both IEC 60793-2-50 B-657.A2 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.
- Full 1260-1625 nm low water peak compliance.

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A Brand of Prysmian Group

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Optical Specifications (Uncabled)

Maximum Attenuation	(dB/km)*
@ 1310 nm	0.34
@ 1383 nm **	0.34
@ 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	$= \alpha_{1310} \pm 0.03$ dB/km
1525 nm to 1575 nm	$= \alpha_{1550} \pm 0.02$ dB/km
1460 nm to 1625 nm	$= \alpha_{1550} \pm 0.04$ 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)
7.5	1	1625	≤ 1.0
7.5	1	1550	≤ 0.5
10	1	1625	≤ 0.2
10	1	1550	≤ 0.1
15	10	1625	≤ 0.1
15	10	1550	≤ 0.03

Cutoff Wavelength	
Cable Cutoff Wavelength (λccf)	≤ 1260 nm

Mode Field Diameter	
1310 nm	8.8 ± 0.4 µm
1550 nm	9.8 ± 0.5 µm

Chromatic Dispersion	
Zero Dispersion Wavelength (λ)	1300-1324 nm
Slope (S_o) at λ_o	≤ 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	≤ 5%

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: 0.8 N to 3 N Peak Strip Force: 1.0 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
Accelerated Heat Aging (85°C ± 2°C)	≤ 0.05
Damp Heat (85°C, 85% RH)	≤ 0.05

Typical Specifications	
Effective Group Index	@ 1310 nm 1.467 @ 1550 nm 1.467 @ 1625 nm 1.468
Rayleigh Backscatter Coefficient (1 ns = pulse width)	@ 1310 nm: -79.1 dB @ 1550 nm: -81.4 dB @ 1625 nm: -82.2 dB
Median Dynamic Tensile Strength (Aged at 85°C, 85% RH, 30 days; 0,5 m gauge length)	5.3 GPa (750 kpsi)

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