

## Overview

BendBright™ A1 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.

This fiber can be used in all cable constructions, including loose tube, tight buffered, ribbon, and central tube designs. It supports long-haul, metropolitan, access and premises (FTTH) applications in telecommunications, CATV, utility and intelligent traffic networks.

Using wavelengths in the L-band is a challenge for standard fiber, due to its macro-bend sensitivity. BendBright™ meets and exceeds this challenge.

BendBright A1 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 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

### 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  $\leq$  0.25 dB at 1550 nm
- Specified down to a 10 mm bend radius; 1 turn loss  $\leq$  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/ $\sqrt{\text{km}}$ 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.

# BendBright™ A1 Single-Mode Optical Fiber - North America

Prysmian

## 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	$\leq 0.75$
10	1	1625	$\leq 1.5$
15	10	1550	$\leq 0.25$
15	10	1625	$\leq 1.0$

Cutoff Wavelength	
Cable Cutoff Wavelength ( $\lambda_{ccf}$ )	$\leq 1260$ nm

Mode Field Diameter	
1310 nm	$9.2 \pm 0.4$ $\mu$ m
1550 nm	$10.4 \pm 0.5$ $\mu$ m

Chromatic Dispersion	
1285-1330 nm	$\leq  3 $ ps/(nm*km)
1550 nm	$\leq 18.0$ ps/(nm*km)
1625 nm	$\leq 22.0$ ps/(nm*km)
Zero Dispersion Wavelength ( $\lambda_0$ )	1304-1324 nm
Slope (So) at $\lambda_0$	$\leq 0.092$ ps/(nm <sup>2</sup> *km)

Polarization Mode Dispersion (PMD)	
PMD Link Design Value**	$\leq 0.06$ ps/ $\sqrt$ km
Max. Individual Fiber	$\leq 0.1$ ps/ $\sqrt$ km

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

Geometrical Specifications	
<b>Glass Geometry</b>	
Core/Cladding Concentricity Error	$\leq 0.5$ $\mu$ m
Cladding Diameter	$125.0 \pm 0.7$ $\mu$ m
Cladding Non-Circularity	$\leq 0.7\%$
Fiber Curl	$\geq 4.0$ m radius
<b>Coating Geometry</b>	
Coating/Cladding Concentricity Error	$\leq 12$ $\mu$ m
Coating Diameter	$242 \pm 7$ $\mu$ m
Coating Non-Circularity	$\leq 6\%$
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*** $n_f > 20$
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)	$\leq 0.05$
Temperature Humidity Cycling (-10°C to +85°C, up to 98% RH)	$\leq 0.05$
Water Immersion (23°C $\pm$ 2°C)	$\leq 0.05$
Dry Heat (30 days, 85°C $\pm$ 2°C)	$\leq 0.05$
Damp Heat (30 days, 85°C, 85% RH)	$\leq 0.05$

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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A Brand of Prysmian Group

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