



Draka

Single-Mode Fiber

BendBright-XS Single-Mode Optical Fiber

Truly bend-insensitive fiber, fully backwards compatible



Issue date: 08/10
Supersedes: 12/09

Draka BendBright-XS fiber combines two attractive features: excellent low macro-bending sensitivity and low water peak level. Together they allow unlimited use of the whole telecom wavelength window for a great variety of applications. This next generation behavior has been obtained by adding a trench with a lowered refractive index in the cladding area preventing the optical field to escape, avoiding compromises affecting the main transmission parameters.

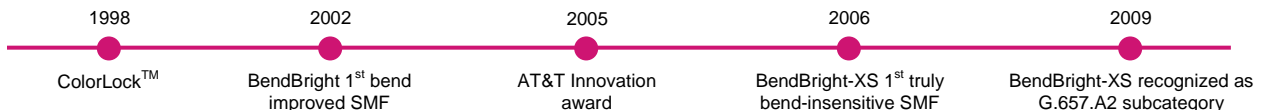
Apart from its use in office installations, as patch cords and/or interconnection cables, the use of the BendBright-XS in Fiber-to-the-Home (and even longer distance) networks offers significant added value to the network installers. Bend radii in fiber guidance ports can be reduced as well as minimum bend radii in wall and corner mountings. As the fiber is very forgiving for installation errors, reduced demands for the skills of the installation engineers may further reduce the costs. Its enhanced macro-bending behavior further guarantees that all transmission bands up to 1625 nm (L-band) will be available for future use in this hungry bandwidth environment. BendBright-XS guarantees future proof end-to-end FTTH roll outs.

Draka's Advanced Plasma and Vapor Deposition (PCVD and APVD™) manufacturing process ensures the highest quality and purity of fibers. Proprietary ColorLock™ coating process further enhances the performance, durability and reliability of the fiber, even in the harshest environments.

The fiber fully complies with or exceeds the ITU-T Recommendations G.657.A2, G.657.B2 (2009) and G.652.D (2009), the IEC International Standard 60793-2-50 type B.1.3 and B.6.A&B Optical Fiber Specification and is backwards compatible with all other G.652 fiber used in current optical networks.

Features	Advantages
Low macro-bending loss at very low radii (≤ 15 mm)	<ul style="list-style-type: none"> • Allows shorter radius storage of fiber over-length leading to more compact installations • Is more forgiving for installation errors in fiber management systems and or splice protection devices
Compatibility with other G.652 single-mode fiber installations	<ul style="list-style-type: none"> • The BendBright-XS can be spliced with similar settings of the fusion splice program as applied for other G.652 fibers • Low loss splicing of BendBright-XS to other G.652 fibers can be done with standard fusion splicers
Low bending at partial bends in the mm bend	<ul style="list-style-type: none"> • Allows for tight in-building installations • Allows for small volume patch panel installations • Prevents fiber coating degradation in case high power systems are used in up-grading scenarios
Low micro-bending loss	Allows for highly demanding cable designs including ribbons

Key Industry Leading Milestones



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Product Type: G.657.A2, G.657.B2, G.652.D (2009 editions)
Coating Type: ColorLock-XS and Natural

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Optical Specifications

Attenuation	
Attenuation at 1310 nm	0.33 – 0.35 dB/km
Attenuation at 1383 nm*	0.32 – 0.35 dB/km
Attenuation at 1460 nm	0.25 dB/km
Attenuation at 1550 nm	0.19 – 0.20 dB/km
Attenuation at 1625 nm	0.20 – 0.21 dB/km

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

Other values available on request

Attenuation vs. Wavelength	
Maximum attenuation change over the window from reference	

Wavelength range (nm)	Reference λ (nm)	(dB/km)
1285 – 1330	1310	≤ 0.03
1525 - 1575	1550	≤ 0.02
1460 - 1625	1550	≤ 0.04

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

Attenuation with Bending			
Number of Turns	Mandrel Radius (mm)	Wavelength (nm)	Induced Attenuation (dB)
10	15	1550	≤ 0.03
10	15	1625	≤ 0.1
1	10	1550	≤ 0.1
1	10	1625	≤ 0.2
1	7.5	1550	≤ 0.5
1	7.5	1625	≤ 1.0

Cutoff Wavelength	
Cable Cutoff wavelength (Accf)	≤ 1260 nm

Mode Field Diameter	
Wavelength (nm)	MFD (μm)
1310	8.8 ± 0.4
1550	9.8 ± 0.5

Chromatic Dispersion	
Wavelength (nm)	Chromatic Dispersion (ps/[nm.km])
Zero Dispersion Wavelength (λ_0):	1300 - 1324 nm
Slope (S_0) at λ_0 :	≤ 0.092 ps/(nm ² .km)

Polarization Mode Dispersion (PMD)	
PMD Link Design Value** (ps $\sqrt{\text{km}}$)	≤ 0.06
Max. Individual Fiber (ps $\sqrt{\text{km}}$)	≤ 0.1

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

Geometrical Specifications	
Glass Geometry	
Cladding Diameter	125.0 ± 0.7 μm
Core/Cladding Concentricity Error	≤ 0.5 μm
Cladding Non-Circularity	≤ 0.7 %
Fiber Curl (Radius)	≥ 4 m
Coating Geometry	
Coating Diameter	242 ± 7 μm
Coating/Cladding Concentricity Error	≤ 12 μm
Coating Non-Circularity	≤ 5 %
Length	Standard lengths up to 25.2 km

Mechanical Specifications	
Proof Test	

The entire length is subjected to a tensile proof stress ≥ 0.7 GPa (100 kpsi); 1% strain equivalent

Tensile Strength	
Dynamic tensile strength (0.5 meter gauge length):	
Aged*** and unaged:	median > 3.8 GPa (550 kpsi)

*** Aging at 85°C, 85% RH, 30 days

Dynamic and Static Fatigue	
Dynamic fatigue, unaged and aged***	$n_d \geq 20$
Static fatigue, aged***	$n_s \geq 23$

Coating Performance	
Coating strip force unaged and 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
 - 14 days water immersion at 23°C
 - Wasp spray exposure (Telcordia)

Environmental Specifications		
Attenuation		

Environmental Test	Test Conditions	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, 4-98% RH	≤ 0.05
Water Immersion	14 days; 23°C	≤ 0.05
Dry Heat	30 days; 85°C	≤ 0.05
Damp Heat	30 days; 85°C; 85% RH	≤ 0.05

Typical Values	
Miscellaneous	

Nominal Zero Dispersion Slope	0.088 ps/(nm ² .km)
Effective group index @ 1310 nm	1.467
Effective group index @ 1550 nm	1.467
Effective group index @ 1625 nm	1.468
Rayleigh Backscatter Coefficient for 1 ns pulse width:	
@ 1310 nm	- 79.1 dB
@ 1550 nm	- 81.4 dB
@ 1625 nm	- 82.2 dB
Median Dynamic Tensile Strength	5.3 GPa (750 kpsi)
(Aged at 85°C, 85% RH, 30 days; 0.5 m gauge length)	