Specialty Fiber

DrakaElite™ BendBright-Elite Fiber for Components

Ultra bend-insensitive SMF – Guaranteed for very low radii

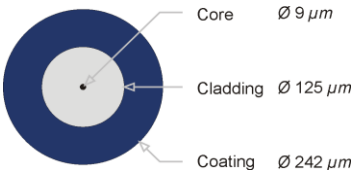
Issue date: 08/10
Supersedes: 12/09

Since 2002, Draka's BendBright fibers family has set the standard of single-mode fibers for applications particularly demanding in terms of bending resistance, notably Access and FTTX telecom networks. Based on the Draka's proprietary manufacturing technologies and the Draka's patented trench-assisted design BendBright-XS offers full backward compatibility while meeting or exceeding the newest standards for telecom applications.

BendBright-Elite further extends these technologies to enhance the bending performance at very low radii at all wavelengths. With bend losses less than 0.1 dB for 1 turn at 5 mm at 1550 nm, Draka's BendBright-Elite offers unmatched value to customers that need to reduce the size of their components or to those who wants to introduce the fiber in customer's home. Its tight geometry is guaranteed over the entire length of the fiber, a pre-requisite for automated inter-connectorization practices. Thanks to its high proof test stress level and its extreme insensitivity to optical bending loss, Draka's BendBright-Elite is able to endure repeated very tight bending.

While offering unparalleled performance, Draka's BendBright-Elite is still based on conventional technology. It is an all solid silica fibers, without voids or other hole structures. It can be easily fusion spliced by any commercial splicer and requires no specific connectorization procedure. Because it's manufactured using Draka's Plasma Chemical Vapor Deposition process, BendBright-Elite has perfect control of all its characteristics both along the length of the fiber and in any radial direction. The fiber fully complies with or exceeds the ITU-T Recommendation G.652.D, and the IEC 60793-2-50 type B.1.3. Optical Fiber Specification and is backwards compatible with all other G.652 fiber used in current optical networks. In addition the fiber fully complies with ITU-T Recommendation G.657.B3 (2009) and the IEC 60793-2-50 type B.6.A&B.

Features	Advantages
Excellent macro-bend performance at very low radii (down to 5 mm)	• Allows miniaturization of optical components • Permits high power in compact components
Low macro-bending loss and high proof test stress (200 kpsi)	• Guaranteed high strength • Able to cope with non professional, do-it-your-self installation practice in home environment
Solid silica structure	• No special connectorization procedures • No special mechanical splice procedures • Easy to fusion splice with any commercial machine
Tight cladding diameter 125.0 ± 0.4 µm	Guarantees easy, fully automated connectorization
Tight cladding non-circularity ≤ 0.3 %	Guarantees easy connectorization
Tight core/cladding concentricity ≤ 0.3 µm	Offers low connector loss
DLPC9 coating	Guarantees easy strip-ability



Draka Communications
fibersales@draka.com
www.draka.com/communications

Netherlands: Tel: +31 (0)40 29 58 700 Fax: +31 (0)40 29 58 710
France: Tel: +33 (0)3 21 79 49 00 Fax: +33 (0)3 21 79 49 33
USA: Toll free: 800-879-9862 Outside US: +1.828.459.9787 Fax: +1.828.459.8267

DrakaElite™ BendBright-Elite Fiber for Components

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Product Type: G.657.B3, G.652.D (2009 editions)
Coating Type: ColorLock-XS or natural; 900 µm tight buffer and in ribbon

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Optical Specifications

Attenuation

Attenuation at 1310 nm	≤ 0.35 dB/km
Attenuation at 1383 nm*	≤ 0.35 dB/km
Attenuation at 1550 nm	≤ 0.22 dB/km
Attenuation at 1625 nm	≤ 0.24 dB/km

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

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)
1	10	1550	≤ 0.03
1	10	1625	≤ 0.1
1	7.5	1550	≤ 0.08
1	7.5	1625	≤ 0.25
1	5.0	1550	≤ 0.15
1	5.0	1625	≤ 0.45

Cutoff Wavelength

Cable Cutoff wavelength (λccf)	≤ 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√km)	≤ 0.06
Max. Individual Fiber (ps√km)	≤ 0.1

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

Geometrical Specifications

Glass Geometry

Cladding Diameter	125.0 ± 0.4 µm
Core/Cladding Concentricity Error	≤ 0.3 µm
Cladding Non-Circularity	≤ 0.3 %
Fiber Curl (Radius)	≥ 4 m

Coating Geometry

Coating Diameter	242 ± 5 µm
Coating/Cladding Concentricity Error	≤ 12 µm
Coating Non-Circularity	≤ 5.0 %
Length	Standard lengths up to 25.2 km

Mechanical Specifications

Proof Test

The entire length is subjected to a tensile proof stress ≥ 1.4 GPa (200 kpsi); 2% 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	0.089 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	- 79.0 dB
@ 1550 nm	- 81.3 dB
@ 1625 nm	- 82.0 dB
Median Dynamic Tensile Strength****	5.3 GPa (750 kpsi)

*****(Aged at 85°C, 85% RH, 30 days; 0,5 m gauge length)*

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fibersales@draka.com
www.draka.com/communications