Properties of cable with standard BendBright® fibre

ESMF, low water peak G652D, OS2, G657A1 low bend, FTTx

General and application

The optical fibres are made of a high grade doped silica core surrounded by a silica cladding;

They are coated with a dual layer, UV cured acrylate based coating.

This enhanced low macro bending sensitive, low water peak fibre, gives very good bending performance. This BendBright® fibre is suitable for all applications (access networks as well as general transport networks). The BendBright® offers reduced bending radii for many cables types. The fibre fulfils the latest ITU G.657 A1 specification, as well as G.652.D. The low macro bending sensitivity further guarantees that the 1625 nm window (L-band) will be available for future use in this bandwidth hungry environment

Standards and Norms

IEC 60793-2-50 Category B.1.3 and B6_a1	ANSI/ICEA S-87-640
ITU Recommendation G.657.A1	EN 50 173-1: cat. OS2 and OS1
ITU Recommendation G.652 A, B, C and D	ISO/IEC 11801: cat. OS1
Telcordia GR-20-CORE	ISO/IEC 24702: cat. OS2 and OS1
	IEEE 802.3

Optical properties

Attribute	Measurement method	Units	Limits
Mode field diameter at 1310 nm	IEC/EN 60793-1-45	µm	9.0 ± 0.4
Mode field diameter at 1550 nm		µm	10.1 ± 0.5
Chromatic dispersion coefficient:	IEC/EN 60793-1-42		
In the interval 1285 nm – 1330 nm		ps/km • nm	≤ |3|
At 1550 nm		ps/km • nm	≤ 18.0
At 1625 nm		ps/km • nm	≤ 22.0
Zero dispersion wavelength, λ_0		nm	1300 - 1322
Zero dispersion slope		ps/(nm^2 • km)	≤ 0.092
Cut-off wavelength	IEC/EN 60793-1-44	λ_{cc} nm	≤ 1260 *
Polarisation mode dispersion (PMD) coefficient	IEC/EN 60793-1-48	ps/√km	≤ 0.1
PMD_Q Link Design Value (computed with Q=0.01%, N=20)	IEC/EN 60794-3	ps/√km	≤ 0.06

** guaranteed value according to the ITU-T (ATM G650) method*

Attenuation

Attribute	Measurement method	Units	Limits
Maximum attenuation value of cable in the interval 1310 nm – 1625 nm*	IEC/EN 60793-1-40	dB/km	≤ 0.39
Maximum attenuation value of cable at 1550 nm	IEC/EN 60793-1-40	dB/km	≤ 0.22
Local discontinuity at 1310 and 1550 nm	IEC/EN 60793-1-40	dB	max. 0.1

** Including H2-ageing according to IEC 60793-2-50, type B.1.3, @1383nm*

Attenuation variation vs Bending

Attribute	Measurement method	Units	Limits
100 turns on a mandrel R = 25 mm, @1310 & 1550nm	IEC/EN 60793-1-47	dB	≤ 0.02
100 turns on a mandrel R = 30 mm, @1625nm	IEC/EN 60793-1-47	dB	≤ 0.05
10 turns on a mandrel R = 15 mm, @1550nm	IEC/EN 60793-1-47	dB	≤ 0.25
10 turns on a mandrel R = 15 mm, @1625nm	IEC/EN 60793-1-47	dB	≤ 1.0
1 turn on a mandrel R = 10 mm, @1550nm	IEC/EN 60793-1-47	dB	≤ 0.75
1 turn on a mandrel R = 10 mm, @1625nm	IEC/EN 60793-1-47	dB	≤ 1.5

Group index of refraction

Attribute	Measurement method	Units	Values
1310 nm	IEC/EN 60793-1-22	-	1.467
1550 nm	IEC/EN 60793-1-22	-	1.467
1625 nm	IEC/EN 60793-1-22	-	1.468

Rayleigh Backscatter coefficient (1ns pulse width)

Attribute	Measurement method	Units	Values
1310 nm	-	dB	-79.4
1550 nm	-	dB	-81.7
1625 nm	-	dB	-82.5

Geometrical properties

Attribute	Measurement method	Units	Limits
Cladding diameter	IEC/EN 60793-1-20	µm	125.0 ± 0.7
Cladding non-circularity	IEC/EN 60793-1-20	%	≤ 0.7
Core (MDF) -cladding concentricity error	IEC/EN 60793-1-20	µm	≤ 0.5
Primary coating diameter – ColorLock®^{XS} and natural	IEC/EN 60793-1-21	µm	242 ± 7
Primary coating non-circularity	IEC/EN 60793-1-21	%	≤ 5
Primary coating-cladding concentricity error	IEC/EN 60793-1-21	µm	≤ 12

Mechanical properties

Attribute	Measurement method	Units	Limits
Proof stress level	IEC/EN 60793-1-30	GPa	≥ 0.7 (≈ 1 %)
Strip force (peak)	IEC/EN 60793-1-32	N	$1.2 \leq F_{peak.strip} \leq 8.9$
Dynamic fatigue resistance aged and unaged	IEC / EN 60793-1-33	(N_d)	≥ 20
Static fatigue, aged	IEC / EN 60793-1-33	(N_s)	≥ 23

All measurements in accordance with ITU-T G650 recommendations