Properties of cabled G657.A1 fibre for FlexRibbon™

ESMF, low water peak single mode fibre G.652.D, OS2, G.657.A1 low bend

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 of UV cured acrylate based coating.

This enhanced low macro bending sensitive, low water peak fibre, gives very good bending performance. 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 1625nm 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-T Recommendation G.657.A1	EN 50 173-1: Cat. OS2 and OS1
ITU-T 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

Attenuation of cabled fibre

Attribute	Measurement method	Units	Limits
Maximum attenuation value of cable @ 1310 nm	IEC 60793-1-40	dB/km	0.40
Maximum attenuation value of cable @ 1383 nm		dB/km	0.40
Maximum attenuation value of cable @ 1550 nm		dB/km	0.30
Maximum attenuation value of cable @ 1625 nm		dB/km	0.30

Group index of refraction

Attribute	Measurement method		Values
Effective group index at 1310 nm	IEC 60793-1-22		1.467
Effective group index at 1550 nm			1.468
Effective group index at 1625 nm			1.468

Optical properties

Attribute	Measurement method	Units	Limits
Mode field diameter at 1310 nm	IEC 60793-1-45	µm	9.0 ± 0.4
at 1550 nm		µm	10.1 ± 0.5
Chromatic dispersion coefficient:			
In the interval between 1285 nm and 1330 nm	IEC 60793-1-42	ps/km.nm	≤ |3|
@ 1550 nm		ps/km.nm	≤ 18.0
@ 1625 nm		ps/km.nm	≤ 22.0
Zero dispersion wavelength λ_0		nm	1300 to 1324
Zero dispersion slope @ λ_0		ps/(nm^2.km)	≤ 0.092
Cut-off wavelength λ_{CC}	IEC 60793-1-44	nm	≤ 1260*
Polarisation mode dispersion (PMD) coefficient	IEC 60793-1-48	ps/√km	≤ 0.1
PMDQ Link value (calculated with Q=0.01%;m=20)	IEC 60794-3	ps/√km	≤ 0.06

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

Geometrical properties

Attribute	Measurement method	Units	Limits
Cladding diameter	IEC 60793-1-20	µm	125.0 ± 0.7
Cladding non-circularity		%	≤ 0.7
Core (MDF) - cladding concentricity error		µm	≤ 0.5
Primary coating diameter (nominal)	IEC 60793-1-21	µm	242
Primary coating non–circularity		%	≤ 5
Primary coating – cladding concentricity error		µm	≤12

Macrobending loss

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

Mechanical properties

Attribute	Measurement method	Units	Limits
Proof stress level	IEC 60793-1-30	Gpa	≥ 0.7 (1% strain)
Fibre curl radius	IEC 60793-1-34	m	> 4
Strip force (peak)	IEC 60793-1-32	N	$1.2 \leq F_{peak\ strip} \leq 8.9$
Dynamic fatigue resistance aged and unaged	IEC 60793-1-33	N_d	≥ 20
Static fatigue resistance		N_S	≥ 23

All measurements in accordance with ITU-T G650 recommendations