Properties of cable with standard Enhanced SM fibre

ESMF, low water peak single mode fibre G652D, OS2

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 single mode fibre provides improved performance across the entire 1260 nm to 1625 nm wavelength spectrum due to its low attenuation in 1383 nm, the water-peak region.

Standards and Norms

IEC / EN 60793-2-50 Category B.1.3	EN 50 173-1:2007, cat. OS2 and OS1
ITU-T Recommendation G.652.D and C, B, A	ISO / IEC 11801:2002, cat. OS2 and OS1
IEEE 802.3 – 2002 incl. 802.3ae	ISO / IEC 24702:2006, cat. OS2 and OS1

Optical properties

Attribute	Measurement method	Units	Limits
Mode field diameter at 1310 nm	IEC/EN 60793-1-45	µm	9.2 ± 0.4
Mode field diameter at 1550 nm		µm	10.4 ± 0.5
Chromatic dispersion coefficient:	IEC/EN 60793-1-42		
In the interval 1285 nm – 1330 nm		ps/km • nm	≤ | 3.5 |
At 1550 nm		ps/km • nm	≤ 18
At 1625 nm		ps/km • nm	≤ 22
Zero dispersion wavelength, λ_0		nm	1300 - 1324
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, cabled	IEC/EN 60793-1-48	ps/√km	≤ 0.2
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 (ASTM G650) method*

Attenuation

Attribute	Measurement method	Units	Limits
Maximum attenuation value of cable at 1310 nm	IEC/EN 60793-1-40	db/km	≤ 0.36
Maximum attenuation value of cable at 1550 nm	IEC/EN 60793-1-40	db/km	≤ 0.22
Inhomogeneity of OTDR trace for any two 1000 meter fibre lengths		db/km	Max. 0.1

Attenuation variation vs Bending

Attribute	Measurement method	Units	Limits
100 turns on a R=25 mm mandrel at 1310 & 1550 nm	IEC/EN 60793-1-47	db	≤ 0.05
100 turns on a R=30 mm mandrel at 1625 nm	IEC/EN 60793-1-47	db	≤ 0.05

Group index of refraction

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

Geometrical properties

Attribute	Measurement method	Units	Limits
Cladding diameter	IEC/EN 60793-1-20	µm	125.0 ± 1.0
Cladding non-circularity	IEC/EN 60793-1-20	%	≤ 1
Core (MDF) – cladding concentricity error	IEC/EN 60793-1-20	µm	≤ 0.6
Primary coating diameter - ColorLock®^{XS} and natural	IEC/EN 60793-1-21	µm	245 ± 10
Primary coating non-circularity	IEC/EN 60793-1-21	%	≤ 6
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	$1.3 \leq F_{peak.strip} \leq 8.9$
Dynamic fatigue resistance aged and unaged (N_d)	IEC/EN 60793-1-33		≥ 20
Static fatigue, aged n_s	IEC/EN 60793-1-33		≥ 23

All measurements in accordance with ITU-T G650 recommendations