

Properties of cabled Standard Enhanced Singlemode fibre

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

General and application

The optical fibres are made of a high grade doped silica core surrounded by a silica cladding; coated with a dual layer of UV cured acrylate based coating.

This enhanced single mode fibre also 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 60793-2-50 Category B.1.3	ISO/IEC 11801 and ISO / IEC 24702: Cat. OS2 and OS1
AS/NZS 3080	ITU-T Recommendation G.652.D (Including A, B and C)

Attenuation of cabled fibre

Attribute	Measurement method	Units	Limits
Maximum attenuation value of cable @ 1310 nm	IEC 60793-1-40	dB/km	0.35
Maximum attenuation value of cable @ 1383 nm		dB/km	0.35
Maximum attenuation value of cable @ 1550 nm		dB/km	0.21
Maximum attenuation value of cable @ 1625 nm		dB/km	0.24

Group index of refraction

Attribute	Measurement method	Values
Effective group index at 1310 and 1383 nm	IEC 60793-1-22	1.467
Effective group index at 1550 and 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	10.4 ± 0.5
Chromatic dispersion coefficient:			
In the interval between 1285 nm and 1330 nm	IEC 60793-1-42	ps/km.nm	≤ 3.5
@ 1550 nm		ps/km.nm	≤ 18
@ 1625 nm		ps/km.nm	≤ 22
Zero dispersion wavelength λ_0		nm	1302 to 1322
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		µm	125.0 ± 0.7
Cladding non-circularity	IEC 60793-1-20	%	≤ 0.7
Core (MDF) - cladding concentricity error		µm	≤ 0.5
Primary coating diameter (nominal)		µm	245
Primary coating non-circularity	IEC 60793-1-21	%	≤ 5
Primary coating - cladding concentricity error		µm	≤ 12

Macrobending loss

Attribute	Measurement method	Units	Limits
100 turns on a R= 25 mm mandrel @ 1550 nm		dB	≤ 0.05
100 turns on a R= 30 mm mandrel @ 1625 nm	IEC 60793-1-47	dB	≤ 0.05

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 ≤ F _{peak strip} ≤ 8.9
Dynamic fatigue resistance aged and unaged		N _d	≥ 20
Static fatigue resistance	IEC 60793-1-33	N _s	≥ 23

All measurements in accordance with ITU-T G650 recommendations

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