

Properties of cable with Enhanced SM fibre

ESMF, low macro bending sensitive, low water peak single mode fibre
G652D, G657A

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 bend insensitive Single mode fibre is optimized for application in access networks because of its low bending sensitivity and 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 and B.6.A	EN 50 173-1:2007, cat. OS2 and OS1
ITU-T Recommendation G.657 A	ISO / IEC 11801:2002, cat. OS2 and OS1
ITU-T Recommendation G.652.D and C, B, A	
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	9.0 ± 0.4
Mode field diameter at 1550 nm		µm	10.1 ± 0.5
Chromatic dispersion coefficient:	IEC/EN 60793-1-42		
In the interval 1260 nm – 1360 nm		ps/km • nm	≤ 6
In the interval 1480 nm – 1580 nm		ps/km • nm	≤ 19
In the interval 1570 nm – 1625 nm		ps/km • nm	≤ 22
Zero dispersion wavelength, λ ₀		nm	1300 - 1322
Zero dispersion slope		ps/(nm ² • km)	≤ 0.093
Cut-off wavelength	IEC/EN 60793-1-44	λ _{cc} nm	≤ 1260 *
Polarisation mode dispersion (PMD) coefficient	IEC/EN 60793-1-48	ps/√km	≤ 0.2, uncabled
PMD ₀ Link Design Value (computed with Q=0.01%, N=20)	IEC/EN 60794-3	ps/√km	≤ 0.1

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

Attenuation

Attribute	Measurement method	Units	Limits
			max average / individual
in the range 1285-1330 nm	IEC/EN 60793-1-40	dB/km	≤ 0.37 / ≤ 0.40
at 1383 nm	IEC/EN 60793-1-40	dB/km	≤ 0.37 / ≤ 0.40
in the range 1530-1570 nm	IEC/EN 60793-1-40	dB/km	≤ 0.22 / ≤ 0.28
in the range 1570-1625 nm	IEC/EN 60793-1-40	dB/km	≤ 0.30 / ≤ 0.40
Local discontinuity at 1310 and 1550 nm	IEC/EN 60793-1-40	dB	≤ 0.1

Attenuation variation vs Bending

Attribute	Measurement method	Units	Limits
10 turns on a R=15 mm mandrel at 1550 nm	IEC/EN 60793-1-47	dB	≤ 0.25
10 turns on a R=15 mm mandrel at 1625 nm	IEC/EN 60793-1-47	dB	≤ 1.0
1 turn on a R=10 mm mandrel at 1550 nm	IEC/EN 60793-1-47	dB	≤ 0.75
1 turn on a R=10 mm mandrel at 1625 nm	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	-	1.468
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	%	≤ 1.0
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	%	≤ 5
Primary coating-cladding concentricity error	IEC/EN 60793-1-21	µm	≤ 12.5

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 ≤ F _{peak.strip} ≤ 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

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