

Properties of cabled Non-zero Dispersion-shifted SM fibre

Non-zero dispersion-shifted single mode fibre G.655

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 single mode fibre supports high-power signals and longer distances, as well as closely spaced DWDM (dense WDM) channels at rates of 10 Gb/s or higher (40 Gb/s). With larger Effective Area the fibre is capable to operate between the Conventional Band (1530 to 1565 nm) and in the Extended or Large Band (1565 to 1625 nm). Fibre is suitable to support the highest bit-rate transmission currently used in optical communication systems and due to its particular features will also support future system upgrades.

It is optimized for WDM and long-distance cable runs such as transoceanic cables.

Standards and Norms

IEC 60793-2-50 Category B4	ISO / IEC 11801 and ISO / IEC 24702
ITU-T Recommendation G.655 (all tables)	AS / NZS 3080

Attenuation of cabled fibre

Attribute	Measurement method	Units	Limits
Maximum attenuation value of cable @ 1550 nm		dB/km	0.23 / 0.21 (average)
Maximum attenuation value of cable @ 1625 nm	IEC 60793-1-40	dB/km	0.25/ 0.23 (average)
Point discontinuity @ 1550 nm		dB	Max. 0.05

Group index of refraction

Attribute	Measurement method	Value
Effective group index at 1550 nm and 1625 nm	IEC 60793-1-22	1.468

Optical properties

Attribute	Measurement method	Units	Limits
Mode field diameter at 1550 nm	IEC 60793-1-45	μm	9.6 ± 0.4
Chromatic dispersion coefficient:			
In the interval between 1530 nm and 1565 nm	IEC 60793-1-42	ps/km.nm	2.0 ÷ 6.0
In the interval between 1565 nm and 1625 nm			4.5 ÷ 11.2
Typical Effective Area @ 1550 nm	IEC 60793-1-20	μm^2	72
Cut-off wavelength λ_{cc}	IEC 60793-1-44	nm	$\leq 1450^*$
Polarisation mode dispersion (PMD) coefficient	IEC 60793-1-48	ps/ $\sqrt{\text{km}}$	≤ 0.1
PMDQ Link value (calculated with $Q=0.01\%$; $m=20$)	IEC 60794-3	ps/ $\sqrt{\text{km}}$	≤ 0.04

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

Geometrical properties

Attribute	Measurement method	Units	Limits
Cladding diameter		μm	125 ± 0.7
Cladding non-circularity	IEC 60793-1-20	%	≤ 1.0
Core (MFD) - cladding concentricity error			≤ 0.5
Primary coating diameter		μm	245 ± 5
Primary coating - cladding concentricity error	IEC 60793-1-21	μm	≤ 10
Primary coating non-circularity			≤ 6

Macrobending loss

Attribute	Measurement method	Units	Limits
100 turns on a R= 30 mm mandrel @ 1550 nm/1625 nm	IEC 60793-1-47	dB	≤ 0.05
1 turn on a R= 16 mm mandrel @ 1550 nm/1625 nm		dB	≤ 0.5

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	$1.2 \leq F_{\text{peak strip}} \leq 8.9$
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

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