

Properties of cable with standard BendBright® XS fibre

ESMF, low water peak G652D, OS2, G657A2&B2 low bend, FTTH

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 low macro bending sensitive, low water peak fibre, gives unsurpassed bending performance. The use of the BendBright® XS fibre is in office installations, for patch cords, interconnection cables and for Fibre-to-the-Home networks, as well as access and general transport networks. The BendBright® XS offers reduced bending radii for many cables types. The fibre fulfils the new ITU G.657 A2 and G.657 B2 specification, as well as G.652.D. The low macro bending sensitivity further guarantees that the 1625 nm window (L-band) will be available for future use in this bandwidth hungry environment

Standards and Norms

| | |
|--|---------------------------------|
| IEC 60793-2-50 Category B6_a2 and B6_b2 | EN 50 173-1: cat. OS2 |
| EN 60793-2-50: Class B6_a2 and B6_b2 | ISO/IEC 11801: cat. OS1 |
| ITU Recommendation G.657.A2 and G.657.B2 | ISO/IEC 24702: cat. OS2 and OS1 |
| ITU Recommendation G.652 A, B, C and D | IEEE 802.3 |

Optical properties

| Attribute | Measurement method | Units | Limits |
|---|--------------------|---------------------------|-------------|
| Mode field diameter at 1310 nm | IEC/EN 60793-1-45 | µm | 8.8 ± 0.4 |
| Mode field diameter at 1550 nm | | µm | 9.8 ± 0.5 |
| Chromatic dispersion coefficient: | IEC/EN 60793-1-42 | | |
| In the interval 1285 nm – 1330 nm | | ps/km • nm | ≤ 3.7 |
| At 1550 nm | | ps/km • nm | ≤ 18.5 |
| At 1625 nm | ps/km • nm | ≤ 23.0 | |
| 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 | IEC/EN 60793-1-48 | ps/√km | ≤ 0.1 |
| 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 (ATM G650) method

Attenuation

| Attribute | Measurement method | Units | Limits |
|--|--------------------|-------|----------|
| Maximum attenuation value of cable at 1310 nm | IEC/EN 60793-1-40 | dB/km | ≤ 0.38 |
| Maximum attenuation value of cable at 1383 nm* | IEC/EN 60793-1-40 | dB/km | ≤ 0.38 |
| Maximum attenuation value of cable at 1550 nm | IEC/EN 60793-1-40 | dB/km | ≤ 0.23 |
| Maximum attenuation value of cable at 1625 nm | IEC/EN 60793-1-40 | dB/km | ≤ 0.25 |
| Local discontinuity at 1310 and 1550 nm | IEC/EN 60793-1-40 | dB | max. 0.1 |

* Including H2-ageing according to IEC 60793-2-50, type B.1.3, @1383nm

Attenuation variation vs Bending

| Attribute | Measurement method | Units | Limits |
|--|--------------------|-------|--------|
| 10 turns on a mandrel R = 15 mm, @1550nm | IEC/EN 60793-1-47 | dB | ≤ 0.03 |
| 10 turns on a mandrel R = 15 mm, @1625nm | IEC/EN 60793-1-47 | dB | ≤ 0.1 |
| 1 turn on a mandrel R = 10 mm, @1550nm | IEC/EN 60793-1-47 | dB | ≤ 0.1 |
| 1 turn on a mandrel R = 10 mm, @1625nm | IEC/EN 60793-1-47 | dB | ≤ 0.2 |
| 1 turn on a mandrel R = 7.5 mm, @1550nm | IEC/EN 60793-1-47 | dB | ≤ 0.5 |
| 1 turn on a mandrel R = 7.5 mm, @1625nm | IEC/EN 60793-1-47 | dB | ≤ 1.0 |

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 | - | 1.467 |
| 1625 nm | IEC/EN 60793-1-22 | - | 1.468 |

Rayleigh Backscatter coefficient (1ns pulse width)

| Attribute | Measurement method | Units | Values |
|-----------|--------------------|-------|--------|
| 1310 nm | - | dB | -79.1 |
| 1550 nm | - | dB | -81.4 |
| 1625 nm | - | dB | -82.2 |

Geometrical properties

| Attribute | Measurement method | Units | Limits |
|---|--------------------|-------|-------------|
| Cladding diameter | IEC/EN 60793-1-20 | µm | 125.0 ± 0.7 |
| Cladding non-circularity | IEC/EN 60793-1-20 | % | ≤ 0.7 |
| Core (MDF) -cladding concentricity error | IEC/EN 60793-1-20 | µm | ≤ 0.5 |
| Primary coating diameter – ColorLock ^{®XS} and natural | IEC/EN 60793-1-21 | µm | 242 ± 7 |
| Primary coating non-circularity | IEC/EN 60793-1-21 | % | ≤ 5 |
| 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 | 1.2 ≤ 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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