

BendBright™ XS Single-Mode Fibre for Patch Cords

ITU-T G.657.A2



Issue date: November 2020
Supersedes: August 2010

Applicable Standards

- IEC/EN 60793-2-50 type B-657.A2
- IEC/EN 60793-2-50 type B-652.D
- ITU-T Recommendation G.657.A2
- ITU-T Recommendation G.652.D

Optical Specifications

Attenuation

| Attribute | Units | 1310 nm | 1383 nm ¹ | 1460 nm | 1550 nm | 1625 nm |
|-------------|-------|---------|----------------------|---------|---------|---------|
| Attenuation | dB/km | ≤ 0.35 | ≤ 0.35 | ≤ 0.25 | ≤ 0.20 | ≤ 0.21 |

¹ Including H2-aging according to IEC 60793-2-50, type B.1.3

Attenuation vs. Wavelength

| Wavelength Range (nm) | Reference λ (nm) | (dB/km) |
|-----------------------|------------------|---------|
| 1285 – 1330 | 1310 | ≤ 0.03 |
| 1525 - 1575 | 1550 | ≤ 0.02 |
| 1460 - 1625 | 1550 | ≤ 0.04 |

Point discontinuities

No point discontinuity greater than 0.05 dB at 1310 nm and 1550 nm.

Attenuation variation vs. Bending

| Number of Turns | Wavelength (nm) | Induced Attenuation (dB) |
|---------------------------------|-----------------|--------------------------|
| 10 turns on a R = 15 mm mandrel | 1550 | ≤ 0.03 |
| 10 turns on a R = 15 mm mandrel | 1625 | ≤ 0.1 |
| 1 turn on a R = 10 mm mandrel | 1550 | ≤ 0.1 |
| 1 turn on a R = 10 mm mandrel | 1625 | ≤ 0.2 |
| 1 turn on a R = 7.5 mm mandrel | 1550 | ≤ 0.5 |
| 1 turn on a R = 7.5 mm mandrel | 1625 | ≤ 1.0 |

Mode Field Diameter

| Wavelength (nm) | Units | MFD |
|-----------------|-------|-----------|
| 1310 | µm | 8.8 ± 0.4 |
| 1550 | µm | 9.8 ± 0.5 |

Cutoff Wavelength

| | |
|---|-----------|
| Cable Cutoff Wavelength (λ_{cct}) | ≤ 1260 nm |
|---|-----------|

Chromatic Dispersion

| Wavelength (nm) | Units | Chromatic Dispersion |
|---|---------------------------|----------------------|
| In the interval 1285 – 1330 | ps/[nm.km] | ≤ [3.7] |
| At 1550 | ps/[nm.km] | ≤ 18.5 |
| At 1625 | ps/[nm.km] | ≤ 23.0 |
| Zero Dispersion Wavelength, λ_0 | nm | 1300 - 1324 |
| Slope (S_0) at λ_0 | ps/(nm ² · km) | ≤ 0.092 |

Polarization Mode Dispersion (PMD)

| Attribute | Units | Specified Values |
|------------------------------------|--------|------------------|
| PMD Link Design Value ² | ps/√km | ≤ 0.08 |
| Max. individual Fiber | ps/√km | ≤ 0.15 |

² According to IEC 60794 –3, Ed 3 (Q=0.01%)

Typical Values

| Attribute | Units | 1310 nm | 1550 nm | 1625 nm |
|---|-------|---------|---------|---------|
| Effective group index | - | 1.467 | 1.468 | 1.468 |
| Rayleigh Backscatter Coefficient for 1 ns pulse width | dB | - 79.1 | - 81.4 | - 82.2 |

Geometrical Specifications

Glass Geometry

| Attribute | Units | Specified Values |
|-------------------------------------|-------|------------------|
| Cladding Diameter | µm | 125.0 ± 0.4 |
| Core - Cladding Concentricity Error | µm | ≤ 0.3 |
| Cladding non-Circularity | % | ≤ 0.3 |
| Fiber Curl (radius) | m | ≥ 4 |

Coating Geometry

| Attribute | Units | Specified Values |
|--|-------|------------------|
| Coating Diameter | µm | 242 ± 5 |
| Coating - Cladding Concentricity Error | µm | ≤ 12 |
| Coating non-Circularity | % | ≤ 5 |

Mechanical Specifications

Proof Test ³

The entire spool length is subjected to a tensile proof stress ≥ 0.7 GPa (100 kpsi) ; 1% strain equivalent

³ Higher proof test available upon request

Coating Performance

| Attribute | Units | Specified Values |
|---|-------|---|
| Average Coating Strip Force, unaged and aged ⁴ | N | $1 \leq F_{\text{avg-strip}} \leq 3$ |
| Peak Coating Strip Force, unaged and aged ⁴ | N | $1.2 \leq F_{\text{peak-strip}} \leq 8.9$ |

⁴ Aging at 23°C, 30 days

Fibre Strength

| Attribute | Units | Specified Values |
|---|-------|-------------------------|
| Dynamic Tensile Strength (0.5 meter gauge length), unaged and aged ⁵ | GPa | median > 3.8 (550 kpsi) |
| Dynamic Fatigue, unaged and aged ⁵ | - | $n_d \geq 20$ |

⁵ Aging at 85°C, 85% RH, 30 days

Environmental Specifications

| Environmental test | Test Conditions | Induced attenuation at 1310, 1550 nm (dB/km) |
|--------------------------------|--------------------------|--|
| Temperature Cycling | - 60°C to 85°C | ≤ 0.05 |
| Temperature - Humidity Cycling | - 10°C to 85°C, 4-98% RH | ≤ 0.05 |
| Water Immersion | 14 days; 23°C | ≤ 0.05 |
| Dry Heat | 30 days; 85°C | ≤ 0.05 |
| Damp Heat | 30 days; 85°C; 85% RH | ≤ 0.05 |

Others

| | |
|---------|---|
| Length | Up to 50.4 km per spool |
| Coating | Acrylate coating; ColorLock™ XS and Clear |

All measurements in accordance with ITU-T G650 recommendations