

# Properties of G.657.A1 Single-Mode Fibre

## Flexribbon SM\_G.657.A1



### APPLICABLE STANDARDS

- IEC / EN 60793-2-50 Category B-657.A1 and B-652.D
- ITU Recommendation G.657.A1
- ITU Recommendation G.652.D
- EN 50 173-1: Category OS2 and OS1a
- ISO / IEC 11801: Category OS2 and OS1a
- All measurements are in accordance with ITU-T G.650 Recommendation

### OPTICAL PROPRIETIES

| 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                                   | IEC/EN 60793-1-45  | µm                        | 10.1 ± 0.5            |
| Chromatic Dispersion coefficient:                                | IEC/EN 60793-1-42  |                           |                       |
| • in the interval 1285 nm – 1330 nm                              |                    | ps/km · nm                | ≤  3                  |
| • at 1550 nm                                                     |                    | ps/km · nm                | ≤ 18.0                |
| • at 1625 nm                                                     |                    | ps/km · nm                | ≤ 22.0                |
| Zero Dispersion Wavelength, $\lambda_0$                          |                    | nm                        | 1300 - 1324           |
| Zero Dispersion Slope                                            |                    | ps/(nm <sup>2</sup> · km) | ≤ 0.092               |
| Cut-off Wavelength, $\lambda_{cc}$                               | IEC/EN 60793-1-44  | nm                        | ≤ 1260 <sup>(1)</sup> |
| Polarisation Mode Dispersion (PMD) coefficient                   | IEC/EN 60793-1-48  | ps/√km                    | ≤ 0.1                 |
| PMD <sub>0</sub> Link Design Value (computed with Q=0.01%, N=20) | IEC/EN 60794-3     | ps/√km                    | ≤ 0.06                |

(1) 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 | ≤ 0.40 |
| Maximum attenuation value of cable at 1383 nm <sup>(2)</sup> | IEC/EN 60793-1-40  | dB/km | ≤ 0.40 |
| Maximum attenuation value of cable at 1550 nm                | IEC/EN 60793-1-40  | dB/km | ≤ 0.30 |

(2) including H2-ageing according to IEC 60793-2-50, type B.1.3, at 1383 nm.

## ATTENUATION VARIATION VS BENDING

| Attribute                                   | Measurement method | Units | Limits      |
|---------------------------------------------|--------------------|-------|-------------|
| 100 turns on a mandrel R = 30 mm at 1625 nm | IEC/EN 60793-1-47  | dB    | $\leq 0.05$ |
| 10 turns on a mandrel R = 15 mm at 1550 nm  | IEC/EN 60793-1-47  | dB    | $\leq 0.25$ |
| 10 turns on a mandrel R = 15 mm at 1625 nm  | IEC/EN 60793-1-47  | dB    | $\leq 1.0$  |
| 1 turn on a mandrel R = 10 mm at 1550 nm    | IEC/EN 60793-1-47  | dB    | $\leq 0.75$ |
| 1 turn on a mandrel R = 10 mm at 1625 nm    | IEC/EN 60793-1-47  | dB    | $\leq 1.5$  |

## GROUP INDEX OF REFRACTION

| Attribute | Measurement method | Units | Limits |
|-----------|--------------------|-------|--------|
| 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  |

## GEOMETRICAL PROPERTIES

| Attribute                            | Measurement method | Units         | Limits          |
|--------------------------------------|--------------------|---------------|-----------------|
| Cladding diameter                    | IEC/EN 60793-1-20  | $\mu\text{m}$ | $125.0 \pm 0.7$ |
| Cladding non-Circularity             | IEC/EN 60793-1-20  | %             | $\leq 0.7$      |
| Core-Cladding Concentricity error    | IEC/EN 60793-1-20  | $\mu\text{m}$ | $\leq 0.5$      |
| Coating diameter (nominal)           | IEC/EN 60793-1-21  | $\mu\text{m}$ | 242             |
| Coating non-Circularity              | IEC/EN 60793-1-21  | %             | $\leq 5$        |
| Coating-Cladding Concentricity error | IEC/EN 60793-1-21  | $\mu\text{m}$ | $\leq 12$       |

## MECHANICAL PROPERTIES

| Attribute                                   | Measurement method | Units | Limits                                    |
|---------------------------------------------|--------------------|-------|-------------------------------------------|
| Proof stress level                          | IEC/EN 60793-1-30  | GPa   | $\geq 0.7$ ( $\approx 1\%$ )              |
| Strip force (average)                       | IEC/EN 60793-1-32  | N     | $1 \leq F_{\text{average.strip}} \leq 3$  |
| Strip force (peak)                          | IEC/EN 60793-1-32  | N     | $1.2 \leq F_{\text{peak.strip}} \leq 8.9$ |
| Dynamic Fatigue Resistance, aged and unaged | IEC/EN 60793-1-33  | -     | $n_d \geq 20$                             |

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