| Type: | EXO-DO | REV: 4.3 |
| :--- | :--- | :--- |
| Issued: | $11 / 09 / 2019$ | AM |
| Modified: | $20 / 01 / 2021$ | KP |

## Universal Single LSOH Jacket Central Loose Tube Cable with Fiberglass Reinforcement-EXO-DO



LSOH sheath
Glass yarns
Loose tube (PBT)
Optical fibres
Thixotropic filling compound
Ripcord

## APPLICATION:

Internal installation
External installation into teletechnical ducts
Fully dielectric cable
Basic rodent protection
LAN and FTTX networks
Distribution network
ODF connections

## DESIGN:

Central loose tubes (PBT Ø 2,5mm) with thixotropic filing compound Glass yarns as strain relief and water absorbent
Polyester ripcord
LSOH outer sheath (different colours available)

CONFIGURATION:

| Variant | Quantity [pcs] |  |  |  | $\varnothing$ nominal ( $\pm 5 \%$ ) | $\begin{gathered} \text { Nominal } \\ \text { weight } \\ ( \pm 10 \%) \end{gathered}$ | Max allowed tension | Max static tension |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Fibres | Fibres per tube | Total elements | Active tubes |  |  |  |  |
|  |  |  |  |  | [mm] | [kg/km] | [N] / $\varepsilon \leq 0,6 \%$ | [ N$] / \mathrm{\varepsilon} \leq 0,2 \%$ |
| 1T $\times 2-24 \mathrm{~F}$ | 2-24 | 2-24 | 1 | 1 | 5,5 | 37 | 1300 | 400 |

Optical fibre and loose tube colour identification
For optical fibres and loose tube identification information please see DSH_Colors_CODE_XXXX document.

## Fibre parameters

For selected post-production optical fibres parameters please see DSH_OFP document.

## MECHANICAL AND ENVIRONMENTAL CHARACTERISTICS

Temperature range:

| Installation: | $-5 \ldots+55\left[{ }^{\circ} \mathrm{C}\right]$ |
| :--- | :--- |
| Operation: | $-20 \ldots+60\left[{ }^{\circ}\right]$ |
| Transport \& Storage: | $-40 \ldots+70\left[{ }^{\circ} \mathrm{C}\right]$ |

Cable bending radius:
$12 \times$ cable diameter (during operation)
$20 \times$ cable diameter (during installation)

| Test | Specification | Method | Requirements |
| :---: | :---: | :---: | :---: |
| Tensile strength | IEC60794-1-21 Method E1 | Sustained load: 400N | Attenuation increment: <br> $\Delta \alpha \leq 0.05 \mathrm{~dB} / \mathrm{km} @ 1550 \mathrm{~nm}$ (after test) <br> No significant damage to fibre unit |
|  |  | Extended load: 1300N | Attenuation increment: <br> $\Delta \alpha \leq 0.05 \mathrm{~dB} / \mathrm{km}$ @ 1550nm (after test) <br> No significant damage to fibre unit |
| Crush resistance | IEC60794-1-21 Method E3 | Load: 1500 N / $10 \mathrm{~cm} / 5$ minutes | $\Delta \alpha \leq 0.1 \mathrm{~dB} @ 1550 \mathrm{~nm}$ (during and after test) No jacket cracking and fibre breakage |
| Impact resistance | IEC60794-1-21 Method E4 | Impact energy: 10 J | $\Delta a \leq 0.1 \mathrm{~dB} @ 1550 n m$ (during and after test) No jacket cracking and fibre breakage |


| Type: | EXO-D0 | REV: 4.3 |
| :--- | :--- | :--- |
| Issued: | $11 / 09 / 2019$ | AM |
| Modified: | $20 / 01 / 2021$ | KP |


|  |  | Cable length to be twisted: 2 m <br> No. of cycles: 5 <br> Twist angle: starting position to $-180^{\circ}$ to <br> starting position to $+180^{\circ}$, and back $\left(360^{\circ}\right.$ <br> total) <br> Load: 100 N | $\Delta \alpha \leq 0.1 \mathrm{~dB}$ @ 1550nm (after test) <br> No jacket cracking and fibre breakage |
| :--- | :--- | :--- | :--- |
| Repeated Bending | IEC 60794-1-21-E6 | $\mathrm{R}=20 \times$ OD | $\Delta \alpha \leq 0.1 \mathrm{~dB}$ @ 1550nm (after test) <br> No jacket cracking and fibre breakage |
| Bending | IEC60794-1-21 Method E11 | Mandrel radius: $12 \times$ OD / 5 turns $/ 3$ <br> cycles | $\Delta \alpha \leq 0.1 \mathrm{~dB}$ @ 1550 nm (after test) <br> No jacket cracking and fibre breakage |
| Water penetration | IEC 60794-1-22 <br> Method F5A, F5B | Water head: 1 m <br> Sample length: 3 m <br> Time: 24 hrs | No water leakage |
| CPR Class | EN 50575:2014+A1:2016 |  | Dca - s2, d0, a1 |

## MARKING

The following print (inkjet) is applied at 1-meter intervals.

- HANDSET symbol
- Products Regulation (CPR)
- DOUBLE SINE symbol
- Supplier: FIBRAIN
- Type of cable
- Year of manufacture: xxxx
- Standard code (Product type, fibre type, fibre count)
- Length marking in meters
- Cable ID / Drum No

Example: "HANDSET" - EN 50575 Dca - s2, d0, a1 - " DOUBLE SINE" - FIBRAIN - Fibre Optic Cable - " YEAR OF MANUFACTURE " - EXO-DO 12F G652D CT 2.5 LSOH

- "LENGTH MARKING" - "BATCH NUMBER"

The accuracy of marking is $\pm 0.5 \%$. Remarking is in accordance with Bellcore GR 20 and supersedes earlier markings. Occasional loss of marking is possible. Cables can be supplied with a range of single mode or multimode fibres and customized print.

## PACKING

Cables will be shipped on disposable wooden or treated wooden drums. Both ends of the cable will be capped and accessible for testing. Rotation direction arrow will be marked on the drum together with identification information.

## Delivery length

2000-8000 meters $+1 \% /-2 \%$, with possibility of supplying up to $5 \%$ of total contract quantity as short length cables which should be above 1000 meters long. Tolerance of $5 \%$ of order quantity shall be allowed.

## STANDARD OUTER JACKET COLOURS:



Black RAL 9005


Light Grey RAL 7037

## OUTER JACKET COLOUR OPTIONS*:

SM G.652D


RAL 1021

SM G657A1, A2, A3


RAL 9010

MM 50/125 OM2


RAL 2003

MM 50/125 OM3


RAL 6027

MM 50/125 OM4


RAL 4003
*On request.

| Type: | EXO-DO | REV: 4.3 |
| :--- | :--- | :--- |
| Issued: | $11 / 09 / 2019$ | AM |
| Modified: | $20 / 01 / 2021$ | KP |

This document and the statements contained in it are not intended for customers within the meaning of the Civil Code. The information submitted in this document is to our knowledge and belief true at the time of issue, however, we do not assume any liability whatsoever for its accuracy, and completeness. This document is for informational purposes on an "as is" basis only and Fibrain reserves the right to change its contents at any time without prior notice. The specification cannot, in any case, be considered an offer within the meaning of the Civil Code and is not contractually valid unless specifically authorized by Fibrain. Before using this product, its buyer and/or user has to make sure that it is suitable for the intended use. All liability issues related to this product are subjected to the seller's separate Terms of Sale or the terms and
conditions agreed with the Fibrain representative or distributor.

