openreach

Specification CP11 – Optical Fibre Cables & Blown Fibre Bundle

For Communication Providers (CPs) Optical Fibre Cables & Blown Fibre Bundle

Issue 6 – May 2020

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The purpose of this specification is to provide Communication Providers (CPs) with details of the Engineering Principles that apply for use of Openreach infrastructure and includes information on the minimum requirements for underground optical fibre cable, overhead optical fibre cable components and blown fibre bundle for both underground and overhead installation in the Openreach Network. Nothing in this document removes obligations on the CP to comply with any and all health, safety and other laws and regulations and to comply with Good Industry Practice.

1. General

1.1 Issue 1 suffixes the first issue of a specification. When a specification is re-issued the issue number is advanced sequentially.

1.2 Except when a specification is completely re-written, a star in the margin adjacent to the main clause number indicates an amendment. A vertical line in the margin indicates the particular portions(s) amended.

1.3 When a specific issue of a supplementary specification is not quoted, then the latest issue of that specification shall be followed.

1.4 If any further information in connection with the specification is required, application should be made to the address given at the end of this specification.

1.5 In this document where we use words "shall" and "must" then these are obligations which a CP has to satisfy when using PIA. If we use the word "should" then a CP must use all reasonable endeavors to satisfy the requirement but may deviate subject to the other requirements set out

2. Underground and Overhead Cabling Components

The components covered within this specification are:

(a) Optical Fibre Cables for underground use.

(b) Optical Fibre Cables for overhead use.

(c) Optical Fibre Drop Cables for overhead use.

(d) Blown Fibre Drop Tubing for overhead use.

(e) Blown Fibre Drop Tubing / Copper Hybrid Cables for overhead use.

(f) Connectors for axially joining together lengths of Drop Blown Fibre Tubing components in (d) & (e) above.

(g) Blown Fibre Bundle for use in underground and overhead Blown Fibre Tubing.

3. Materials

3.1 All Components

The materials used shall be suitable for use in the appropriate environment i.e. an external or underground environment. The completed components shall be suitable for an installed service life of 25 years.

All materials used shall be in accordance with the latest COSHH regulations.

3.2 Blown Fibre Bundle

The coating of the blown fibre bundle shall be resilient enough to not give off excessive dust during the blowing (installation) operation i.e. withstand any abrasion caused by passing through the blowing head. (Dust can be unpleasant or hazardous to the operator of blown fibre blowing equipment and any others in the immediate vicinity). Any dust or particles given off during blowing of the bundle shall not exceed the current HSE (Health & Safety Executive) EH40 Occupational Exposure Standard for "fused silica" (at the time of writing this is 0.08mg/m^3 for an 8 hour Time Weighted Average) and shall also not be less than the maximum respirable particle size in BS EN 481.

4. Identification

All cable types shall be suitably identified.

As per the requirement in CP8 or CP10, as appropriate, the cable shall be labelled in the network as specified with the CP name.

The cable sheath may also be printed with the manufacturer's generic sheath marking such as supplier name, date of manufacture, incremental length marking, etc. and optionally CP name.

Cables must not be printed with BT or Openreach identification markings or a CP name other than that of the CP that it is being installed for.

5. Dimensions

5.1 Optical Fibre Cables For Underground Use

Cables shall be of a suitable diameter for installation in sub-duct detailed in BT specification CP7.

5.2 Drop Cables For Overhead Use

Optical fibre drop cables, blown fibre drop tubing and blown fibre drop tubing/copper hybrid cables shall meet the diameter / dimension requirements detailed in BT specification CP8.

6. PNEUMATIC PERFORMANCE Pneumatic Performance

The overhead blown fibre tubing and blown fibre tubing / copper hybrid cables along with associated connectors shall be tested in accordance with and meet the requirements set out in BS EN ISO 1167-1.

The following requirements shall apply:

Test samples shall consist of lengths of blown fibre tubing axially joined together using connectors.

Adequate testing shall be performed to ensure that the blown fibre tubing / connector combination meets the required pneumatic performance.

- Test Temperatures, 0°C and +40°C.
- Pressure medium, water (+anti freeze).
- Proof test pressure, 13 bar.
- Duration of proof test pressure, 24 hours.
- Minimum burst test pressure, 26 bar.

Acceptance criteria

The blown fibre tubing and connectors shall be capable of sustaining the stated requirements without bursting, loss of pressure and separation.

***7. Mechanical, Electrical and Installation Performance**

7.1 Underground Installation

There are 2 different installations scenarios for underground cable installation.

7.1.1 Sub-Duct

Optical fibre cables shall be installed in pre-provided sub-duct as detailed in BT specification CP7. The maximum diameter for sub duct is 25mm in diameter.

Optical fibre cables shall be mechanically robust and shall be suitable for installation in sub-duct that is installed in accordance with BT specification CP10.

7.1.2 Duct

Optical fibre cables that are installed directly in standard network duct shall be robust enough to withstand future cabling practices (e.g. cabling rod impact / abrasion).

It is recommended that an appropriate grade of sheath material should be used to withstand these cabling practices.

Subject to and as set out in the terms and conditions for PIA you may install a number of cables that combined do not exceed 25mm in diameter (based on the 0.7 planning rule) or one single cable that does not exceed 25mm in diameter.

7.2 Overhead Installation

Optical fibre cables, optical fibre drop cables, blown fibre drop tubing and blown fibre drop tubing/copper hybrid cables shall be mechanically robust and shall be suitable for installation in accordance with BT specification CP8.

Optical fibre cables, optical fibre drop cables, blown fibre drop tubing and blown fibre drop tubing/copper hybrid cables for installing under overhead power cables shall be suitably insulated for the voltage that the power line is designed carry. For, the required clearance between these cables and overhead power lines, please refer to BT specification CP8.

7.3 Blown Fibre Bundle

Blown fibre bundle shall be installed in pre-provided blown fibre tubing described in BT specification CP9, overhead blown fibre drop tubing and overhead blown fibre drop tubing/copper hybrid cable described in this specification.

A maximum working pressure of 10 bar shall not be exceeded for blown fibre bundle installation.

8. References

British Standard	BS EN 481
British Standard	BS EN ISO 1167-1
COSHH Regulations	Latest Issue
Health & Safety Executive	EH40
BT Specification	CP7
BT Specification	CP8
BT Specification	CP9
BT Specification	CP10

9. Change Record

ISSUE	Date	Change
Issue 1	December 2010	New document

Issue 2	May 2014	Change to specification authority address
Issue 3	May 2018	Update to 7.2 for cabling installed under overhead power lines. New address for specification authority
Issue 4	Sept 2018	Clarification on identification. New document format used.
Issue 5	March 2019	Clarification on identification. New document format used. (IG).
Issue 6	May 2020	Section 7 updated. More information added to ensure that the cables left in duct / sub-duct are robust enough to withstand network build activity.

10. Specification Authority

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End of Specification