

## **Company Directive**

### **ENGINEERING SPECIFICATION**

**EE SPEC : 78/1**

**Specification for Multipair Cables**

**Author:** Peter White

**Implementation Date:** December 2014

**Approved by**



**Policy Manager**

**Date:**

9 December 2014

## **IMPLEMENTATION PLAN**

### **Introduction**

This EE document contains the specification for Pilot cables purchased in WPD.

### **Main Changes**

The document has been modified to include the 61 pair Pilot cable which is used in the East and West Midlands area of WPD.

### **Impact of Changes**

None, this change provides Purchasing the ability to procure relevant Pilot cable that is fit for purpose.

### **Implementation Actions**

The specification is required by Purchasing to enable them to purchase Pilot cable required by Network Services.

No formal training will be required.

### **Implementation Timetable**

This Standard Technique can be implemented with immediate effect.

| <b>Document Revision &amp; Review Table</b> |                                                    |               |
|---------------------------------------------|----------------------------------------------------|---------------|
| <b>Date</b>                                 | <b>Comments</b>                                    | <b>Author</b> |
| December 2014                               | The 61 Pair filled 5kV Pilot cable has been added. | Peter White   |
|                                             |                                                    |               |

## **1.0 SCOPE**

This specification deals with Western Power Distribution's (WPD) requirement for polythene insulated, polythene inner-sheathed, filled Multipair Pilot armoured cables, with PVC oversheath.

The finished cable shall generally meet the requirements of Electricity Association Technical Specification (EATS) 09-6 (1988) section 3, (or equivalent standard), or except where modified by this Specification.

## **2.0 CONDUCTORS**

The conductors shall comply with BS 6360 (class 2), (or equivalent standard), in so far as applicable for plain annealed copper wires.

The size of conductor shall be 1/0.8mm.

## **3.0 STANDARD DESIGNS**

The standard designs required by WPD are as follows: -  
7 pair, 19 pair, 37 pair and 61 pair.

## **4.0 INSULATION**

Polythene insulation shall be in accordance with BS 6234 (or equivalent standard).

The thickness of insulation, determined by taking the average of a number of measurements as described in BS EN 60811, part 3, shall not be less than the value given in EATS 09-6 section 3, Tables 3.8 and 3.10 and the smallest of the measured values shall not fall below the minimum value given in the appropriate table.

## **5.0 IDENTIFICATION OF CORES**

The cores shall be clearly identified by colours.

The following scheme of identification shall be used: -

- i 7 pair cable - Centre pair: - Red/Yellow. Outer layer: - Black/Violet, Orange/Grey\*, Green/Brown, Orange/Blue\*, Green/Brown and Orange/White\*.
- ii 19 pair cable - Centre pair and first layer: - as per 7 pair above. Outer layer: - Black/Violet, Odd pairs Red/Yellow. Even pairs Green/Brown, Blue/White.
- iii 37 pair cable - Centre pair, first layer and second layer: - as per 19 pair above. Outer layer: - Black/Violet, Odd pairs Red/Yellow. Even pairs Green/Brown, Blue/White.

- iv 61 pair cable - Centre pair, first layer and second layer: - as per 37 pair above.  
Outer layer: - Black/Violet, Odd pairs Red/Yellow. Even pairs Green/Brown, Blue/White.

Note: - The \* denotes the nominated pairs which shall be designed for use at carrier frequencies in the range 12-108kHz.

## **6.0 TWINNING AND LAYING-UP**

The laying-up of the cables shall be as given in EATS 09-6 section 3, clause 3.6.

## **7.0 FILLERS**

Where fillers are used they shall be as given in EATS 09-6 section 3, clause 3.7.

## **8.0 PLASTIC TAPES**

Open spiral interlayer tapes of suitable plastic material shall be applied. In the case of unidirectional laying-up, interlayer tape binders shall be applied over each layer.

A suitable plastic tape or tapes shall be applied over the laid up cores. The tape shall be applied with a suitable overlap.

## **9.0 FILLING**

The multipair cables shall be filled with a suitable compound, having a nominal drop point of not less than 55°C when measured. The compatibility of the materials shall be in accordance with the requirements given in Appendix 3.A of EATS 09-6.

## **10.0 INNER SHEATH (BEDDING)**

The inner sheath shall consist of an extruded layer of polymer compound having a tensile strength of not less than 4MN/m<sup>2</sup> and an elongation at the break of not less than 50 %.

The minimum thickness of the inner polythene sheath, when measured in accordance with BS EN 60811.1.1 clause 8.1 shall not be less than the value given in EATS 09-6 section 2, Table 2.1.

## **11.0 ARMOURING**

The armour shall consist of a single layer of galvanised steel wires of the size indicated in EATS 09-6 section 3, Table 3.8 and 3.9.

The galvanised steel wires shall comply with BS 6346, (or equivalent standard).

## **12.0 OVER SHEATH**

The over sheath shall consist of an extruded covering of black PVC, which shall be type TM1 compound in accordance with BS 6746. The minimum thickness of the inner polythene sheath, when measured in accordance with BS EN 60811.1.1 shall not be less than the value given in EATS 09-6 section 3, Table 3.8, 3.9 and 3.10.

## **13.0 CABLE MARKINGS**

The cable markings shall comply with EATS 09-6 section 3 for filled cables, clause 3.13.1 and 3.13.2.

In addition to this the cable shall be metre marked.

## **14.0 SEALING AND DRUMMING**

Shall be as defined in EATS 09-6 section 3 clause 3.14.

## **15.0 TECHNICAL CHARACTERISTICS**

Shall be as defined in EATS 09-6 section 3 clause 3.15.

## **16.0 TESTS AT WORKS**

Shall be as defined in EATS 09-6 section 3, clause 3.16.

Engineering Policy Section  
Western Power Distribution  
Avonbank  
Feeder Rd  
Bristol BS2 0TB

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## SCHEDULE 1

### SPECIFICATION FOR MULTIPAIR CABLES

| ITEM NO. | SHOPS CODE | DESCRIPTION                                        | ESTIMATED QUANTITY PER ANNUM | PRICE PER UNIT £ | PRICE FOR ESTIMATED QUANTITY | MAKERS REF. NO. |
|----------|------------|----------------------------------------------------|------------------------------|------------------|------------------------------|-----------------|
| 1        | 30745      | 7 Pair, filled, Multipair Pilot, armoured, cable.  | 1000m                        |                  |                              |                 |
|          |            |                                                    |                              |                  |                              |                 |
| 2        | 30746      | 19 Pair, filled, Multipair Pilot, armoured, cable. | 1000m                        |                  |                              |                 |
|          |            |                                                    |                              |                  |                              |                 |
| 3        | 30747      | 37 Pair, filled, Multipair Pilot, armoured, cable. | 1000m                        |                  |                              |                 |
|          |            |                                                    |                              |                  |                              |                 |
| 4        | 50814      | 61 Pair, filled, Multipair Pilot, armoured, cable. | 1000m                        |                  |                              |                 |

## **APPENDIX A**

### **SUPERSEDED DOCUMENTATION**

This document supersedes EE SPEC : 78 dated July 2003 which should now be withdrawn.