



Technical Specification 43-103

Issue 3 2016

Low voltage overhead line shrouding materials

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Issue 3	May 2016	Major revision of Issue 2 to reflect changes to normative references. This issue has been updated to align with the rules in ENA Engineering Recommendation G0, <i>Rules for structure, drafting and presentation of ENA engineering documents</i> . Details of all other technical, general and editorial amendments are included in the associated Document Amendment Summary for this Issue (available on request from the Operations Directorate of ENA).

Contents

Foreword.....	6
1 Scope	7
2 Normative references.....	7
3 Terms and definitions.....	8
4 General requirements	9
4.1 Live working shrouding	9
4.2 Third party shrouding	9
4.2.1 Temporary shrouding.....	9
4.2.2 Permanent shrouding.....	10
4.3 Manufacture.....	10
4.4 Visibility.....	10
4.5 UV stability.....	10
4.6 Material performance	10
5 Shrouding materials and pre-formed shrouds — Performance criteria and type tests	10
5.1 General.....	10
5.2 Manufacturer’s instructions	11
5.3 Marking.....	11
5.4 Type test requirements	12
5.4.1 Dimensions	12
5.4.2 Marking durability.....	12
5.4.3 Mechanical tests	13
5.4.3.1 Tensile strength.....	13
5.4.3.2 Mechanical puncture resistance	13
5.4.3.2.1 High temperature mechanical puncture resistance.....	13
5.4.3.2.2 Low temperature mechanical puncture resistance.....	13
5.4.3.2.3 Ambient temperature mechanical puncture resistance.....	13
5.4.3.2.4 Shrinkage test	13
5.4.3.3 Low temperature bending	13
5.4.4 Material specific tests.....	13
5.4.5 Water absorption.....	14
5.4.6 Electrical tests.....	14
5.4.6.1 Electrical breakdown — Dry test.....	14
5.4.6.2 Electrical withstand.....	15
5.4.6.3 Electrical breakdown — Prolonged immersion.....	15
5.4.7 Ageing tests	15
5.4.7.1 UV ageing.....	16
5.4.7.2 High temperature ageing	16
5.4.8 Flame retardance	16

5.4.9	Attachment.....	16
6	Split tube — Performance criteria and type tests.....	17
6.1	General.....	17
6.2	Manufacturer's instructions	17
6.3	Marking.....	17
6.4	Type test requirements	18
6.4.1	Dimensions	18
6.4.2	Marking durability	19
6.4.3	Mechanical tests	19
6.4.3.1	Tensile strength.....	19
6.4.3.2	Mechanical puncture resistance	19
6.4.3.2.1	High temperature mechanical puncture resistance.....	19
6.4.3.2.2	Low temperature mechanical puncture resistance.....	19
6.4.3.2.3	Ambient temperature mechanical puncture resistance.....	20
6.4.3.2.4	Shrinkage test	20
6.4.3.3	Low temperature bending.....	20
6.4.3.4	High temperature bending	21
6.4.3.5	Flexibility (optional).....	21
6.4.4	Water absorption.....	22
6.4.5	Electrical tests.....	22
6.4.5.1	Electrical breakdown — Dry test.....	22
6.4.5.2	Electrical withstand.....	23
6.4.5.3	Electrical breakdown — Prolonged immersion.....	23
6.4.6	UV ageing	24
6.4.7	Flame retardance	24
6.4.8	Attachment.....	24
6.4.9	Joint security	25
7	In-service use and care.....	26
7.1	Shrouding	26
7.2	Split tube.....	26
	Annex A (normative) Figures	27
	Annex B (normative) UV ageing — Test conditions	32
	Annex C (informative) In-service use, care and testing.....	33
C.1	Low voltage live working shrouding and live working split tube insulation	33
C.1.1	General.....	33
C.1.2	Storage	33
C.1.3	Visual inspection	33
C.1.4	Temperature	33
C.1.5	Precautions in use.....	33
C.1.6	Electrical testing.....	33
C.2	Split tube.....	34

C.2.1	General	34
C.2.2	Storage	34
C.2.3	Visual inspection	34
C.2.4	Temperature	34
C.2.5	Precautions in use	34
Annex D (normative)	Type tests	36
D.1	Shrouding materials and pre-formed shroud type tests	36
D.2	Split tube type tests	38
Annex E (normative)	Self-Certification Conformance Declaration ENA TS 43-103 Technical Specification for Low voltage overhead line shrouding materials	40

Figures

Figure A.1	— Electrical breakdown — Prolonged immersion test — Suggested arrangement for shrouding material	27
Figure A.2	— Attachment test — Suggested arrangement	28
Figure A.3	— Flexibility test — Suggested arrangement	29
Figure A.4	— Electrical breakdown — Prolonged immersion test — Suggested arrangement for split tube	30
Figure A.5a)	— Clamping arrangement	31
Figure A.5b)	— General arrangement and dimensions	31
Figure A.5	— Attachment — Suggested arrangement	31

Tables

Table D.1	— Table of shrouding materials and pre-formed shroud type tests	36
Table D.2	— Table of split tube type tests	38

Foreword

This Technical Specification (TS) is published by the Energy Networks Association (ENA) and comes into effect from date of publication. It has been prepared under the authority of the ENA Engineering Policy and Standards Manager and has been approved for publication by the ENA Electricity Networks and Futures Group (ENFG). The approved abbreviated title of this engineering document is “ENA TS 43-103”.

This TS has been revised in consultation with the ENA Overhead Lines Panel and reflects changes in relevant National and International Standards since 2012.

This TS supersedes ENA TS 43-103 Issue 1 2012 and covers insulating split tube and shrouding for use by Distribution Network Operators.

Clause 5 and Clause 6 of this TS follows a similar structure for defining performance criteria and type tests; Clause 5 relates to shrouding materials and pre-formed shrouds, whereas Clause 6 relates to split tube type shrouds.

In this TS, the tolerance on a value is presented in the following form. For example, a tolerance of plus or minus 2 mm on a value of 80 mm is presented as (80 ± 2) mm.

Where a clause or sub-clause does not reference a particular Standard then the reference relates to that clause or sub-clause in this TS.

Where the term “shall” is used in this document it means the requirement is mandatory. The term “should” is used to express a recommendation. The term “may” is used to express permission.

NOTE: Commentary, explanation and general informative material is presented in smaller type, and does not constitute a normative element.

1 Scope

The scope of performance criterion in this TS applies to low voltage third party protection shrouding, low voltage live working shrouding, low voltage third party protection split tube insulation and low voltage live working split tube insulation.

When utilised in accordance with company procedures:

- low voltage third party protection shrouding and split tube insulation will provide effective insulation for bare low voltage overhead lines so permitting work by third parties within otherwise prescribed clearances;
- low voltage live working shrouding and split tube insulation will facilitate work on bare low voltage overhead lines by appropriately trained staff.

The provision of effective insulation will mean the conversion of bare low voltage overhead lines into effectively insulated overhead lines as defined in Clause 3 of ENA TS 43-8 [N1].

NOTE: Products manufactured and successfully tested for third party protection will provide suitable levels of insulation and mechanical protection for low voltage live working though they may not provide the necessary flexibility. Those products that only meet the requirements for low voltage live working will not imply suitability for use as third party protection.

2 Normative references

The following referenced documents, in whole or part, are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Standards publications

BS 2782-5: Method 552A: 1999, ISO 4582: 1998, *Methods of testing plastic. Optical and colour properties, weathering. Determination of changes in colour and variations in properties after exposure to daylight under glass, natural weathering or laboratory light sources*

BS 7870-5:2011, *LV and MV polymeric insulated cables for use by distribution and generation utilities. Polymeric insulated aerial bundled conductors (ABC) of rated voltage 0.6/1 kV for overhead distribution*

BS EN 60068-1:2014, *Environmental testing. General and guidance*

BS EN 60684-2:2011, *Flexible insulating sleeving. Methods of test*

BS EN 60743:2013, *Live working. Terminology for tools, devices and equipment*

BS EN 61112:2009, *Live working. Electrical insulating blankets*

BS EN 61477:2009, *Live working. Minimum requirements for the utilization of tools, devices and equipment*

BS EN ISO 4892-2:2013, *Plastics. Methods of exposure to laboratory light sources: Xenon-arc lamps*

IEC 60417-DB:2002, *Graphical symbols for use on equipment*¹

Other publications

¹ "DB" refers to the IEC on-line database.

[N1] ENA TS 43-8, *Overhead Line Clearances*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

ambient temperature

temperature range between +15 °C and +35 °C in accordance with BS EN 60068-1:2014, Clause 4.3

3.2

effective insulation

low voltage insulation for continuous phase to phase or phase to earth contact which is manufactured, as far as is reasonably practicable, to provide protection against accidental mechanical damage or interference having regard for its accessibility

3.3

elastomer

rubber, latex and elastomeric compounds that may be natural or synthetic or a mixture or a combination of both

NOTE: Elastomer is a generic term typically used to describe these types of materials.

3.4

flexible pre-formed shrouds

non-rigid shrouds made from malleable, sheet material that have been pre-formed into shapes suitable to shroud specific low voltage components

3.5

humidity

humidity range between 45% and 75% in accordance with BS EN 60068-1:2014, Clause 4.3

3.6

live working split tube insulation

tubular insulation that can be used on multiple occasions and retrospectively installed onto low voltage overhead line conductors without the continuity of the conductor being broken that once installed, in accordance with the manufacturer's instructions and in compliance with company procedures, will provide insulation for appropriately trained staff when working on live low voltage overhead lines

3.7

live working shrouding materials (insulating blankets)

sheet material that can be used on multiple occasions and, when used in accordance with manufacturer's instructions and installed in compliance with company procedures, will provide insulation for appropriately trained staff when working on live low voltage overhead lines

NOTE: Live working shrouding materials are sometimes referred to as 'insulating blankets'.

3.8

permanent shrouding

insulation material intended to remain in position during normal service to provide effective insulation from live components

3.9

plastic

material that contains, as an essential ingredient, a high polymer and which, at some stage in its processing into finished products, can be shaped by flow