BS 7870-3.50:2023

BSI Standards Publication

LV and MV polymeric insulated cables for use by distribution and generation utilities

Part 3: Distribution cables of rated voltage 0.6/1 (1.2) kV – Specification

Section 3.50: XLPE insulated, copper wire waveform or helical concentric cables with solid aluminium conductors, having low emission of smoke and corrosive gases when affected by fire (Implementation of HD 603)

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Summary of pages
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Foreword

Publishing information

This section of BS 7870-3 is published by BSI Standards Limited, under licence from The British Standards Institution and came into effect on 31 December 2023. It was prepared by Subcommittee GEL/20/16, *Medium/High voltage cables*, under the authority of Technical Committee GEL/20, *Electric cables*. A list of organizations represented on these committees can be obtained on request to the committee manager.

Supersession

BS 7870-3 supersedes BS 7870-3.50:2011, which is withdrawn.

Relationship with other publications

BS 7870 implements the nationally applicable parts of Harmonization Documents HD 603, HD 605, HD 620, HD 626 and HD 627 published by the European Committee for Electrotechnical Standardization (CENELEC) in accordance with the decision of the CENELEC Technical Board.

BS 7870 applies to cables for fixed installations having a rated voltage U_0/U up to and including 19/33 kV and is published as a series of separate parts and sections, as listed in BS 7870-1:2011+A1:2022, Table 1.

This section of BS 7870-3 specifies a range of XLPE insulated, copper wire waveform or helical concentric cables with solid aluminium conductors having low emission of smoke and corrosive gases when affected by fire; it implements Part 5R of HD 603-11 A2 and is to be read in conjunction with BS 7870-1:2011+A1:2022 and BS 7870-2:2022.

A general guide to use for the types of cable specified in BS 7870 is given in BS 7870-1:2011+A1:2022 and specific details for the types of cable specified in this section of BS 7870 are given in Annex A.

Information about this document

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It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this document are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

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

Where words have alternative spellings, the preferred spelling of the *Shorter Oxford English Dictionary* is used (e.g. "organization" rather than "organisation").

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1 Scope

This section of BS 7870 specifies requirements for the construction, dimensions and mechanical and electrical properties of XLPE insulated, concentric copper wire screened waveform or helical cables with solid aluminium conductors having a rated voltage of 0.6/1 (1.2) kV. It is applicable to cables that, when assessed by the specified tests, produce lower levels of smoke and corrosive gases under exposure to fire than cables conforming to BS 7870-3.40.

It specifies requirements for the following types of cable:

- 3-core, 3-phase, with XLPE insulation, a concentric neutral/earth conductor of copper wires on a synthetic bedding and a thermoplastic oversheath; and
- 4-core, 3-phase and a separate neutral, with XLPE insulation, a concentric earth conductor of copper wires on a synthetic bedding, and a thermoplastic oversheath.

This section of BS 7870 is applicable to cables that are designed for a maximum continuous conductor operating temperature of 80 °C and for a maximum short circuit conductor temperature of 250 °C.

NOTE Guidance on type testing is given in Annex B.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes provisions, or limits the application, of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the reference document (including any amendments) applies.

BS 7870-1:2011+A1:2022, *LV and MV polymeric insulated cables for use by distribution and generation utilities – Part 1: General (Implementation of HD 603, 605, 620, 626 and 627)*

BS 7870-2:2022, *LV and MV polymeric insulated cables for use by distribution and generation utilities – Part 2: Methods of test (Implementation of HD 605 S3:2019)*

BS EN 60228, *Conductors of insulated cables*

BS EN 60332-1-2:2004+A12:2020, *Tests on electric and optical fibre cables under fire conditions – Part 1-2: Test for vertical flame propagation for a single insulated wire or cable – Procedure for 1 kW pre-mixed flame*

BS EN 60332-3-24:2009, *Tests on electric and optical fibre cables under fire conditions – Part 3-24: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category C*

BS EN 60754-1, *Test on gases evolved during combustion of materials from cables – Part 1: Determination of the halogen acid gas content*

BS EN 60811-401, *Electric and optical fibre cables – Test methods for nonmetallic materials – Part 401: Miscellaneous tests – Thermal ageing methods – Ageing in an air oven*

BS EN 60811-501, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 501: Mechanical tests – Tests for determining the mechanical properties of insulating and sheathing compounds*

BS EN 60811-502, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 502: Mechanical tests – Shrinkage test for insulations*

BS EN 60811-503, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 503: Shrinkage test for sheaths*

[1] Documents that are referred to solely in an informative manner are listed in the Bibliography.