BS 7870-3.40:2023

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 3.40: XLPE insulated, copper wire waveform concentric cables with solid aluminium or stranded copper conductors (Implementation of HD 603)

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Summary of pages
This document comprises a front cover, an inside front cover, pages I to IV, pages 1 to 15, an inside back cover and a back cover.

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

This section of BS 7870-3 supersedes BS 7870-3.40:2011, which is withdrawn.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. BS 7870 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 concentric cables with solid aluminium or stranded copper conductors. It 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

This is a full revision of the document which brings it up to date in accordance with current practice in the industry.

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Use of this document

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 copper wire waveform cables with solid aluminium or stranded copper conductors, XLPE insulation and PVC oversheath having a rated voltage of 0.6/1(1.2) kV.

It specifies requirements for the following types of cable:

a) 3-core, 3-phase, with a concentric neutral/earth conductor of copper wires bedded on a single rubber layer; and

b) 4-core, 3-phase and a separate neutral, with a concentric earth conductor of copper wires bedded on a single rubber layer.

This section of BS 7870 is applicable to cables 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[1]. 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, 619, 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 60811-401, *Electric and optical fibre cables – Test methods for non-metallic 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 ISO 6892-1, *Metallic materials – Tensile testing – Part 1: Method of test at room temperature*

3 Terms and definitions

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

3.1 wavelength

distance between two identical adjacent points in a wave

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