

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

Part 3: Specification for distribution cables of rated voltage 0.6/1 kV —

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)

ICS 29.060.20

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by Technical Committee GEL/20, Electric cables, to Subcommittee GEL/20/16, Medium/high voltage cables, upon which the following bodies were represented:

- British Approvals Service for Cables
- British Cables Association
- British Plastics Federation
- Energy Networks Association
- ERA Technology Ltd.
- Co-opted members

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Foreword

This section of BS 7870 has been prepared by Subcommittee GEL/20/16.

BS 7870 implements the nationally applicable parts of Harmonization Documents HD 603, 604, 605, 620, 622, 626 and 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 the table in the foreword of BS 7870-1.

BS 7870-3.50 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. This range of cables is to be proposed, under the CENELEC TC20 maintenance procedure, as part of a future amendment to HD 603 Part 5R.

BS 7870-3.50 is to be read in conjunction with BS 7870-1 and BS 7870-2.

A "Guide to use" for these types of cables is under consideration.

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.

WARNING. This British Standard calls for the use of procedures that may be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 11 and a back cover.

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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 core 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 7870-3.11 or 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;
- 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.

2 Normative references

The following referenced documents 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.

BS 6360, *Specification for conductors in insulated cables and cords*.

BS 7655-1.3, *Specification for insulating and sheathing materials for cables — Part 1: Cross-linked elastomeric insulating compounds — Section 1.3: XLPE*.

BS 7655-6.1, *Specification for insulating and sheathing materials for cables — Part 6: Thermoplastic sheathing compounds having low emission of corrosive gases, and suitable for use in cables having low emission of smoke when affected by fire — Section 6.1: General application thermoplastic types*.

BS 7870-1, *LV and MV polymeric insulated cables for use by distribution and generation utilities — Part 1: General*.

BS 7870-2:1999, *LV and MV polymeric insulated cables for use by distribution and generation utilities — Part 2: Methods of test*.

BS EN 13602, *Copper and copper alloys — Drawn, round copper wire for the manufacture of electrical conductors*.

BS EN 50266-2-4:2001, *Common test methods for cables under fire conditions — Test for vertical flame spread of vertically-mounted bunched wires or cables — Part 2-4: Procedures — Category C*.

BS EN 50267-2-1, *Common test methods for cables under fire conditions — Tests on gases evolved during combustion of materials from cables — Part 2-1: Procedures — Determination of the amount of halogen acid gas*.

BS EN 50268-1, *Common test methods for cables under fire conditions — Measurement of smoke density of cables burning under defined conditions — Part 1: Apparatus*.

BS EN 50268-2, *Common test methods for cables under fire conditions — Measurement of smoke density of cables burning under defined conditions — Part 2: Procedure*.

BS EN 60332-1-2:2004, *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 60811-1-2:1995, *Common test methods for insulating and sheathing materials of electric and optical cables — Part 1-2: General application — Thermal ageing methods*.

BS EN 60811-1-3:1995, *Insulating and sheathing materials of electric and optical cables. Common test methods — Part 1: General application — Methods for determining the density — Water absorption tests — Shrinkage test*.