

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

Part 8: Specification for multicore and multipair cables for installation above and below ground —

Section 8.1: Single wire armoured and PVC sheathed multicore cable with copper conductors

(Implementation of part of HD 627)

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Committees responsible for this British Standard

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- British Approval Service for Cables
- British Cables Association
- British Plastics Association
- Electricity Association
- ERA Technology
- Co-opted members

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Foreword

This section of BS 7870 has been prepared by Subcommittee GEL/20/16, under the direction of Technical Committee GEL/20.

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

BS 7870-8.1 implements HD 627-3A1 and is to be read in conjunction with BS 7870-1 and BS 7870-2.

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 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 13 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 multicore PVC insulated and PVC sheathed cables. It specifies requirements for steel wire armoured multicore cables (2-core to 37-core) with copper conductors.

This section of BS 7870 is applicable to cables for use underground in wet conditions and also for withstanding high levels of induced voltage.

NOTE A “guide to use” is given in Annex A.

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 7655-3.1, *Specification for insulating and sheathing materials for cables — Part 3: PVC insulating compounds — Section 3.1: Harmonized types*.

BS 7655-4.1, *Specification for insulating and sheathing materials for cables — Part 4: PVC sheathing compounds — Section 4.1: Harmonized 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 60811-1-1:1995, *Insulating and sheathing materials of electric cables — Common test methods — Part 1-1: General application — Measurement of thickness and overall dimensions — Tests for determining the mechanical properties*.

3 Voltage designation

Cables shall be designated by the voltages U_0 , U and U_m , expressed in the form $U_0/U (U_m)$.

The voltage designation of cables in this standard is 0.6/1 (1.2) kV.

4 Conductors

Conductors shall be 2.5 mm² plain copper stranded circular class 2, conforming to the requirements of BS 6360.

Conformity shall be checked by visual examination as specified in **15.2**.

NOTE A separator tape may be applied over the conductor.

5 Insulation

The insulation shall be PVC compound type TI 1, conforming to the requirements of BS 7655-3.1.

The insulation shall be applied so that it fits closely on the conductor and it shall be possible to remove it without damage to the insulation itself or to the conductor.

The insulation shall be applied by a suitable extrusion process and shall form a compact and homogenous body.

The thickness of the insulation shall conform to the requirements specified in Table 1.

Conformity shall be checked by the test methods specified in **15.3**.

6 Identification of cores

The cores shall be black or white with printed numbers in a contrasting colour.

The cores shall be numbered in sequence from 1 to 37 as follows:

- a) 2-core: 1 and 2;
- b) 3-core: 1, 2 and 3;
- c) 4-core: 1, 2, 3 and 4;
- d) 7-core: centre core numbered 1; six cores around numbered 2 to 7;
- e) 12-core: centre three cores numbered 1, 2 and 3; nine cores around numbered 4 to 12;
- f) 19-core: centre cores as for 7-core; 12 cores around numbered 8 to 19;
- g) 27-core: centre cores as for 12-core; 15 cores around numbered 13 to 27;
- h) 37-core: centre cores as for 19-core; 18 cores around numbered 20 to 37.

Cores shall be clearly identifiable and the printing shall be durable.

Conformity shall be checked by visual examination as specified in **15.4**.

7 Assembly of cores, fillers and binders

The direction of lay shall alternate for each successive layer. Up to seven cores shall be laid up with either a right- or left-hand direction of lay or an alternating right- and left-hand direction of lay.

Conformity shall be checked by visual examination as specified in **15.5**.

NOTE 1 Where necessary, fillers of suitable synthetic material may be used.

NOTE 2 At the discretion of the manufacturer, a synthetic binder tape may be applied over the laid-up cores.

8 Bedding layer

The bedding shall be an extruded layer of polymer compound, conforming to the requirements specified in Table 1.

NOTE Tapes may be applied over the bedding.

9 Armouring

The armouring shall consist of a single layer of galvanized steel wires applied in the opposite direction to the outer layer of cores.

Joints in the steel wire armour shall be brazed or welded and any surface irregularity shall be removed. Any joint in any wire shall be not less than 1 m from the nearest joint in any other armour wire in the complete cable.

NOTE A layer of waterproof compound may be applied over the wires by agreement between the manufacturer and the purchaser.

10 Oversheath

The oversheath shall be an extruded layer of black PVC compound type TM 1, conforming to the requirements of BS 7655-4.1.

When required by the purchaser an outer semi-conducting coating shall be applied to serve as an electrode for a voltage test on the oversheath.