

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

## **Part 5: Polymeric insulated aerial bundled conductors (ABC) of rated voltage 0.6/1 kV for overhead distribution**

(Implementation of parts of HD 626)

ICS 29.060.20

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The preparation of this British Standard was entrusted by Technical Committee GEL/20, Electric cables, to Subcommittee GEL/20/2 Mains cables, 1 kV and above, upon which the following bodies were represented:

- Association of Consulting Engineers
- British Approvals Service for Cables
- British Cables Makers Confederation
- British Plastics Federation
- ERA Technology Ltd.
- Electricity Association
- London Underground Ltd.
- UK Steel Industry

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The following BSI references relate to the work on this standard:  
Committee reference GEL/20/2  
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## Foreword

This British Standard has been prepared by Subcommittee GEL/20/2. It 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 to part 1.

Part 5 of BS 7870 implements part of HD 626, and is to be read in conjunction with BS 7870-1 and -2.

A “Guide to use” for the cables specified in this British Standard 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.

Annexes A and C are normative. Annex B is informative.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their 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 10, an inside back cover and a back cover.

## 1 Scope

This British Standard specifies the construction, dimensional and test requirements for polymeric insulated aerial bundled conductors (ABC) of rated voltage 0.6/1 kV.

The cables are designed for a maximum continuous conductor operating temperature of 75 °C.

The cable types specified in this standard have:

- two-, four- or five-core construction;
- phase and neutral conductors of equal size and type;
- conductor sizes from 25 mm<sup>2</sup> up to and including 120 mm<sup>2</sup>;
- optionally, insulated control or street lighting cores (see annex A).

NOTE The fifth core in the five-core bundle is designated as a protective conductor, i.e. a conductor used for some measure of protection against electric shock.

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this British Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. For undated references, the latest edition of the publication referred to applies.

BS 2627, *Specification for wrought aluminium for electrical purposes. Wire.*

BS 6360, *Conductors in insulated cables and cords.*

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 10002-1, *Tensile testing of metallic materials — Part 1: Method of test at ambient temperature.*

BS EN 60811-1-1, *Insulating and sheathing materials of electric cables — Common test methods — Part 1: General application — Section 1: Measurement of thickness and overall dimension. — Tests for determining the mechanical properties.*

BS EN 60811-1-2, *Insulating and sheathing materials of electric cables — Common test methods — Part 1: General application — Section 2: Thermal ageing methods.*

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

BS EN 60811-2-1, *Insulating and sheathing materials of electric cables — Common test methods — Part 2: Methods specific to elastomeric compounds — Section 1: Ozone resistance test — Hot set test — Mineral oil immersion test.*

BS EN 60811-3-1, *Insulating and sheathing materials of electric cables — Common test methods — Part 3: Methods specific to PVC compounds — Section 1: Pressure test at high temperature — Tests for resistance to cracking.*

BS EN 60811-4-1, *Insulating and sheathing materials of electric cables — Common test methods Part 4: Methods specific to polyethylene and polypropylene compounds — Section 1: Resistance to environmental stress cracking — Wrapping test after thermal ageing in air — Measurement of the flow index — Carbon black and/or mineral content measurement in PE.*

PD 2379, *Register of colours of manufacturers' identification threads for electric cables and cords.*

IEC 60885-1, *Electrical test methods for electric cables — Part 1: Electrical tests for cables, cords and wires for voltages up to and including 450/750 V.*

## 3 Voltage designation

Cables are 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

The conductors shall be of compacted, circular, stranded aluminium in accordance with BS 6360. The individual wires used in the construction shall be material 1350 in the H9 condition as specified in BS 2627. The individual wires shall be of the same nominal diameter before stranding into a compacted circular formation.

Successive layers of wire shall have opposite directions of lay, the outermost layer being right-handed.

The conductors shall conform to the requirements specified in Table 1.

## 5 Insulation

All conductors shall be insulated with extruded cross-linked polyethylene which conforms to the requirements specified in 11.3. The insulation shall be coloured black.

The insulation thickness and core diameter shall conform to the requirements specified in Table 1.