

Electric cables — Thermosetting insulated, unarmoured cables for a voltage of 600/1 000 V

ICS 29.060.20

Committees responsible for this British Standard

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

Association of Consulting Engineers
 Association of Manufacturers of Domestic Electrical Appliances
 BEAMA Electrical Cable and Conductor Accessory Manufacturers' Association
 British Approvals Service for Cables
 British Cables Association
 British Iron and Steel Producers' Association
 British Plastics Federation
 Department of Trade and Industry (Consumer Safety Unit, CA Division)
 Electricity Association
 London Transport

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

Association of Manufacturers Allied to the Electrical and Electronic Industry (BEAMA Ltd.)
 Chartered Institution of Building Services Engineers
 ERA Technology Ltd.
 Electrical Installation Equipment Manufacturers' Association (BEAMA Ltd.)
 Engineering Industries Association
 Institution of Incorporated Executive Engineers
 London Underground Ltd.
 National Association of Lift Makers
 Portable Electric Tool Manufacturers' Association
 Transmission and Distribution Association (BEAMA Ltd.)

This British Standard, having been prepared under the direction of the Electrotechnical Sector Board, was published under the authority of the Standards Board and comes into effect on 15 October 1997

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Amendments issued since publication

Amd. No.	Date	Comments
10095	July 1998	See foreword
14205	5 February 2004	Revised title and see foreword
15053 Corrigendum No. 1	19 March 2004	Correction to foreword
15657	29 April 2005	See foreword

The following BSI references relate to the work on this standard:
 Committee reference GEL/20
 Draft for comment 96/20306 DC

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Foreword

This British Standard has been prepared by Technical Committee GEL/20. BS 7889 is related to but not equivalent to IEC 60502-1:1998.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **[A1]** **[A1]**. Tags indicating changes to text carry the number of the amendment. For example, text altered by amendment No. 1 is indicated by **[A1]** **[A1]**.

It is the first edition of this British Standard, which has been produced to specify the requirements for single-core 600/1 000 V cables having thermosetting insulation and PVC sheaths.

These cables were previously specified in BS 5467, but have been deleted from the scope of that standard so that the specific requirements can be more clearly defined and presented.

Amendment No. 2:2004 implements the changes to the identification of cores by colours, in accordance with HD 308 S2. The principal identification colours are now:

Single phase — Green-and-yellow (Earth); blue (Neutral); brown (Live);
Three phase — Green-and-yellow (Earth); blue (Neutral); brown, black, grey (Live).

Users should ensure that any interconnection between cables with these new colours and those with the pre-existing ones is carried out safely. BS 7671, as amended in parallel with this standard, gives some guidance in this respect, but does not cover all installation conditions or cable uses.

The provisions introduced by amendment No. 2:2004 are effective from 1st April 2004. The original version of this standard remains current until 31st March 2006.

Product certification/inspection/testing. Users of this British Standard are advised to consider the desirability of third-party certification/inspection/testing of product conformity with this British Standard. Users seeking assistance in identifying appropriate conformity assessment bodies or schemes may ask BSI to forward their enquiries to the relevant association.

WARNING. This standard calls for the use of substances and/or 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 15 and a back cover.

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1 Scope

This British Standard specifies requirements for construction and describes methods of test for unarmoured single-core cables with thermosetting insulation of rated voltage 600/1 000 V. Cables specified in this standard are intended for use in fixed installations in industrial areas, buildings and similar applications but not for direct burial in the ground.

The insulation and other components are suitable to permit operation of the cables at a maximum sustained conductor temperature of 90 °C and for a maximum short-circuit conductor temperature of 250 °C.

NOTE 1 Limitation on the temperature of the cables may be imposed in situations where they may be touched.

NOTE 2 In installations which include cable joints and terminations, the performance of these accessories should be taken into account in deciding the maximum operating temperature of the cable.

Annex A gives recommendations for the selection and operation of cables while recommendations for the installation of cables are given in Annex B. Annex C lists the information that should be given with an enquiry or order.

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.

 Text deleted 

BS 4727-2-08:1994, *Glossary of electrotechnical, power, telecommunication, electronics, lighting and colour terms — Terms particular to power engineering — Electric cables.*

BS 5099:1992, *Specification for spark testing of electric cables.*

BS 6360:1991, *Specification for conductors in insulated cables and cords.*

BS 7655-1-2:1993, *Specification for insulating and sheathing materials for cables — Elastomeric insulating compounds — General 90 °C application.*

BS 7655-1-3:1993, *Specification for insulating and sheathing materials for cables — Elastomeric insulating compounds — XLPE.*

BS 7655-4-2:1993, *Specification for insulating and sheathing materials for cables — PVC sheathing compounds — General application.*

 BS EN 50265-2-1, *Common test methods for cables under fire conditions — Test for resistance to vertical flame propagation for a single insulated conductor or cable — Part 2-1: Procedures — 1 kW pre-mixed flame.*

BS EN 50356, *Method for spark testing of cables.* 

BS EN 60811-1-1:1995, *Insulating and sheathing materials of electric cables — Common test methods — Measurement of thickness and overall dimensions. Tests for determining the mechanical properties.*

BS EN 60811-1-2:1995, *Insulating and sheathing materials of electric cables — Common test methods — Thermal ageing methods.*

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

3 Terms and definitions

For the purposes of this British Standard the definitions given in BS 4727:Part 2:Group 08 apply together with the following:

3.1

rated voltage U_0

The nominal power-frequency voltage between conductor and earth for which the cable is suitable.

3.2

rated voltage U

The nominal power-frequency voltage between phase conductors for which the cable is suitable.

3.3

maximum voltage U_m

The maximum sustained power-frequency voltage between phase conductors for which the cable is suitable.

3.4

nominal value

The value by which a quantity is designated and which is often used in tables.

NOTE In this standard, nominal values usually give rise to values to be checked by measurements taking into account specified tolerances.

3.5

approximate value

A value which is only indicative.

NOTE In this standard, values described as approximate do not constitute requirements to be checked by measurement.

3.6

type tests (symbol T)

Tests required to be made before supplying a type of cable specified in this standard, on a general commercial basis, in order to demonstrate satisfactory performance characteristics to meet the intended application. These tests are of such a nature that, after they have been made, they need not be repeated unless changes are made in the cable material, design or type of manufacturing process which might change the performance characteristics.

3.7

sample tests (symbol S)

Tests made on samples of completed cable, or components taken from a completed cable adequate to verify that the finished product meets the design specifications.

3.8

routine tests (symbol R)

Tests made on all production lengths to demonstrate their integrity.

3.9

tests after installation

Tests intended to demonstrate the integrity of the cable and its accessories as installed.

4 Voltage designation

The cables shall be designated by the rated voltages U_0 and U , expressed in the form U_0/U .

The rated voltage recognized for the purposes of this standard is 600/1 000 V.

The maximum designated voltage (U_m) for the purposes of this standard for 600/1 000 V cables is recognized as 1 200 V.

NOTE Guidance on the selection of cables for particular systems is given in A.2.