

BRITISH STANDARD

Electric cables –

**Single core unsheathed heat resisting
cables for voltages up to and including
450/750 V, for internal wiring**

ICS 29.060.20



NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW

Publishing and copyright information

The BSI copyright notice displayed in this document indicates when the document was last issued.

© BSI 17 FEBRUARY 2006

ISBN 0 580 47759 2

The following BSI references relate to the work on this standard:

Committee reference GEL/20/17

Draft for comment 05/30138590 DC

Publication history

First published, August 1969

Second edition, January 1976

Third edition, December 1983

Fourth edition, October 1991

Fifth edition, November 1993

Sixth edition, October 2000

Seventh edition, February 2006

Amendments issued since publication

Amd. no.	Date	Text affected
-----------------	-------------	----------------------

Contents

Foreword *ii*

1	Scope	<i>1</i>
2	Normative references	<i>2</i>
3	Terms and definitions	<i>2</i>
4	Voltage designation	<i>3</i>
5	General	<i>3</i>
6	Constructional details	<i>6</i>
7	Electrical tests	<i>7</i>
8	Non-electrical tests	<i>7</i>

Annex A (informative) Guide to the use of single core unsheathed, heat resisting cables for internal wiring *19*

Annex B (informative) Guidance on procedure for routine tests on rubber insulated cables of rated voltages U_0/U up to 450/750 V *19*

Annex C (normative) Electrical tests *20*

Bibliography *21*

Table 1 – List of tests applicable to cables specified in Tables 3 to 10 *9*

Table 2 – Schedule of tests *10*

Table 3 – 110 °C heat resisting rubber insulated cable, 450/750 V, single core unsheathed *11*

Table 4 – 110 °C heat resisting rubber insulated cable, 450/750 V, single core unsheathed *12*

Table 5 – 110 °C heat resisting rubber insulated cable, 450/750 V, single core unsheathed *13*

Table 6 – 110 °C heat resisting rubber insulated cable, 300/500 V, single core unsheathed *14*

Table 7 – 110 °C heat resisting rubber insulated cable, 300/500 V, single core unsheathed *15*

Table 8 – Braided, 180 °C, silicone rubber insulated cable, 300/500 V, single core unsheathed *16*

Table 9 – 180 °C silicone rubber insulated cable, 300/500 V, single core unsheathed *17*

Table 10 – 180 °C silicone rubber insulated cable, 300/500 V, single core unsheathed *18*

Table C.1 – Summary of electrical tests *20*

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 21 and a back cover.

Foreword

Publishing information

This British Standard was published by BSI and came into effect on XX February 2006. It was prepared by Subcommittee GEL/20/17, *Low voltage cables*, under the authority of Technical Committee GEL/20, *Electric cables*.

Supersession

This British Standard supersedes BS 6007:2000, which is withdrawn.

Relationship with other publications

This new edition of BS 6007 takes account of the changes made to CENELEC HD 22.3 S4:2004 and its A1:2006, and HD 22.7:1995/A2:2004.

It also takes account of CENELEC publications for:

- conductors, in BS EN 60228 (replacing BS 6360);
- materials, in BS EN 50363 (replacing certain parts of BS 7655);
- electrical test methods, (in BS EN 50395) and non-electrical test methods (in BS EN 50396) which replace information previously included in the annexes of BS 6007.

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 British Standard calls for the use of substances and/ or procedures that can 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.

Presentational conventions

The provisions in this standard 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 are presented in smaller italic type, and do not constitute normative elements.

Contractual and legal considerations

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 cannot confer immunity from legal obligations.

1 Scope

This British Standard specifies requirements for the construction, dimensions and mechanical and electrical properties of single core unsheathed rubber insulated cables for operation at voltages up to and including 450 V a.c. to earth and 750 V a.c. between conductors, intended for use as internal wiring.

The types of cable included in the standard are as follows:

Table 3	110 °C heat resisting rubber insulated cable, 450/750 V; Single core unsheathed (H07G-U)
Table 4	110 °C heat resisting rubber insulated cable, 450/750 V; Single core unsheathed (H07G-R)
Table 5	110 °C heat resisting rubber insulated cable, 450/750 V; Single core unsheathed (H07G-K)
Table 6	110 °C heat resisting rubber insulated cable, 300/500 V; Single core unsheathed (H05G-U)
Table 7	110 °C heat resisting rubber insulated cable, 300/500V; Single core unsheathed (H05G-K)
Table 8	Braided, 180 °C silicone rubber insulated cable, 300/500 V; Single core unsheathed (H05SJ-U and H05SJ-K)
Table 9	180 °C silicone rubber insulated cable, 300/500 V; Single core unsheathed (H05S-U)
Table 10	180 °C silicone rubber insulated cable, 300/500 V; Single core unsheathed (H05S-K)

A guide to the use of the cables specified in this standard is given in Annex A. Guidance to manufacturers on procedures for routine testing is given in Annex B. Conditions for electrical test methods are given in Annex 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 4727-2: Group 08, *Glossary of electrotechnical, power, telecommunication, electronics, lighting and colour terms – Part 2: Terms particular to power engineering – Group 08: Electric cables*

BS EN 50363-1:2005, *Insulating, sheathing and covering materials for low voltage energy cables – Part 1: Cross-linked elastomeric insulating compounds*

BS EN 50395:2005, *Electrical test methods for low voltage energy cables*

BS EN 50396:2005, *Non-electrical test methods for low voltage energy cables*

BS EN 60228:2005, *Conductors of insulated cables*

BS EN 60811-1-1:1995, *Insulating and sheathing materials of electric cables – Part 1: Common test methods – General application – Section 1.1: Measurement of thickness and overall dimensions – Tests for determining the mechanical properties*

BS EN 60811-1-4:2005, *Insulating and sheathing materials of electric cables – Part 1: Common test methods – General application – Section 1.4: Tests at low temperature*

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

3 Terms and definitions

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

3.1 rated voltage U_0

nominal power-frequency voltage between conductor(s) and earth, for which the cable is suitable

3.2 rated voltage U

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

3.3 nominal value

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 measurement taking into account specified tolerances.

3.4 approximate value

value which is only indicative

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

3.5 type tests (symbol T)

tests required to be made before supplying a type of cable covered by this standard on a general commercial basis, in order to demonstrate satisfactory performance characteristics to meet the intended application

NOTE 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 materials, design or type of manufacturing process which might change the performance characteristics.

3.6 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

3.7 routine tests (symbol R)

tests made on all production lengths of cable to demonstrate their integrity

4 Voltage designation

Cables shall be designated by the rated voltages U_0 and U and expressed in the form U_0/U .

In an a.c. system, the rated voltage of a cable shall be at least equal to the nominal voltage of the system for which it is intended and this applies both to the value U_0 and to the value U .

In a d.c. system, the nominal voltage between the conductors shall be not higher than 1.5 times the rated voltage U of the cable and the nominal voltage between any conductor and earth shall be not higher than 1.5 times the rated voltage U_0 of the cable.

The rated voltages recognized for the purposes of this standard shall be 300/500 V and 450/750 V.

NOTE The operating voltage of a system may permanently exceed the nominal voltage of such a system by 10 %. A cable can be used at 10 % higher voltage than its rated voltage if the latter is at least equal to the nominal voltage of the system.

5 General**5.1 Construction**

The construction of the cables shall be as specified in the appropriate construction table (Tables 3 to 10).

Conformity shall be checked by examination.

5.2 Identification and marking**5.2.1 General**

Each cable shall be identified by its colour as indicated in the appropriate construction table.

Designated harmonized codes for cables are given in the appropriate construction tables and these cables shall be permitted to bear the CENELEC Common Marking in accordance with 5.2.4.

5.2.2 Colours

The colour shall be either throughout the whole of the insulation or on its surface.

On the cable with the bi-colour combination green-and-yellow, the distribution of these colours shall be such that for every 15 mm length of cable, one of these colours shall cover at least 30 % and not more than 70 % of the surface of the cable, while the other colour covers the remainder of the surface.

Conformity shall be checked by measurement.

NOTE 1 In cases of dispute regarding the green-and-yellow combination and where appropriate to the method of colour marking of the insulation, a suitable test method for checking conformity is given in BS EN 50396:2005, 5.2.

NOTE 2 Attention is drawn to the fact that, according to the use to which the cables are to be put, they could be subject to core colour requirements specified in BS 7671, in other British Standards or in other standards, or in regulations or statutory requirements.

NOTE 3 In addition to the combination green-and-yellow, the following mono-colours are recognized as harmonized: black, blue, brown, grey, orange, pink, red, turquoise, violet and white.

5.2.3 Indication of origin

All cables shall be provided with an indication of origin consisting either of an identification thread or threads or the continuous marking of the manufacturer's name or trademark.

If coloured threads are used, the colours shall conform to those registered in PD 2379, where applicable. The colours shall be easy to recognize or shall become recognizable by cleaning with petrol or other suitable solvent, if necessary.

The marking of the manufacturer's name or trademark, if used, shall be by one of the following alternative methods:

- a) printed tape within the cable;
- b) printing, indenting or embossing on the insulation.

Each specified mark shall be legible and shall be regarded as continuous if the distance between the end of one mark and the beginning of the next identical mark does not exceed 275 mm.

Conformity shall be checked by measurement.

NOTE In this context, a "specified mark" is either a mark stipulated as a requirement of this standard, or the optional CENELEC Common Marking as discussed in 5.2.4.