
British Standard Specification for

**Cables with thermosetting insulation for
electricity supply for rated voltages of up to and
including 600/1000 V and up to and including
1900/3300 V**

Câbles d'alimentation à isolation
thermodurcissable pour tensions assignées
de 600/1000 V et de 1900/3300 V – Spécifications

Stromkabel mit Wärmebeständiger Isolierung
für Spannungen von 600 V – 1000 V und
1900 V – 3300 V

Foreword

This revision of BS 5467 has been prepared under the direction of the General Electrotechnical Engineering Standards Policy Committee. It supersedes the 1977 edition which is withdrawn. This revision has been prepared to satisfy the requirements for cables having thermosetting insulation for electricity supply for the rated voltages of up to and including 600/1000 V and up to and including 1900/3300 V. The range of armoured cables has been extended to include smaller and larger conductor sizes. Unarmoured 600/1000 V cables and multicore auxiliary 600/1000 V cables with steel wire armour are now included.

This British Standard takes account of the conductor requirements given in BS 6360 : 1981 'Specification for conductors in insulated cables and cords', which has been revised so as to align with IEC Publication 228, published by the International Electrotechnical Commission (IEC).

The dimensions, requirements and test methods closely follow those given in IEC Publications 502 and 811. In addition, a spark test on cores and oversheath is included. This does not appear in the IEC Publications as no international agreement has yet been reached on this test.

Attention is drawn to the recommendations for the selection and operation, and installation of cables given in appendices A and B.

Product certification. Users of this British Standard are advised to consider the desirability of third party certification of product conformity with this British Standard based on testing and continuing surveillance, which may be coupled with assessment of a supplier's quality systems against the appropriate Part of BS 5750.

Enquiries as to the availability of third party certification schemes will be forwarded by BSI to the Association of Certification Bodies.

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

Amendment No. 1
published and effective from 30 March 1990
to BS 5467 : 1989

**Specification for cables with thermosetting
insulation for electricity supply for rated
voltages of up to and including 600/1000 V
and up to and including 1900/3300 V**

Corrections

AMD 6425
March 1990

Front cover

Beneath the shoulder heading insert the following UDC number.
UDC 621.315.222 : 621.315.616 : 678.072 : 621.3.027.4/.5

AMD 6425
March 1990

Clause 9.3 Multicore cables

In the last line delete 'table 1' and substitute 'table 5'.

AMD 6425
March 1990

Table 5. Schedule of test requirements

Opposite the last line 'Test for flame propagation of single cable', in column 4, delete 'T' and substitute 'SS'.

AMD 6425
March 1990

Table 6. Routine tests

Delete table 6 entirely and substitute the following.

Table 6. Routine tests		
1	2	3
Test	Requirement (clause)	Test method
Spark test	5 and 12	BS 5099
Cable markings	14	Visual examination and measurement
Conductor resistance test	4	17.2 and BS 6360
Voltage test on complete cable	17.3	17.3

AMD 6425
March 1990

Table 18. Four-core 600/1000 V cables with reduced neutral conductor and with stranded copper conductors

In column 2 delete 'mm' and substitute 'mm²'.

AMD 6425
March 1990

Clause A.2 Voltage ratings
Delete the asterisk against the title.

AMD 6425
March 1990

Clause A.3 Current ratings
Insert an asterisk against the heading.

AMD 6425
March 1990

Table 28. Maximum resistance of conductor and armour for two-, three- and four-core cables having steel wire armour

In column 2, delete the last value '0.470' and substitute '0.0470'.

In column 9, for cables with a nominal area of conductor of 25 mm^2 , '3.1' and substitute '4.1'.

Amendment No. 2
published and effective from 28 February 1992
to BS 5467 : 1989

**Specification for cables with thermosetting
insulation for electricity supply for rated
voltages of up to and including 600/1000 V
and up to and including 1900/3300 V**

Revised text

AMD 6829
February 1992

Contents

Under the heading 'Appendices' insert the following:
'E Guide to use'.

AMD 6829
February 1992

Clause 12. Oversheath

Delete the first sentence and substitute the following:

'The oversheath of unarmoured or armoured cable shall be an extruded layer of PVC complying with the appropriate requirements of table 5 and BS 6746 for Type 9 compound.'

Between paragraphs 1 and 2 insert the following:

'NOTE. Oversheaths are normally black, but colours other than black may be provided by agreement between the manufacturer and purchaser, subject to their suitability for the particular exposure conditions under which the cables are to be used.'

AMD 6829
February 1992

Clause 14. Marking and end sealing

Delete 14.2 and 14.3, and substitute the following:

'14.2 External marking

The external surface of all cables complying with this British Standard shall be legibly marked with the following elements:

Element	Example of marking
(a) Electric cable	ELECTRIC CABLE
(b) Voltage designation	600/1000 V 3300 V 600/1000 V AUX
(c) British Standard number	BS 5467
(d) Manufacturer's identification	XYZ
(e) Number of cores, type and nominal area of conductor	
(1) Copper conductor cables	4 × 50

NOTE 1. 4 × 50 indicates a four-core cable with 50 mm² copper conductors.

(2) Copper conductor cables
with reduced neutral 3 × 50/25

NOTE 2. 3 × 50/25 indicates a four-core cable with three 50 mm² copper phase conductors and one 25 mm² copper neutral conductor.

(3) Aluminium conductor
cables 4 × 50 AL

NOTE 3. 4 × 50 AL indicates a four-core cable with 50 mm² aluminium conductors.

The marking of items (a) to (d) shall be by embossing or indenting on the oversheath.

For cables with tabulated approximate overall diameters above 15 mm, items (a), (b) and (c) shall appear, in any sequence that is deemed to neither confuse nor conflict, on two or more primary lines along the axis of the cable, approximately equally spaced around the circumference. Items (d) and (e) shall appear on either one of the primary lines, or a secondary line or lines. They can appear in any sequence that is deemed to neither confuse nor conflict, and need not both be on the same line.

For cables with tabulated approximate overall diameters of 15 mm or smaller, the elements of marking shall be disposed as for cables above 15 mm except that the marking for items (a), (b) and (c) shall appear on one or more primary lines.

The letters and figures shall consist of upright block characters with a minimum height of 3 mm.

The distance between the end of one element of marking and the beginning of the next identical element shall be not greater than 550 mm, for items (a), (b) and (c), and not greater than 1100 mm for items (d) and (e).

Compliance shall be checked by visual examination and measurement.

14.3 Identification of year of manufacture

A means of identifying the year of manufacture shall be provided throughout the length of the cable, either internally or by marking on the surface.

If the identification is internal the distance between the end of one mark and the beginning of the next mark shall be not greater than 550 mm.

NOTE. As an alternative internal marking, an identification thread may be used.

If the identification is by marking on the surface it shall comply with 14.2 (d) and (e) in respect of maximum distance between marks.

14.4 The mark of an approval organization

If the mark of an approval organization is used it shall be provided throughout the length of the cable.

If the mark is applied to the cable it shall be on the surface in the form of the symbol(s) specified by the approval organization, and shall comply with 14.2 (d) and (e) in respect of maximum distance between marks.

NOTE. As an alternative to the mark of the approval organization, an identification thread may be incorporated into the cable, as specified by the approval organization.

14.5 Additional marking

The use of additional marking is permitted. Where such marking is made it shall be throughout the length of the cable, and can be on the external surface of the cable, by means of a tape or thread within the cable, or by a combination of these methods. If the additional marking is applied to the surface of the cable it shall not render illegible the marking specified in 14.2 to 14.4.

The additional marking, however made, shall be repeated at intervals not exceeding 1100 mm.'

AMD 6829
February 1992

14.4 End sealing

Delete '14.4' and substitute '14.6'.

AMD 6829
February 1992

New appendix E

Following appendix D, insert the following:

'Appendix E. Guide to use

E.1 Aim

The aim of this appendix is to inform users of characteristics and limitations of electric cables and thereby to minimize their misuse.

It is assumed that the design of installations and the specification, purchase and installation of cables in accordance with this British Standard is entrusted to suitably skilled and competent people.

In cases of doubt as to the suitability of cables complying with this British Standard for a particular use, further specific information should be obtained from the manufacturer.

E.2 Cable selection and design

E.2.1 The products specified in this British Standard are intended to be used for the supply of electrical energy up to the rated voltage indicated on the cable. **A.2** defines the voltage ratings of cables manufactured to the specification. These ratings should not be exceeded.

E.2.2 These cables are intended for use at a nominal power frequency range of 49 Hz to 61 Hz.

E.2.3 In addition to the thermal rating, due regard should be given to:

- (a) the capability of the cable to withstand the worst anticipated fault condition of the system;
- (b) the earth loop impedance;
- (c) the operating characteristics of the connected equipment.

E.2.4 The possible effects of transient over-voltages should be recognized as they can be detrimental to cables.

E.2.5 In three-phase circuits, where third or higher multiple harmonics, or phase load unbalance may occur, consideration should be given to the use of cable with full sized neutral, e.g. in banks of discharge lighting.

E.3 Environment and application

E.3.1 Reasonable protection against mechanical damage, appropriate to the choice of cable and the installation conditions, should be provided.

E.3.2 Cables complying with this British Standard contain PVC and when exposed to the effects of external fire will produce harmful smoke and fumes, and where bundled together may propagate fire. Where circumstances dictate, consideration may be given to the use of reduced propagation materials.

E.3.3 Cables may be harmed by exposure to corrosive products or solvent substances, especially petroleum based vapours.

E.3.4 Special precautions are required when cables are to be installed in areas classified as hazardous and reference should be made to BS 5345.

E.3.5 Cables complying with this British Standard are not specifically designed for use:

- (a) as self supporting aerial cables;
- (b) as submarine cable or for laying in water-logged conditions;
- (c) where subsidence is likely, unless special precautions are taken to minimize damage;
- (d) where any exposure to excessive heat is involved;
- (e) where the oversheath is subjected to a voltage test after installation.

E.3.6 If cables to this specification are exposed to localized heat, solar radiation or high temperature ambient conditions, this will reduce the current carrying capacity.

E.3.7 The standard sheathing compounds supplied on these cables do not provide protection against damage by rodents, termites, etc.

E.3.8 Loaded cables may have surface temperatures which require protection against accidental contact.

E.4 Installation

E.4.1 Precautions should be taken to avoid mechanical damage to the cables before and during installation.

E.4.2 Exceeding the manufacturer's recommended maximum pulling tensions may result in damage to the cable.

E.4.3 If cables are to be installed in ducts, the correct size of duct should be used. Reference should be made to ERA Publication 69-30, Part V.

E.4.4 The type of jointing and filling compounds employed have to be chemically compatible with the cable materials.

E.4.5 The cable support system should be such as to avoid damage or danger under normal or fault conditions.

E.4.6 Cables complying with this British Standard are designed for fixed installations only, e.g. they are not for use as trailing or reeling cables.

E.4.7 Repeated over-voltage testing can lead to premature failure of the cable.

E.4.8 The selection of cable glands, accessories and any associated tools should take account of all aspects of intended use.

E.5 Storage and drum disposal

E.5.1 Cable drums should be regularly inspected during storage to assess their physical condition.

E.5.2 Battens, where applied, should not be removed from drums until the cable is about to be installed.

E.5.3 When handling drums reasonable precautions should be taken to avoid injury. Due regard should be paid to the mass of the drum, method and direction of rolling, lifting, protruding nails and splinters.

E.5.4 Care should be taken with the disposal of empty drums and battens. These are normally returnable to the supplier/cable maker, and return should take place as soon as possible in order to avoid deterioration or their becoming a hazard to the general public, e.g. children.

E.5.5 Small quantities of timber from drums or battens, which may have been treated with wood preservative, may be burnt under carefully controlled conditions in the open.

E.5.6 A detailed guide to the safe handling of cable drums is available from the cable manufacturer.

E.6 Incineration

The by-products of burning scrap cable can be a health hazard. Incineration should only be undertaken by a licensed contractor. For further information, HM Inspectorate of Pollution should be contacted.'

Amendment No. 3
published and effective from 15 May 1993
to BS 5467 : 1989

Specification for cables with thermosetting insulation
for electricity supply for rated voltages of up to and
including 600/1000 V and up to and including
1900/3300V

Revised text

AMD 7611
May 1993

Clause 19.5 Tensile test for aluminium wires and strips

Delete the first paragraph and substitute the following:

‘When specified by the purchaser, the aluminium wires or strips shall be subjected to a tensile test. 10 % of the total number of wires/strips shall be taken at random from one sample of the completed cable and the tensile strength of each wire or strip shall be measured in accordance with BS EN 10002–1, except that in the case of the aluminium strip the cross-sectional area shall be determined, to an accuracy of ± 1 %, from the mass of a known length and a density of 2.703 g/cm³.’

AMD 7611
May 1993

Table 12. Two-core 600/1000 V cables with copper conductors

In column 1, delete symbol ‘†’ against ‘1.5’, ‘2.5’, ‘4’, ‘6’ and ‘10’ and substitute ‘±’.

Delete the footnote ‘† Circular stranded conductors (class 2)’.

AMD 7611
May 1993

Table 14. Three-core 600/1000 V cables with copper conductors

In column 1, delete symbol ‘†’ against ‘1.5’, ‘2.5’, ‘4’, ‘6’ and ‘10’ and substitute ‘±’.

Delete the footnote ‘† Circular stranded conductors (class 2)’.

AMD 7611
May 1993

Table 16. Four-core 600/1000 V cables with copper conductors

In column 1, delete symbol ‘†’ against ‘1.5’, ‘2.5’, ‘4’, ‘6’ and ‘10’ and substitute ‘±’.

Delete the footnote ‘† Circular stranded conductors (class 2)’.

AMD 7611
May 1993

Publications referred to

Delete the entry for BS 18.

Insert the following new entry at the end of the list of British Standards:

‘BS EN 10002–1 Tensile testing of metallic materials
Part 1 Method of test at ambient temperature’