

Cables for portable earthing and short-circuiting equipment

The European Standard EN 61138:1997, with the incorporation of amendment A11:2003, has the status of a British Standard

ICS 29.060.20

National foreword

This British Standard is the official English language version of EN 61138:1997, including amendment A11:2003. It was derived by CENELEC from IEC 61138:1994, including amendment 1:1995.

The CENELEC common modifications have been implemented at the appropriate places in the text. The start and finish of each common modification is indicated in the text by tags [C] [C]. Where a common modification has been introduced by amendment, the tags carry the number of the amendment. For example, the common modifications introduced by CENELEC amendment A11 are indicated by [C11] [C11].

The start and finish of text introduced or altered by amendment is indicated in the text by tags [A] [A]. Tags indicating changes to CENELEC text carry the number of the CENELEC amendment. For example, text altered by CENELEC amendment A1 is indicated by [A1] [A1].

The UK participation in its preparation was entrusted by Technical Committee GEL/20, Electric cables, to Subcommittee GEL/20/1, Wiring cables, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

The following HD can be directly cross-referenced to an existing British Standard:

HD 383 – BS 6360.

The following covering materials which are cross-referenced to HD 21.1 and IEC 502 can be found in the appropriate Section of BS 7655, thus:

- EPR — as GP7 in Section 1.2
- TM 2 — as TM2 in Section 4.1

Specific tests and requirements can be cross-referenced directly as follows:

Reference	Description	British Standard
HD 21.2/HD 22.2 s/c 1.8	Durability	9.3 of BS 6004:1995
HD 21.2/HD 22.2 s/c 2.1	Conductor resistance	Appendix A and Table 5 of BS 6360:1991
HD 22.2 s/c 3.2	Static flexibility test	Annex C of BS EN 638-4:1996

Other tests and requirements

National Annex NA defines the following cross-references:

- HD 21.2/HD 22.2 subclause 1.9
- HD 21.2/HD 22.2 subclause 1.11

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 15 and a back cover.

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Amendments issued since publication

Amd. No.	Date	Comments
14443	14 October 2003	See national foreword

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 September 1998

© BSI 14 October 2003

ISBN 0 580 30343 8

ICS 29.060.20; 29.240.01

Descriptors: Electric cable, low voltage, flexible cable, insulated cable, rubber covering, ethylene propylene rubber, polyvinyl chloride, electrical earthing, short-circuiting, constructional characteristics, test, marking

English version

Cables for portable earthing and short-circuiting equipment

(includes amendment A11:2003)

(IEC 61138:1994 + A1:1995, modified)

Câbles d'équipement portable de mise
à la terre et de court-circuit
(inclut l'amendement A11:2003)
(CEI 61138:1994 + A1:1995, modifiée)

Leitungen für ortsveränderliche Erdungs-und
Kurzschluß-Einrichtungen
(enthält Änderung A11:2003)
(IEC 61138:1994 + A1:1995, modifiziert)

This European Standard was approved by CENELEC on 1997-03-11 and amendment A11 was approved by CENELEC on 2003-02-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Ref. No.  EN 61138:1997 + A11:2003 E
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Foreword

The text of the International Standard IEC 61138:1994 and its amendment 1:1995, prepared by SC 20B, Low voltage cables, of IEC TC 20, Electric cables, together with the common modifications prepared by the Technical Committee CENELEC TC 20, Electric cables was submitted to the Unique Acceptance Procedure and was approved as by CENELEC EN 61138 on 1997-03-11.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1997-12-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1997-12-01

For products with have complied with the relevant national standard before 1997-12-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1998-12-01.

Annexes designated “normative” are part of the body of the standard.

In this standard, Annex ZA is normative.

Annex ZA has been added by CENELEC.

Foreword to amendment A11

This amendment to EN 61138:1997 was prepared by the Technical Committee CENELEC TC 20, Electric cables, in the framework of the maintenance programme.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as amendment A11 to EN 61138:1997 on 2003-02-01.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2004-02-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2005-02-01

Annexes designated normative are part of the body of the standard.

In this standard, Annex ZA is normative.

Annex ZA has been added by CENELEC.

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Section 1. General requirements

1.1 Scope

This International Standard applies to flexible cables with covering based on ethylene propylene rubber (EPR) or on polyvinyl chloride (PVC) for portable earthing and short-circuiting equipment.

For this type of cable no rated voltage is given as such cables are exclusively intended for earthing and short-circuiting equipment.

The particular types of cable and their code designations are specified in Section 2 of this standard.

1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60227-1:1993, *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V — Part 1: General requirements.*

IEC 60227-2:1979, *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V — Part 2: Test methods.*

IEC 60228:1978, *Conductors of insulated cables.*

IEC 60245-2:1980, *Rubber insulated cables of rated voltages up to and including 450/750 V — Part 2: Test methods.*

IEC 60502:1983, *Extruded solid dielectric insulated power cables for rated voltages from 1 kV up to 30 kV.*

IEC 60719:1992, *Calculation of the lower and upper limits for the average outer dimensions of cables with circular copper conductors and of rated voltages up to and including 450/750 V.*

IEC 60811-1-1:1993, *Common test methods for insulating and sheathing materials of electric cables — Part 1: Methods for general application — Section 1: Measurement of thickness and overall dimensions — Tests for determining the mechanical properties.*

IEC 60811-1-2:1985, *Common test methods for insulating and sheathing materials of electric cables — Part 1: Methods for general application — Section 2: Thermal ageing methods.*

IEC 60811-1-3:1985, *Common test methods for insulating and sheathing materials of electric cables — Part 1: Methods for general application — Section 3: Methods for determining the density — Water absorption tests — Shrinkage test.*

IEC 60811-1-4:1985, *Common test methods for insulating and sheathing materials of electric cables — Part 1: Methods for general application — Section 4: Tests at low temperature.*

IEC 60811-2-1:1986, *Common test methods for insulating and sheathing materials of electric cables — Part 2: Methods specific to elastomeric compounds — Section 1: Ozone resistance test — Hot set test — Mineral oil immersion test.*

IEC 60811-3-1:1985, *Common test methods for insulating and sheathing materials of electric cables — Part 3: Methods specific to PVC compounds — Section 1: Pressure test at high temperature — Tests for resistance to cracking*

IEC 60811-3-2:1985, *Common test methods for insulating and sheathing materials of electric cables — Part 3: Methods specific to PVC compounds — Section 2: Loss of mass test — Thermal stability test.*

IEC 61230:1993, *Live working — Portable equipment for earthing or earthing and short-circuiting.*

1.3 Test methods

The test methods specified in Section 1 and Section 2 are given in IEC 60227-2, IEC 60245-2 and IEC 60811.

In addition to the requirements given in this standard, mechanical requirements and requirements for the marking for the complete equipment shall be taken into account. These requirements can be found in IEC 61230.

1.4 Definitions relating to the tests

1.4.1
type tests (symbol T)
tests required 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. These tests are such that, once made, they need not be repeated unless subsequent changes in the cable materials or design are likely to modify performance characteristics

1.4.2
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

1.5 Marking

1.5.1 Indication of origin

Cables shall be provided with an indication of origin consisting of:

- either the manufacturer's identification thread;
- or the continuous marking of the manufacturer's name or trade mark, by printing, or by reproduction in relief on the covering.

1.5.2 Indication of the cross-sectional area of the conductor

Cables shall be provided with an indication of the cross-sectional area of the conductor “..... mm²”.

This shall be made by printing or by reproduction in relief or engraved on the covering.

1.5.3 Continuity of marks

The distance between the end of one complete set of marks and the beginning of the next shall not exceed 500 mm.

1.5.4 Durability

Printed markings shall be durable. Compliance with this requirement shall be checked by the test given in 1.8 of IEC 60227-2 and IEC 60245-2.

1.5.5 Legibility

All marking shall be legible.

The colours of the identification threads shall be easy to recognize or easily made recognizable if necessary, by cleaning with petrol or other solvent.

1.6 General requirements for the construction of cables

1.6.1 Conductors

1.6.1.1 Material

The conductor shall consist of annealed copper or aluminium or aluminium alloy in accordance with IEC 60228 and the conductor resistance specified in Table 2. The wires of copper conductors may be plain or tinned. Tinned wires shall be covered with an effective layer of tin.