

Live working — Insulating hollow tubes for electrical purposes

The European Standard EN 61235:1995 has the status of a
British Standard

ICS 29.120.10; 13.340.20

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Power Electrical Engineering Standards Policy Committee (PEL/-) to Technical Committee PEL/88, upon which the following bodies were represented:

- Association of Manufacturers Allied to the Electrical and Electronic Industry (BEAMA Ltd.)
- BECCAMA (BEAMA Electrical Cable Connector and Accessories Manufacturers' Association)
- British Railways Board
- Department of Trade and Industry
- Department of Trade and Industry (Consumer Safety Unit, CA Division)
- Electricity Association
- Federation of British Hand Tool Manufacturers
- GAMBICA (BEAMA Ltd.)
- Health and Safety Executive
- Industrial Safety (Protective Equipment) Manufacturers' Association
- International Powered Access Federation
- Ministry of Defence
- National Association of Glove Manufacturers
- Coopted members

This British Standard, having been prepared under the direction of the Power Electrical Engineering Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 15 March 1994

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

This British Standard has been prepared under the direction of the Power Electrical Engineering Standards Policy Committee (PEL/-). The text is identical with IEC 61235:1993, *Live working — Insulating hollow tubes for electrical purposes*, including Corrigendum July 1999, published by the International Electrotechnical Commission (IEC) and prepared by IEC Technical Committee No. 78 Tools for live working.

In 1995 the European Committee for Electrotechnical Standardization (CENELEC) accepted IEC 1235:1993, together with common modifications, as European Standard EN 61235:1995. As a consequence of implementing the European Standard this British Standard is numbered as BS EN 61235 and any reference to BS 7741 should be read as reference to BS EN 61235.

The graphics signs, symbols and letters used in this standard may be found in the following British Standards:

BS 3939, *Graphical symbols for electrical power, telecommunications and electronics diagrams* — Part 1:1986: *General information, general index* — Part 2:1985: *Symbol elements, qualifying symbols and other symbols having general application*.

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 Technical Committee has reviewed the provisions of IEC 410 and IEC 743, to which normative reference is made in the text, and has decided that they are acceptable for use in conjunction with this standard.

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 to iv, the EN title page, pages 2 to 30, an inside back cover and a back cover.

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Descriptors: Live working, safety device, characteristics, tests, insulating tube, hollow tube

English version

Live working — Insulating hollow tubes for electrical purposes

(IEC 1235:1993, modified)

Travaux sous tension
Tubes creux isolants pour travaux électriques
(CEI 1235:1993, modifiée)

Arbeiten unter Spannung Isolierte hohle Rohre
für elektrotechnische Zwecke
(IEC 1235:1993, modifiziert)

This European Standard was approved by CENELEC on 1995-03-06. 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B-1050 Brussels

Foreword

The text of the International Standard IEC 1235:1993, prepared by IEC TC 78, Tools for live working, together with common modifications prepared by the Technical Committee CENELEC TC 78, was submitted to the formal vote and was approved by CENELEC as EN 61235 on 1995-03-06.

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) 1996-03-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1996-03-01

For products which have complied with the relevant national standard before 1996-03-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2001-03-01.

Annexes designated “normative” are part of the body of the standard. Annexes designated “informative” are given for information only. In this standard, Annex A, Annex B, Annex C, Annex D, Annex E and Annex ZA are normative and Annex F is informative. Annex ZA has been added by CENELEC.

Section 1. General

1 Scope

This International Standard is applicable to insulating hollow tubes made of synthetic materials and intended for tools and equipment for work on systems operating at voltages above 1 kV.

Separate special technical standards give details of tests for fittings and attachments to these hollow tube terminal parts or complete tools.

Other dimension such as tube diameters 64 mm, 77 mm and 100 mm are under consideration. Other manufacturing methods are under consideration.

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 50(151):1978, *International Electrotechnical Vocabulary — Chapter 151: Electrical and magnetic devices*

IEC 60-1:1989, *High-voltage test techniques — Part 1: General definitions and test requirements*

IEC 212:1971, *Standard conditions for use prior to and during the testing of solid electrical insulating materials*

IEC 410:1973, *Sampling plans and procedures for inspection by attributes*

IEC 743:1983, *Terminology for tools and equipment to be used in live working*

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 Terms defined in accordance with IEC 50(151)

3.1.1

type test

a test performed on one or more devices made to a certain design to show that the design meets certain specifications

[IEV 151-04-15]

3.1.2

routine test

a test to which each individual device is subjected during or after manufacture to ascertain whether it complies with certain criteria

[IEV 151-04-16]

3.1.3

sampling test

a test on a number of devices taken at random from a batch

[IEV 151-04-17]

3.1.4

acceptance test

a contractual test to prove to the customer that the device meets certain conditions of its specification

[IEV 151-04-20]

3.2 Terms defined in accordance with IEC 410

3.2.1

minor defect

a defect that is not likely to reduce materially the usability of the unit of product for its intended purpose, or is a departure from established standards having little bearing on the effective use or operation of the unit (see 2.1.3)

3.2.2

major defect

a defect, other than critical, that is likely to result in failure, or to reduce materially the usability of the unit of product for its intended purpose (see 2.1.2)

3.2.3

critical defect

a defect that judgment and experience indicate is likely to result in hazardous or unsafe conditions for individuals using, maintaining or depending upon the product; or a defect that judgment and experience indicate is likely to prevent performance of the function of a major end item (see 2.1.1)

3.3 Definitions of special terms

3.3.1

reinforced tube

tube which is especially designed in order to resist important mechanical strain, usually made of specific materials such as fibreglass

(see Table 4, Table 7 and Table 9)

3.3.2

standard tube

tube which may be submitted occasionally to mechanical loading and should be able to self-restore by the nature of the material itself

(see Table 5, Table 7 and Table 9)

3.3.3

light tube

tube which has not been designed and manufactured to resist mechanical stresses except its own weight

(see Table 6 and Table 8)

4 Classification

4.1 Mechanical category

Hollow tubes are classified in three categories according to their mechanical characteristics.

These categories are: reinforced tube, standard tube and light tube.

In all three cases, the tubes shall comply with dielectric tests specified in this standard.

4.2 Electrical category

There is only one electrical category.

The electrical properties shall be the same for the three mechanical categories.

NOTE Hollow tubes should be used in areas having ambient temperature between -40°C and $+70^{\circ}\text{C}$.

Section 2. Technical characteristics

5 Materials

Hollow tubes shall be made of insulating material such as synthetic materials which may be reinforced with mineral or artificial fibres.

6 Diameters of tubes

All diameters are included between 10 mm and 100 mm and preferred diameters are given in Table 1.

Table 1 — Preferred diameters

External diameter mm	Tolerance mm
10 ^a	±0,5
15 ^a , 19	±1
25, 32, 39, 51, 64 ^a , 77 ^a	±1,5
100 ^a	±2,5
^a Mechanical test values for these diameters are under consideration.	