

BS EN 60670-23:2008



BSI Standards Publication

# Boxes and enclosures for electrical accessories for household and similar fixed electrical installations —

Part 23: Particular requirements for floor boxes  
and enclosures

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### National foreword

This British Standard is the UK implementation of EN 60670-23:2008. It was derived by CENELEC from IEC 60670-23:2006.

The CENELEC common modifications have been implemented at the appropriate places in the text and are indicated by tags (e.g.  $\langle C_1 \rangle$   $\langle C_1 \rangle$ ).

The UK participation in its preparation was entrusted to Technical Committee PEL/23, Electrical accessories.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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### Amendments issued since publication

Amd. No.	Date	Text affected
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**Boxes and enclosures for electrical accessories for household and similar fixed electrical installations - Part 23: Particular requirements for floor boxes and enclosures (IEC 60670-23:2006, modified)**

Boîtes et enveloppes pour appareillage électrique pour installations électriques fixes pour usages domestiques et analogues -  
 Partie 23: Règles particulières pour les boîtes et enveloppes de sol (CEI 60670-23:2006, modifiée)

Dosen und Gehäuse für elektrische Installationsgeräte für Haushalt und ähnliche ortsfeste elektrische Installationen -  
 Teil 23: Besondere Anforderungen für Unterflurdosen (IEC 60670-23:2006, modifiziert)

This European Standard was approved by CENELEC on 2008-11-01. 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.

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.

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## 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 60670-23:2006, prepared by SC 23B, Plugs, socket-outlets and switches, of IEC TC 23, Electrical accessories, together with the common modifications prepared by the Technical Committee CENELEC TC 23BX, d.c. plugs and socket outlets and switches for household and similar fixed electrical installations, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 60670-23 on 2008-11-01.

EN 60670-23:2008, which specifies particular requirements for floor boxes, is to be used in conjunction with EN 60670-1:2005.

EN 60670-23:2008 supplements or modifies the corresponding clauses of EN 60670-1. Where a particular clause or subclause of Part 1 is not mentioned in this Part 23, that clause or subclause applies as far as is reasonable. Where this Part 23 states “add”, “replace” or “delete”, the relevant text of Part 1 is to be adapted accordingly.

Subclauses, figures, tables or notes which are additional to those in Part 1 are numbered starting from 101.

In this standard, the following print types are used:

- requirements proper: in roman type;
- *test specifications: in italic type;*
- notes: in smaller roman type.

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) | 2009-11-01 |
| - latest date by which the national standards conflicting with the EN have to be withdrawn   | (dow) | 2011-11-01 |

Annex ZB has been added by CENELEC.

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## Annex ZB (normative)

### Special national conditions

**Special national condition:** National characteristic or practice that cannot be changed even over a long period, e.g. climatic conditions, electrical earthing conditions.

NOTE If it affects harmonization, it forms part of the European Standard.

For the countries in which the relevant special national conditions apply these provisions are normative, for other countries they are informative.

<u>Clause</u>	<u>Special national condition</u>
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	<b>Denmark</b>
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13.3.101	Change the last paragraph in Subclause 13.3.101 to:
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*The floor enclosure shall be mounted as instructed to a level surface of impermeable material with the lid(s), if any, closed and with plugs and connectors connected as in normal use. The mounting surface shall extend 50 mm in each direction from the perimeter of the floor box cover at its interface with the mounting surface.*

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**BOXES AND ENCLOSURES FOR ELECTRICAL ACCESSORIES FOR  
HOUSEHOLD AND SIMILAR FIXED ELECTRICAL INSTALLATIONS –****Part 23: Particular requirements for floor boxes and enclosures**

## FOREWORD

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International Standard IEC 60670-23 has been prepared by subcommittee 23B: Plugs, socket-outlets and switches, of IEC technical committee 23: Electrical accessories.

The text of this standard is based on the following documents:

FDIS	Report on voting
23B/814/FDIS	23B/820/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This part of IEC 60670 shall be used in conjunction with IEC 60670-1 (2002). It lists the changes necessary to convert that standard into a specific standard for floor boxes and enclosures.

In this publication, the following print types are used:

- requirements proper: in roman type.
- ± *test specifications: in italic type.*
- notes: in smaller roman type.

Subclauses, figures, tables or notes which are additional to those in Part 1 are numbered starting from 101.

The IEC 60670 series comprises the following parts, under the general title *Boxes and enclosures for electrical accessories for household and similar fixed electrical installations*:

- Part 1: General requirements
- Part 21: Particular requirements for boxes and enclosures with provision for suspension means
- Part 22: Particular requirements for connecting boxes and enclosures
- Part 23: Particular requirements for floor boxes and enclosures
- Part 24: Particular requirements for enclosures for housing protective devices and similar power consuming devices

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.



# BOXES AND ENCLOSURES FOR ELECTRICAL ACCESSORIES FOR HOUSEHOLD AND SIMILAR FIXED ELECTRICAL INSTALLATIONS –

## Part 23: Particular requirements for floor boxes and enclosures

### 1 Scope

This clause of Part 1 is applicable except as follows:

*Addition after the fourth paragraph:*

This standard applies to boxes and floor enclosures.

The flush floor boxes and flush floor enclosures are intended to be intended to protect accessories against load up to and including 1 000 N.

NOTE Outdoor requirements are under consideration. C1

### 2 Normative references

This clause of Part 1 is applicable.

### 3 Definitions

This clause of Part 1 is applicable with the following additions:

#### 3.106

##### **finished floor (for indoor application)**

floor which carries the load and which is completed with or without a floor covering material such as carpet, tile, vinyl or wood

#### 3.107

##### **dry treatment of floor**

process for cleaning and/or care by which the floor is treated without liquids or with only a small quantity of liquid. The required agents are applied and spread in such quantities that no pools are formed, and soaking of the floor covering does not occur

NOTE Examples for dry treatment are: Sweeping with a broom or carpet-sweeper, vacuum cleaning, brushing, cleaning with a dry cleaning powder, dry shampoo treatment, wet shampooing of carpets, treatment with cleaning litter (liquid chemical cleaning agent on a solid material used as carrier, e.g. soaked sawdust, damp cloth, etc.).

#### 3.108

##### **wet treatment of floor**

process for cleaning and/or care by which the floor is treated with liquid agents such that pools of liquid, or soaking of the floor covering for a brief period of time, cannot be excluded

NOTE Examples of wet treatment are: wet scrubbing, manual or mechanical wiping.

### 4 General requirements

This clause of Part 1 is applicable.

## 5 General notes on tests

This clause of Part 1 is applicable.

## 6 Ratings

This clause of Part 1 is not applicable.

## 7 Classification

This clause of Part 1 is applicable except as follows:

### 7.2 Addition:

7.2 The method of installation <sup>a</sup>	7.2.101 According to floor treatment	7.2.101.1 Floor boxes or enclosures intended to be installed in floor subjected to dry treatment
		7.2.101.2 Floor boxes or enclosures intended to be installed in floor subjected to wet treatment
		7.2.101.3 Floor boxes or enclosures having a minimum IPX4 rating, intended to be installed in floor subjected to wet treatment

C1 Note deleted C1

**7.7** This subclause is not applicable.

7.101 According to the type of lid

7.101.1 Enclosure with a removable lid

7.101.2 Enclosure with a fixed lid

C1 7.101.3

NOTE The IP X4 rating is fulfilled with the lid, if any, closed and without any cables connected. C1

## 8 Marking

This clause of Part 1 is applicable except as follows:

### 8.1 Replacement of c) by:

c) the IP code marking against harmful ingress of water applies only to floor enclosures as classified according to 7.2.101.3.

*Replacement of the 2<sup>nd</sup> paragraph by:*

The IP code marking, if applicable, shall be visible when in normal use.

*Addition after item j):*

k) a marking shall be placed inside the box (e.g. under the cover...) describing the intended use for “dry treatment only” of the floor, or “not suitable for wet treatment” of the floor.

NOTE The marking may be a label or a graphic symbol.

## 9 Dimensions

This clause of Part 1 is applicable.

## 10 Protection against electric shock

This clause of Part 1 is applicable.

## 11 Provision for earthing

This clause of Part 1 is applicable except as follows:

11.2 This subclause is not applicable.

## 12 Construction

### 12.101 Openings for the passage of cables for connected equipment

Openings for the passage of cables and cords for connected equipment in floor boxes and enclosures shall protect these cables or cords from damage.

When in use (cable or cord attached to equipment), all openings of a surface accessible flush floor box or enclosure classified according to 7.2.101.1, need not be covered if one dimension of each uncovered opening is less than 20 mm in one direction. Such openings are permitted in floor boxes or enclosures classified according to 7.2.101.2.

In the unused condition, all openings of a surface accessible flush floor box or enclosure classified according to 7.2.101.1 shall have at least a degree of protection of IP 20 or shall be able to be closed and the closure shall be flush with the surface to which it is attached. Such openings are permitted in floor boxes or enclosures classified according to 7.2.101.2.

*Compliance is checked by inspection and measurement  $\square_{C1}$  and by the test of 13.2.  $\square_{C1}$*

**12.102** Enclosures shall protect the accessories and inserted plugs from traffic load.

Enclosures classified according to 7.101.2 shall be so designed that the lid cannot be removed without the use of a tool.

*Compliance is checked by inspection.*

**12.103** Floor enclosures as classified according to 7.2.101.2 shall have a protuberance from the floor greater than 19 mm.

*Compliance is checked by measurement.*

## 13 Resistance to ageing, protection against ingress of solid objects and against harmful ingress of water

This clause of Part 1 is applicable except as follows:

**13.3.3 Replacement of the first paragraph:**

Immediately after the test, there shall be no water in the box or enclosure.

**13.3.101**

☐<sub>C1</sub> Text deleted ☐<sub>C1</sub>

Floor enclosures as classified under 7.2.101.2 shall be subjected to the test for a degree of protection IP X4 according to IEC 60529, when they are mounted as follows:

*The floor enclosure shall be mounted as instructed to a level surface of impermeable material with the lid(s), if any, closed and without any cables connected. The mounting surface shall extend 50 mm in each direction from the perimeter of the floor box cover at its interface with the mounting surface. All joints of the floor enclosure assembly greater than 19 mm above the plane of the floor shall be permitted to be masked by impermeable tape or other suitable impermeable material.*

Floor enclosures as classified under 7.2.101.3 shall be subjected to the test for a degree of protection IP X4 according to IEC 60529, when they are mounted as follows:

*The floor enclosure shall be mounted as instructed to a level surface of impermeable material with the lid(s), if any, closed and without any cables connected. The mounting surface shall extend 50 mm in each direction from the perimeter of the floor box cover at its interface with the mounting surface.*

☐<sub>C1</sub> Immediately after the test, there shall be no water in the box or enclosure. ☐<sub>C1</sub>

**14 Insulation resistance and electric strength**

This clause of Part 1 is applicable.

**15 Mechanical strength**

This clause of Part 1 is applicable except as follows:

**15.3 Addition after the first paragraph:**

*For floor boxes or enclosures the height of fall for impact test (Table 8) is 500 mm.*

**15.101 Compression test for all floor mounting boxes**

Boxes suitable for mounting in floors shall withstand the load as expected in normal use.

*Compliance is checked by the following test:*

*The box shall be mounted according to the instructions of the manufacturer in a horizontal position in a sheet of plywood simulating the floor. Then, the cover of the box and special parts, if any, are loaded as follows (see Figure 101):*

- a) *load the cover with a force of 500 N, applied gradually on an area of 1 cm<sup>2</sup> at the foreseeable point of maximum deflection of the cover;*

*The cover and the floor box or enclosure shall support the test load for 1 min without deflecting more than 3 mm. The deflection is to be measured when the force reaches the specified value and shall exclude the deflection of the plywood and gasket compression. The permanent deformation at any point on the cover, excluding the deflection of the plywood and gasket compression, shall not exceed 1 mm, measured 1 h after the test load is removed.*

- b) *gradually apply a force of 50 N/cm<sup>2</sup> (with a total maximum of 1 000 N) via a sheet of plywood of a thickness of 9 mm to the whole area of the cover.*

**C<sub>1</sub>** *There shall be no damage neither to the means supporting the box in the floor nor to the lid.* **C<sub>1</sub>**

## **16 Resistance to heat**

This clause of Part 1 is applicable.

## **17 Creepage distances, clearances and distances through sealing compound**

This clause of Part 1 is applicable.

## **18 Resistance of insulating material to abnormal heat and fire**

This clause of Part 1 is applicable.

## **19 Resistance to tracking**

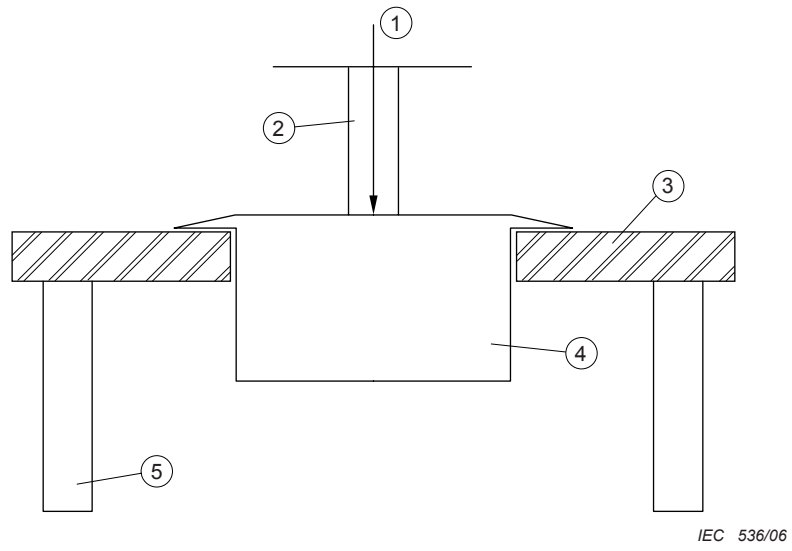
This clause of Part 1 is applicable.

## **20 Resistance to corrosion**

This clause of Part 1 is applicable.

## **21 Electromagnetic compatibility (EMC)**

This clause of Part 1 is applicable.



**Key**

- 1 Test force
- 2 Cylinder
- 3 Plywood panel
- 4 Floor box
- 5 Support

**Figure 101 ± Point load compression test equipment for the test of 15.101**

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