

# INTERNATIONAL STANDARD



This full version of IEC 60670-21:2024 includes the content of the references made to IEC 60670-1:2024

**Boxes and enclosures for electrical accessories for household and similar fixed electrical installations –  
Part 21: Particular requirements for boxes and enclosures with provision for suspension means**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**BOXES AND ENCLOSURES FOR ELECTRICAL ACCESSORIES FOR  
HOUSEHOLD AND SIMILAR FIXED ELECTRICAL INSTALLATIONS –****Part 21: Particular requirements for boxes and  
enclosures with provision for suspension means**

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**IEC 60670-21:2024 EXV includes the content of IEC 60670-21:2024, and the references made to IEC 60670-1:2024.**

**The specific content of IEC 60670-21:2024 is displayed on a blue background.**

IEC 60670-21 has been prepared by subcommittee 23B: Plugs, socket-outlets and switches, of IEC technical committee 23: Electrical accessories. It is an International Standard.

This second edition cancels and replaces the first edition published in 2004 and Amendment 1:2016. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Complete revision of the tests and requirements of the suspension means.

The text of this International Standard is based on the following documents:

Draft	Report on voting
23B/1534/FDIS	23B/1552/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

A list of all parts in the IEC 60670 series, published under the general title *Boxes and enclosures for electrical accessories for household and similar fixed installations*, can be found on the IEC website.

This document is to be used in conjunction with IEC 60670-1:2024. It lists the changes necessary to convert that standard into a specific standard for housing protective devices and other power dissipating electrical equipment.

Where this document states "addition", "modification" or "replacement", the relevant requirement, test specifications or explanatory matter in IEC 60670-1:2024 shall be adapted accordingly.

Clauses and subclauses, notes, figures or tables which are additional to those in IEC 60670-1:2024 are numbered starting from 101.

Additional annexes to IEC 60670-1:2024 are numbered AA, BB, etc.

In this publication the following print types are used:

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

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](https://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

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

## Part 21: Particular requirements for boxes and enclosures with provision for suspension means

### 1 Scope

This part of IEC 60670 applies to boxes, enclosures and parts of enclosures (hereafter called "boxes" and "enclosures") for electrical accessories with a rated voltage not exceeding 1 000 V AC and 1 500 V DC intended for household or similar fixed electrical installations, either indoors or outdoors.

Boxes and enclosures complying with this document are suitable for use at ambient temperatures not normally exceeding +40 °C, but their average over a period of 24 h does not exceed +35 °C, with a lower limit of the ambient air temperature of –5 °C.

Other temperatures outside the above range can apply according to the classification of the boxes and the enclosures.

This document applies to boxes and enclosures for ceiling and wall mounting with provision for suspension means.

This document is intended to apply to boxes and enclosures for electrical accessories within the scope of IEC technical committee 23.

A box or an enclosure which is an integral part of an electrical accessory and provides protection for that accessory against external influences (for example mechanical impact, ingress of solid objects or water, etc.) is covered by the relevant standard for such an accessory.

This document gives test requirements for boxes and enclosures declared with IK code, see Annex B (normative).

This document also applies to types of boxes and enclosures as modified in IEC 60670-21, IEC 60670-22, IEC 60670-23, and IEC 60670-24.

This document does not apply to:

- ceiling roses;
- luminaire supporting couplers;
- boxes, enclosures and parts of enclosures specifically designed to be used for cable trunking and ducting systems complying with IEC 61084 and which are not intended to be installed outside of these systems.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 60068-2-75:2014, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC 60112:2020, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*

IEC 60417, *Graphical symbols for use on equipment*, available at <http://www.graphical-symbols.info/equipment>

IEC 60423:2007, *Conduit systems for cable management – Outside diameters of conduits for electrical installations and threads for conduits and fittings*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*

IEC 60529:1989/AMD1:1999

IEC 60529:1989/AMD2:2013

IEC 60695-2-11:2021, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products*

IEC 60695-10-2:2014, *Fire hazard testing – Part 10-2: Abnormal heat – Ball pressure test*

IEC 60981:2019, *Extra-heavy duty rigid steel conduits*

IEC 61032:1997, *Protection of persons and equipment by enclosures – Probes for verification*

IEC 61140:2016, *Protection against electric shock – Common aspects for installation and equipment*

IEC 62262:2002, *Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)*

IEC 62262:2002/AMD1:2021

ISO/IEC Guide 51, *Safety aspects – Guidelines for their inclusion in standards*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

#### 3.1

##### **enclosure**

combination of parts, such as boxes, backplates, covers, cover-plates, lids, box extensions, accessories, etc., providing after assembly and installation as in normal use, an appropriate protection against external influences, and a defined protection against contact with enclosed live parts from any accessible direction

Note 1 to entry: See Annex A.

#### 3.2

##### **box**

part of an enclosure provided with means for fixing a cover, cover-plate, accessory, etc., and intended to receive accessories (such as socket-outlets, switches, etc.)

Note 1 to entry: The accessory can be entirely or partly inside the enclosure.

**3.3****box extension**

part of an enclosure which is intended to extend a box for the purpose of either increasing the internal volume of the box or enclosure or to adjust for mounting the box flush or semi-flush with the finished surface of a wall or the like

**3.4****backplate**

part of a surface mounting enclosure provided with means for fixing a cover, cover-plate, accessory (such as socket-outlets, switches, etc)

**3.5****lid****cover****cover-plate**

part of an enclosure, not integral with or part of an accessory, which may either retain an accessory in position or enclose it

**3.6****raised cover**

cover intended for mounting directly onto a box to provide for the attachment of accessories and to increase the internal volume of the enclosure

Note 1 to entry: The centre portion of the cover is raised to accommodate a specific wall or ceiling thickness and to permit the mounting of the accessory on it, flush with the surface of the wall or ceiling.

**3.7****exposed conductive part**

conductive part of electrical equipment, which can be touched, and which is not normally live, but which can become live when basic insulation fails

**3.8****surface mounting enclosure****surface mounting box**

box or enclosure which is intended for mounting on a surface

Note 1 to entry: See Annex A.

**3.9****flush-mounting box****flush-mounting enclosure**

box or enclosure which is intended for mounting flush with the surface

Note 1 to entry: See Annex A.

**3.10****semi-flush mounting box****semi-flush mounting enclosure**

box or enclosure which is intended to fit within a mounting surface and partially projects from the mounting surface

**3.11****cable gland**

device designed to permit the entry of a cable, flexible cable or insulated conductor into an enclosure, and which provides sealing and retention and eventually may also provide other functions such as earthing, bonding, insulation, cable guarding, strain relief or a combination of these

**3.12****seal**

material used to fill up the space between the inside of a gland and the cable passing through, usually compressed by the gland and thereby forming a joint

**3.13****gasket**

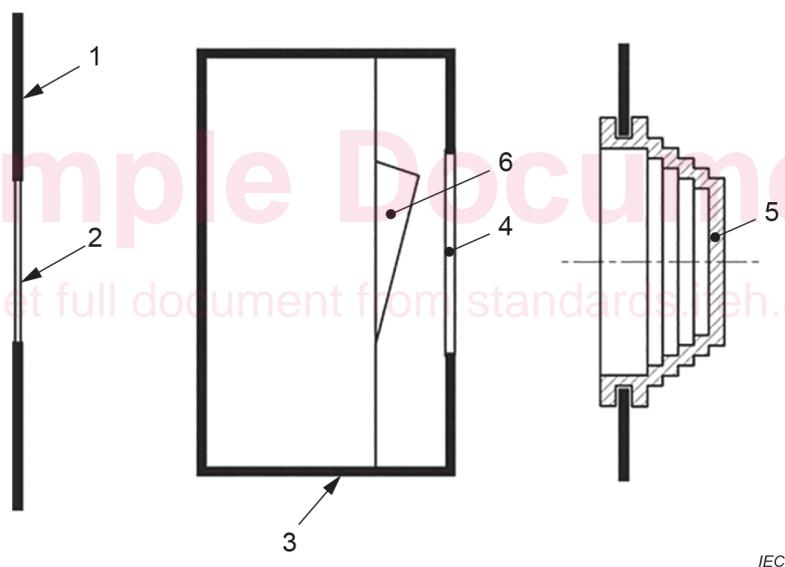
material introduced between mating surfaces of an enclosure which when under compression forms a joint

**3.14****grommet**

component used to support and protect the cable or conduit at the point of entry; it may also prevent the ingress of moisture or contaminants

Note 1 to entry: See Figure 1.

[SOURCE: IEC 60050-581:2008, 581-27-19, modified – The words "part of", "or an accessory" and "wires or" have been omitted from the definition and "or conduit" added; Note 1 to entry added.]

**Key**

- 1 box
- 2 entry membrane
- 3 enclosure
- 4 protective membrane
- 5 grommet
- 6 electrical accessory

**Figure 1 – Examples of membranes and grommets**

**3.15****entry membrane**

component or an integral part of an enclosure used to protect the cable which may be used to support the cable or conduit at the point of entry

Note 1 to entry: An entry membrane may also prevent the ingress of moisture or contaminants and may be part of a grommet (see Figure 1).

**3.16****protective membrane**

component or an integral part of an enclosure that is not intended to be penetrated in normal use and is intended to provide protection against ingress of water or solid objects and/or to allow the operation of an accessory

Note 1 to entry: See Figure 1.

**3.17****composite material**

combination of metal and insulating material

**3.18****spout****hub**

open entry of a box permitting the insertion and containment of a conduit

**3.19****cable retention**

ability to limit the displacement of a fitted cable against pull forces

**3.20****cable anchorage**

ability to limit the displacement of a fitted flexible cable against pull and push forces and torques

**3.21****blanking-plug**

component used to close an open inlet or an open knock-out

**3.22** $U_n$ **rated voltage**

voltage assigned by the manufacturer for a specific operating condition of the box or enclosure

[SOURCE: IEC 60050-442:1998, 442-01-03, modified – The symbol has been added as a term, the domain "(of accessories)" has been deleted; in the definition, "accessory" has been replaced with "box or enclosure".]

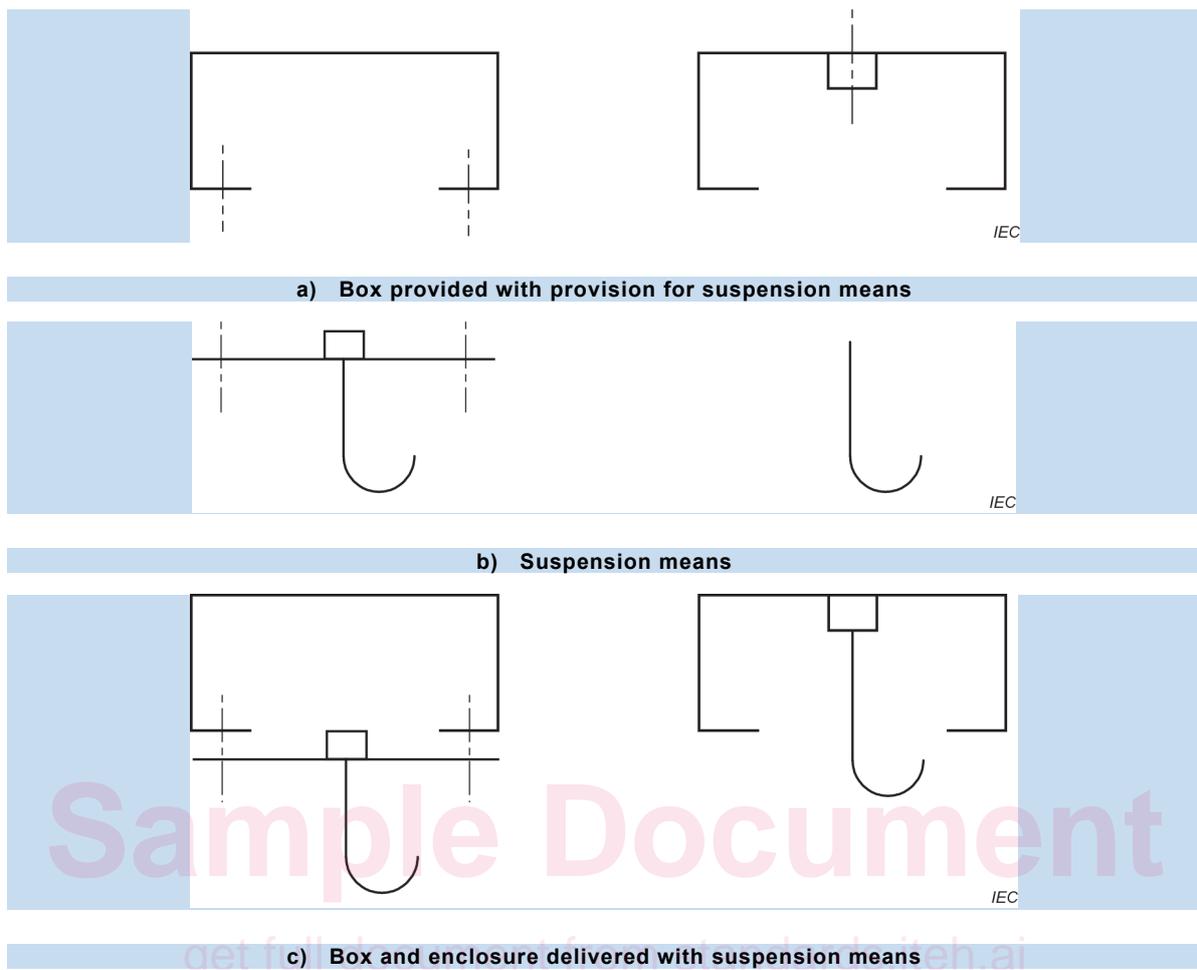
**3.101****box with provision for suspension means**

box intended to be used for suspending and supporting mechanical loads and which accepts the suspension means

**3.102****suspension means**

means comprising any necessary components (hooks, brackets, etc.) which may be delivered with the box and enclosure or supplied separately

Note 1 to entry: Examples of suspension means are shown in Figure 101.



**Figure 101 – Examples of suspension means**

## 4 General requirements

Boxes and enclosures shall be so designed and constructed that, in normal use, their performance is reliable, and safety is achieved by reducing risk to a tolerable level, as defined in ISO/IEC Guide 51.

*Compliance is checked by meeting all the relevant requirements and tests specified.*

## 5 General remarks on tests

### 5.1 Test conditions and number of samples

Tests according to this document are type tests.

Unless otherwise specified in this document, boxes and enclosures are tested as delivered.

Accessories complying with other standards are not tested again.

Tests on boxes and enclosures of insulating material shall be performed after a preconditioning period of at least 48 h at ambient temperature between +15 °C and +35 °C and relative air humidity between 45 % and 85 %.