

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



## AMENDMENT 2 AMENDEMENT 2

Household and similar electrical appliances – Safety –  
Part 2-48: Particular requirements for commercial electric grillers and toasters  
(standards.iteh.ai)

Appareils électrodomestiques et analogues – Sécurité –  
Partie 2-48: Règles particulières pour les grils et grille-pain électriques à usage  
collectif





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## FOREWORD

This amendment has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

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

FDIS	Report on voting
61/5322/FDIS	61/5388/RVD

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

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC website 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- withdrawn,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.

**iTeh STANDARD PREVIEW**

NOTE The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

[IEC 60335-2-48:2002/AMD2:2017](#)

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 12 months or later than 36 months from the date of publication.

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

## 1 Scope

Add in the second paragraph, the words, “and similar”, after the words, “.....not intended for household”, to read:

“...not intended for household and similar use,....”.

Replace Note 101 by the following:

NOTE 101 These appliances are used for the commercial processing of food, for example in kitchens of restaurants, canteens, hospitals and in commercial enterprises such as bakeries, butcheries, etc.

Replace the third dashed item of Note 103 by the following dashed item:

- appliances for continuous mass production of food;

## 2 Normative references

Replace the existing text by the following:

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60584-1, *Thermocouples – Part 1: EMF specifications and tolerances*  
(standards.iteh.ai)

ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel – Part 1: Bolts, screws and studs with specified property classes – Coarse thread and fine pitch thread*

<https://standards.iteh.ai/catalog/standards/sist/a058f914-0d7c-4942-ac56-1ec603352482/2002/AMD2/2017>

ISO 3506-1, *Mechanical properties of corrosion-resistant stainless steel fasteners – Part 1: Bolts, screws and studs*

ISO 3506-2, *Mechanical properties of corrosion-resistant stainless steel fasteners – Part 2: Nuts*

ISO 3506-3, *Mechanical properties of corrosion-resistant stainless steel fasteners – Part 3: Set screws and similar fasteners not under tensile stress*

ISO 3506-4, *Mechanical properties of corrosion-resistant stainless steel fasteners – Part 4: Tapping screws*

## 3 Definitions

Replace the title of Clause 3 but not the clause number by the following:

### Terms and definitions

Add the following new definitions:

#### 3.105

##### functional surface

surface that is intentionally heated by an internal heat source and has to be hot to carry out the function for which the appliance is intended

Note 1 to entry: An example is the heated sheath of a tubular heating element.

**3.106****adjacent surface**

surface adjacent to a **functional surface** and which can become hot through conduction

**6 Classification****6.2** *Replace the text of the addition by the following:*

Appliances normally used on a table shall be at least IPX3. Other appliances shall be at least IPX4. Toasters other than those intended to be used in a commercial kitchen may be IPX0.

**7 Marking and instructions****7.1** *Replace the text of the addition by the following:*

If appliances have external **accessible surfaces**, for which temperature rise limits are specified in Table 101 and for which the provisions of footnote b to Table 101 apply, then the appliance shall be marked with symbol IEC 60417-5041(2002-10), or with the substance of the following:

CAUTION: Hot surfaces.

**7.6** *Delete symbol IEC 60417-5021*

Add the following new symbol. **(standards.iteh.ai)**



[symbol IEC 60417-5041 (2002-10)] Caution, hot surface  
<https://standards.iteh.ai/catalog/standards/sist/a058914-0d7c-4942-ac56-dd8d785cfd1bb/iec-60335-2-48-2002-amd2-2017>

**7.12** *Replace the text of the addition by the following:*

If symbols IEC 60417-5021 (2002-10) and IEC 60417-5041 (2002-10) are marked on the appliance, their meaning shall be explained.

Toasters not marked with an IP classification of at least IPX3 shall include the substance of the following warning:

**WARNING** The toaster shall not be used in commercial kitchens

NOTE 101 The requirement is due to the cleaning process in such kitchens.

The instructions shall include the substance of the following:

These appliances are intended to be used for commercial applications, for example in kitchens of restaurants, canteens, hospitals and in commercial enterprises such as bakeries, butcheries, etc., but not for continuous mass production of food.

If the manufacturer wants to limit the use of the appliance to less than the above, this has to be clearly stated in the instructions.

**7.12.1** *Add to the last sentence of the first paragraph “or a steam cleaner”.*

*Add the following before the test specification:*

If a **stationary appliance** is intended to be moved for cleaning, this shall be stated.

For **stationary appliances** equipped with rollers or castors or intended to be moved for cleaning the instructions shall state the substance of the following.

This appliance is to be connected with flexible connections for equipotential bonding and connection to services such as electricity supply, water supply, gas supply and steam supply such that the appliance can be moved in the direction required for cleaning a distance not less than the dimension of the appliance in the direction of movement plus 500 mm without the flexible connections becoming taut or being subject to strain.

*Add the following new subclauses:*

**7.12.9** Not applicable.

**7.14** *Addition:*

The height of the triangle used with symbol IEC 60417-5041 (2002-10) shall be at least 15 mm.

**7.15** *Add the following text to the addition as a new first paragraph:*

The marking specified for external **accessible surfaces** shall be visible when the appliance is operated as in normal use, including when actuating any switch, adjusting any control or opening a lid or door. It shall not be placed on a **functional surface** or **adjacent surface**.

## 11 Heating

# iTeh STANDARD PREVIEW (standards.iteh.ai)

*Add the following new subclause:*

[IEC 60335-2-48:2002/AMD2:2017](https://standards.iteh.ai/catalog/standards/sist/a058f914-0d7c-4942-ac56-dd8d785cf1bb/iec-60335-2-48-2002-amd2-2017)

**11.3** *Addition:* <https://standards.iteh.ai/catalog/standards/sist/a058f914-0d7c-4942-ac56-dd8d785cf1bb/iec-60335-2-48-2002-amd2-2017>

*Where the external **accessible surfaces** are suitably flat and access permits, then the test probe of Figure 103 is used to measure the temperature rises of external **accessible surfaces** specified in Table 101. The probe is applied with a force of  $4\text{ N} \pm 1\text{ N}$  to the surface in such a way that the best possible contact between the probe and the surface is ensured. The measurement is performed after a contact period of 30 s.*

*The probe may be held in place using a laboratory stand clamp or similar device. Any measuring instrument giving the same results as the probe may be used.*

**11.7** *Add the following new text after Note 101:*

*Steady conditions are considered to exist 60 min after reaching the temperatures defined for **normal operation**.*

*When an appliance is assembled in combination with, equipped with or incorporating accessories or other appliances, the interaction shall be covered if they are provided to operate simultaneously as stated by the manufacturer or by a common control.*

**11.8** *Add the following to the addition:*

*During the test, the temperature rises are monitored continuously and shall not exceed the values shown in Table 3 and Table 101.*

**Table 101 – Maximum temperature rises for specified external accessible surfaces under normal operating conditions**

Surface <sup>a</sup>	Temperature rise of external accessible surfaces <sup>b</sup> K
Bare metal	48
Coated metal <sup>c</sup>	59
Glass and ceramic	65
Plastic and plastic coating > 0,4 mm <sup>d, e</sup>	74
<p><sup>a</sup> Temperature rises are not measured on:</p> <ul style="list-style-type: none"> <li>– the underside of appliances intended to be used on a working surface or floor;</li> <li>– the rear surface of appliances;</li> <li>– surfaces that are inaccessible to a 75 mm diameter probe having a hemispherical end;</li> <li>– functional surfaces and adjacent surfaces.</li> </ul> <p><sup>b</sup> The temperature rise on external accessible surfaces up to a distance of 100 mm from adjacent surfaces of the appliance, (see Figure 102) may exceed the limits by up to 25 K, but the relevant part shall then be marked with symbol IEC 60417-5041 (2002-10) or the equivalent text.</p> <p><sup>c</sup> Metal is considered coated when a coating having a minimum thickness of 90 µm made by enamel or non-substantially plastic coating is used.</p> <p><sup>d</sup> The temperature rise limit of plastic also applies for plastic material having a metal finish of thickness less than 0,1 mm.</p> <p><sup>e</sup> When the thickness of the plastic coating does not exceed 0,4 mm, the temperature rise limits of coated metal for underlying metal apply or the temperature rise limits for glass or ceramic material for underlying glass or ceramic material apply.</p>	

IEC 60335-2-48:2002/AMD2:2017

### 13 Leakage current and electric strength at operating temperature

#### 13.2 Replace the text of the modification by the following:

Instead of the permissible leakage current for **stationary class I appliances**, the following applies:

- for cord and plug connected appliances      0,75 mA or 1 mA per kW **rated power input** of the appliance with a maximum of 10 mA, whichever is higher.
- for other appliances      0,75 mA or 1 mA per kW **rated power input** of the appliance with no maximum, whichever is higher.

Add the following:

For **portable class I appliances**, instead of the permissible leakage current, the following applies:

- for cord and plug connected appliances      0,75 mA or 1 mA per kW **rated power input** of the appliance with a maximum of 10 mA, whichever is higher.

### 15 Moisture resistance

#### 15.3 Delete this subclause.



## 16 Leakage current and electric strength

16.2 Replace the text of the modification by the following:

Instead of the permissible leakage current for **stationary class I appliances**, the following applies:

- for cord and plug connected appliances 0,75 mA or 1 mA per kW **rated power input** of the appliance with a maximum of 10 mA, whichever is higher;
- for other appliances 0,75 mA or 1 mA per kW **rated power input** of the appliance with no maximum, whichever is higher.

Add the following:

For **portable class I appliances**, instead of the permissible leakage current, the following applies:

- for cord and plug connected appliances 0,75 mA or 1 mA per kW **rated power input** of the appliance with a maximum of 10 mA, whichever is higher.

## 19 Abnormal operation

19.4 Delete this subclause.

## 25 Supply connection and external flexible cords

25.3 Replace the first paragraph of the addition by the following:

Appliances with a mass greater than 40 kg, intended for permanent connection to fixed wiring and not provided with rollers, castors or similar means shall be constructed so that the connection can be done after the appliance has been installed in accordance with the manufacturer's instructions.

## 28 Screws and connections

Replace the existing text by the following:

This clause of Part 1 is applicable except as follows.

28.1 Addition:

Screws made of carbon steel and alloy steel shall be made in accordance with ISO 898-1.

Screws made of corrosion-resistant stainless-steel shall be made in accordance with ISO 3506-1, or ISO 3506-2, or ISO 3506-3, or ISO 3506-4.

28.4 Addition:

Screws that make mechanical connections and electrical connections shall be so designed that the contact pressure does not change appreciably through loosening of the screwed assembly parts during operational stress and contact corrosion.

Screws that make mechanical connections and provide earthing continuity shall be so designed that the contact pressure does not change appreciably through loosening of the screwed assembly parts due to operational stress and contact corrosion. They shall be designed so that a minimum contact pressure remains.

*Compliance is checked by inspection and by measuring the assembling torques for screwed connections providing earthing continuity by applying a torque as specified in Table 102 to turn the screw in the fastening direction. The screw shall not turn.*

*The screw shall not have been unfastened prior to performing this test.*

**Table 102 – Assembling torques for screwed connections providing earthing continuity**

Outer thread diameter of the screw mm	Assembling torque Nm	
	Screwed connections for the mechanical strength of the screws A2-70 according to ISO 3506-1, or ISO 3506-2, or ISO 3506-3, or ISO 3506-4 and 5.8 according to ISO 898-1	Screwed connections for the mechanical strength of the screws > 8.8 according to ISO 898-1
> 2,8 and ≤ 3,6	0,8	1,3
> 3,6 and ≤ 4,2	1,9	3,0
> 4,2 and ≤ 5,3	3,7	6,0
> 5,3 and ≤ 6,3	6,5	10,0
M 8	15,0	25,0
M 10	31,0	50,0

<https://standards.iteh.ai/catalog/standards/sist/a058f914-0d7c-4942-ac56-415d705e1dbb/iec-60335-2-48-2002-amd2-2017>

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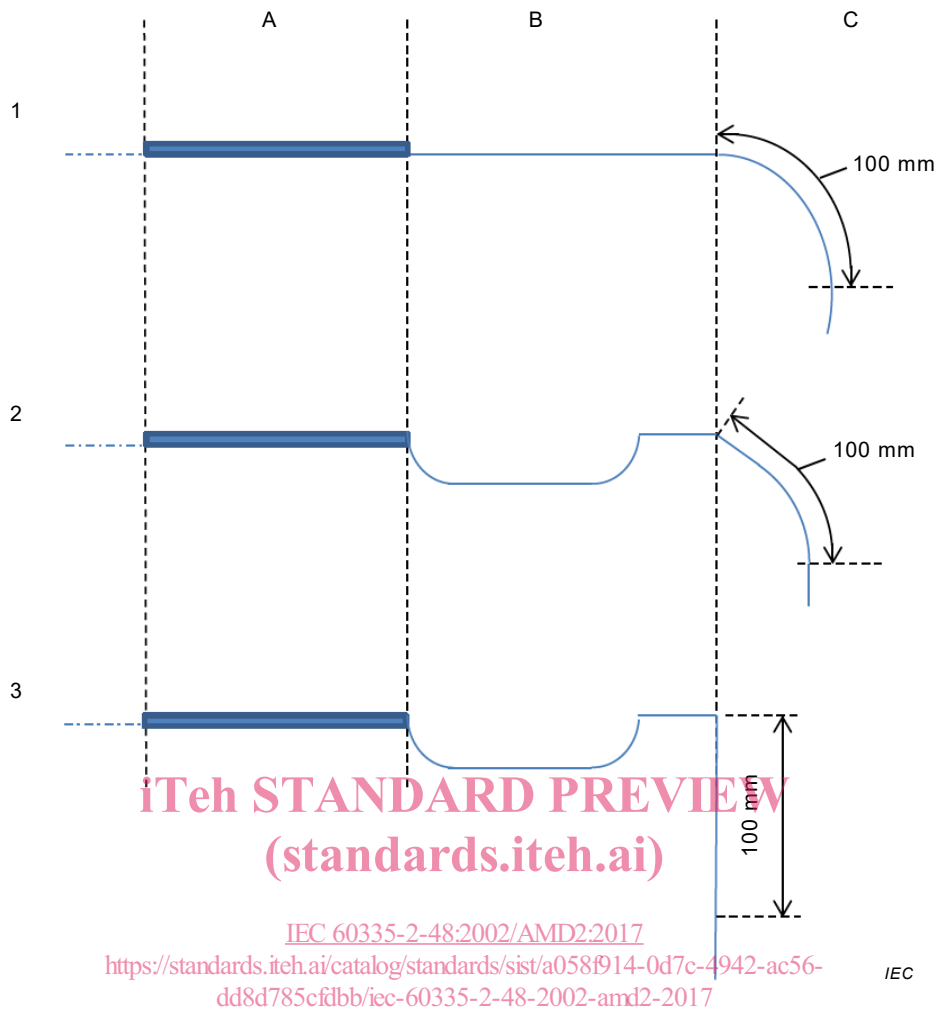
### 30 Resistance to heat and fire

#### 30.2.1 Replace the text of the modification by the following:

*The glow-wire test is carried out at 650 °C. The glow-wire flammability index (GWFI) according to IEC 60695-2-12 shall be at least 650 °C.*

### Figures

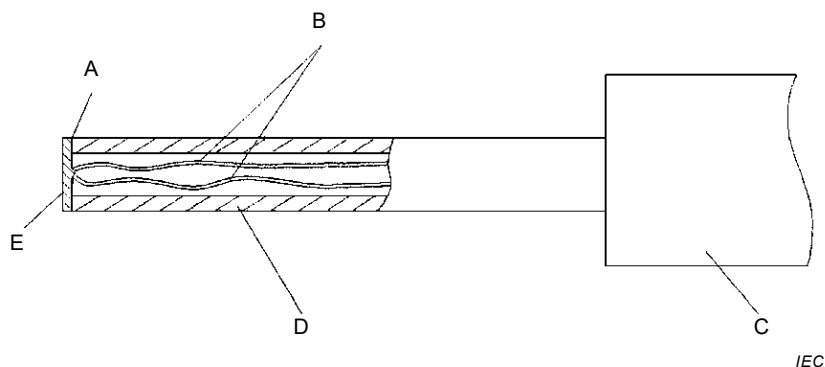
*Add the following new figures:*



**Key**

- A functional surface
- B adjacent surface
- C external accessible surface

**Figure 102 – Identification of surfaces for temperature measurement**



**Key**

- A adhesive
- B thermocouple wires 0,3 mm diameter to IEC 60584-1 Type K (chrome alumel)
- C handle arrangement permitting a contact force of  $4\text{ N} \pm 1\text{ N}$
- D polycarbonate tube: inside diameter 3 mm, outside diameter 5 mm
- E tinned copper disc: 5 mm diameter, 0,5 mm thick with flat contact face

**Figure 103 – Probe for measuring surface temperatures**