

INTERNATIONAL STANDARD

NORME INTERNATIONALE



Household and similar electrical appliances – Safety –
Part 2-48: Particular requirements for commercial electric grillers and toasters

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



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IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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IEC 60335-2-48

Edition 5.0 2021-11

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Part 2-48: Particular requirements for commercial electric grillers and toasters

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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 97.040.50

ISBN 978-2-8322-1039-5

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY –****Part 2-48: Particular requirements for commercial
electric grillers and toasters****FOREWORD**

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IEC 60335-2-48 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This fifth edition cancels and replaces the fourth edition published in 2002, Amendment 1:2008 and Amendment 2:2017. This edition constitutes a technical revision.

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

- a) the text has been aligned with IEC 60335-1:2020;
- b) some notes have been converted to normative text, modified or deleted (Clause 1, 7.15, 9.101, 11.7, 22.101, 23.3, 27.2, 30.101);
- c) clarifications to some test specifications have been made (7.101, 11.4, 15.1.1, 19, 20.1, 25.3);

- d) introduction of requirements for appliances intended for use in areas open to the public, including external accessible surface temperatures (Clause 1, 7.12, 11.8, Table 102);
- e) clarification of applicable standard for appliances for use by laymen (Clause 1, 7.12);
- f) exclusion of battery-operated appliances;
- g) relocation of cleaning instructions from 7.12.1 to 7.12;
- h) relocation of 24.101 to 22.104;
- i) additional instructional requirements in 7.12;
- j) conciliation of the text of IEC 60335-2-48 with other standards under IEC/TC61/MT32.

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

FDIS	Report on voting
61/6364/FDIS	61/6412/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. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts in the IEC 60335 series, published under the general title *Household and similar electrical appliances – Safety*, can be found on the IEC website.

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This Part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments unless that edition precludes it; in that case, the latest edition that does not preclude it is used. It was established on the basis of the sixth edition (2020) of that standard.

NOTE 1 When "Part 1" is mentioned in this standard, it refers to IEC 60335-1.

This Part 2 supplements or modifies the corresponding clauses in IEC 60335-1, so as to convert that publication into the IEC standard: Particular requirements for commercial electric grillers and toasters.

When a particular subclause of Part 1 is not mentioned in this Part 2, that subclause applies as far as is reasonable. When this standard states "addition", "modification" or "replacement", the relevant text in Part 1 is to be adapted accordingly.

NOTE 2 The following numbering system is used:

- subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
- unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;
- additional annexes are lettered AA, BB, etc.

NOTE 3 The following print types are used:

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

Words in **bold** in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold.

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 in the data related to the specific document. At this date, the document will be

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

NOTE 4 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.

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.

The following differences exist in the countries indicated below.

- 6.1: Class 01 appliances are allowed (Japan).
- 13.2: Leakage current limits are different (Japan).
- 16.2: Leakage current limits are different (Japan).

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INTRODUCTION

It has been assumed in the drafting of this International Standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

Guidance documents concerning the application of the safety requirements for appliances can be accessed via TC 61 supporting documents on the IEC website:

<https://www.iec.ch/tc61/supportingdocuments>

This information is given for the convenience of users of this International Standard and does not constitute a replacement for the normative text in this standard.

This standard recognizes the internationally accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. It also covers abnormal situations that can be expected in practice and takes into account the way in which electromagnetic phenomena can affect the safe operation of appliances.

This standard takes into account the requirements of IEC 60364 as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, national wiring rules may differ.

If an appliance within the scope of this standard also incorporates functions that are covered by another Part 2 of IEC 60335, the relevant Part 2 is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

When a Part 2 standard does not include additional requirements to cover hazards dealt with in Part 1, Part 1 applies.

NOTE 1 This means that the technical committees responsible for the Part 2 standards have determined that it is not necessary to specify particular requirements for the appliance in question over and above the general requirements.

This standard is a product family standard dealing with the safety of appliances and takes precedence over horizontal and generic standards covering the same subject.

NOTE 2 Horizontal publications, basic safety publications and group safety publications covering a hazard are not applicable since they have been taken into consideration when developing the general and particular requirements for the IEC 60335 series of standards.

An appliance that complies with the text of this standard will not necessarily be considered to comply with the safety principles of the standard if, when examined and tested, it is found to have other features that impair the level of safety covered by these requirements.

An appliance employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be considered to comply with the standard.

NOTE 3 Standards dealing with non-safety aspects of household appliances are:

- IEC standards published by TC 59 concerning methods for measuring performance;
- CISPR 11, CISPR 14-1 and relevant IEC 61000-3 series standards concerning electromagnetic emissions;
- CISPR 14-2 concerning electromagnetic immunity;
- IEC standards published by TC 111 concerning environmental matters.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-48: Particular requirements for commercial electric grillers and toasters

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of electrically operated commercial **grillers** and **toasters**, their **rated voltage** being not more than 250 V for single-phase appliances connected between one phase and neutral, and 480 V for other appliances.

Rotary or continuous grillers or toasters and similar appliances intended for grilling by radiant heat such as rotisseries, salamanders, etc., are within the scope of this standard.

These appliances are not intended for household and similar purposes. They are used for commercial processing of food, also in **areas open to the public**, for example in kitchens of restaurants, canteens, hospitals and in commercial enterprises such as bakeries and butcheries. The electrical part of appliances making use of other forms of energy is also within the scope of this standard.

As far as is practicable, this standard deals with the common hazards presented by these types of appliances.

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Attention is drawn to the fact that:

- for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements can be necessary;
- in many countries additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour, the national water supply authorities and similar authorities;
- for appliances intended to be used outdoors, additional requirements can be necessary.

This standard does not apply to:

- appliances designed exclusively for industrial purposes;
- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);
- appliances for continuous mass production of food;
- commercial electric griddles and griddle grills (IEC 60335-2-38);
- **battery-operated appliances**;
- grills, toasters and similar portable cooking appliances for household use covered by IEC 60335-2-9 and used in the following environments by laymen;
 - staff kitchen areas in shops, offices and other working environments;
 - farm houses;
 - hotels, motels and other residential type environments;
 - bed and breakfast type environments.

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60584-1, *Thermocouples – Part 1: EMF specifications and tolerances*

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*

ISO 3506-1, *Fasteners – Mechanical properties of corrosion-resistant stainless steel fasteners – Part 1: Bolts, screws and studs with specified grade and property classes*

ISO 3506-2, *Fasteners – Mechanical properties of corrosion-resistant stainless steel fasteners – Part 2: Nuts with specified grade and property classes*

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 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1 Definitions relating to physical characteristics

3.1.4 Addition:

Note 101 to entry: The **rated power input** is the sum of the power inputs of all the individual elements in the appliance that can be on at one time; where there are several such combinations possible, that giving the highest power input is used in determining the **rated power input**.

3.1.9 Replacement:

operation of the appliance under the following conditions:

Appliances are operated with no load and with any controls intended to be operated by the user set at the maximum. Timers, if provided, are rendered inoperative.

If doors, lids, reflectors or drip trays are provided, they are arranged in accordance with the manufacturer's instructions. If no instructions are given, doors are fully open, drip trays are put into the lowest and the grilling grid into the highest possible position.

If the appliance cannot be operated without a load, then the manufacturer's instructions are taken into account.

Motors and **detachable electrical parts** incorporated in the appliance are operated under the most unfavourable conditions that can be expected in normal use taking into account the manufacturer's instructions.

3.5 Definitions relating to types of appliances

3.5.101

griller

appliance in which food is cooked by being exposed mainly to radiant heat

3.5.102

toaster

appliance intended exclusively for browning bread and similar products by radiant heat

3.5.103

rotary or continuous griller or toaster

appliance where the product is moved while being grilled or toasted

3.6 Definitions relating to parts of an appliance

3.6.101

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.

3.6.102

adjacent surface

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

3.8 Definitions relating to miscellaneous matters

3.8.101

installation wall

special fixed construction containing supply facilities for appliances installed in conjunction with it

3.8.102

area open to the public

area in which the general public, including children, can have access

Note 1 to entry: Examples are canteens and self-service restaurants.

4 General requirement

This clause of Part 1 is applicable.

5 General conditions for the tests

This clause of Part 1 is applicable except as follows.

5.10 Addition:

*Appliances intended for installation in a bank of other appliances and appliances intended to be fixed to an **installation wall** are enclosed to obtain protection against electric shock and harmful ingress of water equivalent to that obtained when installed in accordance with the instructions provided with the appliance.*

NOTE Appropriate enclosures or additional appliances can be needed for test purposes.

5.101 *Appliances are tested as **heating appliances**, when during a mode of operation electrical heaters are energized. If no electrical heaters are energized, the appliances are tested as **motor-operated appliances**.*

5.102 *Appliances, when assembled in combination with or incorporating other appliances, are tested in accordance with the requirements of this standard. The other appliances are operated simultaneously in accordance with the requirements of the relevant standards.*

6 Classification

This clause of Part 1 is applicable except as follows.

6.1 Replacement:

Appliances shall be **class I** with respect to protection against electric shock.

Compliance is checked by inspection and by the relevant tests.

6.2 Addition:

Appliances normally used on a table shall be at least IPX3. Other appliances shall be at least IPX4.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.1 Addition:

If appliances have external **accessible surfaces**, for which temperature rise limits are specified in Table 101 or Table 102 and for which the provisions of footnote b to Table 101 or Table 102 apply, then the appliance shall be marked with symbol IEC 60417-5041 (2002-10), or with the substance of the following:

Caution: Hot surfaces.

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7.6 Addition:

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[symbol IEC 60417-5041 (2002-10)]

caution, hot surface

7.12 Addition:

The manufacturer shall declare that the appliance is also intended to be used in an **area open to the public** or, if the appliance is not suitable for use in an **area open to the public**, the instruction shall include the substance of the following warning:

WARNING: This appliance shall not be installed where the public has access.

Instructions for **user maintenance**, for example cleaning, shall also be given. They shall include a statement that the appliance is not to be cleaned with a water jet or a steam cleaner.

If any of symbols IEC 60417-5021 (2002-10) or IEC 60417-5041 (2002-10) are marked on the appliance, its meaning shall be explained.

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.

The instructions shall include the substance of the following:

- This appliance is not intended to be used by laymen in household and similar applications such as:
 - staff kitchen areas in shops, offices and other working environments;
 - farm houses;
 - hotels, motels and other residential type environments;
 - bed and breakfast type environments.

Modification:

The instruction concerning persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge and children playing with the appliance is not applicable.

7.12.1 Addition:

The appliance shall be accompanied by instructions detailing any special precautions necessary for installation. For appliances intended for installation in a bank of other appliances and appliances intended to be fixed to an **installation wall**, details of how to ensure appropriate protection against electric shock and harmful ingress of water shall be supplied. If the controls of more than one appliance are combined in a separate enclosure, detailed installation instructions shall be supplied.

For appliances that are permanently connected to fixed wiring and for which leakage currents can exceed 10 mA, particularly if disconnected or not used for long periods, or during initial installation, the instruction sheet shall give recommendations regarding the rating of **protective devices**, such as residual current devices (RCD), to be installed.

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.

Compliance is checked by inspection.

7.12.4 Addition:

*The instructions for **built-in appliances** having a separate control panel for several appliances shall state that the control panel is only to be connected to the specified appliances in order to avoid a possible hazard.*

7.12.9 Not applicable.

7.14 Addition:

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

7.15 Addition:

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**.

When it is not practical to place the marking of **fixed appliances** so that it is visible after the appliance has been installed, the relevant information shall also be included in the instructions or on an additional label that can be fixed near the appliance after installation.

7.101 If, during the test of Clause 11, the temperature rise of the floor of the test corner or the side and rear walls of the test corner above the level of the top of **stationary appliances** exceeds 65 K or during the test of Clause 19, the temperature rise of the floor or the walls above and below the top of **stationary appliances** exceeds 125 K, the installation instructions provided by the manufacturer shall include the substance of the following that shall also be included on a permanent label attached to the appliance:

Where this appliance is to be positioned in close proximity to a wall, partitions, kitchen furniture, decorative finishes, etc., it is recommended that they are made of non-combustible material. If not, that they shall be clad with a suitable non-combustible heat-insulating material.

Compliance is checked by inspection.

7.102 Equipotential bonding terminals shall be marked with symbol IEC 60417-5021 (2002-10).

These markings shall not be placed on screws, removable washers or other parts that can be removed when conductors are being connected.

Compliance is checked by inspection.

8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.101 Heating elements, other than those of slot **toasters**, that are liable to be touched accidentally by a fork or similar pointed object in normal use, shall be so protected that it is not possible to touch their **live parts** with such an object.

*Compliance is checked by inserting test probe 12 of IEC 61032 at all points where the probe can enter in the vicinity of **live parts**.*

9 Starting of motor-operated appliances

This clause of Part 1 is applicable except as follows.

9.101 Fan motors providing a cooling effect in order to comply with the requirements of Clause 11 shall start under all voltage conditions that can occur in use.

*Compliance is checked by the following tests using a supply source such that its drop in voltage does not exceed 1 % during the tests. The appliance being returned to **room temperature** after each test.*