



IEC 60335-2-48

Edition 5.0 2021-11  
REDLINE VERSION

# INTERNATIONAL STANDARD



---

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

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

ICS 97.040.50

ISBN 978-2-8322-4080-9

**Warning! Make sure that you obtained this publication from an authorized distributor.**

## CONTENTS

|                                                                                                                                        |               |
|----------------------------------------------------------------------------------------------------------------------------------------|---------------|
| FOREWORD .....                                                                                                                         | 4             |
| INTRODUCTION .....                                                                                                                     | 7             |
| 1 Scope .....                                                                                                                          | 8             |
| 2 Normative references .....                                                                                                           | 9             |
| 3 Terms and definitions .....                                                                                                          | 9             |
| 4 General requirement .....                                                                                                            | 10            |
| 5 General conditions for the tests .....                                                                                               | 10            |
| 6 Classification .....                                                                                                                 | 11            |
| 7 Marking and instructions .....                                                                                                       | 11            |
| 8 Protection against access to live parts .....                                                                                        | 13            |
| 9 Starting of motor-operated appliances .....                                                                                          | 14            |
| 10 Power input and current .....                                                                                                       | 14            |
| 11 Heating .....                                                                                                                       | 14            |
| 12 <del>Void</del> Charging metal-ion batteries .....                                                                                  | 17            |
| 13 Leakage current and electric strength at operating temperature .....                                                                | 17            |
| 14 Transient overvoltages .....                                                                                                        | 18            |
| 15 Moisture resistance .....                                                                                                           | 18            |
| 16 Leakage current and electric strength .....                                                                                         | 19            |
| 17 Overload protection of transformers and associated circuits .....                                                                   | 19            |
| 18 Endurance .....                                                                                                                     | 19            |
| 19 Abnormal operation .....                                                                                                            | 19            |
| 20 Stability and mechanical hazards .....                                                                                              | 20            |
| 21 Mechanical strength .....                                                                                                           | 20            |
| 22 Construction .....                                                                                                                  | 20            |
| 23 Internal wiring .....                                                                                                               | 21            |
| 24 Components .....                                                                                                                    | 22            |
| 25 Supply connection and external flexible cords .....                                                                                 | 22            |
| 26 Terminals for external conductors .....                                                                                             | 22            |
| 27 Provision for earthing .....                                                                                                        | 22            |
| 28 Screws and connections .....                                                                                                        | 23            |
| 29 Clearances, creepage distances and solid insulation .....                                                                           | 24            |
| 30 Resistance to heat and fire .....                                                                                                   | 24            |
| 31 Resistance to rusting .....                                                                                                         | 25            |
| 32 Radiation, toxicity and similar hazards .....                                                                                       | 25            |
| Annexes .....                                                                                                                          | 29            |
| Annex B (normative) Battery-operated appliances, separable batteries and detachable<br>batteries for battery-operated appliances ..... | 30            |
| <del>Annex N (normative) Proof tracking test .....</del>                                                                               | <del>30</del> |
| Annex P (informative) Guidance for the application of this standard to appliances used<br>in tropical climates .....                   | 32            |
| Bibliography .....                                                                                                                     | 33            |

|                                                                                                                                                                                      |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Figure <del>103</del> 101 – Probe for measuring surface temperatures .....                                                                                                           | 25 |
| Figure 102 – Identification of surfaces for temperature measurement .....                                                                                                            | 26 |
| Figure <del>101</del> 103 – Splash apparatus.....                                                                                                                                    | 28 |
| Table 101 – Maximum temperature rises for specified external accessible surfaces<br>under normal operating conditions .....                                                          | 15 |
| Table 102 – Maximum temperature rises of external accessible surfaces for appliances<br>intended to be installed in areas open to the public under normal operating conditions ..... | 17 |
| Table <del>102</del> 103 – Assembling torques for screwed connections providing earthing<br>continuity .....                                                                         | 24 |

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

---

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

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

**This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 60335-2-48:2002+AMD1:2008+AMD2:2017 CSV. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.**

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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://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.

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](http://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).

**IMPORTANT – The "colour inside" logo on the cover page of this document 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.**

## 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 ~~generic standards~~ 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. ~~For example, in the case of temperature requirements for surfaces on many appliances, generic standards, such as ISO 13732-1 for hot surfaces, are not applicable in addition to Part 1 or part 2 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** ~~not intended for household and similar use~~, 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** ~~and or~~ **toasters** and similar appliances intended for grilling by radiant heat such as rotisseries, salamanders, etc., are within the scope of this standard.

**NOTE 101**—These appliances are ~~not intended for household and similar purposes~~. They are used for ~~the~~ 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, etc.~~

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.

**NOTE 102**—Attention is drawn to the fact that:

- for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements ~~may~~ **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 ~~may~~ **can** be necessary.

**NOTE 103**—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*

# 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**

## CONTENTS

|                                                                                                                                        |    |
|----------------------------------------------------------------------------------------------------------------------------------------|----|
| FOREWORD .....                                                                                                                         | 4  |
| INTRODUCTION .....                                                                                                                     | 7  |
| 1 Scope .....                                                                                                                          | 8  |
| 2 Normative references .....                                                                                                           | 9  |
| 3 Terms and definitions .....                                                                                                          | 9  |
| 4 General requirement .....                                                                                                            | 10 |
| 5 General conditions for the tests .....                                                                                               | 10 |
| 6 Classification .....                                                                                                                 | 11 |
| 7 Marking and instructions .....                                                                                                       | 11 |
| 8 Protection against access to live parts .....                                                                                        | 13 |
| 9 Starting of motor-operated appliances .....                                                                                          | 13 |
| 10 Power input and current .....                                                                                                       | 14 |
| 11 Heating .....                                                                                                                       | 14 |
| 12 Charging metal-ion batteries .....                                                                                                  | 16 |
| 13 Leakage current and electric strength at operating temperature .....                                                                | 16 |
| 14 Transient overvoltages .....                                                                                                        | 17 |
| 15 Moisture resistance .....                                                                                                           | 17 |
| 16 Leakage current and electric strength .....                                                                                         | 18 |
| 17 Overload protection of transformers and associated circuits .....                                                                   | 18 |
| 18 Endurance .....                                                                                                                     | 18 |
| 19 Abnormal operation .....                                                                                                            | 18 |
| 20 Stability and mechanical hazards .....                                                                                              | 19 |
| 21 Mechanical strength .....                                                                                                           | 19 |
| 22 Construction .....                                                                                                                  | 19 |
| 23 Internal wiring .....                                                                                                               | 20 |
| 24 Components .....                                                                                                                    | 20 |
| 25 Supply connection and external flexible cords .....                                                                                 | 20 |
| 26 Terminals for external conductors .....                                                                                             | 21 |
| 27 Provision for earthing .....                                                                                                        | 21 |
| 28 Screws and connections .....                                                                                                        | 21 |
| 29 Clearances, creepage distances and solid insulation .....                                                                           | 22 |
| 30 Resistance to heat and fire .....                                                                                                   | 23 |
| 31 Resistance to rusting .....                                                                                                         | 23 |
| 32 Radiation, toxicity and similar hazards .....                                                                                       | 23 |
| Annexes .....                                                                                                                          | 26 |
| Annex B (normative) Battery-operated appliances, separable batteries and detachable<br>batteries for battery-operated appliances ..... | 27 |
| Annex P (informative) Guidance for the application of this standard to appliances used<br>in tropical climates .....                   | 28 |
| Bibliography .....                                                                                                                     | 29 |
| Figure 101 – Probe for measuring surface temperatures .....                                                                            | 23 |

|                                                                                                                                                                                      |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Figure 102 – Identification of surfaces for temperature measurement .....                                                                                                            | 24 |
| Figure 103 – Splash apparatus .....                                                                                                                                                  | 25 |
| Table 101 – Maximum temperature rises for specified external accessible surfaces<br>under normal operating conditions .....                                                          | 15 |
| Table 102 – Maximum temperature rises of external accessible surfaces for appliances<br>intended to be installed in areas open to the public under normal operating conditions ..... | 16 |
| Table 103 – Assembling torques for screwed connections providing earthing continuity .....                                                                                           | 22 |

# INTERNATIONAL ELECTROTECHNICAL COMMISSION

---

## HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

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

#### FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://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.

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](http://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).

**IMPORTANT – The "colour inside" logo on the cover page of this document 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.**

## 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.

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*

## SOMMAIRE

|                                                                                                                                                      |    |
|------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| AVANT-PROPOS .....                                                                                                                                   | 32 |
| INTRODUCTION.....                                                                                                                                    | 35 |
| 1 Domaine d'application .....                                                                                                                        | 36 |
| 2 Références normatives .....                                                                                                                        | 37 |
| 3 Termes et définitions .....                                                                                                                        | 37 |
| 4 Exigences générales .....                                                                                                                          | 38 |
| 5 Conditions générales d'essais .....                                                                                                                | 39 |
| 6 Classification.....                                                                                                                                | 39 |
| 7 Marquage et instructions .....                                                                                                                     | 39 |
| 8 Protection contre l'accès aux parties actives.....                                                                                                 | 42 |
| 9 Démarrage des appareils à moteur .....                                                                                                             | 42 |
| 10 Puissance et courant .....                                                                                                                        | 42 |
| 11 Echauffements.....                                                                                                                                | 43 |
| 12 Charge des batteries à ions métalliques .....                                                                                                     | 45 |
| 13 Courant de fuite et rigidité diélectrique à la température de régime .....                                                                        | 45 |
| 14 Surtensions transitoires .....                                                                                                                    | 46 |
| 15 Résistance à l'humidité.....                                                                                                                      | 46 |
| 16 Courant de fuite et rigidité diélectrique .....                                                                                                   | 47 |
| 17 Protection contre la surcharge des transformateurs et des circuits associés .....                                                                 | 47 |
| 18 Endurance .....                                                                                                                                   | 47 |
| 19 Fonctionnement anormal .....                                                                                                                      | 47 |
| 20 Stabilité et dangers mécaniques .....                                                                                                             | 48 |
| 21 Résistance mécanique.....                                                                                                                         | 48 |
| 22 Construction .....                                                                                                                                | 48 |
| 23 Conducteurs internes.....                                                                                                                         | 49 |
| 24 Composants .....                                                                                                                                  | 50 |
| 25 Raccordement au réseau et câbles souples extérieurs .....                                                                                         | 50 |
| 26 Bornes pour conducteurs externes .....                                                                                                            | 50 |
| 27 Dispositions en vue de la mise à la terre .....                                                                                                   | 50 |
| 28 Vis et connexions .....                                                                                                                           | 51 |
| 29 Distances dans l'air, lignes de fuite et isolation solide.....                                                                                    | 51 |
| 30 Résistance à la chaleur et au feu.....                                                                                                            | 52 |
| 31 Protection contre la rouille .....                                                                                                                | 52 |
| 32 Rayonnement, toxicité et dangers analogues.....                                                                                                   | 52 |
| Annexes .....                                                                                                                                        | 56 |
| Annexe B (normative) Appareils alimentés par batteries, batteries séparables et batteries amovibles pour les appareils alimentés par batteries ..... | 57 |
| Annexe P (informative) Lignes directrices pour l'application de la présente norme aux appareils utilisés en climat tropical .....                    | 58 |
| Bibliographie.....                                                                                                                                   | 59 |
| Figure 101 – Calibre pour le mesurage des températures de surface .....                                                                              | 53 |

|                                                                                                                                                                                                           |    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Figure 102 – Identification des surfaces pour le mesurage des températures.....                                                                                                                           | 54 |
| Figure 103 – Appareil d'éclaboussement.....                                                                                                                                                               | 55 |
| Tableau 101 – Echauffements maximaux pour les surfaces accessibles extérieures<br>spécifiées en conditions de fonctionnement normal.....                                                                  | 44 |
| Tableau 102 – Echauffements maximaux pour les surfaces accessibles extérieures des<br>appareils destinés à être installés dans des lieux ouverts au public en conditions de<br>fonctionnement normal..... | 45 |
| Tableau 103 – Couples d'assemblage pour les connexions vissées qui assurent la<br>continuité de la mise à la terre .....                                                                                  | 51 |

## COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

### APPAREILS ÉLECTRODOMESTIQUES ET ANALOGUES – SÉCURITÉ –

#### Partie 2-48: Exigences particulières pour les grils et grille-pain électriques à usage commercial

#### AVANT-PROPOS

- 1) La Commission Electrotechnique Internationale (IEC) est une organisation mondiale de normalisation composée de l'ensemble des comités électrotechniques nationaux (Comités nationaux de l'IEC). L'IEC a pour objet de favoriser la coopération internationale pour toutes les questions de normalisation dans les domaines de l'électricité et de l'électronique. A cet effet, l'IEC – entre autres activités – publie des Normes internationales, des Spécifications techniques, des Rapports techniques, des Spécifications accessibles au public (PAS) et des Guides (ci-après dénommés "Publication(s) de l'IEC"). Leur élaboration est confiée à des comités d'études, aux travaux desquels tout Comité national intéressé par le sujet traité peut participer. Les organisations internationales, gouvernementales et non gouvernementales, en liaison avec l'IEC, participent également aux travaux. L'IEC collabore étroitement avec l'Organisation Internationale de Normalisation (ISO), selon des conditions fixées par accord entre les deux organisations.
- 2) Les décisions ou accords officiels de l'IEC concernant les questions techniques représentent, dans la mesure du possible, un accord international sur les sujets étudiés, étant donné que les Comités nationaux de l'IEC intéressés sont représentés dans chaque comité d'études.
- 3) Les Publications de l'IEC se présentent sous la forme de recommandations internationales et sont agréées comme telles par les Comités nationaux de l'IEC. Tous les efforts raisonnables sont entrepris afin que l'IEC s'assure de l'exactitude du contenu technique de ses publications; l'IEC ne peut pas être tenue responsable de l'éventuelle mauvaise utilisation ou interprétation qui en est faite par un quelconque utilisateur final.
- 4) Dans le but d'encourager l'uniformité internationale, les Comités nationaux de l'IEC s'engagent, dans toute la mesure possible, à appliquer de façon transparente les Publications de l'IEC dans leurs publications nationales et régionales. Toutes divergences entre toutes Publications de l'IEC et toutes publications nationales ou régionales correspondantes doivent être indiquées en termes clairs dans ces dernières.
- 5) L'IEC elle-même ne fournit aucune attestation de conformité. Des organismes de certification indépendants fournissent des services d'évaluation de conformité et, dans certains secteurs, accèdent aux marques de conformité de l'IEC. L'IEC n'est responsable d'aucun des services effectués par les organismes de certification indépendants.
- 6) Tous les utilisateurs doivent s'assurer qu'ils sont en possession de la dernière édition de cette publication.
- 7) Aucune responsabilité ne doit être imputée à l'IEC, à ses administrateurs, employés, auxiliaires ou mandataires, y compris ses experts particuliers et les membres de ses comités d'études et des Comités nationaux de l'IEC, pour tout préjudice causé en cas de dommages corporels et matériels, ou de tout autre dommage de quelque nature que ce soit, directe ou indirecte, ou pour supporter les coûts (y compris les frais de justice) et les dépenses découlant de la publication ou de l'utilisation de cette Publication de l'IEC ou de toute autre Publication de l'IEC, ou au crédit qui lui est accordé.
- 8) L'attention est attirée sur les références normatives citées dans cette publication. L'utilisation de publications référencées est obligatoire pour une application correcte de la présente publication.
- 9) L'attention est attirée sur le fait que certains des éléments de la présente Publication de l'IEC peuvent faire l'objet de droits de brevet. L'IEC ne saurait être tenue pour responsable de ne pas avoir identifié de tels droits de brevets.

L'IEC 60335-2-48 a été établie par le comité d'études 61 de l'IEC: Sécurité des appareils électrodomestiques et analogues. Il s'agit d'une Norme internationale.

Cette cinquième édition annule et remplace la quatrième édition parue en 2002, l'Amendement 1:2008 et l'Amendement 2:2017. Cette édition constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

- a) alignement du texte sur l'IEC 60335-1:2020;
- b) conversion en texte normatif, modification ou suppression de certaines notes (Article 1, 7.15, 9.101, 11.7, 22.101, 23.3, 27.2, 30.101);

- c) clarification de certaines modalités d'essais (7.101, 11.4, 15.1.1, 19, 20.1, 25.3);
- d) introduction d'exigences pour les appareils destinés à être utilisés dans des lieux ouverts au public, y compris les températures des surfaces accessibles extérieures (Article 1, 7.12, 11.8, Tableau 102);
- e) clarification de la norme applicable aux appareils destinés à être utilisés par des usagers non avertis (Article 1, 7.12);
- f) exclusion des appareils alimentés par batteries;
- g) déplacement des instructions pour le nettoyage du 7.12.1 au 7.12;
- h) déplacement du 24.101 au 22.104;
- i) ajout d'exigences pour les instructions en 7.12;
- j) alignement du texte de l'IEC 60335-2-48 sur d'autres normes sous l'IEC/TC61/MT32.

Le texte de cette Norme internationale est issu des documents suivants:

| FDIS         | Rapport de vote |
|--------------|-----------------|
| 61/6364/FDIS | 61/6412/RVD     |

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à son approbation.

La langue employée pour l'élaboration de cette Norme internationale est l'anglais.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2, il a été développé selon les Directives ISO/IEC, Partie 1 et les Directives ISO/IEC, Supplément IEC, disponibles sous [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). Les principaux types de documents développés par l'IEC sont décrits plus en détail sous [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

Une liste de toutes les parties de la série IEC 60335, publiées sous le titre général *Appareils électrodomestiques et analogues – Sécurité*, se trouve sur le site web de l'IEC.

La présente Partie 2 doit être utilisée conjointement avec la dernière édition de l'IEC 60335-1 et ses amendements, sauf si cette édition l'exclut. Dans ce cas, la dernière édition qui n'exclut pas la présente Partie 2 est utilisée. Elle a été établie sur la base de la sixième édition (2020) de cette norme.

NOTE 1 L'expression "la Partie 1" utilisée dans la présente norme fait référence à l'IEC 60335-1.

La présente Partie 2 complète ou modifie les articles correspondants de l'IEC 60335-1, de façon à transformer cette publication en norme IEC: Exigences particulières pour les grils et grille-pain électriques à usage commercial.

Lorsqu'un paragraphe particulier de la Partie 1 n'est pas mentionné dans cette Partie 2, ce paragraphe s'applique pour autant que cela soit raisonnable. Lorsque la présente norme mentionne "addition", "modification" ou "remplacement", le texte correspondant de la Partie 1 doit être adapté en conséquence.

NOTE 2 Le système de numérotation suivant est utilisé:

- les paragraphes, tableaux et figures qui s'ajoutent à ceux de la Partie 1 sont numérotés à partir de 101;
- à l'exception de celles qui sont dans un nouveau paragraphe ou de celles qui concernent des notes de la Partie 1, les notes sont numérotées à partir de 101, y compris celles des articles ou paragraphes qui sont remplacés;
- les annexes qui sont ajoutées sont désignées AA, BB, etc.

NOTE 3 Les caractères d'imprimerie suivants sont utilisés:

- exigences: caractères romains;
- modalités d'essais: caractères italiques;

– notes: petits caractères romains.

Les termes en **gras** dans le texte sont définis à l'Article 3. Lorsqu'une définition concerne un adjectif, l'adjectif et le nom associé figurent également en gras.

Le comité a décidé que le contenu de ce document ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous [webstore.iec.ch](http://webstore.iec.ch) dans les données relatives au document recherché. A cette date, le document sera

- reconduit,
- supprimé,
- remplacé par une édition révisée, ou
- amendé.

NOTE 4 L'attention des Comités nationaux est attirée sur le fait que les fabricants d'appareils et les organismes d'essai peuvent avoir besoin d'une période transitoire après la publication d'une nouvelle publication IEC, ou d'une publication amendée ou révisée, pour fabriquer des produits conformes aux nouvelles exigences et pour adapter leurs équipements aux nouveaux essais ou aux essais révisés.

Le comité recommande que le contenu de cette publication soit entériné au niveau national au plus tôt 12 mois et au plus tard 36 mois après la date de publication.

Les différences suivantes existent dans les pays indiqués ci-après.

- 6.1: les appareils de la classe 01 sont admis (Japon).
- 13.2: les limites de courant de fuite sont différentes (Japon).
- 16.2: les limites de courant de fuite sont différentes (Japon).

**IMPORTANT – Le logo "colour inside" qui se trouve sur la page de couverture de ce document indique qu'il contient des couleurs qui sont considérées comme utiles à une bonne compréhension de son contenu. Les utilisateurs devraient, par conséquent, imprimer ce document en utilisant une imprimante couleur.**

## INTRODUCTION

Il a été considéré en établissant cette Norme internationale que l'exécution de ses dispositions était confiée à des personnes expérimentées et ayant une qualification appropriée.

Les documents de recommandations concernant l'application des exigences de sécurité pour les appareils peuvent être consultés dans les documents de support du CE 61, accessibles sur le site web de l'IEC à l'adresse:

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

Cette information est donnée à l'intention des utilisateurs de la présente Norme internationale et n'a pas pour objet de remplacer le texte normatif de la présente norme.

La présente norme reconnaît le niveau de protection internationalement accepté contre les dangers électriques, mécaniques, thermiques, liés au feu et au rayonnement des appareils, lorsqu'ils fonctionnent comme en usage normal en tenant compte des instructions du fabricant. Elle couvre également les situations anormales auxquelles on peut s'attendre dans la pratique et elle tient compte de la façon dont les phénomènes électromagnétiques peuvent affecter le fonctionnement sûr des appareils.

Cette norme tient compte autant que possible des exigences de l'IEC 60364, de façon à rester compatible avec les règles d'installation quand l'appareil est raccordé au réseau d'alimentation. Cependant, des règles nationales d'installation peuvent être différentes.

Si un appareil relevant du domaine d'application de la présente norme comporte également des fonctions couvertes par une autre Partie 2 de l'IEC 60335, la Partie 2 correspondante est appliquée à chaque fonction séparément, dans la limite du raisonnable. Si cela est applicable, on tient compte de l'influence d'une fonction sur les autres fonctions.

Lorsqu'une Partie 2 ne comporte pas d'exigences complémentaires pour couvrir les risques traités dans la Partie 1, la Partie 1 s'applique.

NOTE 1 Cela signifie que les comités d'études responsables pour les Parties 2 ont déterminé qu'il n'était pas nécessaire de spécifier des exigences particulières pour l'appareil en question en plus des exigences générales.

Cette norme est une norme de famille de produits traitant de la sécurité d'appareils et a préséance sur les normes horizontales et génériques couvrant le même sujet.

NOTE 2 Les publications horizontales, les publications fondamentales de sécurité et les publications groupées de sécurité couvrant un risque ne sont pas applicables parce qu'elles ont été prises en considération lorsque les exigences générales et particulières ont été étudiées pour la série de normes IEC 60335.

Un appareil conforme au texte de la présente norme ne sera pas nécessairement jugé conforme aux principes de sécurité de la norme si, lorsqu'il est examiné et soumis aux essais, il apparaît qu'il présente d'autres caractéristiques qui compromettent le niveau de sécurité visé par ces exigences.

Un appareil utilisant des matériaux ou présentant des modes de construction différents de ceux décrits dans les exigences de cette norme peut être examiné et essayé en fonction de l'objectif poursuivi par ces exigences et, s'il est jugé pratiquement équivalent, il peut être estimé conforme aux principes de sécurité de la norme.

NOTE 3 Les normes traitant des aspects non relatifs à la sécurité des appareils électrodomestiques sont:

- les normes IEC publiées par le comité d'études 59 concernant les méthodes de mesure d'aptitude à la fonction;
- les normes CISPR 11 et CISPR 14-1, ainsi que les normes applicables de la série IEC 61000-3 concernant les émissions électromagnétiques;
- la norme CISPR 14-2 concernant l'immunité électromagnétique;
- les normes IEC publiées par le comité d'études 111 concernant l'environnement.

## APPAREILS ÉLECTRODOMESTIQUES ET ANALOGUES – SÉCURITÉ –

### Partie 2-48: Exigences particulières pour les grils et grille-pain électriques à usage commercial

#### 1 Domaine d'application

L'article de la Partie 1 est remplacé par l'article ci-après.

La présente partie de l'IEC 60335 traite de la sécurité des **grils** et **grille-pain** électriques à usage commercial dont la **tension assignée** est inférieure ou égale à 250 V pour les appareils monophasés raccordés entre un conducteur de phase et le conducteur de neutre, et à 480 V pour les autres appareils.

Les **grils** ou **grille-pain rotatifs ou continus** ainsi que les appareils analogues destinés à griller les aliments par exposition à la chaleur rayonnante tels que les rôtissoires, salamandres, etc., relèvent du domaine d'application de la présente norme.

Ces appareils ne sont pas destinés à un usage domestique ou analogue. Ils sont destinés à un usage commercial pour le traitement des aliments dans des **lieux ouverts au public**, par exemple dans les cuisines de restaurants, les cantines, les hôpitaux et les entreprises commerciales, telles que les boulangeries et les boucheries. La partie électrique des appareils qui utilisent d'autres formes d'énergie est également comprise dans le domaine d'application de la présente norme.

Dans la mesure du possible, la présente norme traite des dangers courants que présentent ces types d'appareils.

L'attention est attirée sur le fait que:

- pour les appareils destinés à être utilisés dans des véhicules ou à bord de navires ou d'avions, des exigences supplémentaires peuvent être nécessaires;
- dans de nombreux pays, des exigences supplémentaires sont spécifiées par les organismes nationaux de la santé, par les organismes nationaux responsables de la protection des travailleurs, par les organismes nationaux responsables de l'alimentation en eau et par des organismes similaires;
- pour les appareils destinés à être utilisés en extérieur, des exigences supplémentaires peuvent être nécessaires.

La présente norme ne s'applique pas:

- aux appareils prévus exclusivement pour des usages industriels;
- aux appareils destinés à être utilisés dans des locaux qui présentent des conditions particulières, telles que la présence d'une atmosphère corrosive ou explosive (poussière, vapeur ou gaz);
- aux appareils conçus pour la production continue en masse d'aliments;
- aux plaques à griller électriques à usage commercial (IEC 60335-2-38);
- aux **appareils alimentés par batteries**;

- aux grils, grille-pain et appareils de cuisson mobiles analogues destinés à un usage domestique couverts par l'IEC 60335-2-9 et utilisés par des usagers non avertis dans les environnements suivants:
  - les coins cuisines réservés au personnel des magasins, bureaux et autres environnements professionnels;
  - les fermes;
  - les hôtels, les motels et autres environnements résidentiels;
  - les environnements de type chambres d'hôtes.

## 2 Références normatives

L'article de la Partie 1 est applicable, avec l'exception suivante.

*Addition:*

IEC 60584-1, *Couples thermoélectriques – Partie 1: Spécifications et tolérances en matière de FEM*

ISO 898-1, *Caractéristiques mécaniques des éléments de fixation en acier au carbone et en acier allié – Partie 1: Vis, goujons et tiges filetées de classes de qualité spécifiées – Filetages à pas gros et filetages à pas fin*

ISO 3506-1, *Fixations – Caractéristiques mécaniques des fixations en acier inoxydable résistant à la corrosion – Partie 1: Vis, goujons et tiges filetées de grades et classes de qualité spécifiés*

ISO 3506-2, *Fixations – Caractéristiques mécaniques des fixations en acier inoxydable résistant à la corrosion – Partie 2: Ecrous de grades et classes de qualité spécifiés*

ISO 3506-3, *Caractéristiques mécaniques des éléments de fixation en acier inoxydable résistant à la corrosion – Partie 3: Vis sans tête et éléments de fixation similaires non soumis à des contraintes de traction*

ISO 3506-4, *Caractéristiques mécaniques des éléments de fixation en acier inoxydable résistant à la corrosion – Partie 4: Vis à tôle*