



Edition 6.1 2025-02 CONSOLIDATED VERSION

# INTERNATIONAL STANDARD

Household and similar electrical appliances – Safety –
Part 2-42: Particular requirements for commercial electric forced convection ovens, steam cookers and steam-convection ovens

### Document Preview

EC 60335-2-42:2021

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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#### INTERNATIONAL ELECTROTECHNICAL COMMISSION

# HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

# Part 2-42: Particular requirements for commercial electric forced convection ovens, steam cookers and steam-convection ovens

#### **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.
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This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 60335-2-42 edition 6.1 contains the sixth edition (2021-11) [documents 61/6366/FDIS and 61/6416/RVD] and its amendment 1 (2025-02) [documents 61/7240/CDV and 61/7353/RVC].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

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IEC 60335-2-42 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This sixth edition cancels and replaces the fifth 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, 10.1, 11.7, 19.2, 19.7, 20.101, 21.101, 22.101, 22.114, 27.2, 30.101);
- c) exclusion of battery-operated appliances and appliances used in areas open to the public (Clause 1);
- d) clarification of applicable standard for appliances for use by laymen (Clause 1, 7.12);
- e) relocation of cleaning instructions from 7.12.1 to 7.12;
- f) clarifications to some test specifications have been made (15.1.1, 15.2, 19.2, 19.7, 23.3, 25.3);
- g) introduction of a symbol to indicate risk of scalding (7.6);
- h) conciliation of the text of IEC 60335-2-42 with other standards under IEC/TC61/MT32.

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 <a href="https://www.iec.ch/members\_experts/refdocs">www.iec.ch/members\_experts/refdocs</a>. The main document types developed by IEC are described in greater detail at <a href="https://www.iec.ch/standardsdev/publications">www.iec.ch/standardsdev/publications</a>.

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 forced convection ovens, steam cookers and steam-convection ovens.

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.

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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.

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The committee has decided that the contents of this document and its amendment 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, or
- revised.

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 –

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# Part 2-42: Particular requirements for commercial electric forced convection ovens, steam cookers and steam-convection ovens

### 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 **forced convection ovens**, **steam cookers**, **steam-convection ovens** and, exclusive of any other use, **steam generators**, 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, including direct current (DC) supplied appliances.

These appliances are not intended for household and similar purposes. They are used for commercial processing of food in areas not open to the public, for example in kitchens of restaurants, canteens, hospitals and in commercial enterprises such as bakeries and butcheries.

This standard deals also with electrically operated commercial forced convection ovens, steam cookers, steam-convection ovens intended for use on board ships, for which informative Annex AA is applicable.

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 aircrafts, 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;
- in many countries additional requirements are specified for pressure appliances.

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;
- microwave ovens (IEC 60335-2-90);.
- battery-operated appliances.

#### 2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60068-2-6, Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)

IEC 60068-2-27, Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock

IEC 60068-2-52:2017, Environmental testing – Part 2: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)

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

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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:

Modification:

Replace the first paragraph with the following:

operation of the appliance under the conditions specified in 3.1.9.101 to 3.1.9.103, as applicable.

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.

**3.1.9.101** For dry heat mode, the appliance is operated with all the shelves or the shelf trolley in position according to the manufacturer's instructions but with no load. The controls are set so that the mean value of the temperature over the **thermostat** cycle at the geometric centre

of each usable space in the interior of the oven is maintained at 220 °C  $\pm$  4 °C. Stepped controls are set so that this temperature is 220 °C  $\pm$  15 °C.

For ovens that are unable to attain a temperature of 220 °C, the controls are set at the maximum.

For ovens that are capable of attaining temperatures in excess of 270 °C, the controls are set so that the mean value of the temperature is 50 °C  $\pm$  4 °C below the maximum temperature attainable.

**3.1.9.102** For steaming only mode, the appliance is operated in accordance with the manufacturer's instructions with all controls intended to be operated by the user adjusted to their maximum setting until reaching operating temperature. They are then readjusted, if possible, to the lowest setting that maintains that temperature.

Appliances with **steam generators** intended to be filled by hand or by a manually operated tap are filled to the **indicated level** on the **steam generator**.

Appliances with **steam generators** intended to be filled automatically are connected to a water supply having the maximum pressure indicated by the manufacturer. Where the manufacturer specifies a range of pressures, the pressure is adjusted to give the most unfavourable conditions.

The incoming water is maintained at: h Standards

- 15 °C ± 5 °C in the case of appliances intended for connection to a cold water supply;
- 60 °C ± 5 °C or the temperature indicated in the instruction sheet, whichever is the higher, in the case of appliances intended for connection to a hot water supply only.

If the appliance is intended for connection to either a hot or cold water supply, the temperature of the water is that which gives the most unfavourable results.

Lids, doors, and covers are in position and closed. 6-49c3-ac04-5657b1473360/iec-60335-2-42-2021

The **cooking compartment** of the appliance contains a water load, initially at 15  $^{\circ}$ C  $\pm$  5  $^{\circ}$ C, comprising 0,5 l/kg of the manufacturer's declared maximum food load. The water load is evenly distributed between the shelves or pans. Since pans may be perforated to allow for circulation of steam, the water load may be contained in suitable containers evenly distributed over the shelves or pans.

**3.1.9.103** For combination mode, the appliance is operated as for the steaming only mode, but with the forced convection fan/s and elements for heating the **cooking compartment** on and the temperature controls set as for the dry heat mode.

#### 3.1.101

#### rated pressure

maximum working pressure of **steam cookers** and **steam generators** assigned by the manufacturer to the pressurized parts of the appliance

#### 3.5 Definitions relating to types of appliances

### 3.5.101

#### forced convection oven

appliance intended for the cooking of food by heated air that is circulated by mechanical means within the **cooking compartment** 

Note 1 to entry: The pressure within the **cooking compartment** does not differ significantly from atmospheric pressure.

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#### 3.5.102

#### steam cooker

appliance intended for the cooking of food only by means of direct steam contact

Note 1 to entry: The pressure within the cooking compartment can exceed atmospheric pressure.

#### 3.5.103

#### atmospheric steam cooker

appliance in which the pressure within the **cooking compartment** does not differ significantly from atmospheric pressure

#### 3.5.104

#### steam-convection oven

appliance intended for the cooking of food either by means of direct steam contact or by heated air circulated by mechanical means within the **cooking compartment** or by a combination of these two modes

Note 1 to entry: The pressure within the **cooking compartment** does not differ significantly from atmospheric pressure.

### 3.6 Definitions relating to parts of an appliance

#### 3.6.101

#### steam generator

that part of the appliance designed specifically for the generation of steam for exclusive use in a cooking compartment

Note 1 to entry: The steam generator may be either combined within the cooking compartment, remote from the cooking compartment, but contained within the same casing, or function as a separate unit providing steam for one or more cooking compartments.

#### 3.6.102

#### cooking compartment

that part of the appliance in which the cooking or food heating process takes place

#### 3.6.103

#### 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.

#### 3.6.104

#### 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

#### indicated level

mark on the appliance or **steam generator** to indicate the maximum liquid level for correct operation

#### 3.8.102

#### installation wall

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

### 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 (https://standards.iteh.ai)

This clause of Part 1 is applicable except as follows.

#### **6.1** Replacement:

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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:

Appliances shall be marked with the **rated pressure**, in kilopascals (kPa), on pressurized parts of the appliance.

Unless the instructions include the statement to install the appliance and shelf trolley less than 1,6 m above the floor, the appliance and shelf trolley shall be marked with the risk of scalding symbol on the front surface.