

INTERNATIONAL STANDARD



**Household and similar electrical appliances – Safety –
Part 2-6: Particular requirements for stationary cooking ranges, hobs, ovens and
similar appliances**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-6: Particular requirements for stationary cooking ranges, hobs, ovens and similar appliances

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 60335-2-6 edition 6.1 contains the sixth edition (2014-02) [documents 61/4668/FDIS and 61/4708/RVD] and its amendment 1 (2018-05) [documents 61/5631/FDIS and 61/5690/RVD].

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.

This part of International Standard IEC 60335 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

This sixth edition constitutes a technical revision.

The principal changes in this edition as compared with the fifth edition of IEC 60335-2-6 are as follows (minor changes are not listed):

- introduction of requirements for steam ovens;
- introduction of requirements for ovens intended for use on ships;
- clarified requirements for oven shelve construction and test;
- introduction of optional values for the accessible surface temperatures of ovens;
- introduction of stabilising means including warnings;
- clarified representative periods for various appliances (Clause 10);
- introduction of a spillage test for built-in under-bench ovens.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments. It was established on the basis of the fifth edition (2010) 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: Safety requirements for stationary electric cooking ranges, hobs, ovens and similar appliances.

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 the base publication and its amendment will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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- withdrawn,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

NOTE 2 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.

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

The following differences exist in the countries indicated below.

- 6.1: **Class 0I appliances** are allowed (Japan).
- 7.12: The minimum indicated water pressure is 1 MPa (Norway).
- 24.101: Socket-outlets have to be provided with residual current devices which may be combined with the overcurrent protective device (Australia).
- 25.3: **Cooking ranges** that are not built-in shall not be permanently connected to the fixed wiring (New Zealand).

A bilingual version of this publication may be issued at a later date.

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

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.

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 and generic standards 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.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-6: Particular requirements for stationary cooking ranges, hobs, ovens and similar appliances

1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of **stationary electric cooking ranges, hobs, ovens** and similar appliances for household 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.

This International Standard also includes some requirements for **ovens** that are intended to be used on board ships.

NOTE 101 Examples of appliances that are within the scope of this standard are

- **griddles;**
- **grills;**
- **induction hobs;**
- **induction wok elements;**
- **pyrolytic self-cleaning ovens;**
- **steam ovens.**

As far as is practicable, this standard deals with the common hazards presented by appliances that are encountered by all persons in and around the home. However, in general, it does not take into account

- persons (including children) whose
 - physical, sensory or mental capabilities; or
 - lack of experience and knowledgeprevents them from using the appliance safely without supervision or instruction;
- children playing with the appliance.

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 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.

NOTE 103 This standard does not apply to

- appliances intended for commercial catering;
- 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);

- grills, toasters and similar portable cooking appliances (IEC 60335-2-9);
- microwave ovens (IEC 60335-2-25).

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

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

IEC 60068-2-6:2007, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-27:2008, *Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock*

IEC 60068-2-52:1996, *Environmental testing – Part 2-52: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1.6 Addition:

Note 101 to entry: For appliances having more than three **heating units** per phase, other than those that are controlled by programmable **electronic circuits** that limit the input of heating elements and/or motors from being energized at the same time, a diversity factor is applied to the **rated current** or **rated power input** when determining the current used to establish the size of the terminals and the nominal cross-sectional area of the **supply cord**. The diversity factor F is calculated from the following formula, where N is the number of **heating units** per phase that can be energized together:

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$$F = 0,35 + \frac{0,65}{\sqrt{N}}$$

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3.1.9 Replacement:

normal operation

operation of the appliance as specified in 3.1.9.101 to 3.1.9.107

3.1.9.101 Hob elements, other than **induction hob elements** and **induction wok elements**, are operated with vessels containing cold water. The vessel is made of unpolished commercial quality aluminium, has a flat bottom and is covered with a lid that is positioned so that steam does not affect the tests. Thermal controls are adjusted to their highest setting until the water boils and then adjusted so that the water boils gently. Water is added to maintain the level during boiling.

In case of doubt, vessels as specified in Figure 101 are used.

Induction hob elements are operated with vessels as specified in Figure 102 that contain cooking oil at room temperature. Thermal controls are adjusted to their highest setting until the oil temperature reaches $180\text{ °C} \pm 4\text{ °C}$ and then adjusted so that this temperature is maintained. The oil temperature is measured 10 mm above the centre of the bottom of the vessel.

Induction hob elements in a **flexible induction cooking zone** are operated with:

- a) the maximum number of vessels which can be separately controlled at the same time, arranged to cover the **flexible induction cooking zone** as far as possible. Any

combination of vessels giving the most unfavourable results shall be used for the test. Several vessels with the same diameter may be used;

- b) the vessel which provides the highest power density (W/cm²);
- c) the smallest vessel that allows an **induction hob element** to operate.

Note 1 to entry: Vessels according to Figure 102 should be used for the tests. The vessel diameters specified in Figure 101 should be considered for the tests.

Operation as specified in a), b) or c), that results in the most unfavourable condition for the tests specified in the relevant subclauses is applied.

Induction wok elements are operated with a wok having an equivalent sphere diameter that does not differ from the equivalent sphere diameter of the **induction wok element** cavity by more than $\begin{matrix} 0 \\ -1 \end{matrix}$ %. This wok may be supplied by the manufacturer.

The wok is made of low carbon steel having a maximum carbon content of 0,08 % and a thickness of 2 mm ± 0,5 mm. The height of the wok shall be approximately twice the depth of the **induction wok element** cavity.

The wok is filled to approximately half of its height with cooking oil at room temperature. Thermal controls are adjusted to their highest setting until the oil temperature reaches 180 °C ± 4 °C and then adjusted so that this temperature is maintained. The oil temperature is measured 10 mm above the centre of the bottom of the vessel.

For all **hob elements** other than those in a **flexible induction cooking zone** and **induction wok elements**, the diameter of the bottom of the vessel is approximately equal to the diameter of the **cooking zone** and the quantity of liquid is specified in Table 101. The vessel is positioned centrally on the **cooking zone**.

If several **cooking zones** are marked for one **hob element**, the most unfavourable **cooking zone** is used for the test.

For **non-circular cooking zones**, the smallest non-circular vessel is used which will cover the **cooking zone** as far as possible, taking into account the hob rim and the other vessels. The quantity of liquid is determined on the basis of the minor diameter of the **cooking zone**.

Table 101 – Quantity of liquid in the vessel

Diameter of cooking zone mm	Quantity of water or oil l
≤ 110	0,6
> 110 and ≤ 145	1,0
> 145 and ≤ 180	1,5
> 180 and ≤ 220	2,0
> 220 and ≤ 300	3,0

3.1.9.102 Ovens and **steam convection ovens** are operated empty with the door closed. Thermal controls are adjusted so that the mean temperature in the centre of the **oven** is maintained at

- 220 °C ± 4 °C for **ovens** with forced air circulation;
- 240 °C ± 4 °C for other **ovens**.

If the temperature cannot be attained, the thermal control is adjusted to its highest setting.

Ovens without thermal controls are switched on and off so that the temperature in the centre of the **oven** is maintained at 240 °C ± 15 °C.