

INTERNATIONAL STANDARD

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Fifth edition
2002-07

Household and similar electrical appliances – Safety –

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

*Appareils électrodomestiques et analogues –
Sécurité –*

*Partie 2-6:
Règles particulières pour les cuisinières, les tables
de cuisson, les fours et appareils fixes analogues*



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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 IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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 the 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 National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

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

This fifth edition cancels and replaces the fourth edition published in 1997 and its amendment 1 (2000). It constitutes a technical revision.

The text of this part of IEC 60335 is based on the following documents:

FDIS	Report on voting
61/2137/FDIS	61/2162/RVD

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

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 fourth edition (2001) 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 this publication will remain unchanged until 2003. At this date, the publication will be

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

The following differences exist in the countries indicated below.

- 3.1.6: The diversity factor is not used (USA).
- 3.1.9: Other test conditions are used (USA).
- 6.1: Class 0I appliances are allowed (Japan).
- 7.1: Instructions for pyrolytic self-cleaning ovens are to be marked on the outside of the oven (USA).
- 7.1: Miniature fuse links are not to be used to protect socket-outlets (USA).
- 7.12: The minimum indicated water pressure is 1 MPa (Norway).
- 7.12.4: The instructions shall state the name of the manufacturer and model number of the control panel to be used with built-in appliances (USA).
- 11.7: The duration of the test is different (Canada and USA).
- 11.8: 65 K applies for all wooden surfaces (Norway, Sweden and USA).
- 11.8: Lower temperature limits apply to handles, knobs and other surfaces accessible during the self-cleaning operation (USA).
- 11.101: The test is different (Australia, Canada and USA).
- 13.2: Leakage current measurements are not carried out (USA).
- 13.3: The electric strength test is not carried out (USA).
- 15.2: Tests are only carried out on controls mounted in the hob surface (USA).
- 16.2: Leakage current measurements are not carried out (USA).
- 19.4: The temperature limit is 315 °C (USA).
- 19.101: Different disc sizes are used (USA).
- 20.101: Heavier loads are used (USA).
- 21.101: Additional requirements for oven shelves are specified (Australia, New Zealand and USA).
- 21.102: Different test loads and test methods are used (USA).
- Clause 22: Ovens installed at a height below 80 cm above the floor shall be constructed so that the oven door cannot be opened by a simple operation (Sweden).
- Clause 22: Hob elements are required to be inaccessible to children (Sweden).
- 22.2: For appliances with more than one heating unit, each unit shall be provided with all-pole disconnection (Norway).

- 22.107: The requirement does not apply (USA).
- 22.108: The test is different (USA).
- 22.109: A centre oven temperature of 315 °C is specified (USA).
- 22.110: Larger quantities of different soils are used (USA).
- 22.111: Larger quantities of different soils are used (USA).
- 22.113: The test is not carried out (USA).
- 22.115: The test is not carried out (USA).
- 24.1.4: The number of cycles of operation is different (USA).
- 24.101: Socket-outlets have to be provided with residual current devices which may be combined with the overcurrent protective device (Australia).
- 24.102: The current limitation is different and socket-outlets are required to be de-energized when the cooking elements are in use (USA).
- 25.3: Ranges that are not built-in shall not be permanently connected to the fixed wiring (New Zealand and Norway).
- Clause 27: Earthing terminals are permitted to be connected to the neutral (USA).

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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.

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.

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.

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.

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.

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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.

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

- **griddles;**
- **grills;**
- **induction hobs;**
- **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

- the use of appliances by young children or infirm persons without supervision;
- playing with the appliance by young children.

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 is applicable except as follows.

Addition:

IEC 60584-1, *Thermocouples – Part 1: Reference tables*

3 Definitions

This clause of Part 1 is applicable except as follows.

3.1.6 Addition:

NOTE 101 For appliances having more than three **heating units** per phase, 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:

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

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**, 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. 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.

NOTE 1 The lid is positioned so that steam does not affect the test.

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 approximately half their capacity of 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.

For all **hob 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**.

NOTE 2 If several **cooking zones** are marked for one **hob element**, the most unfavourable zone is used for the test.

NOTE 3 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 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

- $220\text{ °C} \pm 4\text{ °C}$ for **ovens** with forced air circulation;
- $240\text{ °C} \pm 4\text{ °C}$ for other **ovens**.

NOTE 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 $240\text{ °C} \pm 15\text{ °C}$.

Steam ovens are operated in accordance with the instructions. Controls are adjusted to their highest setting until the cooking temperature is reached and then adjusted to the lowest setting that maintains this temperature.

Steam generators intended to be filled by hand are filled according to the instructions, water being added to maintain the steam generation.

Steam generators intended to be filled automatically are connected to a water supply, the pressure of which is set according to the instructions.

The supply water has a temperature of

- $15\text{ °C} \pm 5\text{ °C}$ for appliances to be connected to a cold water supply;
- $60\text{ °C} \pm 5\text{ °C}$ or the temperature indicated in the instructions, whichever is the higher, for appliances to be connected to a hot water supply.

Steam ovens are also operated while generating steam but with the thermal controls adjusted as for operation without steam.

3.1.9.103 Grills are operated empty with the grill pan and food supports in the most unfavourable position for normal use, the door and any other accessories being positioned in accordance with the instructions. In the absence of such instructions, the door and other accessories are placed in the most unfavourable position in which they may be left. Thermal controls are adjusted to their highest setting. However, if the instructions for **grills** incorporated in **ovens** specify a lower setting, this setting is used. Any reflectors intended to be placed above heating elements are in position.

3.1.9.104 Rotating spits in **ovens** or **grills** are operated with the load on the rotating spit as shown in Figure 103. The appliance is operated taking into account the instructions with regard to

- the heating elements to be operated;
- the setting of the thermal control;
- the position of the door and grill pan.

In the absence of such instructions, the control is adjusted to its highest setting and the door is fully open or is placed in the most unfavourable intermediate position in which it may be left.

Any grill pan is placed in its lowest position.

3.1.9.105 Warming drawers and similar compartments are operated in the closed position with their controls adjusted to the highest setting.

3.1.9.106 Griddles are operated so that the temperature at the centre of the heated surface is maintained at $275\text{ °C} \pm 15\text{ °C}$ by adjusting their thermal controls or by switching the supply on or off.

3.1.9.107 Cooking ranges are operated with their individual **heating units** being operated under their stated conditions of **normal operation**.

3.101 oven

appliance having a heated cavity with a door and constructed so that food, which may be in a container, can be placed on a shelf

3.102 grill

heating unit constructed so that the food is supported on a grid or spit and is cooked by radiant heat

NOTE The cooking operation in a **grill** is known as grilling or broiling.