

INTERNATIONAL STANDARD

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60335-2-36

Fourth edition
2000-02

Safety of household and similar electrical appliances –

Part 2-36: Particular requirements for commercial electric cooking ranges, ovens, hobs and hob elements

Sécurité des appareils électrodomestiques et analogues –

*Partie 2-36:
Règles particulières pour les cuisinières, les fours,
les tables de cuisson et les foyers de cuisson électriques
à usage collectif*



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International Electrotechnical Commission 3, rue de Varembé Geneva, Switzerland
Telefax: +41 22 919 0300 e-mail: inmail@iec.ch IEC web site <http://www.iec.ch>



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY OF HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –**Part 2-36: Particular requirements for commercial electric cooking ranges, ovens, hobs and hob elements**

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.
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- 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.

International Standard IEC 60335-2-36 has been prepared by subcommittee 61E: Safety of electrical commercial catering equipment, of IEC technical committee 61: Safety of household and similar electrical appliances.

It forms the fourth edition of IEC 60335-2-36 and replaces the third edition, published in 1993, its amendment 1 (1996) and amendment 2 (1998).

The text of this standard is based on the third edition, amendments 1 and 2 and the following documents:

FDIS	Report on voting
61E/347/FDIS	61E/361/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 third edition (1991) of that standard.

This part 2 supplements or modifies the corresponding clauses in IEC 60335-1, so as to convert it into the IEC standard: Safety requirements for commercial electric cooking ranges, ovens, hobs and hob elements.

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

NOTE 1 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 2.

NOTE 2 Subclauses, notes and figures which are additional to those in part 1 are numbered starting from 101.

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



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SAFETY OF HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –

Part 2-36: Particular requirements for commercial electric cooking ranges, ovens, hobs and hob elements

1 Scope

This clause of part 1 is replaced by:

This standard deals with the safety of electrically operated commercial **cooking ranges**, ovens, **hobs**, **hob elements** and similar appliances not intended 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 1 These appliances are used for example in kitchens such as in restaurants, canteens, hospitals and commercial enterprises such as bakeries, butcheries, etc.

The electrical part of appliances making use of other forms of energy is also within the scope of this standard.

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

NOTE 2 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;
- for appliances intended to be used in tropical countries, special 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.

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);
- continuous process appliances for the mass production of food;
- microwave ovens;
- steam-convection ovens;
- forced convection ovens (IEC 60335-2-42);
- steam cookers (IEC 60335-2-46);
- hot cupboards (IEC 60335-2-49).

2 Definitions

This clause of part 1 is applicable except as follows.

2.2.4 Addition:

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

2.2.9 Replacement:

normal operation: Operation of the appliance under the following conditions:

- Solid **hob elements** are operated with no load and sheathed **hob elements** are operated with a load made of dull black, cold or hot rolled steel, 9 mm to 10 mm thick, which covers not less than 90 % and not more than 100 % of the element surface. The **hob elements** are operated with the controls set to give the temperatures as set out below, the temperature being measured at the geometrical centre or the hottest point of the solid element or load, if the element is unevenly heated.

Stepped controls are set to the first position which gives a temperature equal to or greater than 275 °C. Cycling controls are set so that the mean value of the temperature over the cycle is 275 °C ± 5 °C. If this temperature cannot be reached, the control is set at the maximum.

- Non-induction heating sources beneath a glass-ceramic or similar material are operated with a pan or pans containing initially cold water, the pan(s) being filled to a height of 60 mm ± 10 mm. The pan or pans are of aluminium, of ordinary quality, not brightly polished with a base concavity not exceeding 0,1 mm. The pan or pans shall cover the **cooking zone** to the greatest extent possible.

The pan or pans are covered with a lid. The controls are set at maximum until the water boils and then adjusted to maintain boiling. Water is added to maintain the water level during boiling.

- **Induction heating sources** beneath a glass-ceramic or similar material are operated with the pan or pans recommended by the manufacturer.

If one pan is used, it shall cover as closely as possible, but not less than, the full area of the **cooking zone**. The pan is positioned centrally.

For non-circular **cooking zones** a combination of the smallest number of pans is chosen to cover as much as possible the area of the **cooking zone**.

The pan or pans in each case are filled with initially cold frying oil to a height of 30 mm ± 5 mm. The controls are set to maximum until the temperature of the oil attains a value of 180 °C and then adjusted to maintain the oil at a temperature of 180 °C ± 15 °C.

A further test is made using initially cold water, the pan(s) being filled to a height of 60 mm ± 10 mm. The pan or pans are covered with a lid. The controls are set at maximum until the water boils and then adjusted to maintain boiling. Water is added to maintain the water level during boiling.

The condition providing the most unfavorable results (oil or water) is used.

- Ovens are operated with no load and with the controls set so that the mean value of the temperature over the thermostat cycle at the geometric centre of the usable space in the interior of the oven is maintained at 240 °C ± 4 °C. Stepped controls are set so that this temperature is 240 °C ± 15 °C. For ovens which are capable of attaining temperatures in excess of 290 °C, the controls are set so that the temperature is 50 °C ± 4 °C below the maximum temperature attainable. For ovens which are unable to attain a temperature of 240 °C, the controls are set to maximum.
- **Griddle plates** are operated with no load and with the controls set so as to give the temperatures set out below, the temperature being measured at the hottest point of each controlled cooking surface. Stepped controls are set to the first position which gives a temperature equal to or greater than 275 °C. Cycling controls are set so that the mean value of the temperature over the cycle is 275 °C ± 5 °C. If this temperature cannot be reached, the control is set to maximum.
- Motors incorporated in the appliance are operated in the intended manner under the most severe conditions which can be expected in normal use, taking into account the manufacturer's instructions.

**2.2.101
cooking range**

a single cooking appliance incorporating one or more ovens together with one or more **hob elements** or **griddle plates** or a combination of these

NOTE An appliance incorporating a forced convection oven, steam-convection oven or microwave oven is considered to be an appliance incorporating another appliance (see also 4.102).

**2.2.102
heating unit**

any part of the appliance which fulfils an independent cooking or heating function

NOTE 1 Examples are **hob elements**, **griddle plates** or ovens.

NOTE 2 If an oven incorporates more than one heating element or groups of elements which are so controlled that one element or group cannot be switched on while another element or group is energized, each of the elements or groups of elements is to be considered as a separate **heating unit** and tested accordingly.

**2.2.103
hob element (boiling plate, surface element)**

heating unit designed to accommodate a vessel or vessels on its upper surface

NOTE A **hob element** may consist of an **induction** or non-induction **heating source** beneath a surface of glass-ceramic or similar material.

**2.2.104
hob surface (cooking top)**

horizontal part of the appliance to which the **hob elements** are attached

**2.2.105
hob**

a **hob surface** and one or more **hob elements**. It may be a separate appliance or part of a **cooking range**

NOTE A **hob** may also incorporate a **griddle plate**.

**2.2.106
cooking zone**

area marked on a **hob surface** of glass-ceramic or similar material where the vessel is intended to be placed

**2.2.107
induction heating source**

a heating source which operates by inducing eddy currents in a vessel positioned on the **hob element**.

**2.2.108
griddle plate**

a **heating unit** having a cooking surface on which the food is intended to be placed directly

**2.2.109
installation wall**

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

**2.2.110
pan detector**

a device incorporated in a **hob element**, which prevents its operation unless a vessel is placed on the **cooking zone**

NOTE A **pan detector** is not considered to be a thermostat or **protective device**.

3 General requirement

This clause of part 1 is applicable except as follows.

Addition:

NOTE 101 The d.c. component in the appliance neutral is limited (Australia).

4 General conditions for the tests

This clause of part 1 is applicable except as follows.

4.2 *Addition:*

Hob elements which are submitted separately are tested when installed in an appropriate cooking range.

The test of 18.2 may be made on a separate sample.

4.3 *Addition:*

The test of 18.2 is made before the test of clause 11 unless it is made on a separate sample.

4.10 *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 appliances.

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

4.101 Appliances are tested as **heating appliances**, even if they incorporate a motor.

4.102 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 standard.

5 Void

6 Classification

This clause of part 1 is applicable except as follows.

6.1 *Replacement:*

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

Compliance is checked by inspection and by the relevant tests.

NOTE **Class 0I appliances** are allowed if their **rated voltage** does not exceed 150 V (Japan).

6.2 *Addition:*

NOTE 101 For appliances intended to be installed in a kitchen, an appropriate degree of protection against harmful ingress of water is required according to their height of installation (France).

7 Marking and instructions

This clause of part 1 is applicable except as follows.

7.1 Addition:

In addition, appliances shall be marked with

- the water pressure or range of pressures, in kilopascals (kPa), for appliances intended to be connected to a water supply, unless this is indicated in the instruction sheet.

Appliances incorporating **induction heating sources** shall in addition be marked with

- operating frequency or operating frequency range in kilohertz (kHz);
- the total power input of all the induction **heating unit(s)** which can operate simultaneously, in watts or kilowatts, unless this is indicated in the instruction sheet.

NOTE 101 The power input to be marked or declared is the highest power input any switching arrangement will allow.

- the total power input of all the non-induction **heating unit(s)** which can operate simultaneously in watts or kilowatts unless this is indicated in the instruction sheet.

NOTE 102 The power input to be marked or declared is the highest power input any switching arrangement will allow.

Any cover giving access to **live parts** at a **working voltage** exceeding 250 V shall be marked by the following:

"WARNING – DANGEROUS VOLTAGE" or by the symbol for dangerous voltage (see 7.6).

Covers giving access to induction coils shall be marked by the following:

"CAUTION – MAGNETIC FIELD" or by the symbol for non-ionizing electromagnetic radiation (see 7.6).

NOTE 103 If it is not possible to mark these warnings on the cover, they may be placed close to the cover retaining screws.

7.6 Addition:

Add the following symbols:



.....non-ionizing electromagnetic radiation (IEC 60417-5140)*



.....dangerous voltage (IEC 60417-5036-a)*



.....equipotentiality (IEC 60417-5012-a)*

* See IEC 60417-1:1998, *Graphical symbols for use on equipment – Part 1: Overview and application*, and IEC 60417-2:1998, *Graphical symbols for use on equipment – Part 2: Symbol originals*