

Safety of household and similar electrical appliances —

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

The European Standard EN 60335-2-36:2000 has the status of a British Standard

ICS 97.040.20

National foreword

This British Standard is the official English language version of EN 60335-2-36:2000. It is identical with IEC 60335-2-36:2000. It supersedes BS EN 60335-2-36:1995 which will be withdrawn on 01/10/2002.

The UK participation in its preparation was entrusted by Technical Committee CPL/61, Safety of household and similar electrical appliances, to CPL/61/5, Part 2-36: Particular requirements for commercial electric multi-purpose cooking pans, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

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Attention is drawn to the fact that CEN and CENELEC Standards normally include an annex which lists normative references to international publications with their corresponding European publications. The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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Summary of pages

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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
(IEC 60335-2-36:2000)

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
(CEI 60335-2-36:2000)

Sicherheit elektrischer Geräte für den
Hausgebrauch und ähnliche Zwecke
Teil 2-36: Besondere Anforderungen für
elektrische Herde, Brat- und Backöfen
und Kochplatten für den gewerblichen
Gebrauch
(IEC 60335-2-36:2000)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 61E/347/FDIS, future fourth edition of IEC 60335-2-36, prepared by SC 61E of the IEC Technical Committee 61, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60335-2-36 on 2000-04-01.

This European Standard replaces EN 60335-2-36:1995 and its amendments A1:1996 and A2:1999.

The following dates are applicable:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2001-01-01
- date on which national standards
conflicting with the EN have to be withdrawn (dow) 2003-04-01

This standard has to be used in conjunction with EN 60335-1, Safety of household and similar electrical appliances, Part 1: General requirements. It was established on the basis of the 1994 edition of that standard. Amendments and revisions of part 1 have also to be taken into account and the dates when such changes become applicable will be stated in the relevant amendment or revision of part 1.

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

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 of part 1 is to be adapted accordingly.

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

There are no special national conditions causing a deviation from this European Standard, other than those listed in annex ZA to EN 60335-1.

National deviations from this European Standard are listed in annex ZB and are in addition to those in EN 60335-1.

NOTE 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. When a definition of part 1 concerns an adjective, the adjective and the associated noun are also in bold.

Introduction

An investigation by CENELEC TC 61 has shown that all risks from products within the scope of this standard are fully covered by the Low Voltage Directive, 73/23/EEC. If the product has mechanical moving parts, a risk assessment in accordance with the Machinery Directive, 89/392/EEC, has shown that the risks are mainly of electrical origin and consequently this directive is not applicable. However, the relevant essential safety requirements of the Machinery Directive are covered by this standard together with the principal objectives of the Low Voltage Directive.

Endorsement notice

The text of the International Standard IEC 60335-2-36:2000 was approved by CENELEC as a European Standard without any modification.

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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*

7.12 Addition:

If the appliance incorporates a **hob surface** of glass-ceramic or similar material which provides the enclosure of **live parts**, the instructions shall include the substance of the following warning:

WARNING – If the surface is cracked, immediately disconnect the appliance or appropriate part of the appliance from the supply.

The instructions for appliances with **hob surfaces** of glass-ceramic or similar material shall state that aluminium foil and plastic vessels are not to be placed on the hot surfaces. They shall also state that these surfaces are not to be used for storage.

The instructions for **hobs** incorporating halogen lamps shall warn the user to avoid looking direct at the lamps when on.

The instructions for appliances incorporating **induction heating sources** shall indicate the size of the smallest cooking vessel to be used. They shall also include the substance of the following:

- metallic objects such as kitchen utensils, cutlery etc. shall not be placed on the **hob surface** within the **cooking zones** since they could get hot;
- take care when operating the appliance, as rings, watches and similar objects worn by the user could get hot when in close proximity to the **hob surface**;
- only use vessels of the type and size recommended.

The instructions for appliances incorporating **induction heating sources** shall state that users with heart pacemakers should consult with the manufacturer, unless specific details are given.

The instructions for use for **hobs** with **hob elements** incorporating **pan detectors** shall include the substance of the following:

After use, switch the **hob element** off by means of its control. Do not rely on the **pan detector**.

7.12.1 Replacement:

The appliance shall be accompanied by an instruction sheet detailing any special precautions necessary for installation. For appliances intended for installation in a bank of other appliances and appliances intended to be fixed to an **installation wall**, details of how to ensure appropriate protection against electric shock and harmful ingress of water shall be supplied. If the controls of more than one appliance are combined in a separate enclosure, detailed installation instructions shall be supplied. Instructions for **user maintenance**, for example cleaning, shall also be given.

For appliances which are permanently connected to fixed wiring and for which leakage currents may exceed 10 mA, particularly if disconnected or not used for long periods, or during initial installation, the instruction sheet shall give recommendations regarding the rating of **protective devices**, i.e. earth leakage relays to be installed.

If the appliance is constructed so that it is not protected against water jets, clear and detailed instructions for the user shall be delivered together with the appliance. It shall be stated in the instructions that this appliance shall not be cleaned with a water jet.

In addition, for appliances incorporating **induction heating sources**, the instructions shall state that any repairs shall be carried out only by persons trained or recommended by the manufacturer.