

Specification for

Safety of household and similar electrical appliances —

Part 202: Particular requirements —

Section 202.46 Commercial electric
steam cookers

This European Standard EN 60335-2-46 has the status of a
British Standard

UDC 621.365:64-621-83:64:614.8.004.1-777:621.396.669.8

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National foreword

This Section of BS 3456-202 has been prepared under the direction of the Light Electrical Engineering Standards Policy Committee and is the English language version of EN 60335-2-46, “*Safety of household and similar electrical appliances*”: Part 2 “*Particular requirements for commercial electric steam cookers*”, including Amendment A1, published by the European Committee for Electrotechnical Standardization (CENELEC). It was derived from the first edition (1986) of IEC Publication 335-2-46 and an amendment document CLC/TC 61 (SEC) 521. For the sake of clarity, the CENELEC common modifications have been incorporated at the appropriate places in the text of IEC 335-2-46:1986 and are marked by a vertical line at the left-hand margin. The relevant parts of the original IEC text have been quoted as “INFORMATION” directly after the text of the common modifications. Where modifications have been incorporated the correct print type has been used and the marginal letters referred to in the foreword have been omitted. Appendices designated “normative” are part of the body of the standard. Appendices designated “informative” are given only for information.

This Section is to be read in conjunction with BS 3456-201:1989: “*General requirements*”, which it supplements or modifies. The many references to Part 1 should be read as references to BS 3456-201, which is the English language version of EN 60335-1.

Cross-references. The relationship between other international publications quoted in this Section of BS 3456 and British Standards which are either identical or technically equivalent, is given in National appendix X.

Product approval. Attention is drawn to the fact that products conforming to this British Standard may be approved by the British Electrotechnical Approvals Board for the purposes of participation in the CENELEC Certification Agreement and in the CB Scheme of the IECEE. (Details of the BEAB Approval Marks Scheme are given on the inside back cover).

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 18, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60335-2-46

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Key words: Household electrical appliance; commercial electric steam cooker; protection against electric shock; protection against fire risk; protection against mechanical hazard

English version

Safety of household and similar electrical appliances Part 2: Particular requirements for commercial electric steam cookers

(includes amendment *A1:1992*)
(IEC 335-2-46:1986 1st edition, modified)

Sécurité des appareils électrodomestiques et
analogues
Deuxième partie: Règles particulières pour les
cuisers à vapeur électriques à usage collectif
(inclut l'amendement *A1:1992*)
(CEI 335-2-46:1986 1ère édition, modifiée)

Sicherheit elektrischer Geräte für den
Hausgebrauch und ähnliche Zwecke
Teil 2: Besondere Anforderungen für
elektrische Dampfkocher für den gewerblichen
Gebrauch
(enthält Änderung *A1:1992*)
(IEC 335-2-46:1986 1. Ausgabe, modifiziert)

This European Standard was ratified by CENELEC on 7 March 1989.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CENELEC Central Secretariat has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
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Ref. No. EN 335-2-46:1989 + *A1:1992* E

Brief history

The proposal to endorse the first edition of IEC Publication 335-2-46, document CENELEC/TC 61 (SEC) 521, was circulated under the enquiry procedure in January 1987.

This proposal was discussed during the Brighton meeting in October 1987, when it was decided to submit a draft for EN 60335-2-46 to the voting procedure. This procedure started in September 1988.

The text of this draft was ratified by the CENELEC Technical Board on the 7th of March 1989.

Foreword

This European Standard has been prepared by the Secretariat of CENELEC Technical Committee 61.

The following dates are applicable:

- date of announcement (doa) 1989-12-01
- date of latest publication (dop) 1990-03-01
- date of withdrawal of conflicting national standards (dow) 1993-01-01

For products which have complied with the relevant national standard before 1993-01-01, as shown by the manufacturer or by a Certification Body, this previous standard may continue to apply for production until 1998-01-01.

This document supplements or modifies the corresponding clauses of IEC 335-2-46, first edition, so as to convert that standard into the European Standard EN 60335-2-46, which has to be used in conjunction with EN 60335-1:1988, *Safety of household and similar electrical appliances, Part 1: General requirements*.

Sub-clauses which are in addition to those in IEC 335-2-46 are numbered starting with 601.

There are no special national conditions (snc) causing a deviation from this European Standard, other than those listed in Annex ZX of EN 60335-1. National deviations from this European Standard are listed in Annex ZY and are in addition to those in EN 60335-1.

NOTE Where reference is made to other harmonized standards, the latest edition of that standard is applicable.

The following print types referred to in the preface of IEC 335-2-46 are used:

- requirements proper: in roman type
- test specifications: in italic type
- explanatory matter: in smaller roman type

In addition:

- *instructions for modification of the reference document:* in italic type

1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.

2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.

3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

Foreword to Amendment A1

The proposal to endorse amendment 1:1990 to IEC 335-2-46:1986, was discussed during the Helsinki meeting in May 1990 and the Athens meeting in November 1990, when it was decided to submit a draft for an amendment to EN 60335-2-46 to the unique acceptance procedure (UAP).

This draft was circulated as prAA in June 1991 and was ratified by CENELEC as amendment A1 on the 24th of March 1992.

This amendment has been prepared by the secretariat of CENELEC Technical Committee TC 61.

The following dates are applicable:

- latest date of publication of an identical national standard (dop) 1992-09-01
- date of withdrawal of conflicting national standards (dow) 1994-09-01

For products which have complied with EN 60335-2-46:1989 before 1994-09-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1999-09-01.

This document supplements or modifies the corresponding clauses of amendment 1:1990 to IEC 335-2-46:1986, so as to convert it into amendment A1 to EN 60335-2-46:1989.

As a consequence of endorsing amendment 1 to IEC 335-2-46, the common modifications in EN 60335-2-46 concerning subclauses **1.1**, **4.601**, **11.2**, **19.4**, **22.101** and **24.11** are withdrawn since they are covered by the IEC text.

EN 60335-2-46, including this amendment, has to be used in conjunction with EN 60335-1:1988, including its amendments A2:1988, A5:1989, A6:1989 and A51:1991.

There are no special national conditions (snc) causing a deviation from this amendment.

There are no national deviations from this amendment.

NOTE The UDC and descriptors of this amendment replace the ones given for EN 60335-2-46:1989.

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1 Scope

This clause of Part 1 is applicable except as follows:

1.1 Replacement:

This standard applies to electrically operated commercial steam cookers and, exclusive of any other use, steam generators, not intended for household use.

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

INFORMATION as to original IEC text.

It reads:

The electrical part of appliances making use of other forms of energy is also within the scope of this standard and the influence of the non-electrical parts on the electrical parts is taken into consideration.

This standard does not apply to:

- steam cookers for industrial purposes;
- continuous process steam cookers for the mass production of food;
- steam cookers with electrode heaters;
- 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).

For appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may be necessary.

Attention is drawn to the fact that in many countries additional requirements are specified by the national authorities responsible for health, for water supplies and for the protection of labour.

In many countries additional requirements for pressure appliances are specified.

These appliances are intended for use in professional kitchens, such as those in restaurants and hospitals, and in enterprises such as bakeries and butcheries.

For appliances intended to be used in tropical countries, special requirements may be necessary.

2 Definitions

This clause of Part 1 is applicable except as follows:

2.2.4 Addition:

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

2.2.19 Addition:

Wherever Class II is used in this standard it is understood to mean a part of Class II construction.

2.2.20 Addition:

Wherever Class III is used in this standard it is understood to mean a part of Class III construction.

2.2.29 Replacement:

Conditions of adequate heat discharge denote:

- that 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. Then they are readjusted, if possible, to the lowest setting that maintains that temperature;
- that appliances with steam generators intended to be filled by hand are filled to the indicated level on the steam generator;
- that appliances with steam generators intended to be filled automatically are connected to a supply having the pressure designated by the manufacturer for correct operation. Where the manufacturer specifies a range of pressures, the pressure is adjusted to give the most unfavourable conditions;
- that the incoming water is maintained at:
 - 15 ± 5 °C in the case of appliances intended for connection to a cold water supply;
 - 60 ± 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.

- that lids, doors, and covers are in position and closed;
- that the cooking compartment of the appliance contains a water load, initially at 15 ± 5 °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.

2.2.30 Replacement:

Normal load denotes the load obtained when the 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, while the appliance is operating under conditions of adequate heat discharge.

Additional definitions:

2.2.101 *A steam cooker* denotes an appliance intended for the cooking of food by means of direct steam contact.

2.2.102 *Atmospheric steam cooker* denotes an appliance in which the steam space of the cooking compartment is directly vented to atmosphere.

2.2.103 *Rated pressure* denotes the maximum working pressure assigned by the manufacturer to the pressurized parts of the appliance.

2.2.104 *Steam generator* denotes that part of the appliance designed specifically for the generation of steam for exclusive use in a cooking compartment.

The steam generator may be contained within the cooking compartment, remote from the cooking compartment but contained within the same casing or as a separate unit providing steam for one or more cooking compartments.

2.2.105 *Cooking compartment* denotes that part of the appliance in which the cooking or food heating process takes place.

2.2.106 *Indicated level* denotes a mark on the steam generator to indicate the maximum liquid level for correct operation.

3 General requirement

This clause of Part 1 is applicable.

4 General notes on tests

This clause of Part 1 is applicable except as follows:

Additional sub-clauses:

4.101 *For combined appliances, if the voltage required to increase the input for the heating sections to 1.15 times rated input exceeds the voltage required to increase the voltage of the motors to 1.06 times rated voltage by 3 V, a separate supply is used for the motors.*

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 standards.*

4.103 *When testing the electrical part of appliances supplied with energy other than electric, the influence of the non-electrical part of the appliance must be taken into account.*

4.601 *When testing the electrical part of appliances supplied with energy other than electric, the influence of the non-electrical part of the appliance has to be taken into account.*

INFORMATION as to original IEC text.

Sub-clause **4.601** is not included.

5 Rating

This clause of Part 1 is applicable.

6 Classification

This clause of Part 1 is applicable except as follows:

6.1 Addition:

Add the following to Item 2:

- Jet-proof appliances (IPX5 in accordance with HD 365. Classification of Degrees of Protection Provided by Enclosures).

INFORMATION as to original IEC text.

It reads:

- Jet-proof appliances (IPX5 in accordance with IEC publication 529: Classification of Degrees of Protection Provided by Enclosures).

Addition:

3. According to degree of protection against temperature rise due to installation conditions:

- appliances intended for installation in isolation;
- appliances intended for installation in a bank of other appliances.

There are no additional requirements for appliances intended for installation in a bank of other appliances at present.

7 Marking

This clause of Part 1 is applicable except as follows:

7.1 Addition:

In addition, appliances shall be marked with:

- the rated pressure, in kPa, on pressurized parts of the appliance;
- the water pressure or range of pressures, in kPa, for appliances with steam generators intended to be connected to a water supply, unless this is indicated in the instruction sheet.

7.6 Addition:

Add the following to the list of symbols:

kPa	kilopascals
IPX5	jet-proof construction

7.12 Addition:

The appliance shall be accompanied by an instruction sheet detailing any special precautions necessary for installation. Operating instructions and instructions for user maintenance, for example cleaning, shall also be given.

For appliances which are permanently connected to fixed wiring, the instruction sheet shall give information about precautions to be taken during installation with regard to leakage current.

If an appliance is not of jet-proof construction, 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.

The instruction sheet shall also include information with regard to the maximum food load in kilograms.

Additional sub-clause:

7.101 Steam generators intended to be filled by hand shall be marked with an indicated level.

8 Protection against electric shock

This clause of Part 1 is applicable.

9 Starting of motor-operated appliances

This clause of Part 1 is applicable.

10 Input and current

This clause of Part 1 is applicable except as follows:

10.1 Addition:

For multiple units the total input may be determined by measuring the input of each unit separately.

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

11 Heating

This clause of Part 1 is applicable except as follows:

11.2 Addition:

— *Appliances intended to be fixed to the floor are installed in accordance with the manufacturer's instructions. If no instructions are given, Part 1 applies.*

INFORMATION as to original IEC text.

It reads:

— *Fixed floor mounted appliances are installed according to the manufacturer's instructions.*

— *Separate cooking compartments and steam generators are assembled in accordance with the manufacturer's instructions and located in the test corner in such a manner that they will have the most unfavourable effect on each other and on their surroundings.*

11.4 Replacement:

Appliances are operated in accordance with conditions of adequate heat discharge such that the total input of the appliance is 1.15 times rated input. If it is not possible to switch on all heating elements at the same time, the test is made with each of the combinations that the switch arrangement will allow, the highest load possible with each switching arrangement being in circuit.

If the appliance is provided with a control which limits the total input, the test is made with whichever combination of heating units as may be selected by the control imposes the most severe condition.

11.7 Replacement:

The appliance is operated as follows:

Steam cookers with steam generators incorporated in the cooking compartment are operated on continuous cycles until steady conditions are established. Each cycle comprises an operating period followed by a rest period strictly sufficient, but in no case longer than 5 min, to allow for replacing the water load, the water level in the steam generators intended to be filled by hand being, if necessary, restored to the indicated level, in accordance with the manufacturer's instructions.

The operating period is equal to the maximum cooking time declared by the manufacturer or, if such declaration is not provided, to the time taken for the appliance to reach the maximum temperature conditions.

Steam cookers with separate generators are switched on and allowed to operate until steady conditions are established in the steam generator. When these conditions have been reached, the appliance is operated as above.

11.8 Addition:

During the test the pressure relief device shall not operate.

11.10 Modification:

Replace the text of note 1) of the table by:

The factor "p" equals 8 000.

12 Operation under overload conditions of appliances with heating elements

This clause of Part 1 is applicable except as follows:

12.3 Addition:

This test is only carried out on pressurized parts of the appliance if the pressure is intended to be varied by the user.

13 Electrical insulation and leakage current at operating temperature

This clause of Part 1 is applicable except as follows:

13.2 Modification:

Instead of the permissible leakage current for stationary Class I appliances, the following applies:

- for cord and plug connected appliances 1 mA/kW with a maximum of 10 mA
- for other appliances 1 mA/kW with no maximum

Addition:

Where parts of Class II or Class III construction are included in the appliance, the leakage current of these parts shall not exceed the values given in Part 1.

14 Radio and television interference suppression

This clause of Part 1 is applicable.

15 Moisture resistance

This clause of Part 1 is applicable except as follows:

15.2 Addition:

Ordinary and drip-proof appliances are also subjected to the splash test with the apparatus shown in Figure 10 of Part 1.

Jet-proof appliances are subjected to the test described in HD 365 (IPX5).

INFORMATION as to original IEC text.

It reads:

Jet-proof appliances are subjected to the test described in IEC Publication 529 (IPX5).

15.3 Modification:

Instead of the requirement, the following applies:

Appliances shall be so constructed that spillage of liquid in normal use does not affect their electrical insulation.

Instead of the test specification paragraph referring to the liquid container, the following applies:

The water container of steam generators intended to be filled with water by hand is completely filled with water and a further quantity equal to 15 % of the capacity of the container is poured in steadily over a period of 1 min.

Appliances with steam generators intended to be filled automatically are connected to a water supply having the maximum supply pressure designated by the manufacturer for correct operation. The means for controlling the incoming water is held fully open and the filling continued for 1 min after the first evidence of overflow, or until a further protective system operates to stop the inflow.

15.4 Modification:

Instead of the periods specified, the following applies:

Appliances are placed in the humidity cabinet for a period of 24 h.

Addition:

If it is not possible to place the whole appliance in the humidity cabinet, parts containing electrical components are tested separately, taking into account the conditions which occur in the appliance.

15.101 Appliances which are provided with a tap intended for filling or cleaning shall be so designed that the water from the tap cannot come into contact with live parts.

Compliance is checked by the following test:

The means for controlling the incoming water is held fully open for 1 min with the appliance connected to a water supply having the maximum water pressure indicated by the manufacturer. Tiltable and movable parts, including lids, are tilted or placed in the most unfavourable position. Swivelling outlets of water taps are so positioned as to direct water onto those parts which will give the most unfavourable result.

Immediately following this treatment, the appliance shall withstand the dielectric strength test of Clause 16.

16 Insulation resistance and electric strength

This clause of Part 1 is applicable except as follows:

16.2 Modification:

Instead of the permissible leakage current for stationary Class I appliances, the following applies:

- for cord and plug connected appliances 2 mA/kW with a maximum of 10 mA
- for other appliances 2 mA/kW with no maximum

17 Overload protection

This clause of Part 1 is applicable.

18 Endurance

This clause of Part 1 is applicable except as follows:

18.1 Addition:

The tests are only made on the motor-operated part of the appliance, but the heating elements are energized.

INFORMATION as to original IEC text.

It reads:

The tests are only made on the motor-operated part of the appliance.

18.2 Modification:

Instead of the test specification paragraph referring to the table, the following applies:

The motor-operated part of the appliance, is operated under normal load and at a voltage equal to 0.9 times rated voltage for 48 h through equal cycles of operation of the appliance, the duration of each cycle being limited to 4 h unless restricted by the operation of the appliance.

19 Abnormal operation

This clause of Part 1 is applicable except as follows:

19.1 Modification:

Instead of the tests specified as applicable, the following applies:

- for all appliances *Sub-clauses 19.2 and 19.3 if necessary*
- In addition:
- for all appliances provided with a control which limits the temperature or pressure during the test of Clause 11 *Sub-clause 19.4*
- for appliances incorporating motors *Sub-clause 19.6 and 19.7 to 19.10 as applicable*

Addition:

Continuous blowing-off of the pressure relief device is in itself disregarded.

19.2 Modification:

Instead of the first paragraph, the following applies:

Appliances, without water load and with all doors or lids closed, are operated under the conditions specified in Clause 11, the supply voltage, determined prior to the test, being that required to provide an input of 0,85 times the rated input under conditions of adequate heat discharge when steady conditions have been established. This voltage is maintained throughout the test. Steam generators intended to be filled by hand are operated without water. Steam generators intended to be filled automatically are operated with the water supply turned off and the steam generator dry.

Addition:

For steam generators, the test of Sub-clause 19.3 is to be made in any case.

19.3 Addition:

Any adjustable temperature or pressure control within the appliance which is preset for correct operation but is not locked in position is adjusted to its most unfavourable position.

19.4 Addition:

The appliance is tested under the conditions specified in Clause 11 but with the voltage such that the input is 1,24 times the rated input and with any control which limits the temperature during the test of Clause 11 short-circuited.

If the appliance is provided with more than one control, these are short-circuited in turn.

Contactors complying with the relevant IEC standard are not open-circuited or short-circuited, provided the appropriate standard covers the conditions which occur in the appliance. However, locking in the "on" position of the main contacts of a contactor intended for switching on and off the heating element(s) in normal use is considered to be a fault condition, unless the appliance is provided with at least two sets of contacts connected in series. This condition is, for example, achieved by providing two contactors operating independently of each other or by providing one contactor having two independent armatures operating two independent sets of main contacts.

20 Stability and mechanical hazards

This clause of Part 1 is applicable except as follows:

20.1 Addition:

Covers, lids, and accessories are placed in the most unfavourable positions.

For the purpose of this test any spillage of liquid is ignored.

21 Mechanical strength

This clause of Part 1 is applicable except as follows:

Additional sub-clause:

21.101 Shelves shall be so designed that they do not fall away from the shelf supports either when inside the oven or extended out by 50 % of their depth. They shall not tip when extended out by 50 %.

Compliance is checked by the following test:

Load a cake tin or similar container, having an area of 75 % of that of the shelf, with evenly distributed weights of mass totalling 40 kg for each square meter of tin area. Insert a shelf, with the loaded tin centrally disposed, on the supports provided in the oven. Move the shelf as far as possible to the left, leave for 1 min and then withdraw it. Re-insert the shelf and move it to the extreme right, leave for 1 min and again withdraw it.

During this test the shelf shall not fall away from the support.

The test is then repeated with the shelf extended out by 50 % of its depth. Then apply an additional force of 10 N vertically downward on the centre of the exposed front edge of the shelf. During this test the shelf shall not tip.

22 Construction

This clause of Part 1 is applicable except as follows:

22.1 Replacement:

Appliances shall be of Class I construction.

Compliance is checked by inspection and by the relevant tests.

22.2 Replacement:

Appliances shall be at least drip proof.

Compliance is checked by inspection and by the relevant tests.

INFORMATION as to original IEC text.

This replacement is not included.

22.28 Replacement:

Appliances which operate at a pressure in excess of atmospheric pressure (over-pressure) shall incorporate a suitable pressure relief device which prevents excessive pressure.

Compliance is checked by operating the appliance at rated input with the pressure controls rendered inoperative.

The pressure relief device shall operate during this test so as to prevent the internal pressure from exceeding the rated pressure by 10 %.

Additional sub-clauses:

22.101 *Replace this sub-clause by:*

Appliances shall be protected in such a manner that moisture and grease will not collect in such a way that creepage distances and clearances are affected.

Compliance is checked by inspection.

INFORMATION as to original IEC text.

It reads:

Appliances shall be protected in such a manner that moisture and grease will not collect in such a way as to affect creepage distance and clearance values.

Compliance is checked by inspection.

22.102 Thermal cut-outs shall be of the non-self-resetting trip-free type.

Compliance is checked by inspection and by manual test.

22.103 The operating pressure shall not exceed the rated pressure.

Compliance is checked during the test of Clause 11.

22.104 It shall not be possible to open the door of the cooking chamber of a pressurized appliance until the pressure has been reduced to approximately atmospheric pressure.

INFORMATION as to original IEC text.

It reads:

It shall not be possible to open the cooking chamber door of a pressurized appliance until the pressure has been reduced to atmospheric pressure.

Compliance is checked by inspection and by manual test.

INFORMATION as to original IEC text.

An additional sub-clause is included.

It reads:

22.105 For fixed appliances and appliances which are permanently connected to fixed wiring, it shall be possible to gain access to components for servicing without moving the appliance, for example heating elements and controls.

It shall be possible on fixed appliances, and appliances with a mass greater than 40 kg not provided with rollers or castors, to connect water and other services to the appliance in its intended position.

Compliance is checked by inspection.

22.106 For appliances designed to operate at atmospheric pressure, the steam vents shall be protected either by design, location, or other means against blockage.

Compliance is checked by inspection.

22.107 Means provided to allow drainage of water from steam generators and cooking compartments shall discharge the water in such a manner that electrical insulation is not affected.

Compliance is checked by inspection and by manual test.

22.108 The level to which manually filled water containers of steam generators have to be filled shall be so located as to be readily visible when filling.

Compliance is checked by inspection.

22.109 Pressure appliances shall be provided with a means whereby exhausted steam is condensed automatically before it is released to the drain.

Compliance is checked by inspection.

22.110 Pressure appliances shall incorporate a vacuum release valve to prevent a partial vacuum forming within the appliance unless it is designed for vacuum operation.

Compliance is checked by inspection.

22.111 Pressure appliances shall be capable of withstanding the rated pressure.

Compliance is checked by subjecting the pressure compartments for 30 min to a hydrostatic pressure equal to 1.3 times the rated value. All outlets are sealed and any pressure relief devices rendered inoperative.

Means other than water may be used to create the hydrostatic pressure.

During the test the pressure compartments shall show no signs of leaks or permanent deformation, nor shall they burst.

23 Internal wiring

This clause of Part 1 is applicable.

24 Components

This clause of Part 1 is applicable except as follows:

24.1 Addition:

Switches intended to be adjusted frequently during the operation of the appliance, shall be switches for frequent operation.

On/off switches are not required to be switches for frequent operation if the appliance is provided with a separate regulating device.

24.11 Addition:

Appliances are considered to be intended for use unattended.

INFORMATION as to original IEC text.

It reads:

This clause of Part 1 is applicable.

Replacement:

Thermal cut-outs shall provide all-pole disconnection from the supply.

Compliance is checked by inspection.

25 Supply connection and external flexible cables and cords

This clause of Part 1 is applicable except as follows:

25.1 Modification:

Appliances shall not be provided with an appliance inlet.

Addition:

The terminals for permanent connection to fixed wiring may also be suitable for the type X attachment of a power supply cord. In this case the instruction sheet shall give full particulars of the power supply cord.

Compliance is checked by inspection.

25.2 Addition:

Fixed appliances and appliances with a mass greater than 40 kg and not provided with rollers or castors shall be so designed that the supply cord can be connected after the appliance has been installed in accordance with the manufacturer's instructions.

25.4 Addition:

Type X attachment shall be used for appliances delivered without a cord.

25.6 Modification:

Instead of the types of power supply cord specified, the following applies:

Power supply cords shall be oil resistant sheathed flexible cable not lighter than ordinary polychloroprene or other equivalent synthetic elastomer-sheathed cord (code designation HO5 RN-F).

INFORMATION as to original IEC text.

Code designation 245 IEC 57 is cited instead of HO5 RN-F.

26 Terminals for external conductors

This clause of Part 1 is applicable.

27 Provision for earthing

This clause of Part 1 is applicable except as follows:

27.2 Addition:

Stationary appliances shall be provided with a terminal for the connection of an external equipotential conductor. This terminal shall be in effective electrical contact with all fixed exposed metal parts of the appliance and shall allow the connection of a conductor having a nominal cross-sectional area of up to 10 mm². It shall be located in a position convenient for the connection of the bonding conductor after installation of the appliance.

Small fixed exposed metal parts, for example name-plates and the like, are not required to be in electrical contact with the terminal.

28 Screws and connections

This clause of Part 1 is applicable.

29 Creepage distances, clearances and distances through insulation

This clause of Part 1 is applicable.

30 Resistance to heat, fire and tracking

This clause of Part 1 is applicable except as follows:

30.3 Modification:

Instead of the requirement, the following applies:

Insulating parts retaining live parts in position and supplementary insulation of metal-encased Class II parts, shall be of material resistant to tracking.

INFORMATION as to original IEC text.

It reads:

This clause of Part 1 is applicable.

The glow-wire test referred to in Appendix K is made at a temperature of 650 °C.

30.4 Addition:

Appliances are regarded as appliances to be operated while unattended.

30.5 Addition:

Switching devices with moving contacts, other than those manually operated and those intended to operate only during abnormal operation, are considered as subjected to extra-severe duty conditions.

In addition, other parts of insulating materials are also considered as subjected to extra-severe duty conditions, unless they are so enclosed or located that pollution by condensation is unlikely to occur; in such a case, the requirements for severe duty conditions apply.

31 Resistance to rusting

This clause of Part 1 is applicable.

32 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable except as follows:

32.1 Replacement:

A test specification is not yet available.

INFORMATION as to original IEC text.

It reads:

This clause of Part 1 is applicable.

Appendices

Appendix C Deleted.

Appendix D Deleted.

INFORMATION as to original IEC text.

It reads:

The Appendices of Part 1 are applicable.

Annex ZA (normative) Switches

Annex ZA to EN 60335-1 is applicable except as follows:

Clause 15 — Breaking capacity

Subclause 15b

Modification:

Instead of the rate of operation specified, switches for frequent operation are tested at a rate of 1 operation per minute.

Annex ZY (informative) National deviations

This document was compiled by CENELEC Technical Committee 61. It contains national deviations from the content of the European Standard EN 60335-2-46. These deviations are in addition to those in EN 60335-1 and could not yet be removed. They are only applicable in the countries concerned.

1. National deviations due to legal requirements

22.2 France (Décret 73 1007, 1973-10-31)

For commercial cooking appliances and for groups of such appliances, having a total maximum rated input exceeding 20 kW, parts situated at a height not exceeding 110 cm from the floor shall be jet proof (IPX5).

2. National deviations due to particular technical requirements permitted to be maintained until the date specified

7.12 Germany 1990-01-01

The statement in the instruction sheet that the appliance shall not be cleaned with a water jet is required for all appliances, including jet-proof appliances.

20.1 Germany 1990-01-01

Trolleys are subjected to the following additional test.

The trolley is loaded in accordance with the manufacturer's instructions and is placed on a plane inclined at an angle of 10° to the horizontal, the braking mechanism being applied as in normal use.

During the test, the trolley shall not move by more than 100 mm.

20.2 Germany 1990-01-01

Operating means, such as handles, knobs, push-buttons and the like, shall be designed and located so that scalding or burning due to hot surfaces or steam is not possible under conditions of normal use.

Scalding by escaping steam or liquid shall not occur.

Compliance is checked by inspection and by manual test.

21.1 France and netherlands 1990-01-01

Parts of the appliance situated at a height not exceeding 110 cm from the floor are subjected to blows having an impact energy of 20 Nm.

24.1 Germany 1990-01-01

For testing switches incorporated in the appliance, the number of cycles of operation is reduced to 20 000.

National appendix W

The United Kingdom participation in the preparation of this European Standard was entrusted by the Light Electrical Engineering Standards Policy Committee to Technical Committee LEL/161 upon which the following bodies were represented:

Association for Consumer Research
Association of Control Manufacturers — TACMA (BEAMA Ltd.)
Association of Manufacturers of Domestic Electrical Appliances
British Cable Makers' Confederation
British Electrotechnical Approvals Board
British Gas plc
British Lawn Mower Manufacturers' Federation
British Retailers' Association
Catering Equipment Manufacturers' Association
Consumer Policy Committee of BSI
Department of Energy (Electricity Division)
Department of Trade and Industry (Consumer Safety Unit, CA Division)
ERA Technology Ltd.
Economic Development Council
Electrical Installation Equipment Manufacturers' Association (BEAMA Ltd.)
Electricity Supply Industry in England and Wales
Fire Protection Association
Home Office
Institution of Electrical Engineers
Lighting Industry Federation Ltd.
Ministry of Defence
Portable Electric Tool Manufacturers' Association
Rotating Electrical Machines Association (BEAMA Ltd.)
Royal Society for the Prevention of Accidents
Small Electrical Appliances Marketing Association
South of Scotland Electricity Board

The following bodies were also represented, through subcommittees and panels:

Association of Supervisory and Executive Engineers
British Telecommunications plc
The Crown Suppliers
Health and Safety Executive
Post Office

National appendix X

The British Standards which are identical or technically equivalent to the International Standards referred to in EN 60335-2-46 are as follows:

International Standard	Corresponding British Standard
IEC 529:1976	BS 5490:1977 <i>Specification for classification of degrees of protection provided by enclosures</i> (Identical)
HD 22:1984 Code designation HO5 RN-F	BS 6500:1990 <i>Specification for insulated flexible cords and cables</i> Table 6 (Technically equivalent)

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BS
3456-202.46:
1990
EN
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1989

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