

Specification for

Safety of household and similar electrical appliances —

Part 2: Particular requirements —

Section 2.25 Microwave ovens

This European Standard EN 60335-2-25:1990 has the status of a British Standard

Cooperating organizations

The European Committee for Electrotechnical Standardization (CENELEC), under whose supervision this European Standard was prepared, comprises the National Committees of the following countries.

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Iceland	Switzerland
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National foreword

This British Standard has been prepared under the direction of the Light Electrical Engineering Standards Policy Committee and is the English language version of EN 60335-2-25, “*Safety of household and similar electrical appliances — Part 2: Particular requirements for microwave ovens*” including amendment A51 and amendment A2, published by the European Committee for Electrotechnical Standardization (CENELEC). It was derived by that organization from IEC Publication 335-2-25 (1988) second edition, including Amendment No. 1 (1989) and Amendment No. 2 (1991), which has the same title as the European Standard.

The CENELEC Common Modifications have been implemented at the appropriate places in the text of IEC Publication 335-2-25 (1988) second edition, and are indicated by a side line in the margin. The foreword and preface of IEC Publication 335-2-25 (1988) second edition and the deleted parts of the original IEC text which do not form part of the text of EN 60335-2-25 have been quoted in National appendix NA. Annexes designated “normative” are part of the body of the standard. Annexes designated “informative” are given for information only. National appendices are designated “informative”.

This Section of BS EN 60335-2 is to be read in conjunction with BS 3456 “*Safety of household and similar electrical appliances — Part 201:1990 General requirements*” which it supplements or modifies. The many references to Part 1 should read as references to BS 3456-201, which is the English language version of EN 60335-1 which was derived from the 1983 reprint of IEC Publication 335-1 (1976) second edition including Amendments 1, 2 and 3 to IEC 335-1.

This British Standard supersedes BS 3456-102.25:1988 which will be withdrawn no later than 1 January 1993 in accordance with CENELEC Internal Regulations.

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

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 Scheme are given on the inside back cover.)

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 26, 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 60335-2-25

November 1990

+ A51 March 1992

+ A2 April 1993

UDC 64.06-83:641.539:620.1:614.8

Supersedes HD 270 S1:1983

Descriptors: Household electrical appliances, microwave ovens, safety requirements, protection against electric shocks, fire protection, protection against mechanical hazard

English version

Safety of household and similar electrical appliances Part 2: Particular requirements for microwave ovens

(includes amendments A51:1992 + A2:1993)
(IEC 335-2-25:1988 + Amendment 1:1989, modified)

Sécurité des appareils électrodomestiques et analogues
Deuxième partie: Règles particulières pour les fours à micro-ondes
(inclut les amendements A51:1992 + A2:1993)
(CEI 335-2-25:1988 + Modification 1:1989, modifiées)

Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke
Teil 2: Besondere Anforderungen für Mikrowellengeräte
(enthält Änderungen A51:1992 + A2:1993)
(IEC 335-2-25:1988 + Änderung 1:1989, modifiziert)

This European Standard was approved by CENELEC on 11 June 1990. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B-1050 Brussels

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Ref. No. EN 60335-2-25:1990 + A51:1992 + A2:1993

 Documents
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Brief history

The proposal to endorse the second edition of IEC Publication 335-2-25, document CLC/TC 61 (SEC) 643, was circulated under the enquiry procedure in March 1988.

This proposal was discussed during the Brussels meeting in November 1988 when it was decided to submit a draft for EN 60335-2-25 to the voting procedure. This procedure started in September 1989.

The proposal to endorse amendment 1 to IEC Publication 335-2-25 was discussed during the Brussels meeting in November 1988 when it was decided to submit a draft for an amendment to EN 60335-2-25 to the Unique Acceptance Procedure (UAP). This procedure started in September 1989.

The texts of both drafts were ratified by the CENELEC Technical Board on the 11th of June 1990 and are combined in EN 60335-2-25.

Foreword

This European Standard has been prepared by the secretariat of CENELEC Technical Committee 61. The following dates are applicable:

- date of announcement (doa) 1990-08-01
- date of latest publication (dop) 1991-01-01
- date of withdrawal of conflicting national standards (dow) 1993-01-01

This European Standard replaces HD 270 S1:1983.

For products which have complied with HD 270 S1:1983 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 335-2-25:1988, including its amendment 1:1989, so as to convert that standard into the European Standard EN 60335-2-25.

This standard has to be used in conjunction with EN 60335-1:1988, *Safety of household and similar electrical appliances, Part 1: General requirements*, including its amendments 2:1988, A5:1989 and A6:1989.

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 of Part 1 is to be adopted accordingly.

Subclauses which are in addition to those in IEC 335-1 are numbered starting with 101. Additional appendices are lettered AA, BB, etc.

Special national conditions (snc) causing a deviation from this European Standard are listed in Annex ZX and are in addition to those in EN 60335-1.

There are no national deviations from this European Standard, other than those listed in Annex ZY of EN 60335-1.

Other publications quoted in this standard:

- | | |
|-------------------|---|
| EN 60335-2-6:1990 | <i>Particular requirements for cooking ranges, cooking tables, ovens and similar appliances for household use</i> |
| IEC 384-14:1981 | <i>Fixed capacitors for use in electronic equipment, Part 14: Sectional specification: Fixed capacitors for radio interference suppression, Selection of methods of test and general requirements</i> |

The following print types are used:

- requirements: in roman type
- test specifications: in italic type
- explanations: in small roman type

Foreword to Amendment A51

A proposal to amend EN 60335-2-25, document CLC/TC 61 (SEC) 701, was discussed during the Athens meeting in November 1990, when it was decided to submit document IEC 61B (Central Office) 40 as a draft for an amendment to the unique acceptance procedure (UAP). This procedure started in April 1991.

The text of this draft was ratified by CENELEC as amendment A51 on 10 December 1991.

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) 1992-11-01
- date of withdrawal of conflicting national standards (dow) 1994-11-01

For products which have complied with EN 60335-2-25:1990 before 1994-11-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1999-11-01.

This document supplements or modifies the corresponding clauses of EN 60335-2-25.

Subclauses which are in addition to those in IEC 335-2-25 are numbered starting with 601.

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

There are no national deviations from this amendment.

NOTE Amendment numbers commencing A1 refer to the endorsement of IEC amendments, while those commencing A51 originate in CENELEC.

Foreword to Amendment A2

A proposal to amend EN 60335-2-25:1990, document CLC/TC 61 (FR) 207, was discussed during the Brussels meeting in November 1991 and during the Valadares meeting in April 1992, when it was decided to submit a draft for an amendment to the unique acceptance procedure (UAP). This draft was circulated as prAC in July 1992.

The proposal to endorse amendment 2:1991 to IEC 335-2-25:1988, document CLC/TC 61 (SEC) 801, was circulated under the CENELEC enquiry procedure in August 1991. This proposal was discussed during the Valadares meeting in April 1992, when it was decided to submit a draft for an amendment to EN 60335-2-25:1990 to the voting procedure. This draft was circulated as prAD in August 1992.

Both drafts were combined and were ratified by CENELEC as amendment A2 on 9 March 1993.

There is no amendment A1 to EN 60335-2-25.

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) 1994-01-01
- date of withdrawal of conflicting national standards (dow) 1996-01-01

For products which have complied with EN 60335-2-25:1990, including its amendment A51:1992, before 1996-01-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2000-01-01.

EN 60335-2-25 including this amendment has to be used in conjunction with EN 60335-1:1988, including its amendments A2:1988, A5:1989, A6:1989, A51:1991, A52:1992, A53:1992, A54:1992 and A55:1993.

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

There are no national deviations from this amendment.

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1 Scope

This clause of Part 1 is applicable, except as follows:

1.1 Replacement:

This standard applies to appliances for heating food and beverages using electromagnetic energy (microwaves) in one or more of the I.S.M. frequency bands¹⁾ between 300 MHz and 30 GHz and intended for household use. These appliances may also incorporate a browning function.

For combination microwave ovens EN 60335-2-6 is also applicable.

This standard does not take into account the special hazards which exist in nurseries and other places where there are young children or aged or infirm persons without supervision; in such cases additional requirements may be necessary.

This standard does not apply to:

- appliances 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);
- appliances for medical purposes.

Until an IEC standard for microwave ovens for commercial purposes is issued, this standard may form a guide to suitable requirements and tests for such appliances.

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.

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

2 Definitions

This clause of Part 1 is applicable, except as follows:

2.2.6 Addition:

Rated frequency refers to input frequency.

2.2.30 Replacement:

Normal load denotes that the appliance is operated with a potable water load of initially $(1\,000 \pm 50)$ g in a cylindrical borosilicate glass vessel having a maximum material thickness of 3 mm and an outside diameter of approximately 190 mm. The load is placed at the centre of the shelf. The initial temperature of the water is (20 ± 2) °C.

Additional definitions:

2.2.101 Microwave oven denotes an appliance designed to use microwave energy for heating food and beverages in a cavity.

Examples of heating are defrosting, warming and cooking.

2.2.102 Combination microwave oven denotes an appliance which combines some or all of the thermal heating functions of conventional ovens with microwave heating in a cavity.

Microwave ovens incorporating a browning function only are not considered to be combination microwave ovens.

2.2.103 Cavity denotes the space enclosed by the inner walls and door and into which food and beverages are placed.

2.2.104 Microwave enclosure denotes a structure intended to effectively confine the microwave energy to a defined region.

Examples are the cavity, door seals and waveguides.

2.2.105 Shelf denotes a horizontal support in the cavity on which the load is placed.

2.2.106 A browning function denotes a process which supplements microwave cooking by means of radiant heating elements.

2.2.107 Magnetron denotes a type of vacuum tube used to generate microwaves.

2.2.108 Stirrer denotes a device which changes the microwave relationship between the load in the cavity and the microwave generator by mechanical, electrical or magnetic means.

Examples of such devices are a rotating shelf, a moving secondary antenna or a metal propeller.

¹⁾ I.S.M. frequency bands are the electromagnetic frequencies established by international treaty for industrial, scientific and medical purposes.

2.2.109 *Microwave transparency* denotes the property of a material having negligible absorption and reflection of microwaves.

The relative permittivity of a microwave transparent material is less than 7 and the loss factor is less than 0.015.

2.2.110 *Interlock* denotes a safety device or system, which prevents a particular situation unless specified conditions exist.

An example of an interlock is a switch which prevents the operation of the magnetron unless the cavity door is closed.

2.2.111 *Primary door safety interlock* denotes an interlock provided with a supervision device which in case of failure of this interlock prevents further operation of the microwave oven until the interlock is repaired or replaced.

2.2.601 *Temperature sensing probe*: Device which is inserted into the food to measure temperature and which is the detachable component of a control incorporated in a microwave oven.

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:

4.2 Addition:

An additional sample may be required for the test of Sub-clause **19.106**.

Six samples of the interlock are required for the test of Sub-clause **18.101**.

4.3 Replacement:

The tests are carried out in the following order of the Clauses and Sub-clauses: 32.1, 32.102 to 32.104, 7 to 10, 11 with 32.101, 13 to 17, 20, 21.1 to 21.4, 18, 19 except 19.106, 22 to 31, 21.101 to 21.105 and 19.106.

Additional sub-clause:

4.101 Unless otherwise specified, microwave ovens are tested as motor-operated appliances.

4.601 Class III temperature sensing probes are not subjected to the tests, except that of **22.601**.

5 Rating

This clause of Part 1 is applicable.

6 Classification

This clause of Part 1 is applicable.

7 Marking

This clause of Part 1 is applicable except as follows:

7.1 Addition:

Appliances shall also be marked with the rated microwave frequency in megahertz. This frequency shall be the centre frequency of the I.S.M. band.

The appliance shall be marked with the substance of the following warning in clearly legible lettering at least 3 mm high. The warning shall be visible when removing any cover if removal of such a cover results in microwave leakage exceeding the value specified in Sub-clause **32.1**:

WARNING
MICROWAVE ENERGY
DO NOT REMOVE THIS COVER

7.5 Addition:

The rated input of heating elements providing a browning function shall be marked either on each element or on the rating plate.