

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Household and similar electrical appliances – Safety  
Part 2-90: Particular requirements for commercial microwave ovens**

**Appareils électrodomestiques et analogues – Sécurité –  
Partie 2-90: Exigences particulières pour les fours à micro-ondes à usage  
commercial**



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## CONTENTS

|  |    |
|--|----|
| FOREWORD.....  | 4  |
| INTRODUCTION.....  | 7  |
| 1 Scope.....   | 8  |
| 2 Normative references .....   | 9  |
| 3 Terms and definitions .....  | 10 |
| 4 General requirement.....   | 13 |
| 5 General conditions for the tests .....   | 13 |
| 6 Classification.....  | 14 |
| 7 Marking and instructions.....  | 14 |
| 8 Protection against access to live parts.....   | 16 |
| 9 Starting of motor-operated appliances .....  | 17 |
| 10 Power input and current.....  | 17 |
| 11 Heating.....  | 17 |
| 12 Charging of metal-ion batteries.....  | 20 |
| 13 Leakage current and electric strength at operating temperature.....   | 20 |
| 14 Transient overvoltages .....  | 20 |
| 15 Moisture resistance .....   | 21 |
| 16 Leakage current and electric strength.....  | 21 |
| 17 Overload protection of transformers and associated circuits .....   | 22 |
| 18 Endurance.....  | 22 |
| 19 Abnormal operation .....  | 23 |
| 20 Stability and mechanical hazards.....   | 25 |
| 21 Mechanical strength .....   | 26 |
| 22 Construction.....   | 28 |
| 23 Internal wiring.....  | 33 |
| 24 Components.....   | 33 |
| 25 Supply connection and external flexible cords .....   | 33 |
| 26 Terminals for external conductors.....  | 34 |
| 27 Provision for earthing .....  | 34 |
| 28 Screws and connections .....  | 34 |
| 29 Clearance, creepage distances and solid insulation .....  | 34 |
| 30 Resistance to heat and fire .....   | 34 |
| 31 Resistance to rusting.....  | 35 |
| 32 Radiation, toxicity and similar hazards.....  | 35 |
| Annexes .....  | 38 |
| Annex A (informative) Routine tests.....   | 39 |
| Annex R (normative) Software evaluation .....  | 41 |
| Annex AA (normative) Combination microwave ovens.....  | 42 |
| Annex BB (normative) Requirements for commercial microwave ovens without a cavity door and with conveyor-type means..... | 44 |
| Annex CC (informative) Overview of the requirements for covers, means of access and similar.....                         | 58 |

|  |    |
|--|----|
| Annex DD (informative) Rationales for the microwave barrier and associated leakage tests .....   | 60 |
| Annex EE (normative) Microwave ovens intended to be used on board ships .....  | 66 |
| Bibliography .....   | 70 |
| Figure 101 – Test rod for door interlock concealment .....   | 36 |
| Figure 102 – Probe for measuring surface temperatures .....  | 36 |
| Figure 103 – Front view of appliance with identification of excluded areas .....   | 37 |
| Figure BB.201 – Splash apparatus .....   | 55 |
| Figure BB.202 – Arrangement for measurement of microwave leakage from access openings .....  | 56 |
| Figure BB.203 – Examples of definitions of Clause 3 .....  | 57 |
| Table 101 – Maximum temperature rises of external accessible surfaces under normal operating conditions .....  | 19 |
| Table 102 – Maximum temperature rises of external accessible surfaces for appliances intended to be used in areas open to the public under normal operating conditions ..... | 20 |
| Table 103 – Number of potatoes .....   | 24 |
| Table BB.201 – Specifications for microwave barriers .....   | 51 |
| Table BB.202 – Assembling torques for screwed connections providing earthing continuity .....  | 53 |
| Table CC.1 – Overview of the requirements for covers, means of access and similar .....  | 59 |
| Table EE.201 – Assembling torques for screwed connections providing earthing continuity .....  | 68 |

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –  
SAFETY –****Part 2-90: Particular requirements for commercial microwave ovens**

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publications”). 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. 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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IEC 60335-2-90 has been prepared by subcommittee 61B: Safety of microwave appliances for household and commercial use, of IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This fifth edition cancels and replaces the fourth edition published in 2015 including its Amendment 1:2019. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) the appliance used in area open to the public has been introduced in Clause 1, 3.8.107, 7.12, 8.1.1, 11.8, 20.2, 22.103.2, 22.105 and 22.117;
- b) Subclauses 5.5, 7.12.1, 11.2, 11.7, 20.1 and 20.101 have been modified to add for stacking installation;

- c) Subclauses 7.1, 11.7 and 22.61 have been modified for the appliance outlets and socket-outlets;
- d) Subclause 7.12 has been improved in clarity;
- e) maximum temperature rises of external accessible surfaces have been added in Subclause 11.8;
- f) test criterion has been modified in Subclause 15.101;
- g) Subclause 16.101 has been modified to move the content of 16.101.1, 16.101.2 directly under 16.101.
- h) Subclauses 19.11.2, 19.13, Clause 21, Subclauses 22.105, 22.111 and Annex AA have been improved in clarity;
- i) Annex BB and Annex EE have been modified to add screw requirements.

The text of this International Standard is based on the following documents:

| Draft        | Report on voting |
|--------------|------------------|
| 61B/702/FDIS | 61B/706/RVD      |

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standard\\_de/publications](http://www.iec.ch/standard_de/publications).

A list of all parts of the IEC 60335 series under the general title: *Household and similar electrical appliances – Safety*, can be found on the IEC website.

This part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments unless that edition precludes it; in that case, the latest edition that does not preclude it is used. It was established on the basis of the sixth edition (2020) of that standard.

NOTE 1 When "Part 1" is mentioned in this standard, it refers to IEC 60335-1.

This part 2 supplement modifies the corresponding clauses in IEC 60335-1, so as to convert that publication into the IEC standard: Particular requirements for commercial microwave ovens.

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

NOTE 2 The following numbering system is used:

- subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
- unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;
- additional annexes are lettered AA, BB, etc.

NOTE 3 The following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- notes: in small roman type.

Words in **bold** type in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

NOTE 4 The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations can need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 12 months or later than 36 months from the date of publication.

The following differences exist in the countries indicated below.

- 5.3: Microwave leakage is not to exceed  $10 \text{ W/m}^2$  during the initial test (Japan, USA and Canada).
- 6.1: Microwave ovens may be class 0I if the rated voltage does not exceed more than 150 V (Japan).
- 7.12: Some warnings have to be marked on the appliance and be visible to the user (Canada).
- Clause 18: The test is carried out on two appliances (USA).
- 19.11.2: The input voltage variation is not applied (USA).
- 19.13: Microwave leakage is only measured at the end of each test (USA).
- 21.102: The applied force is 222 N (USA).
- 21.105: Microwave leakage is not to exceed  $50 \text{ W/m}^2$  (Japan and USA).
- 22.111: Microwave leakage is only measured at the end of the test (USA).
- 22.112: Microwave leakage is not to exceed  $50 \text{ W/m}^2$  (Japan and USA).
- 22.116: All access to the cavity has to be prevented (USA).
- 27.2: A terminal for an external equipotential conductor is not required (Japan).

## INTRODUCTION

It has been assumed in the drafting of this International Standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

Guidance documents concerning the application of the safety requirements for appliances can be accessed via TC 61 and SC 61B supporting documents on the IEC website

<https://www.iec.ch/tc61/supportingdocuments>  
<https://www.iec.ch/sc61b/supportingdocuments>

This information is given for the convenience of users of this International Standard and does not constitute a replacement for the normative text in this standard.

This standard recognizes the internationally accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. It also covers abnormal situations that can be expected in practice and takes into account the way in which electromagnetic phenomena can affect the safe operation of appliances.

This standard takes into account the requirements of IEC 60364 as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, national wiring rules can differ.

If an appliance within the scope of this standard also incorporates functions that are covered by another part 2 of IEC 60335, the relevant part 2 is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

When a part 2 standard does not include additional requirements to cover hazards dealt with in Part 1, Part 1 applies.

NOTE 1 This means that the technical committees responsible for the part 2 standards have determined that it is not necessary to specify particular requirements for the appliance in question over and above the general requirements.

This standard is a product family standard dealing with the safety of appliances and takes precedence over horizontal and generic standards covering the same subject.

NOTE 2 Horizontal publications, basic safety publications and group safety publications covering a hazard are not applicable since they have been taken into consideration when developing the general and particular requirements for the IEC 60335 series of standards.

An appliance that complies with the text of this standard will not necessarily be considered to comply with the safety principles of the standard if, when examined and tested, it is found to have other features which impair the level of safety covered by these requirements.

An appliance employing materials or having forms of construction differing from those detailed in the requirements of this standard can be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be considered to comply with the standard.

NOTE 3 Standards dealing with non-safety aspects of household appliances are:

- IEC standards published by TC 59 concerning methods of measuring performance;
- CISPR 11, CISPR 14-1 and relevant IEC 61000-3 series standards concerning electromagnetic emissions;
- CISPR 14-2 concerning electromagnetic immunity;
- IEC standards published by TC 111 concerning environmental matters.

## HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

### Part 2-90: Particular requirements for commercial microwave ovens

#### 1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with:

- the safety of **microwave ovens** with a **cavity** door intended for commercial 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.

These appliances are not intended for household and similar purposes. They are used for commercial processing of food, also in **areas open to the public**, for example in kitchens of restaurants, canteens, hospitals and in commercial enterprises such as bakeries and butcheries;

- the safety of **combination microwave ovens** with a **cavity** door, the requirements of which are contained in normative Annex AA;
- the safety of **microwave ovens** without a **cavity** door and with **transportation means** that are intended for commercial use only, for the heating of food and beverages, the requirements of which are contained in normative Annex BB.

**Microwave ovens** covered by normative Annex BB have **transportation means** for moving the **load** through the **microwave oven**. Requirements for tunnel microwave ovens and several types of microwave vending machines are covered.

This standard also deals with **microwave ovens** intended to be used on board ships, for which normative Annex EE is applicable.

In normative Annex BB, a **microwave oven** without a **cavity** door and with **transportation means** is described as a **microwave oven**. All clauses of this standard apply to these appliances unless otherwise specified in normative Annex BB.

This part of IEC 60335 also takes into account **ordinary persons** having access to the **removing area** of the vending machine.

The appliance can be built into a vending machine, in which case IEC 60335-2-75 can also be applicable.

Appliances that use non-electrical energy are within the scope of this standard.

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

This standard does not take into account the use of a **microwave oven** without a **cavity** door and with **transportation means** by **ordinary persons** except in the vicinity of **entrance and exit ports**.

The rationales for particular microwave exposure conditions and measures related to microwave energy being confined by an open structure are given in normative Annex BB.