

INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 2
AMENDEMENT 2

Household microwave ovens – Methods for measuring performance

Fours à micro-ondes à usage domestique – Méthodes de mesure de l'aptitude
à la fonction

[IEC 60705:2010/AMD2:2018](https://standards.iteh.ai/catalog/standards/sist/bf2cb780-0043-40ae-a4af-9aadd6e19d79/iec-60705-2010-amd2-2018)

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FOREWORD

This amendment has been prepared by subcommittee 59K: Ovens and microwave ovens, cooking ranges and similar appliances, of IEC technical committee 59: Performance of household and similar electrical appliances.

The text of this amendment is based on the following documents:

FDIS	Report on voting
59K/297/FDIS	59K/299/RVD

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

This publication contains an attached file in the form of an Excel 97 file. This file is intended to be used as a complement and does not form an integral part of the standard.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
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1 Scope

Replace the contents of the Scope with the following new text:

This document applies to **microwave ovens** for household use. It also applies to **microwave ovens with grills** and **combination microwave ovens**.

This document defines the main performance characteristics of these appliances, which are of interest to the user, and it specifies methods for measuring these characteristics.

NOTE 1 This document does not deal with

- **microwave ovens** that cannot accept a load having a diameter of ≥ 200 mm or a height of ≥ 120 mm;
- safety requirements (see IEC 60335-2-25 [1]¹ and IEC 60335-2-90 [2]).

NOTE 2 This document does not apply to ovens incorporating conventional heating means only (see IEC 60350) [3].

3 Terms and definitions

3.1 microwave oven

Replace the definition by the following new definition:

appliance using electromagnetic energy in one or several of the ISM frequency bands between 300 MHz and 30 GHz, for heating food and beverages in a cavity

¹ Figures in square brackets refer to the Bibliography.

3.2 combination microwave oven

Replace the definition with the following new definition:

microwave oven in which microwave energy is combined with energy transfer by forced air circulation, by conventional heating, by hot steam and by steam

Replace the existing NOTE with the following new Note to entry:

Note 1 to entry: For definitions of a forced air circulation function, conventional heating function, hot steam function and steam function, IEC 60350-1:2016 is relevant.

3.5 microwave function

Replace the definition with the following new definition:

function using electromagnetic energy in one or several of the ISM frequency bands between 300 MHz and 30 GHz for heating food and beverages in a cavity

3.6 combination microwave function

Replace the definition with the following new definition:

heat transfer by electromagnetic energy simultaneously or sequentially with energy transfer by forced air circulation, conventional heating, by hot steam or by steam

Replace the existing Note with the following new Note to entry:

Note 1 to entry: For definitions of a forced air circulation function, conventional heating function, hot steam function and steam function, IEC 60350-1:2016 is relevant.

Add the following new terminological entries after 3.10:

3.11 microwave oven with grill

microwave oven in which microwave energy is combined with grill

Note 1 to entry: For a definition of a grill, IEC 60350-1:2016 is relevant.

3.12 microwave function with grill

heat transfer by electromagnetic energy simultaneously or sequentially with energy transfer by radiant heat typically from the top

Note 1 to entry: For a definition of a grill, IEC 60350-1:2016 is relevant.

4.1 According to type

Add the following item to the dashed list:

- **Microwave oven with grill**

5 List of measurements

Replace the first line of the clause with the following new line:

Table 1 shows which measurement shall be applied for which function.

Replace Table 1 by the following new table:

Table 1 – List of measurements

Measurements	Clause or subclause	Applicable to				
		microwave function	microwave function with grill	microwave function in combination with forced air circulation or conventional heating	microwave function in combination with hot steam	microwave function in combination with steam
Dimensions and volume	7	Applicable to all appliances which are under the scope.				
Microwave power output	8	x	-	-	-	-
Efficiency	9	x	-	-	-	-
Square tank	10.2	x	-	-	-	-
Multiple cup	10.3	x	-	-	-	-
Heating beverages	11.1	x	-	-	-	-
Heating simulated food	11.2	x	-	-	-	-
Egg custard	12.3.1	x	-	-	-	x
Sponge cake	12.3.2	x	-	-	-	x
Meatloaf	12.3.3	x	-	-	-	x
Potato gratin	12.3.4	x	-	-	x	-
Cake	12.3.5	-	x	x	x	-
Chicken	12.3.6	-	x	x	x	-
Meat defrosting	13.3	x	-	-	-	x
Energy consumption	14	x	-	-	-	-
Consumption measurement of low power modes	15	Applicable to all appliances which are under the scope.				

For definition of grill, forced air circulation function, conventional heating function, hot steam function and steam function IEC 60350-1:2016 is relevant.

Delete the paragraph below Table 1 because the content is now integrated in Table 1.

6.5 Initial condition of the oven

Replace the title of the subclause with the following new title:

6.5 Initial condition of the appliance

Replace, in the content of 6.5, all occurrences of the word "oven" by the word "appliance".

7.2.1 General

Replace the third paragraph (the second paragraph in the base publication) with the following new paragraph:

The measurement of the usable dimensions is to be carried out at ambient temperature.

Replace, in the title of Figure 2a, "volume" with "dimensions".

Replace item *i* in the key of Figure 2b in Amendment 1 with the following:

i inside surface of the door

8 Determination of microwave power output

Replace, in the third paragraph and the fourth paragraph modified by Amendment 1, all occurrences of the word "oven" by the word "appliance".

Replace the explanations for P and t of the formula in Clause 8 with the following new explanations:

P is the calculated microwave power output, expressed in watts (W);

t is the heating time, in seconds, excluding the magnetron filament heating-up time. It starts counting from the moment the appliance reaches 90 % of the nominal input power.

9 Efficiency

Replace, in the second paragraph, the word "oven" with the word "appliance".

Delete "in watts" in the explanation for P in the formula in Clause 9.

10.2.1 Procedure

Replace, in the content of 10.2.1, all occurrences of the word "oven" with the word "appliance".

10.3 Multiple cup test

Replace the title of the clause with the following new title:

10.3 Multiple beakers test

Replace, in the whole clause, including Figures, all occurrences of the words "cup" and "cups" with the words "beaker" and "beakers", respectively.

Replace, in Figure 4, " $D \leq 70$ " with " $d \leq D \leq 70$ ".

10.3.1 Procedure

Replace, in the content of 10.3.1, the word "oven" with the word "appliance".

Replace, in Note 2, the word "sprout" with the word "spout".

11.1 Heating beverages

Replace, in the whole clause, all occurrences of the words "cup" and "cups" with the words "beaker" and "beakers", respectively.

11.1.1 General

Replace, in the first paragraph, the word "oven" with the word "appliance".

11.1.2 Procedure

Replace, in the second paragraph, the word "oven" with the word "appliance".

11.2.1 Test purpose

Replace, in the first paragraph, the word "oven" with the word "appliance".

11.2.2 Procedure

Replace, in the second and fourth paragraphs, the word "oven" with the word "appliance".

12.1 General

Replace, in the first paragraph, the word "oven" with the word "appliance".

Add the following new note:

NOTE 2 Tests in Clause 12 are applicable for comparative testing only.

12.2 Evaluation

Replace, in the first paragraph, the word "oven" with the word "appliance".

12.3.1.2 Container

Replace, in the third paragraph, the word "oven" with the word "appliance".

12.3.1.4 Procedure

Replace, in the third paragraph, the word "oven" with the word "appliance".

12.3.2.4 Procedure

Replace, in the second and third paragraphs, the word "oven" with the word "appliance".

12.3.3.4 Procedure

Replace, in the third paragraph, the word "oven" with the word "appliance".

12.3.4.4 Procedure

Replace, in the third paragraph, the word "oven" with the word "appliance".

12.3.5.4 Procedure

Replace, in the second and third paragraphs, the word "oven" with the word "appliance".

12.3.6.3 Ingredients

Replace the first paragraph with the following new paragraph:

Whole chicken, 1 200 g ± 200 g, without offal

12.3.6.4 Procedure

Replace the first sentence of the second paragraph with the following new sentence:

*Remove the clingfilm and place the whole chicken on the **food support** as described in the manufacturer's instructions.*

Replace, in the third paragraph, the word "oven" with the word "appliance".

13.2 Evaluation

Replace, in the first paragraph, the word "oven" with the word "appliance".

13.3.3 Ingredients

Replace the first item in the list with the following new item:

500 g minced meat having a maximum fat content > 16 % and ≤ 20 %.

13.3.4 Procedure

Replace, in the second and third paragraphs, the word "oven" with the word "appliance".

Add the following new paragraph after the last paragraph:

The test shall be repeated at a different power level or for a different period of time resulting in at least 60 % of the minced meat being defrosted.

Replace, in the note, the word "oven" with the word "appliance".

14 Energy consumption for the microwave function

14.2 Test load

Delete the letter "Ø" after "d" in Table 4 in Amendment 1.

Replace, in Table 4 in Amendment 1, all occurrences of the word "weight" with the word "mass".

Replace, in Table 4 in Amendment 1, the word "tape" with the word "tap".

14.5 Measurement of energy consumption for a cooking cycle

Replace, in the fourth and fifth paragraphs in Amendment 1, all occurrences of the word "oven" with the word "appliance".

14.6 Calculation for the energy consumption of a cooking cycle

Replace, in Equation (5) in Amendment 1, " total ΔT_{high} " by " $\Delta T_{\text{high,total}}$ "

Replace, in Equation (6) in Amendment 1, " total ΔT_{low} " by " $\Delta T_{\text{low,total}}$ ".

15 Consumption measurements of low power modes

Add the word "microwave" before the words "oven" and "ovens" in the first and second sentences of the second paragraph in Amendment 1. Change format to bold.

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Annex A (informative)

Regional defrosting tests

A.3.2.4 Procedure

Replace, in the third paragraph, the word "oven" with the word "appliance".

A.3.3.2 Container

Add, in the note, the word "microwave" before the word "ovens".

A.3.3.4 Procedure

Replace, in the note, "Ovens" by "Microwave ovens".

Replace, in the fifth paragraph, the word "oven" with the word "appliance".

Annex D (informative)

Glass container for Clauses 8 and 14

Delete the letter "Ø" after "d" in Table D.1 in Amendment 1.

Replace, in Table D.1 in Amendment 1, all occurrences of the word "weight" with the word "mass".

Replace, in Table D.1 in Amendment 1, the word "tape" with the word "tap".

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Annex F (informative)

Energy consumption for the cooling down period

Replace, in the first paragraph of Annex F in Amendment 1, "Table 3" with "Table 4".

Replace, in the sixth paragraph of Annex F in Amendment 1, the word "oven" by the word "appliance".

Bibliography

Replace, in [1], "2002" with "2010".

Replace, in [2], "2006" with "2015".

Replace [3] with the following new entry:

[3] IEC 60350-1:2016, *Household electric cooking appliances – Part 1: Ranges, ovens, steam ovens and grills – Methods for measuring performance*

Replace, in [4], "2009" by "2015".

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