



**SLOVENSKI STANDARD**  
**oSIST prEN IEC 60705:2024**  
**01-januar-2024**

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**Gospodinske mikrovalovne pečice - Metode za merjenje lastnosti**

Household microwave ovens - Methods for measuring performance

Mikrowellengeräte für den Hausgebrauch und ähnliche Zwecke - Verfahren zur Messung der Gebrauchstauglichkeit

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

**Ta slovenski standard je istoveten z: prEN IEC 60705:2023**

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**ICS:**

97.040.20	Štedilniki, delovni pulti, pečice in podobni aparati	Cooking ranges, working tables, ovens and similar appliances
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**oSIST prEN IEC 60705:2024**

**en**





# 59K/381/CDV

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SECRETARY:

Ms Susanne Stolz

OF INTEREST TO THE FOLLOWING COMMITTEES:

PROPOSED HORIZONTAL STANDARD:

Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

FUNCTIONS CONCERNED:

 EMC

 ENVIRONMENT

 QUALITY ASSURANCE

 SAFETY

 SUBMITTED FOR CENELEC PARALLEL VOTING

 NOT SUBMITTED FOR CENELEC PARALLEL VOTING

**Attention IEC-CENELEC parallel voting**

The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.

The CENELEC members are invited to vote through the CENELEC online voting system.

oSIST prEN IEC 60705:2024

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TITLE:

**Household microwave ovens - Methods for measuring performance**

PROPOSED STABILITY DATE: 2025

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**HOUSEHOLD MICROWAVE OVENS – METHODS FOR MEASURING  
PERFORMANCE**

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## FOREWORD

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147 IEC 60705 has been prepared by subcommittee 59K: Performance of household and similar  
148 cooking appliances, of IEC technical committee 59: Performance of household and similar  
149 electrical appliances. It is an International Standard.

150 This 5<sup>th</sup> edition cancels and replaces the 4<sup>th</sup> edition published in 2010, Amendment 1: 2014 and  
151 Amendment 2: 2018. This edition constitutes a technical revision.

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

154 a) thematically ordered new sequence of the clauses;

155 b) updated normative references;

156 c) introducing a new definition for microwave generator to open the standard for microwave  
157 ovens with one or more magnetrons or solid-state components;

158 d) alignment with IEC 60350-1 Ed. 3.0 regarding the definitions and references;

159 e) remove the definitions for set to off mode (3.7) and set to standby mode (3.8);

160 f) adding new definitions regarding low power modes;

161 g) aligning the low power mode measurement, clause 11, to IEC 60350-1:2013;

162 h) revision of square tank tests to one new clause 12.2;

- 163 i) revision of the dishes used for clause 12, 13 and 14 and removal of Annex B;  
 164 j) remove of A.3.3 Defrosting of gel berries;  
 165 k) remove of Annex F for measuring the energy consumption of the cooling down period;  
 166 l) former Annex E will be substituted by a supporting document located on the IEC's website.  
 167 The document contains supplementary material highlighted by notes indicating the link.  
 168 The text of this International Standard is based on the following documents:

Draft	Report on voting
XX/XX/FDIS	XX/XX/RVD

169  
 170 Full information on the voting for its approval can be found in the report on voting indicated in  
 171 the above table.

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

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

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

- 180 • reconfirmed,
- 181 • withdrawn,
- 182 • replaced by a revised edition, or
- 183 • amended.

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# HOUSEHOLD MICROWAVE OVENS – METHODS FOR MEASURING PERFORMANCE

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## 191 **1 Scope**

192 This document applies to **microwave ovens** for household and similar use, it also applies to  
193 **microwave ovens with grills** and **combination microwave ovens**.

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

196 NOTE 1 This document does not deal with safety requirements (see IEC 60335-2-25 [1] and IEC 60335-2-90 [2]).

197 NOTE 2 This document does not apply to appliances incorporating conventional heating means, steam function or  
198 hot steam function only. (see IEC 60350-1).

## 199 **2 Normative references**

200 The following documents are referred to in the text in such a way that some or all of their content  
201 constitutes requirements of this document. For dated references, only the edition cited applies.  
202 For undated references, the latest edition of the referenced document (including any  
203 amendments) applies.

204 IEC 60350-1:2023, *Household electric cooking appliances – Part 1: Ranges, ovens, steam*  
205 *ovens and grills – Methods for measuring performance*

206 IEC 60584-1, *Thermocouples – Part 1: EMF specification and Tolerances*

207 IEC 62301:2011, *Household electrical appliances – Measurement of standby power*

208 ISO 80000-1:2009, *Quantities and units – Part 1: General*

## 209 **3 Terms and definitions**

210 For the purposes of this document, the following terms and definitions apply.

211 ISO and IEC maintain terminology databases for use in standardization at the following  
212 addresses:

- 213 • IEC Electropedia: available at <https://www.electropedia.org/>
- 214 • ISO Online browsing platform: available at <https://www.iso.org/obp>

215

### 216 **3.1** 217 **active mode**

218 mode in which the appliance is connected to a mains power source, has been activated, and is  
219 performing any of the intended functions

220 Examples: Producing heat transfer by electromagnetic energy, thermal heat, or the combination from them.

221 Note 1 to entry: Examples of recognized associated functions include displaying recipes, running an egg timer,  
222 software download, running a cooling fan and the like.

223

### 224 **3.2** 225 **combination microwave function**

226 heat transfer by electromagnetic energy simultaneously or consecutively with energy transfer  
227 by a heating function, by hot steam or by steam

228 Note 1 to entry: For definitions of a heating function, hot steam function and steam function, IEC 60350-1 is  
229 relevant.

230 **3.3**231 **combination microwave oven**

232 appliance which can be operated by **microwave function, combination microwave**  
233 **function**, heating function

234 Note 1 to entry: For the definition of a heating function IEC 60350-1 is relevant.

235 **3.4**236 **food support**

237 horizontal support in the cavity on which the load is placed

238 NOTE 1 to entry If the appliance is fitted with a turntable, the turntable is the **food support**. The **food support** can  
239 also be a shelf or a reciprocating tray. If recommended by manufacturer's instruction also the cavity bottom can be  
240 the **food support**.

241 **3.5**242 **microwave function**

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

245 **3.6**246 **microwave function with grill**

247 heat transfer by electromagnetic energy simultaneously or consecutively with energy transfer  
248 by radiant heat typically from the top of the cavity

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

250 **3.7**251 **microwave generator**

252 device in an appliance for generating microwave energy, i.e. one or more magnetrons or solid-  
253 state components

254 **3.8**255 **microwave oven**

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

258 NOTE 1 to entry ISM frequency bands are the electromagnetic frequencies established by the ITU and reproduced  
259 in CISPR 11 [3].

260 **3.9**261 **microwave transparent**

262 property of a material with microwaves passing through, having negligible absorption and  
263 reflection

264 NOTE 1 to entry: The relative permittivity of a microwave transparent material is less than 7 and the relative loss  
265 factor is less than 0,015.

266 **3.10**267 **network**

268 communication infrastructure with a topology of links, an architecture, including the physical  
269 components, organizational principles, communication procedures and formats (protocols)

270 **3.11**271 **off mode**

272 condition in which the appliance is connected to the mains and is not providing any active mode  
273 or standby function and where the mode may persist for an indefinite time.

274 Note 1 to entry: The following shall also be considered as **off mode**:

275 a) conditions providing only an indication of **off mode**;

276 b) conditions providing only functionalities intended to ensure electromagnetic compatibility.

277 **3.12**278 **rated voltage**

279 voltage assigned to the appliance by the manufacturer

280 **3.13**281 **standby mode**

282 condition, where the appliance is connected to the mains and provides only the following  
283 functions, which may persist for an indefinite duration:

- 284 a) reactivation function, or reactivation function and a mere indication of enabled  
285 reactivation function; and/or
- 286 b) information or status display; and/or
- 287 c) detection function for emergency measures.

288 **3.14 standby mode in condition of networked standby**

289 condition, where the appliance is connected to the mains and provides only the reactivation  
290 function through a connection to a **network**, which can persist for an indefinite duration.

291 Note 1 to entry: This mode is only applicable to appliances that provide a connection function to a **network**.

292 **4 Classification**293 **4.1 According to type**

294 Appliances are classified according to their type and characteristics.

- 295 – **Microwave oven**
- 296 – **Combination microwave oven**
- 297 – **Microwave oven with grill**

298 The manufacturers shall define the primary cooking function of the appliance, **microwave**  
299 **function** or thermal heat. The primary cooking function has to be measured with an existing  
300 method according to energy consumption.

301 If the primary cooking function is declared as a **microwave function**, IEC 60705 shall be  
302 applied for energy consumption measurement. If the primary cooking function is declared as a  
303 thermal heat, IEC 60350-1 shall be applied for energy consumption measurement. If the  
304 manufacturer does not declare the primary function, the performance of the microwave function  
305 and thermal heat is measured as far as it is possible.”

306 NOTE There is currently no measurement method for the energy consumption for grilling and steam functions.

307 The type shall be stated in the report.

308 **4.2 According to characteristics**

- 309 – Usable cavity dimensions
- 310 – Dimensions of shelves
- 311 – Moved **food support**, e.g. reciprocating tray, turntable
- 312 – Possible thermal heating modes (grilling, heating function, steam function etc.), combination  
313 modes.

314 The characteristics shall be stated in the report.

315 **5 List of measurements**

316 Table 1 shows which measurement shall be applied for the relevant function.

317

318

Table 1 – List of measurements

Measurements	Clause or subclause	Applicable to				
		microwave function	microwave function with grill	microwave function in combination with heating function	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	-	-	-	-
Energy consumption	10	x	-	-	-	-
Consumption measurement of low power modes	11	Applicable to all appliances which are under the scope.				
Square tank	12.2	x	-	-	-	-
Multiple beakers	12.3	x	-	-	-	-
Heating beverages	13	x	-	-	-	-
Egg custard	14.3.1	x	-	-	-	x
Sponge cake	14.3.2	x	-	-	-	x
Meatloaf	14.3.3	x	-	-	-	x
Potato gratin	14.3.4	-	x	x	x	-
Cake	14.3.5	-	x	x	x	-
Chicken	14.3.6	-	x	x	x	-
Meat defrosting	15	x	-	-	-	x
For definition of grill, heating function, hot steam function and steam function IEC 60350-1 is relevant.						

319

320

## 6 General conditions for measurements

321

### 6.1 General

322

Unless otherwise specified, the measurements are made under the following conditions.

323

324

When a metal **food support** is provided and used for the measurements, the load position and the corresponding shape of the metal **food support** shall be reported.

325

If not otherwise specified the **food support** is placed in the cavity in its lowest position.

326

NOTE The positioning influences the repeatability of the test results.

327

328

329

If numbers have to be rounded, they shall be rounded according to ISO 80000-1:2009, Annex B.3 Rule B. If the rounding takes place to the right of the comma, the omitted places shall not be filled with Zeros.

330

### 6.2 Supply voltage

331

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334

The supply voltage shall be maintained at the main terminal at **rated voltage**  $\pm 1$  %, while the microwave operation is switched on. If the appliance has a rated voltage range, the tests are carried out at the nominal voltage of the country where the appliance is intended to be used. The supply frequency shall be at rated frequency  $\pm 1$  %.

335

336

The supply voltage measured during the tests shall be recorded.