IEC 60350-2

Edition 2.0 2017-08

INTERNATIONAL STANDARD

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Household electric cooking appliances – Part 2: Hobs – Methods for measuring performance

IEC 60350-2:2017-08(en)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ICS 97.040.20

ISBN 978-2-8322-4767-9

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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HOUSEHOLD ELECTRIC COOKING APPLIANCES –

Part 2: Hobs – Methods for measuring performance

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 Publication(s)"). 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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International Standard IEC 60350-2 has been prepared by subcommittee 59K: Performance of household and similar electrical cooking appliances, of IEC technical committee TC 59: Performance of household and similar electrical appliances.

This second edition cancels and replaces the first edition published in 2011. This edition constitutes a technical revision.

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

a) terms and definitions revised and new definitions added (see 3);
b) following the new market trend, requirements related to so-called flexible and free induction zones – in this document named as **cooking areas** – are added;
c) specification for standardized and alternative cookware is introduced (see 5.6);
d) measurement procedure reflecting a household-like cooking process for measuring the energy consumption is introduced (see Clause 7 and Annex A);

e) revision of measurement procedure for determining the accuracy of control (see Clause 8);

f) new reproducible measurement procedure for assessing the heat distribution (see Clause 9);

g) additional requirements (according to IEC 62301:2011) on how to measure low-power modes.

In this document, terms in bold characters are defined in Clause 3.

This standard contains attached files in the form of a spreadsheet. These files are intended to be used as a complement and do not form an integral part of the standard.

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

FDIS	Report on voting
59K/293/FDIS	59K/294/RVD

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

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60350 series, published under the general title *Household electric cooking appliances*, can be found on the IEC website.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

HOUSEHOLD ELECTRIC COOKING APPLIANCES –

Part 2: Hobs – Methods for measuring performance

1 Scope

This part of IEC 60350 defines methods for measuring the performance of electric **hobs** for household use.

Appliances covered by this document can be built-in or designed to be placed on a work surface. The **hob** can also be a part of a cooking range.

This document does not apply to portable appliances for cooking, grilling and similar functions (see IEC 61817).

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

This document does not specify a classification or ranking for performance.

NOTE 1 Some of the tests which are specified in this document are not considered to be reproducible since the results can vary between laboratories. They are therefore intended for comparative testing purposes only.

NOTE 2 This document does not deal with safety requirements (IEC 60335-2-6 and IEC 60335-2-9).

2 Normative references

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

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

IEC 60364-5-54, *Low-voltage electrical installations – Part 5-54: Selection and erection of electrical equipment – Earthing arrangements and protective conductors*

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

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
cooking range
appliance having a **hob** and at least one **oven** and which may incorporate a **grill**

Note 1 to entry: Methods for measuring performance of ovens are described in IEC 60350-1.

3.2
hob
appliance or part of an appliance which incorporates one or more **cooking zones** and/or **cooking areas** including a **control** unit

Note 1 to entry: A **hob** is also known as a cooktop.

Note 2 to entry: The **control** unit can be included in the **hob** itself or integrated in a **cooking range**.

3.3
cooking zone
limitative marking on the surface of a hob where one cookware is placed and heated or an attached area to the surface

EXAMPLE

A **cooking zone** can be:

– a **single zone** or a **multiple zone** (see 3.4 and 3.5);
– a **solid hotplate** (see 3.6);
– a **tubular hotplate** (see 3.7);
– a **radiant cooking zone** (see 3.8);
– an **induction cooking zone** (see 3.9).

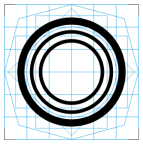
Note 1 to entry: **Cooking zones** which are used without cookware but by positioning the food directly on the surface are not included.

Note 2 to entry: Sometimes there is a decoration symbol, e.g. a cross, to mark the centre of the **cooking zone** additionally.

3.4
single zone
cooking zone marked for one cookware size

3.5
multiple zone
cooking zone marked for more than one cookware size and shape which can be circular, elliptical or a combination

EXAMPLE 1 Circular **multiple zone** for three different cookware sizes:



[IEC 60417-Pr17-001]

EXAMPLE 2 Circular and elliptical **multiple zone**:

[IEC 60417-5492:2002-10]

3.6
solid hotplate
cooking zone having a closed surface, which is usually constructed from cast iron, with an integrated heating element

3.7
tubular hotplate
cooking zone having a surface which is formed by the configuration of a tubular heated heating element in a substantially flat plane

3.8
radiant cooking zone
cooking zone on which the pan is heated by means of a radiant heating element below the glass ceramic which could have a heating ribbon, heating spiral or a tungsten wire which is located in a quartz glass bulb or combination of these

3.9
induction cooking zone
cooking zone on which the pan is heated by means of an induction element below the glass ceramic or similar where the eddy currents are inducted in the bottom of the pan by a magnetic field

3.10
cooking area without limitative markings
area where cookware is placed and heated by an inducted magnetic field without limitative markings

EXAMPLE See Figure A.1

Note 1 to entry: **Cooking area**s which are used without cookware but by positioning the food directly on the surface are not included.

Note 2 to entry: Sometimes there are one or more decoration symbols, e.g. a cross, on the **cooking area** to mark the centre position where the cookware is placed.

3.11
cooking area with limitative markings
area where cookware is placed and heated by an inducted magnetic field where the area is marked to show the limits where more than one cookware can be used simultaneously while the cookware pieces can be used and controlled separately from each other at the same time

EXAMPLE See Figure A.2

Note 1 to entry: **Cooking area**s which are used without cookware but by positioning the food directly on the surface are not included.

Note 2 to entry: The **cooking area** is also used combined for one cookware, even if there is more than one control.

3.12
control
part of the **hob** for adjusting the power or temperature respectively of a **cooking zone** or a **cooking area** for one piece of cookware, independent from technical solution (e.g. knobs, touch controls etc.)

Note 1 to entry: The power is generally indicated as numbers, but also temperature values and symbols are possible.

Note 2 to entry: **Controls** integrated outside of the hob in a separate device or as part of a built-in-oven are also included.

3.13
warming zone
area used for keeping food warm usually not used for cooking

Note 1 to entry: Normally one power setting exists – on and off.

3.14
maximum power
maximum possible power setting while only one cookware is used

Note 1 to entry: Boost function is considered.

3.15
standardized cookware
cookware that is in accordance with the specification of 5.6.1

3.16
alternative cookware
commercially available cookware that is in accordance with the requirements given in 5.6.2

3.17
set to off mode
action where the product is switched off using appliance **controls** or switches that are accessible and intended for operation by the user during normal use to attain the lowest power consumption that may persist for an indefinite time while connected to a main power source and used in accordance with the manufacturer's instructions

Note 1 to entry: All actions required to set to off mode like for example remove the cookware etc are considered.

Note 2 to entry: For definition of off mode IEC 62301 is relevant.

3.18
set to standby mode
action where the product is switched to standby using appliance **controls** or switches that are accessible and intended for operation by the user during normal use to attain the lowest power consumption that may persist for an indefinite time while connected to a main power source and used in accordance with the manufacturer's instructions

Note 1 to entry: For definition of standby mode IEC 62301 is relevant.

4 List of measurements

4.1 Dimensions and mass

– overall dimensions (see 6.1);
– cooking zones per hob (see 6.2);
– level of solid hotplates (see 6.3);
– distance between the cooking zones (see 6.4);
– mass of the appliance (see 6.5).

4.2 Cooking zones and cooking areas

– energy consumption and time for heating (see Clause 7 and Annex A);
– ability to control the temperature of a load (see Clause 8);
– heat distribution (see Clause 9);
– heat performance of hobs (see Clause 10);
– smallest detected diameter for induction cooking zones (see Clause 11);

4.3 Cleaning

– spillage capacity for hobs (see Clause 13).

5 General conditions for the measurements

5.1 Test room

The tests are carried out in a substantially draught-free room in which the laboratory ambient temperature is maintained at (20 ± 5) °C.

Only for the measurements described in Clause 7 shall an ambient temperature of (23 ± 2) °C be maintained throughout the entire test.

This ambient temperature is measured at a point that is at the same height as the **hob** positioned at working height and at a distance of 0,5 m diagonally from one of the front edges of the appliance.

NOTE The working height is normally between 800 mm and 1 000 mm.

The measurement of the ambient temperature shall not be influenced by the appliance itself or by any other appliance.

The absolute air pressure shall be between 913 hPa and 1 063 hPa.

5.2 Electricity supply

The appliance is supplied at rated voltage with a relative tolerance of ±1 %.

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.

For the test described in Clause 7, the supply voltage shall be maintained at the main terminal at 230 V with a relative tolerance of ±1 % or at 400 V with a relative tolerance of ±1 % as defined by the manufacturer's installation guide, while the heating elements are switched on.

The supply voltage shall be essentially sinusoidal.

NOTE In case of a fixed cable, the plug (or the end of the cable) is the reference point to maintain the voltage.

The supply frequency shall be at the rated frequency ±1 % throughout the test. If a frequency range is indicated, then the test frequency shall be the nominal frequency of the country in which the appliance is intended to be used.

5.3 Instrumentation and measurements

Instruments used and measurements made for this document shall comply with the specifications in Table 1 and Table 2.