

Household portable appliances for cooking, grilling and similar use — Methods for measuring performance

The European Standard EN 61817:2001, with the incorporation of amendment A1:2004, has the status of a British Standard

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National foreword

This British Standard is the official English language version of EN 61817:2001, including amendment A1:2004. It is identical with IEC 61817:2000.

The UK participation in its preparation was entrusted by Technical Committee CPL/59, Performance of household electrical equipment, to Subcommittee CPL/59/7, Small kitchen appliances, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

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English version

Household portable appliances for cooking, grilling and similar use —

Methods for measuring performance

(IEC 61817:2000)

(includes amendment A1:2004)

Appareils mobiles à usage domestique pour
cuire, griller ou à usage similaire —
Méthodes de mesure l'aptitude à la fonction
(CEI 61817:2000)
(inclut l'amendement A1:2004)

Ortsveränderliche Haushaltsgeräte zum
Kochen, Grillen und ähnlichem Gebrauch —
Verfahren zur messung der
Gebrauchseigenschaften
(IEC 61817:2000)
(enthält Änderung A1:2004)

This European Standard was approved by CENELEC on 2001-11-01. Amendment A1:2004 was approved by CENELEC on 2004-09-01. 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.

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CENELEC

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

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Foreword

The text of the International Standard IEC 61817:2000, prepared by SC 59G, Small kitchen appliances, of IEC TC 59, Performance of household electrical appliances, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 61817 on 2001-11-01.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
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- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2004-11-01

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annexes A, B and ZA are normative and annex C is informative.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61817:2000 was approved by CENELEC as a European Standard without any modification.

Foreword to amendment A1

The text of document 59L/2/FDIS, future amendment 1 to IEC 61817:2000, prepared by SC 59L, Small household appliances, of IEC TC 59, Performance of household electrical appliances, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A1 to EN 61817:2001 on 2004-09-01.

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Endorsement notice

The text of amendment 1:2004 to the International Standard IEC 61817:2000 was approved by CENELEC as an amendment to the European Standard without any modification.

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HOUSEHOLD PORTABLE APPLIANCES FOR COOKING, GRILLING AND SIMILAR USE – METHODS FOR MEASURING PERFORMANCE

1 Scope

This International Standard specifies methods for measuring the performance of electric household portable appliances for cooking, grilling and similar use.

This standard defines the main performance characteristics of such appliances which are of interest to the user, and specifies methods of measurement.

This standard is concerned neither with safety nor performance requirements.

Taking into account the lower grade of accuracy and repeatability, due to the variations in time, origin of test materials and ingredients and to the influence of the subjective judgement of test operators, the described test methods may be applied more reliably for comparative testing of a number of appliances at approximately the same time, in the same laboratory, by the same operator and with the same utensils, rather than for testing of a single appliance in different laboratories.

This standard does not apply to microwave ovens, electric cooking ranges, hobs, ovens and grills for household use, nor to appliances designed exclusively for commercial or industrial use.

2 Normative references

The following referenced documents are indispensable for the application 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.

ISO 7724 (all parts), *Paints and varnishes – Colorimetry*

ISO/CIE 10526:1999, *CIE standard colorimetric illuminants*

ISO/CIE 10527:1991, *CIE standard colorimetric observers*

CIE 15.2:1986, *Colorimetry*

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1

grilling/contact grilling

cooking and/or browning food by means of radiated heat

NOTE 1 In the case of **contact grilling** the food is cooked on one side or both by direct contact with the heating plates.

NOTE 2 **Grilling /contact grilling** performed outdoors is called barbecuing.

NOTE 3 Barbecues, stone grills and raclette/griddle functions are covered by grilling/contact grilling.

3.2

roasting

cooking and browning food (typically joints of meat, game or poultry) by dry convected heat, radiant heat or forced hot air

3.3

toasting

browning flour-based products by means of radiated heat

3.4

baking

cooking and browning food (typically flour based items such as cakes and bread) by dry convected heat, radiant heat or forced hot air

NOTE In some cases the food will expand and become more solidified, causing its mass/weight to be reduced.

3.5

simmering

cooking food immersed in liquid by first bringing to a boil and then reducing the heat to maintain a point below boiling, indicated by slight movement of the liquid.

NOTE Simmering is normally used for long slow cooking.

3.6

steaming

cooking food gently by means of steam produced from boiling water

3.7

shallow frying (Italian soffritto) (French rissoler)

cooking and/or browning food by means of conducted heat using a small amount of cooking agent e.g. fat or oil

3.8

gratinée

finish, by browning, a pre-cooked food normally covered in breadcrumbs or cheese

3.9

dehydrating

preparing food for preservation by removal of water

NOTE By dehydration the weight of the food will be considerably reduced.

3.10

boiling

cooking food in water-based liquid at 100 °C or bringing food/liquid to 100 °C and maintaining a bubble formation to complete the cooking

3.11

melting

converting a solid food, normally fat, sugar, or chocolate, into a liquid by gently heating

3.12

portable appliance

appliance intended to be moved while in operation or having a mass of less than 18 kg

NOTE Portable appliances are normally provided with a supply cord and a plug for connection to the supply.

3.13

hob

appliance or part of an appliance which incorporates one or more **cooking zones**

3.14

cooking zone

part of the **hob** or area marked on the surface of a **hob** on which pans are placed for heating

3.15

hotplate

part attached to the surface of a **hob** which forms a **cooking zone**

3.16

solid hotplate

hotplate with closed surface usually constructed from cast iron with an integrated heating element

3.17

tubular hotplate

hotplate, the surface of which is formed by the configuration of a tubular sheathed heating element in a substantially flat plane

3.18

glass ceramic hob

hob in which the heating elements are located beneath a glass ceramic surface

3.19

induction cooking zone

cooking zone on which the pan is heated by means of eddy currents

NOTE 1 The eddy currents are induced in the bottom of the pan by the electromagnetic field of a coil.

NOTE 2 The hob surface may be of glass ceramic.

3.20

grill

appliance or part of an appliance in which food is cooked by radiant heat

3.21

oven

appliance or compartment of a cooking range in which food is cooked by radiation, by natural convection, by forced-air circulation or by a combination of these heating methods

3.22

oven with forced air circulation

oven with heat transmission to the food by circulating air

NOTE An oven with forced air circulation may also operate as a conventional oven, however, a supplementary set of heating elements may be necessary for that purpose.

3.23

oven with catalytic lining

oven in which cleaning is achieved by breaking down certain depositions on a special coating

3.24

shelf

open grid which allows free movement of air and radiated heat, used to support food/container

3.25

baking sheet

solid sheet of metal, glass or other material

4 List of measurements

4.1 Dimensions and mass

The following measurements are carried out:

- overall dimensions (see 6.1);
- length of the flexible cord (see 6.2);
- mass of the appliance (see 6.3);
- oven, backing sheets and grill grid/shelves dimensions (see 6.4, 6.5, 6.6).

4.2 Functions

The following tests are carried out:

- grilling/contact grilling (see 7.1);
- roasting (see 7.2);
- toasting (see 7.3),
- baking (see 7.4);
- heat distribution (see 7.5);
- simmering (see 7.6);
- steaming (see 7.7).

- shallow frying (see 7.8);
- gratinée (see 7.9);
- dehydrating (see 7.10);
- boiling (see 7.11);
- melting (see 7.12).

4.3 Other Characteristics

- cleaning (see 8.1);
- user instructions (see 8.2).

5 General conditions for the measurements

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

5.1 General

The settings, accessories and quantities of ingredients used are those recommended by the manufacturer. In the absence of the manufacturer's recommendations, the quantities quoted are used. The ingredients specified have been selected primarily to ensure uniform and reproducible results.

Unless otherwise stated, the appliance is operated in accordance with the manufacturer's instructions.

5.2 Test room

The tests are carried out in a substantially draught-free room in which the ambient temperature is maintained at $20\text{ °C} \pm 5\text{ °C}$.

5.3 Ambient temperature

The ambient temperature and the temperature of all utensils and ingredients are maintained at $20\text{ °C} \pm 5\text{ °C}$ unless otherwise specified.

5.4 Voltage

The appliance is supplied at rated voltage $\pm 1\%$.

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.

5.5 Instrumentation

The temperature measuring instruments including thermocouples shall have an accuracy of $0,5\text{ °C}$ within the temperature range of 0 °C to 100 °C and an accuracy of 2 °C within the temperature range 100 °C to 300 °C .

The energy measuring meter shall have an accuracy of 1% .

5.6 Positioning the appliance

Appliances are positioned at a distance of at least 30 cm away from side walls on a dull black painted wooden support.

5.7 Preheating

The appliance is initially at room temperature. However, if preheating is specified, the appliance is preheated in accordance with the instructions for use. If no instructions are given, the appliance is considered to be preheated after the thermostat has switched off for the first time.

5.8 Setting of controls

The control is set to give the temperature specified for the test. However, if the temperature cannot be attained due to the construction of the control, the nearest setting related to the specified temperature is chosen.

5.9 Equipment

When appropriate, an electric food mixer may be used when mixing ingredients. The appliance is supplied at rated voltage.

6 Dimensions and mass

6.1 Overall dimensions

The overall dimensions – height, width and depth – of the appliance including knobs, handles etc., are measured and indicated in millimetres, the doors, if any, being closed.

6.2 Length of the flexible cord

The distance between the entry points into the appliance and the plug, including any cord guard, are measured and indicated in metres, to the nearest 0,05 m.

6.3 Mass of the appliance

The mass of the appliance, with the flexible cord and the plug attached, is determined and expressed in kilograms, rounded to the nearest kilogram.

6.4 Internal dimensions of oven

The height, width and depth within the **oven** are measured as shown in figure 1 and stated in millimetres.

The usable volume is calculated from these three dimensions and stated in litres.

6.5 Dimensions of baking sheets

The usable area of a baking sheet is measured. If the baking sheet is not flat, this area is measured 5 mm above the surface of the shelf.

The surface area is calculated and stated in square centimetres, rounded to the nearest 10 cm².

6.6 Dimensions of grill grids/shelves

The usable width and depth of the shelf for the grill grid are measured.

The surface area is calculated and expressed in square centimetres rounded to the nearest 10 cm².

7 Function measurements

7.1 Grilling / Contact grilling

The purpose of this test is to determine the uniformity of cooking and browning of meat.

NOTE This test is applicable for comparative testing only.

7.1.1 Ingredients

2,5 kg minced beef, fat content 10 % to 20 %

This quantity is sufficient for 20 burgers.

7.1.2 Procedure

Form the minced beef into burgers using a ring mould, each burger weighing 125 g and having a diameter of 75 mm. Compress the burger so that its height is approximately 35 mm.

Distribute the burgers evenly over the grill grid allowing approximately 15 mm between each burger and between the burgers and the edges.

Preheat the **grill** on maximum setting in accordance with the instructions for use. If no instructions are given, preheat the **grill** for 5 min. For contact grills preheat for 5 minutes with the plates closed where applicable.

Place the grill grid and the grill pan under the grill element in the position recommended in the instructions for use. If no instructions are given, place the grill grid so that the top of the burgers is approximately 50 mm to 75 mm below the grill element. The door is in the open position unless otherwise specified in the instructions for use. For other grills follow the manufacturer's instructions. Where no instructions are given, place food directly on the cooking surface or in the cooking container supplied, where applicable, or close to the contact grill plates.

Grill the burgers as recommended in the instructions for use. If no instructions are given, grill one side for 12 min to 15 min turn the burgers over and grill the other side for 10 min to 15 min.

7.1.3 Assessment

The grill grid is removed from the oven and the temperature is measured at the centre of five burgers using a temperature measuring probe. The burgers are selected from the four corners and the centre of the grill grid. The difference between the maximum and minimum centre temperature is stated. The measurement shall be performed within 2 min.

The browning of each burger is assessed as follows:

heavily charred	–	A
lightly charred	–	B
medium dark	–	C
medium light	–	D
grey	–	E