

© Copyright SEK. Reproduction in any form without permission is prohibited.

Ugnar för hushållsbruk – Funktionsprovning

*Electric cooking ranges, hobs, ovens and grills for household use –
Methods for measuring performance*

Som svensk standard gäller europastandarden EN 50304:2009/EN 60350:2009. Den svenska standarden innehåller den officiella engelska språkversionen av EN 50304:2009/EN 60350:2009.

Nationellt förord

Europastandarden EN 50304:2009/EN 60350:2009

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 60350, First edition, 1999 - Electric cooking ranges, hobs, ovens and grills for household use -
Methods for measuring performance**

jämte

Amendment No 1, 2005 och Amendment No.2, 2008

utarbetad inom International Electrotechnical Commission, IEC.

Där texten i europastandarden avviker från texten i motsvarande avsnitt i den internationella standarden har detta markerats med ett lodrätt streck i marginalen.

Tidigare fastställd svensk standard SS-EN 50304, utgåva 1, 2001, SS-EN 50304 C1, utgåva 1, 2002, SS-EN 60350, utgåva 1, 1999 och SS-EN 60350 C1, utgåva 1, 2000, gäller ej fr o m 2009-12-01.

ICS 97.040.20

Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringssarbetet inom elområdet

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

Stora delar av arbetet sker internationellt

Utdriften av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringssarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringssverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

SEK Svensk Elstandard

Box 1284
164 29 Kista
Tel 08-444 14 00
www.elstandard.se

English version

**Electric cooking ranges, hobs, ovens and grills for household use -
Methods for measuring performance**
(IEC 60350:1999 + A1:2005 + A2:2008, modified)

Cuisinières, foyers de cuisson, fours
électriques et grils à usage domestique -
Méthodes de mesure de l'aptitude à la
fonction
(CEI 60350:1999 + A1:2005 + A2:2008,
modifiée)

Elektrische Herde, Kochmulden, Backöfen
und Grillgeräte für den Hausgebrauch -
Verfahren zur Messung der
Gebrauchseigenschaften
(IEC 60350:1999 + A1:2005 + A2:2008,
modifiziert)

This European Standard was approved by CENELEC on 2008-12-01. 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Central Secretariat: avenue Marnix 17, B - 1000 Brussels

Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 59X, Consumer information related to household electrical appliances.

A first draft, based on IEC 60350:1999 + A1:2005, with common modifications prepared by CENELEC TC 59X, was submitted to the Unique Acceptance Procedure.

The text of document 59K/161/FDIS, future amendment A2 to IEC 60350:1999, was submitted the IEC-CENELEC parallel vote procedure. A further draft amendment (prAA), covering the common modifications requested by the National Committees during the parallel vote on IEC 60350:1999/A2 (59K/161/FDIS), was submitted to the formal vote.

The combined texts were approved by CENELEC on 2008-12-01 for publication as a consolidated edition of the double-numbered European Standard EN 50304/EN 60350, consisting of IEC 60350:1999 + A1:2005 + A2:2008 + common modifications + the text of EN 50304:2001.

This European Standard supersedes EN 50304:2001 (+ corrigendum March 2002) and EN 60350:1999 (+ corrigendum February 2000).

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2009-12-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2009-12-01

According to the decision of CLC/TC 59X, taken at the meeting in Brussels in January 2006, this European Standard has been drawn up as a document which follows, as far as suitable, the structure of IEC 60350:1999 + A1:2005 + A2:2008.

In this European Standard the common modifications to the International Standard are indicated by a vertical line in the left margin of the text.

This European Standard has been prepared under Mandate M/203 given to CEN and CENELEC by the European Commission.

This European Standard is suitable for direct comparison and is considered sufficiently reproducible within given limits for the purpose of energy labelling according to the Commission Directive 92/75/EEC on "Indication by labelling and standard product information of the consumption of energy and other resources by household appliances". All paragraphs which are relevant for the measuring of energy labelling are listed in Annex ZA.

This European Standard also defines permitted tolerances to values declared by the manufacturer and control procedures for checking these values.

Words in **bold** in the text are defined in Clause 3.

Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 60350:1999 are prefixed "Z".

Contents

Foreword	1
1 Scope	6
2 Normative references	6
3 Definitions	6
4 List of measurements	8
4.1 Dimensions and mass	8
4.2 Hotplates and cooking zones	8
4.3 Oven	9
4.4 Grill	9
4.5 Warming compartments	9
4.6 Cleaning	9
5 General conditions for the measurements	9
5.1 Test room	9
5.2 Electricity supply	9
5.3 Instrumentation	10
5.4 Positioning the appliance	10
5.5 Preheating	10
5.6 Setting of controls	11
6 Dimensions and mass	11
6.1 Overall dimensions	11
6.2 Dimensions of hotplates and cooking zones	11
6.3 Usable internal dimensions and usable volume of ovens	11
6.4 Overall internal dimensions and overall volume of ovens	12
6.5 Dimensions of shelves	13
6.6 Dimensions of grill grids	13
6.7 Dimensions of warming compartments	13
6.8 Level of hotplates	14
6.9 Distance between hotplates or cooking zones	14
6.10 Level of shelf	14
6.11 Mass of the appliance	14
7 Hotplates and cooking zones	15
7.1 Ability to heat water	15
7.2 Ability to control the temperature of a load	15
7.2.1 Temperature control	15
7.2.2 Temperature overshoot	16
7.3 Heat distribution	16
7.3.1 Recipe for pancakes	16
7.3.2 Procedure	17
7.3.3 Assessment	17
7.4 Heat performance of hobs	17
7.4.1 Test purpose	17
7.4.2 Test procedure	17
8 Ovens	19
8.1 Preheating the empty oven	19
8.2 Accuracy of the control	20

8.3	Energy consumption and time for heating a load	20
8.3.1	Test load	20
8.3.2	Measurement.....	21
8.3.3	Evaluation and calculation	24
8.3.4	Reporting of test results	25
8.4	Heat distribution	25
8.4.1	Shortbread	25
8.4.2	Small cakes.....	26
8.5	Ability to supply heat	33
8.5.1	Fatless sponge cake.....	33
8.5.2	Apple pie	34
9	Grills	35
9.1	Grilling area	35
9.1.1	Procedure.....	35
9.1.2	Assessment.....	36
9.2	Grilling	36
9.2.1	Ingredients	36
9.2.2	Procedure.....	36
9.2.3	Assessment.....	36
10	Warming compartments	37
11	Cleaning	37
11.1	Spillage capacity of hobs.....	37
11.2	Pyrolytic self-cleaning ovens	37
11.3	Ovens with catalytic cleaning	38
12	Standby power	38
Z1	Tolerances and control procedures.....	39
Annex A (normative)	Colour measuring instrument	50
Annex B (normative)	Shade chart	51
Annex C (informative)	Addresses of suppliers	53
Annex D (normative)	Description of the test brick.....	58
Annex E (informative)	Calculation sheet: Energy consumption of electric ovens.....	60
Annex ZA (normative)	Overview – Clauses required for the Commission Directive on Energy Labelling.....	63
Bibliography.....		64
Figure 1 – Dimensions of appliances	41	
Figure 2 – Dimensions of built-in ovens	42	
Figure 3 – Dimensions of built-in hobs	43	
Figure 4 – Internal dimensions of ovens.....	44	
Figure 5 – Device for checking the level of hotplates and shelves	45	
Figure 6 – Saucepan.....	46	
Figure 7 – Frying pan.....	47	
Figure 8 – Shape of the nozzle for extruding pastry	48	
Figure 9 – Position of pastry strips on the baking sheet	48	
Figure 10 – Position of the thermocouple for measuring ambient temperature.....	49	
Figure 11 – Example of a method of fixing a thermocouple for the test of 8.3.....	49	

Figure A.1 – Colour measuring instrument	50
Figure D.1 – Position of the thermocouples.....	59
Table 1 – Quantity of water in the saucepan	15
Table 2 – Ingredients and cooking durations	16
Table 4 – Quantities.....	18
Table 5 – Frying times	18
Table 6 – Oven settings	22
Table 3 – Ingredients	27
Table B.1 – Classification of shade numbers.....	51
Table B.2 – Examples for the shade charts	51
Table C.1 – Ingredient specification	54

1 Scope

This European Standard defines methods for measuring the performance of electric **cooking ranges, hobs, ovens and grills** for household use.

NOTE 1 Appliances covered by this standard may be built-in or for placing on a working surface or the floor.

NOTE 2 This standard does not apply to

- microwave **ovens** (EN 60705),
- portable appliances for cooking, grilling and similar functions (EN 61817).

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

NOTE 3 Some of the tests which are specified in this standard are not considered to be reproducible since the results may vary between laboratories. They are therefore intended for comparative testing purposes only.

This standard does not specify requirements for performance.

NOTE 4 This standard does not deal with safety requirements (EN 60335-2-6 and EN 60335-2-9).

NOTE 5 For measurement of energy consumption and time for heating a load (see 8.3), this standard is furthermore not applicable to:

- microwave combination **ovens**;
- **small cavity ovens**;
- **ovens** without adjustable temperature control;
- heating functions other than defined in 3.16 to 3.18.

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.

EN 60584-2:1993, *Thermocouples – Part 2: Tolerances* (IEC 60584-2:1982 + A1:1989)

EN 62301:2005, Household electrical appliances – Measurement of standby power (IEC 62301:2005, mod.)

ISO 7724-1:1984, *Paints and varnishes – Colorimetry – Part 1: Principles*

ISO 7724-2:1984, *Paints and varnishes – Colorimetry – Part 2: Colour measurement*

ISO 7724-3:1984, *Paints and varnishes – Colorimetry – Part 3: Calculation of colour differences*

ISO/CIE 10526:1991, *CIE standard colorimetric illuminants*

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

CIE 15.2:1986, *Colorimetry*

