SLOVENSKI STANDARD
SIST EN 60350-1:2013/A11:2014

01-december-2014

Gospodinjski električni kuhalni aparati - 1. del: Štedilniki, pečice, parne pečice in žari - Metode za merjenje funkcionalnosti - Dopolnilo A11

Household electric cooking appliances - Part 1: Ranges, ovens, steam ovens and grills - Methods for measuring performance

Elektrische Kochgeräte für den Hausgebrauch - Teil 1: Herde, Backöfen, Dampfgarer und Grills - Verfahren zur Messung der Gebrauchseigenschaften

Appareils de cuisson électrodomestiques - Partie 1: Cuisinières, fours, fours à vapeur et grils - Méthodes de mesure de l'aptitude à la fonction

Ta slovenski standard je istoveten z: **EN 60350-1:2013/A11:2014**

ICS:

97.040.20	Štedilniki, delovni pulti, pečice in podobni aparati	Cooking ranges, working tables, ovens and similar appliances

SIST EN 60350-1:2013/A11:2014 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60350-1:2013/A11

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ICS 97.040.20

English Version

Household electric cooking appliances - Part 1: Ranges, ovens, steam ovens and grills - Methods for measuring performance

Appareils de cuisson électrodomestiques - Partie 1: Cuisinières, fours, fours à vapeur et grils - Méthodes de mesure de l'aptitude à la fonction

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This amendment A11 modifies the European Standard EN 60350-1:2013; it was approved by CENELEC on 2014-09-29. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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 CEN-CENELEC Management Centre or to any CENELEC member.

This amendment 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 CEN-CENELEC Management Centre has the same status as the official versions.

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

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Foreword

This document (EN 60350-1:2013/A11:2014) has been prepared by CLC/TC 59X "Performance of household and similar electrical appliances".

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2015-09-29
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2017-09-29

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

The new amendment covers following issues:

- reference to EN ISO 80000-1:2012 for rounding;
- amending 6.8 mass of the appliances to ensure high reproducibility;
- verification procedure for ensuring that the temperature inside the oven cavity reaches the temperature setting of the thermostat and/or the oven control display within the duration of the test cycle for measuring the energy consumption (7.4.3.2) and implementing this issue to Annex ZE;
- implementation of Annex ZZ which shows the coverage of Commission Regulation and Commission Delegated Regulation and revision of Annex ZA.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.

2 Normative references

Add *the following reference at the end of Clause 2:*

EN ISO 80000-1:2013, *Quantities and units – Part 1: General (ISO 80000-1:2009 + Cor 1:2011)*

5 General conditions for the measurement

Add *the following new subclause 5.Z1:*

5.Z1 Rounding

If it is required that numbers are rounded, they shall be rounded according to EN ISO 80000-1:2013, Annex B.3, Rule B.

6.8 Mass of the appliances

Add *the following sentence at the end of 6.8*

The mass of the oven, including the oven accessories needed to perform the test of 7.4, is determined and expressed in kilograms, rounded to the nearest kilogram.

7.4.3.1 Procedure

Change *in the subclause after Note 4 the last word in brackets:*

(k – summing index, i – heating function)

Add *the following sentence and two notes to 7.4.3.1 before the subclause "The average temperature during the test…":*

The temperature setting T_{ks}^{i} shall be noted, where T_{ks}^{i} is the temperature setting of the thermostat and / or the oven control display ($_s$ - setting).

NOTE 1 If the temperature steps are not clearly marked, the setting temperature should be determined by the angle considering the visible marks on the knob using polar coordinate paper (see Annex ZE).

NOTE 2 If the temperature is set by a knob, the knob should always be turned from zero to the required setting.

Change *in Table 1 the heading "heating mode" of the first column:*

Table 1 – Oven settings

oven temperature rise	heating functions		
	Conventional "ic"	Forced air "if"	Hot steam "ih"
ΔT_1^i	(140 ± 10) K	(135 ± 10) K	(135 ± 10) K
ΔT_2^i	(180 ± 10) K	(155 ± 10) K	(155 ± 10) K
ΔT_3^i	(220 ± 10) K[a]	(175 ± 10) K[a]	(175 ± 10) K[a]
[a] or the maximum temperature rise if this value cannot be reached.			

7.4.3.2 Checking the oven temperature

Change *the first sentence as follows:*

After the test according to 7.4.3.1, the brick is removed from the oven and the oven is run for some extra time without changing the setting. The oven temperature is determined in line with 7.1 as the arithmetic mean between the maximum and minimum temperatures at steady state conditions.

Add *the following sentences to 7.4.3.2 after Note 2:*

The measured oven temperature $T^i_{k,measured}$ is stated.

The difference between T^i_{ks} and $T^i_{k,measured}$ is calculated according to Formula (1) and (2), where n=3.

$$\Delta T^i_{k,setting} = T^i_{ks} - T^i_{k,measured} \quad (1)$$

$$\Delta T^i_{\text{setting}} = \frac{1}{n}\sum_{k=1}^{n} \Delta T^i_{k,setting} \quad (2)$$

$\Delta T^i_{setting}$ shall be ≤ 20 K.

If $\Delta T^i_{setting}$ is greater than 20 K the test shall be carried out on further three appliances, which shall be randomly selected from the market.

The arithmetical mean of the values of these three appliances shall not be greater than 20 K.

NOTE For the verification procedure for ensuring that the temperature inside the oven cavity reaches the temperature setting of the thermostat and/or the oven control the procedure for product conformity checking by market surveillance authorities and the verification tolerances tests are not covered by the Commission Regulation (EU) No 66/2014 of 14 January 2014 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for household ovens and Commission Delegated Regulation (EU) No 65/2014 of 1 October 2013 supplementing Directive 2010/30/EU with regard to energy labelling of household ovens.

7.Z1 Measurement uncertainty of results

Cancel *7.Z1*

***Add** a new Annex ZE*

Annex ZE
(informative)

Marking the temperature setting for checking the oven temperature

For marking the temperature setting on the panel, a polar coordinate paper can be useful. Polar coordinate paper has concentric circles divided into small arcs to allow an exact marking around a knob.

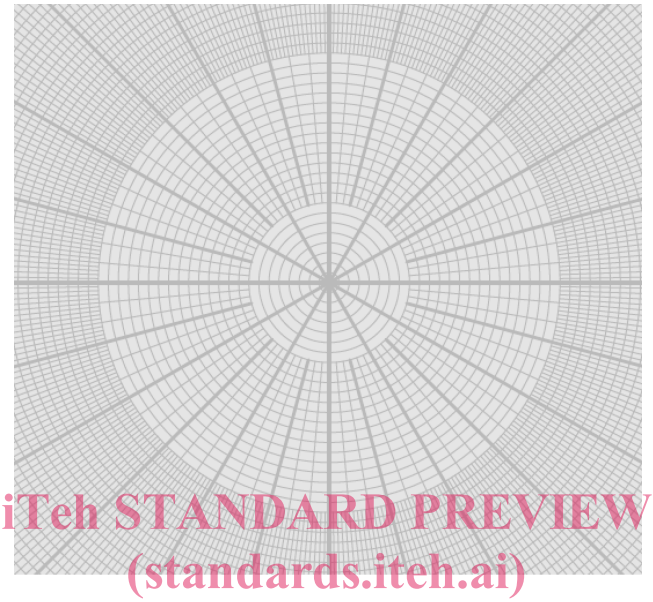

Figure ZE.1 – Polar coordinate paper – Example

Replace *the existing Annex E by the following:*

Calculation Sheet: Energy Consumption for heating a load (7.4)

Brand & Factory:	**Oven Type / Model:**	**Testlab:**
Rated Voltage:	**Supply voltage:**	**Operator:**
Rated Power:	**Calculated Volume (6.2):**	**Date:**

Heating function: Conventional heating "ic" **nominal temperature rise: 180 K**

bricks								measured		room	oven temperature				
no.	dry weight m_d (g)	wet weight m_w (g)	absorbed water Δm (g)	end cooking weight (informative) (g)	weight loss (informative) (g)	start temperatures thermocouple no. 1 (°C)	start temperatures thermocouple no. 2 (°C)	energy consumption E_k (kWh)	time t_k (min)	average ambient temp. (°C)	nominal value ΔT^{ic} (K)	real value (°C)	real value ΔT^{ic} (K)	setting T^{ic}_{ks} (°C)	temperature difference $\Delta T^{ic}_{k,setting}$ (K)
			calc.		calc.						***140±10***		calc.		calc.
			calc.		calc.						***180±10***		calc.		calc.
			calc.		calc.						***220±10***		calc.		calc.
Results at ΔT_0 = 180 K				**$S * \Delta T_0 + B$**		**Slope S**		**Intercept B**		**Standard deviation σ**				$\Delta T^{ic}_{setting} \leq$ 20 K	
Energy (linear regression) (kWh)				**calc.**		calc.		calc.		**calc.**				**calc.**	
Time (linear regression) (min)				**calc.**		calc.		calc.		**calc.**				**calc.**	

Key: calc. - calculation

Continously:

Heating function: Forced air heating "if"										**nominal temperature rise: 155 K**				
bricks								measured		room	oven temperature			
no.	dry weight m_d (g)	wet weight m_w (g)	absorbed water Δm (g)	end cooking weight (informative) (g)	weight loss (informative) (g)	start temperatures thermocouple no. 1 (°C)	start temperatures thermocouple no. 2 (°C)	energy consumption E_k (kWh)	time t_k (min)	average ambient temp. (°C)	nominal value ΔT^{if} (K)	real value (°C)	real value Δtif (K)	setting T^{if}_{ks} (°C)	temperature difference $\Delta T^{if}_{k,setting}$ (K)
			calc.		calc.						***135±10***		calc.		calc.
			calc.		calc.						***155±10***		calc.		calc.
			calc.		calc.						***175±10***		calc.		calc.
Results at ΔT_0 = 155 K				**S * ΔT_0 + B**			**Slope S**		**Intercept B**		**Standard deviation σ**			**≤ 20 K**	
Energy (linear regression) (kWh)				**calc.**			calc.		calc.		**calc.**			**calc.**	
Time (linear regression) (min)				**calc.**			calc.		calc.		**calc.**			**calc.**	

Heating function: Hot steam "ih"										**nominal temperature rise: 155 K**				
bricks								measured		room	oven temperature			
no.	dry weight m_d (g)	wet weight m_w (g)	absorbed water Δm (g)	end cooking weight (informative) (g)	weight loss (informative) (g)	start temperatures thermocouple no. 1 (°C)	start temperatures thermocouple no. 2 (°C)	energy consumption E_k (kWh)	time t_k (min)	average ambient temp. (°C)	nominal value ΔT^{ih} (K)	real value (°C)	real value ΔT^{h} (K)	setting T^{ih}_{ks} (°C)	temperature difference $\Delta T^{ih}_{k,setting}$ (K)
			calc.		calc.						***135±10***		calc.		calc.
			calc.		calc.						***155±10***		calc.		calc.
			calc.		calc.						***175±10***		calc.		calc.
Results at ΔT_0 = 155 K				**S * ΔT_0 + B**			**Slope S**		**Intercept B**		**Standard deviation σ**			$\Delta T^{ih}_{setting}$ **≤ 20 K**	
Energy (linear regression) (kWh)				**calc.**			calc.		calc.		**calc.**			**calc.**	
Time (linear regression) (min)				**calc.**			calc.		calc.		**calc.**			**calc.**	