



SLOVENSKI STANDARD
SIST EN 60311:2003/A2:2010
01-januar-2010

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Electric irons for household or similar use - Methods for measuring performance

Elektrische Bügeleisen für Haushalt und ähnliche Zwecke - Verfahren zur Messung der Gebrauchseigenschaften

Fers à repasser électriques pour usage domestique ou analogue - Méthodes de mesure de l'aptitude à la fonction

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Ta slovenski standard je istoveten z: **EN 60311:2003/A2:2009**

ICS:

97.060 Aparati za nego perila Laundry appliances

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60311/A2

August 2009

ICS 97.060

English version

**Electric irons for household or similar use -
Methods for measuring performance**
(IEC 60311:2002/A2:2009)

Fers à repasser électriques
pour usage domestique ou analogue -
Méthodes de mesure
de l'aptitude à la fonction
(CEI 60311:2002/A2:2009)

Elektrische Bügeleisen
für Haushalt und ähnliche Zwecke -
Verfahren zur Messung
der Gebrauchseigenschaften
(IEC 60311:2002/A2:2009)

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This amendment A2 modifies the European Standard EN 60311:2003; it was approved by CENELEC on 2009-07-01. 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 Central Secretariat 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 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

The text of document 59L/67/FDIS, future amendment 2 to IEC 60311:2002, 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 A2 to EN 60311:2003 on 2009-07-01.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2010-04-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2012-07-01

Endorsement notice

The text of amendment 2:2009 to the International Standard IEC 60311:2002 was approved by CENELEC as an amendment to the European Standard without any modification.

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IEC 60311

Edition 4.0 2009-06

INTERNATIONAL STANDARD

AMENDMENT 2

**Electric irons for household or similar use – Methods for measuring
performance**

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INTERNATIONAL
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ICS 97.060

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FOREWORD

This amendment has been prepared by subcommittee 59L: Small household appliances, of IEC technical committee 59: Performance of household and similar electrical appliances.

The text of this amendment is based on the following documents:

FDIS	Report on voting
59L/67/FDIS	59L/68/RVD

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

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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

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3 Terms and definitions [189071e9c411/sist-en-60311-2003-a2-2010](https://standards.iteh.ai/catalog/standards/sist/6612be18-f4ac-4181-a537-189071e9c411/sist-en-60311-2003-a2-2010)

3.13

auto switch-off device

Replace the definition by the following new definition:

device provided by the manufacturer to switch off the heating element if the iron is not moved for a stated period of time and not intended to activate a 'standby mode' or any kind of 'low power mode'

9 Measurements concerning steaming operation

Replace 9.1 and 9.2 (including any changes made in Amendment 1:2005) by the following new subclauses:

9.1 Measurement of heating-up time for steaming operation

9.1.1 For vented steam irons

All irons shall be given an initial preparation by steaming at least one reservoir capacity of water under dynamic conditions.

Weigh the empty iron (W_0) by means of a balance having an accuracy of at least $\pm 0,1$ g.

For vented steam irons, the water reservoir is filled with distilled water having a temperature of $20\text{ }^\circ\text{C} \pm 2\text{ }^\circ\text{C}$ up to the capacity specified by the manufacturer and then the iron is placed

on its stand or in its upright position. The thermostat is set to the maximum setting indicated for steam ironing.

For irons with a separate water reservoir, the reservoir is filled up to the capacity specified by the manufacturer.

Weigh the full iron (W_1).

The iron is then placed with the sole-plate in a horizontal position with a tolerance of $\pm 1^\circ$ on the carriage, as shown in Figure 4a. A container of known mass within $\pm 0,1$ g is placed under the sole-plate at a distance of approximately 200 mm in order to collect any water which may flow out of the iron during the test. In order to avoid condensing steam collecting in the container, a slow-running fan may be used to blow the steam away.

The iron is connected to the supply and immediately after the thermostat has switched off for the second time, the steam control is operated to give the maximum flow rate. If there is no signal lamp, the second opening of the thermostat is determined with a measuring apparatus.

The heating-up time is the time between the connection to the mains and the instant when the steaming flow appears under the soleplate.

The test is repeated but with the thermostat set to the minimum setting for steam ironing.

The heating-up time is expressed in seconds for both the maximum and minimum thermostat setting for steam ironing.

NOTE Some irons may need a preliminary preparation. In this case, before the test is carried out, the iron is prepared according to the instructions.

9.1.2 For pressurized steam irons or instantaneous steam irons

For pressurized steam irons or instantaneous steam irons, the boiler is filled with distilled water having a temperature of $20^\circ\text{C} \pm 2^\circ\text{C}$ up to the rated capacity and then placed on its stand.

The thermostat of the iron is set to the maximum setting indicated for steam operation and, when applicable, any maximum temperature or pressure setting of the boiler.

The iron is connected to the supply and the following times t_1 and t_2 are recorded where

t_1 is the time necessary for the iron to reach the temperature rise of 160 K;

t_2 is the time necessary for the heating up process of the boiler.

The test is repeated, but with the thermostat of the iron set to the minimum setting indicated for steam operation and, if applicable, any minimum temperature or pressure setting.

The heating-up time is recorded, in minutes and seconds, for both the minimum and maximum thermostat setting for the steam ironing.

The heating-up time is recorded as the greater of the two values t_1 and t_2 .

This measurement is not carried out on

- irons constructed so that steaming is irregular when the iron is in a rest position.

NOTE Some irons may need a preliminary preparation. In this case, before the test is carried out, the iron is prepared according to the instructions.

9.2 Measurement of steaming time, steaming rate and water leakage rate

9.2.1 For vented steam irons

For vented steam irons, without separate water reservoir, the test described in 9.1.1, at the maximum setting of the thermostat, is continued. At the end of heating up time, when steam appears under the soleplate, movements of the carriage for the steaming time (t) are started. The carriage is moved backwards and forwards in a direction parallel to the centre line of the soleplate over the distance of 500 mm. The reciprocal motion is produced by the transformation from rotary movement of 15 r.p.m. with reciprocal motion of 15 cycles per minute.

The duration of steaming time is 3 minutes. At the end of steaming time close the steam control to stop the steam. Weigh the iron (W_2).

The container referred to in 9.1.1 is weighed again and the mass of the water which has leaked from the iron without being evaporated is determined (W_3).

For cordless irons, appliances having a main supply attachment are tested as conventional irons. For appliances without a main supply attachment, dynamic steam rate is measured by sequences of 20 s without power supply. Between two sequences; the cordless iron is being reloaded on its stand. Repeat this cycle until 3 minutes of steaming have occurred.

The steaming rate S_R is calculated as follows:

$$S_R = \frac{W_1 - W_2 - W_3}{t}$$

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where

- W_1 is the mass of the iron and water before the heating-up time;
 W_2 is the mass of the iron and water after 3 minutes steaming;
 W_3 is the mass of the water which has leaked without being evaporated.
 t is the steaming time, in minutes.

The water leakage rate L_R is calculated as follows:

$$L_R = \frac{W_3}{t}$$

The steaming rate and leakage rate are expressed in grams per minute.

The steaming time is the time when 90 % of the water has evaporated.

$$S_T = \frac{W_1 - W_0}{S_R} \times 0,9$$

where :

- W_0 is the mass of the empty iron
 0,9 is the 90 % of the water reservoir capacity

This time is stated in minutes and seconds.

9.2.2 For pressurized steam irons and instantaneous steam irons

For pressurized steam irons and instantaneous steam irons, the measurement procedure is carried out according to Figure 4b (see also Annex A).

The sole-plate shall be on a horizontal position $\pm 1^\circ$ and at the same level as the lower face of the reservoir.

A container is placed under the iron to receive the water which leaks without being evaporated.

The height between the container and the sole-plate shall be at least 500 mm \pm 50 mm.

The test shall be done under the free steaming conditions.

Fill the empty reservoir or boiler/generator according to the manufacturer's instructions. The amount of water shall be noted: W_7

Turn on the iron, setting the thermostat at the maximum setting. The steaming regulator, if any, is set at the maximum setting.

Immediately after the steady conditions are reached, the steaming generation starts according to the following cycle:

- 5 s ON (the steam switch is turned on, there is steam generation);
- 15 s OFF (the steam switch is turned off, there is no steam generation).

This cycle is repeated until 12 times. Then the complete ironing system is weighed: W_4

Repeat the above-mentioned cycle 24 times and make the following measurements:

- the mass of the complete ironing system is measured: W_5 ;
- the mass of the water which has leaked without being evaporated is measured: W_6 .

The steaming rate S_R is calculated as follows:

$$S_R = \frac{(W_4 - W_5) - W_6}{t}$$

Water leakage rate L_R can be calculated as follows:

$$L_R = \frac{W_6}{t}$$

The theoretical time of steaming generation T is calculated as follows:

$$T = \frac{W_7 \times \left(\frac{t_1}{t} \right)}{S_R + L_R}$$

where

W_4 is the mass of the complete ironing system after the first 12 cycles, in grams;

W_5 is the mass of the complete ironing system after the following 24 cycles, in grams;

W_6 is the mass of the water that has leaked without being evaporated, in grams;