



**NSAI**  
Standards

Irish Standard  
I.S. EN 60311:2003

# Electric irons for household or similar use - Methods for measuring performance (IEC 60311:2002 (EQV))

## I.S. EN 60311:2003

*Incorporating amendments/corrigenda issued since publication:*

EN 60311:2003/A1:2006

EN 60311:2003/A2:2009

*This document replaces:*  
EN 60311:1997 + A1:1997  
+A2:2000

*This document is based on:*  
EN 60311:2003

*Published:*  
4 September, 2003

This document was published  
under the authority of the NSAI and  
comes into effect on:

20 October, 2003

ICS number:  
97.060

**NSAI**  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E [standards@nsai.ie](mailto:standards@nsai.ie)  
W [NSAI.ie](http://NSAI.ie)

**Sales:**  
T +353 1 857 6730  
F +353 1 857 6729  
W [standards.ie](http://standards.ie)

Údarás um Chaighdeáin Náisiúnta na hÉireann

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)

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**

**I.S. EN 60311:2003**

EN 60311:2003/A2:2009

- 2 -

**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.

---

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 60311/A1**

March 2006

ICS 97.060

English version

**Electric irons for household or similar use -  
Methods for measuring performance  
(IEC 60311:2002/A1:2005)**

Fers à repasser électriques  
pour usage domestique ou analogue -  
Méthodes de mesure  
de l'aptitude à la fonction  
(CEI 60311:2002/A1:2005)

Elektrische Bügeleisen für Haushalt  
und ähnliche Zwecke -  
Verfahren zur Messung  
der Gebrauchseigenschaften  
(IEC 60311:2002/A1:2005)

This amendment A1 modifies the European Standard EN 60311:2003; it was approved by CENELEC on 2006-02-01. 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, 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: rue de Stassart 35, B - 1050 Brussels**

**I.S. EN 60311:2003**

EN 60311:2003/A1:2006

- 2 -

**Foreword**

The text of document 59L/22/FDIS, future amendment 1 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 A1 to EN 60311:2003 on 2006-02-01.

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) 2006-11-01
- latest date by which the national standards conflicting  
with the amendment have to be withdrawn (dow) 2009-02-01

---

**Endorsement notice**

The text of amendment 1:2005 to the International Standard IEC 60311:2002 was approved by CENELEC as an amendment to the European Standard without any modification.

---

I.S. EN 60311:2003

EUROPEAN STANDARD

**EN 60311**

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2003

ICS 97.060

Supersedes EN 60311:1997 + A1:1997 + A2:2000

English version

**Electric irons for household or similar use –  
Methods for measuring performance  
(IEC 60311:2002)**

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

Elektrische Bügeleisen für Haushalt und  
ähnliche Zwecke –  
Verfahren zur Messung  
der Gebrauchseigenschaften  
(IEC 60311:2002)

This European Standard was approved by CENELEC on 2003-07-01. 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

**CENELEC**

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

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

## I.S. EN 60311:2003

EN 60311:2003

- 2 -

### Foreword

The text of the International Standard IEC 60311:2002, prepared by SC 59E, Ironing and pressing appliances, of IEC TC 59, Performance of household electrical appliances, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 60311 on 2003-07-01 without any modification.

This European Standard supersedes EN 60311:1997 + A1:1997 + A2:2000.

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) | 2004-07-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn                                               | (dow) | 2006-07-01 |

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

Annexes designated "informative" are given for information only.

In this standard, Annexes B, C and ZA are normative and Annexes A and D are informative.

Annex ZA has been added by CENELEC.

In this standard, the following print types are used:

- *test specifications: italic type;*
- In small roman type;
- other texts: in roman type;

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

---

### Endorsement notice

The text of the International Standard IEC 60311:2002 was approved by CENELEC as a European Standard without any modification.

---



## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60051-1	1997	Direct acting indicating analogue electrical measuring instruments and their accessories Part 1: Definitions and general requirements common to all parts	EN 60051-1	1998
IEC 60454-3-3	1998	Pressure-sensitive adhesive tapes for electrical purposes Part 3: Specifications for individual materials - Sheet 3: Polyester film tapes with rubber thermoplastic adhesive	EN 60454-3-3	1998
IEC 60734	2001	Household electrical appliances - Performance - Hard water for testing	EN 60734	2003
ISO 105-F	1985	Textiles - Tests for colour fastness Part F: Standard adjacent fabrics	-	-
ISO 1518	1992	Paints and varnishes - Scratch test	EN ISO 1518	2000
ISO 2409	1992	Paints and varnishes - Cross-cut test	EN ISO 2409	1994
ISO 3758	1991	Textiles - Care labelling code using symbols	EN 23758	1993
ISO 3801	1977	Textiles - Woven fabrics - Determination of mass per unit length and mass per unit area	-	-
ISO 6330	2000	Textiles - Domestic washing and drying procedures for textile testing	EN ISO 6330	2000
ISO 7211-2 (mod)	1984	Textiles - Woven fabrics - Construction - Methods of analysis Part 2: Determination of number of threads per unit length	EN 1049-2	1993
ISO 9073-2	1995	Textiles - Test methods for nonwovens – Part 2: Determination of thickness	EN ISO 9073-2	1996
ISO 4-1	1999	Textiles - Tensile properties of fabrics -- Part 1: Determination of maximum force and elongation at maximum force using the strip method	EN ISO 13934-1	1999

*This page is intentionally left BLANK.*

## CONTENTS

FOREWORD.....	4
1 Scope.....	6
2 Normative references .....	6
3 Terms and definitions .....	7
4 Measurements for various types of irons .....	9
5 General conditions for measurements.....	10
5.1 Ambient conditions .....	10
5.2 Voltage for measurements.....	10
5.3 Steady conditions.....	11
5.4 Iron support for measurements.....	11
5.5 Temperature measurement.....	11
5.6 Cordless irons having a mains supply attachment .....	11
5.7 Irons fitted with separate steam generator/boiler .....	11
5.8 Irons fitted with auto switch-off devices .....	11
5.9 Test sample .....	11
5.10 Irons with additives.....	11
6 General requirements .....	12
6.1 Determination of mass.....	12
6.2 Measurement of length of the supply cord .....	12
7 Temperature measurements .....	12
7.1 Measurement of heating-up time .....	12
7.2 Measurement of initial overswing temperature and heating-up excess temperature.....	12
7.3 Measurement of sole-plate temperature .....	13
7.4 Determination of the hottest point.....	13
7.5 Measurement of temperature distribution.....	14
7.6 Measurement of cyclic fluctuation of temperature of the hottest point .....	14
8 Assessment of the spray function .....	14
8.1 Determination of the mass of spray .....	14
8.2 Determination of the spray pattern.....	15
9 Measurements concerning steaming operation .....	16
9.1 Measurement of heating-up time for steaming operation.....	16
9.2 Measurement of steaming time, steaming rate and water leakage rate .....	17
9.3 Determination of mass of a shot of steam.....	19
10 Assessment of smoothing.....	20
10.1 Creasing of test cloth .....	20
10.2 Conditioning of the iron .....	21
10.3 Ironing.....	21
10.4 Ironing with shot of steam .....	22
10.5 Evaluation .....	22
11 Measurement of input power and energy consumption.....	23
11.1 Measurement of input power .....	23
11.2 Measurement of energy consumption .....	23
11.3 Ironing efficiency .....	24

**I.S. EN 60311:2003**60311 © IEC:2002+A1:2005  
+A2:2009(E)

– 3 –

12	Assessment of sole-plate.....	24
12.1	Determination of smoothness of the sole-plate .....	24
12.2	Measurement of scratch resistance of sole-plate .....	25
12.3	Determination of adhesion of polytetrafluorethylene (PTFE) coating or similar coating on sole-plate .....	27
13	Measurement of thermostatic stability.....	28
13.1	Heating test.....	28
13.2	Drop test .....	28
13.3	Determination of drift of thermostat .....	28
14	Determination of total steaming time for hard water .....	29
14.1	For non-pressurised steam irons .....	29
14.2	For pressurised steam irons or instantaneous steam irons .....	30
15	Instruction for use.....	31
16	Information at the point of sale .....	31
	Annex A (informative) Measurement of steaming time, steaming rate and water leakage rate for pressurized steam irons or instantaneous steam irons.....	45
	Annex B (normative) Ironing board.....	46
	Annex C (normative) Cotton cloth .....	49
	Annex D (informative) Classification of electric irons.....	50
	Figure 1 – Arrangement for measuring the sole-plate temperature .....	32
	Figure 2 – Variation of sole-plate temperature after switching-on .....	32
	Figure 3 – Determination of spray pattern .....	34
	Figure 4 – Test apparatus .....	35
	Figure 5 – Creasing tool.....	36
	Figure 6 – Wrapping rod and pencil .....	36
	Figure 7 – Circular and rectangular blocks .....	37
	Figure 8 – Conditioning of the iron .....	37
	Figure 9 – Ironing .....	38
	Figure 10 – Evaluation .....	38
	Figure 11 – Comparison charts .....	39
	Figure 12 – Test apparatus for smoothness of sole-plate .....	41
	Figure 13 – Scratch .....	42
	Figure 14 – Positions of cutting area.....	43
	Figure 15 – Apparatus for drop test.....	44
	Figure 16 – Test apparatus for total steaming time .....	44
	Figure A.1 – Measurements concerning steaming operation.....	45
	Figure B.1 – Example of construction of the ironing-board .....	48
	Table 1 – Measurements of various types of irons .....	9
	Table 2 – Classes of scratch resistance .....	26

**INTERNATIONAL ELECTROTECHNICAL COMMISSION**

---

**ELECTRIC IRONS FOR HOUSEHOLD  
OR SIMILAR USE –  
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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60311 has been prepared by subcommittee 59E: Ironing and pressing appliances, of IEC technical committee 59: Performance of household electrical appliances.

This consolidated version of IEC 60311 consists of the fourth edition (2002) [documents 59E/148/FDIS and 59E/149/RVD], its amendment 1 (2005) [documents 59L/22/FDIS and 59L/24/RVD] and its amendment 2 (2009) [documents 59L/67/FDIS and 59L/68/RVD].

The technical content is therefore identical to the base edition and its amendments and has been prepared for user convenience.

It bears the edition number 4.2.

A vertical line in the margin shows where the base publication has been modified by amendments 1 and 2.

Annexes B and C form an integral part of this standard.

**I.S. EN 60311:2003**

60311 © IEC:2002+A1:2005  
+A2:2009(E)

– 5 –

Annexes A and D are for information only.

In this standard, the following print types are used:

- *test specifications: in italic type*
- notes: in small roman type
- other texts: in roman type

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

The committee has decided that the contents of the base publication and its amendments 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.

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 publication using a colour printer.**

## **ELECTRIC IRONS FOR HOUSEHOLD OR SIMILAR USE – METHODS FOR MEASURING PERFORMANCE**

### **1 Scope**

This International Standard applies to electric irons for household or similar use.

The purpose of this standard is to state and define the principal performance characteristics of electric irons for household or similar use which are of interest to the user and to describe the standard methods for measuring these characteristics.

Electric irons covered by this standard include

- dry irons;
- steam irons;
- vented steam irons with motor pump;
- spray irons;
- steam irons with separate water reservoir or boiler/generator having a capacity not exceeding 5 l.

This standard is concerned neither with safety nor with performance requirements.

NOTE The primary characteristic to be taken into account in assessing the performance of an electric iron is its basic ability to produce a smooth finish to textile materials, without risk of scorching or other damage. It has not proved possible to devise a single method which will measure this characteristic in a consistently reproducible way and measurements have therefore been included to check certain factors, such as the temperature of the sole-plate at the mid-point, sole-plate temperature distribution, etc., which affect the basic characteristic. In evaluating the results, it must be realized that, while a very exceptional result in any one of them may significantly affect performance, there is considerable latitude in the combination of results which will give satisfactory ironing performance, and too much significance should not be attached to minor differences in any one result.

### **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.

IEC 60051-1:1997, *Direct acting indicating analogue electrical measuring instruments and their accessories – Part 1: Definitions and general requirements common to all parts*

IEC 60454-3-3:1998, *Pressure-sensitive adhesive tapes for electrical purposes – Part 3: Specifications for individual materials – Sheet 3: Polyester film tapes with rubber thermoplastic adhesive*

IEC 60734:2001, *Household electrical appliances – Performance – Hard water for testing*

ISO 105-F:1985, *Textiles – Tests for colour fastness – Part F: Standard adjacent fabrics*

ISO 1518:1992, *Paints and varnishes – Scratch test*

ISO 2409:1992, *Paints and varnishes – Cross-cut test*

ISO 3758:1991, *Textiles – Care labelling code using symbols*

ISO 3801:1977, *Textiles – Woven fabrics – Determination of mass per unit length and mass per unit area*

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- Looking for additional Standards? Visit Intertek Inform Infostore
  - Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-