

INTERNATIONAL STANDARD

IEC 60311

Fourth edition
2002-09

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

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

© IEC 2002 — Copyright - all rights reserved

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE

X

For price, see current catalogue

CONTENTS

| | |
|---|----|
| FOREWORD | 4 |
| 1 Scope and object | 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 | 10 |
| 5.4 Iron support for measurements | 10 |
| 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 |
| 6 General requirements | 11 |
| 6.1 Determination of mass | 11 |
| 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 | 13 |
| 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..... | 21 |
| 10.5 Evaluation | 22 |
| 11 Measurement of input power and energy consumption | 22 |
| 11.1 Measurement of input power..... | 22 |
| 11.2 Measurement of energy consumption..... | 22 |

| | | |
|------|--|------|
| 12 | Assessment of sole-plate | 22 |
| 12.1 | Determination of smoothness of the sole-plate..... | 22 |
| 12.2 | Measurement of scratch resistance of sole-plate | 23 |
| 12.3 | Determination of adhesion of polytetrafluorethylene (PTFE) coating or similar coating on sole-plate | 25 |
| 13 | Measurement of thermostatic stability | 25 |
| 13.1 | Heating test | 25 |
| 13.2 | Drop test..... | 26 |
| 13.3 | Determination of drift of thermostat..... | 26 |
| 14 | Determination of total steaming time for hard water | 26 |
| 15 | Instruction for use | 27 |
| 16 | Information at the point of sale..... | 28 |
| | | |
| | Annex A (informative) Measurement of steaming time, steaming rate and water leakage rate for pressurized steam irons or instantaneous steam irons | 43 |
| | Annex B (normative) Ironing board | 44 |
| | Annex C (normative) Cotton cloth..... | 47 |
| | Annex D (informative) Classification of electric irons | 48 |
| | | |
| | Figure 1 – Arrangement for measuring the sole-plate temperature | 29 |
| | Figure 2 – Variation of sole-plate temperature after switching-on | 30 |
| | Figure 3 – Determination of spray pattern | 31 |
| | Figure 4 – Test apparatus | 32 |
| | Figure 5 – Creasing tool..... | 33 |
| | Figure 6 – Wrapping rod and pencil..... | 33 |
| | Figure 7 – Circular and rectangular blocks | 34 |
| | Figure 8 – Conditioning of the iron | 34 |
| | Figure 9 – Ironing..... | 35 |
| | Figure 10 – Evaluation | 35 |
| | Figure 12 – Test apparatus for smoothness of sole-plate | 38 |
| | Figure 13 -- Scratch | 39 |
| | Figure 14 – Positions of cutting area | 40 |
| | Figure 15 – Apparatus for drop test..... | 41 |
| | Figure 16 – Test apparatus for total steaming time..... | 42 |
| | Figure A.1 – Measurements concerning steaming operation..... | 43 |
| | Figure B.1 – Example of construction of the ironing board..... | 46 |
| | | |
| | Table 1 – Measurements of various types of irons..... | 9-10 |
| | Table 2 – Classes of scratch resistance | 24 |

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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 the 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 National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The 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 fourth edition of IEC 60311 cancels and replaces the third edition published in 1995 and its amendment 1 (1997) and amendment 2 (1999).

The text of this standard is based on the third edition, amendments 1 and 2 and the following documents:

| | |
|--------------|------------------|
| FDIS | Report on voting |
| 59E/148/FDIS | 59E/149/RVD |

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

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

Annexes A and D are for information only.

This is a preview of "IEC 60311 Ed. 4.0 en...". [Click here to purchase the full version from the ANSI store.](#)

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 this publication will remain unchanged until February 2005. 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.

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;
- 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*

ISO 6330:2000, *Textiles – Domestic washing and drying procedures for textile testing*

ISO 7211-2:1984, *Textiles – Woven fabrics – Construction – Methods of analysis – Part 2: Determination of number of threads per unit length*

ISO 9073-2: 1995, *Textiles – Test methods for nonwovens – Part 2: Determination of thickness*

ISO 13934-1:1999, *Textiles – Tensile properties of fabrics – Part 1: Determination of maximum force and elongation at maximum force using the strip method*

3 Terms and definitions

For the purposes of this standard the following definitions apply.

3.1

electric iron

portable appliance, which has an electrically heated sole-plate and is used for ironing textile materials

NOTE In this standard, "electric iron" is referred to as "iron".

3.2

thermostatic iron

iron fitted with a thermostat, the setting of which can be adjusted manually to alter the sole-plate temperature over a range and maintain it within certain limits

3.3

electric iron with non-self-resetting thermal cut-out

iron fitted with a non-self-resetting thermal cut-out, such as a fusible link, for the purpose of disconnecting the heating element if the iron attains excessive temperature

3.4

dry iron

iron having neither means to produce and supply steam nor to spray water onto textile materials while ironing

3.5

steam iron

iron having means to produce and supply steam to textile materials while ironing. It can be provided with means to supply a shot of steam

3.5.1

shot-of-steam iron

iron provided with means to supply a shot of steam to textile materials while ironing

3.5.2

shot of steam

single emission of an increased volume of steam from the sole-plate for a short duration

3.5.3

vented steam iron

steam iron in which steam is produced when the water contacts the sole-plate, the water reservoir being at atmospheric pressure.

NOTE The water reservoir may be incorporated in the iron or connected by a hose to the iron.