

INTERNATIONAL STANDARD

NORME INTERNATIONALE



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



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2016 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, 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 either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing 20 000 terms and definitions in English and French, with equivalent terms in 15 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

65 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Catalogue IEC - webstore.iec.ch/catalogue

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

Recherche de publications IEC - www.iec.ch/searchpub

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient 20 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 15 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary

65 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.

INTERNATIONAL STANDARD

NORME INTERNATIONALE



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

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 97.060

ISBN 978-2-8322-3706-9

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	5
1 Scope.....	7
2 Normative references	7
3 Terms and definitions	8
4 Measurements for various types of irons.....	10
5 General conditions for measurements.....	12
5.1 General.....	12
5.2 Ambient conditions	12
5.3 Voltage and frequency for measurements	12
5.4 Steady conditions	12
5.5 Iron support for measurements	13
5.6 Temperature measurement	13
5.7 Cordless irons having a mains supply attachment.....	13
5.8 Irons fitted with separate steam generator/boiler.....	13
5.9 Irons fitted with auto switch-off devices.....	13
5.10 Test sample	13
5.11 Irons with additives	13
5.12 Circumvention.....	13
6 General requirements	14
6.1 Determination of mass	14
6.2 Measurement of length of the supply cord.....	14
7 Temperature measurements	14
7.1 Measurement of heating-up time.....	14
7.2 Measurement of initial overswing temperature and heating-up excess temperature	14
7.3 Measurement of sole-plate temperature	15
7.4 Determination of the hottest point	15
7.5 Measurement of temperature distribution	16
7.6 Measurement of cyclic fluctuation of temperature of the hottest point.....	16
8 Assessment of the spray function	16
8.1 Determination of the mass of spray.....	16
8.1.1 Determination of the mass of spray for irons with manual spray pumps	16
8.1.2 Determination of the mass of spray for irons with means for continuous spray	17
8.2 Determination of the spray pattern	17
9 Measurements concerning steaming operation	18
9.1 Measurement of heating-up time for steaming operation	18
9.1.1 For vented steam irons	18
9.1.2 For pressurized steam irons or instantaneous steam irons.....	19
9.2 Measurement of steaming time, steaming rate and water leakage rate.....	19
9.2.1 For vented steam irons	19
9.2.2 For pressurized steam irons and instantaneous steam irons	20
9.2.3 Tolerances and control procedures for the steaming rate.....	21
9.3 Determination of mass of a shot of steam	22
10 Assessment of smoothing.....	23
10.1 General.....	23

10.2	Creasing of test cloth	23
10.2.1	Test cloth	23
10.2.2	Conditioning of test cloth before creasing	23
10.2.3	Creasing tool	23
10.2.4	Wrapping and creasing of test cloth	23
10.3	Conditioning of the iron	24
10.4	Ironing	24
10.5	Ironing with shot of steam	24
10.6	Evaluation.....	25
11	Measurement of input power and energy consumption.....	25
11.1	Measurement of input power	25
11.2	Measurement of energy consumption.....	25
11.2.1	Preparation of the test cloth.....	25
11.2.2	Measurement of the energy consumed during heating-up operation.....	26
11.2.3	Measuring of energy consumed during an ironing operation	26
11.3	Ironing efficiency.....	27
12	Assessment of sole-plate.....	27
12.1	Determination of smoothness of the sole-plate.....	27
12.2	Measurement of scratch resistance of sole-plate.....	28
12.2.1	General	28
12.2.2	Test procedure	28
12.2.3	Evaluation of results	29
12.3	Determination of adhesion of polytetrafluorethylene (PTFE) coating or similar coating on sole-plate	29
13	Measurement of thermostatic stability.....	30
13.1	Heating test	30
13.2	Drop test.....	30
13.3	Determination of drift of thermostat.....	31
14	Determination of total steaming time for hard water	31
14.1	For non-pressurised steam irons.....	31
14.2	For pressurised steam irons or instantaneous steam irons	32
15	Instruction for use.....	33
16	Information at the point of sale	33
Annex A (informative) Measurement of steaming time, steaming rate and water leakage rate for pressurized steam irons or instantaneous steam irons.....		47
Annex B (normative) Ironing board.....		48
Annex C (normative) Cotton cloth		51
Annex D (informative) Classification of electric irons.....		52
D.1	Classification according to temperature control.....	52
D.2	Classification according to the existence or non-existence of steam-producing ability.....	52
D.3	Classification of steam irons according to steam control	52
D.4	Classification according to existence or non-existence of spraying ability	52
D.5	Classification according to nature of power supply	52
D.6	Classification according to voltage	52
D.7	Classification according to usage.....	52
D.8	Designation of irons	53
Bibliography.....		54

Figure 1 – Arrangement for measuring the sole-plate temperature	34
Figure 2 – Variation of sole-plate temperature after switching-on	35
Figure 3 – Determination of spray pattern	36
Figure 4 – Test apparatus	37
Figure 5 – Creasing tool.....	38
Figure 6 – Wrapping rod and pencil	38
Figure 7 – Circular and rectangular blocks	39
Figure 8 – Conditioning of the iron	39
Figure 9 – Ironing	39
Figure 10 – Evaluation	40
Figure 11 – Comparison charts	42
Figure 12 – Test apparatus for smoothness of sole-plate	43
Figure 13 – Scratch	44
Figure 14 – Positions of cutting area.....	45
Figure 15 – Apparatus for drop test.....	45
Figure 16 – Test apparatus for total steaming time	46
Figure A.1 – Measurements concerning steaming operation.....	47
Figure B.1 – Example of construction of the ironing board	50
Table 1 – Measurements of various types of irons	11
Table 2 – Classes of scratch resistance	29

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 59L: Small household appliance, of IEC technical committee 59: Performance of household and similar electrical appliances.

This fifth edition cancels and replaces the fourth edition published in 2002, Amendment 1:2005 and Amendment 2:2009. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) 5.3: introduction of clarifications on voltage and frequency to be applied for the tests;
- b) 5.12: introduction of an anti-circumvention subclause;
- c) 9.2.3: clarification on the procedure for measuring steaming rate;
- d) 14.1 and 14.2: clarification on type of water used for the tests;
- e) Figure 2: clarifications and alignment with the relevant formula.

The text of this International Standard is based on the following documents:

CDV	Report on voting
59L/116/CDV	59L/121/RVC

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

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

In this standard, the following print types are used:

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

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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

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 document 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 document 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, 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 is not given to minor differences in any one result.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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, *Direct acting indicating analogue electrical measuring instruments and their accessories – Part 1: Definitions and general requirements common to all parts*

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

ISO 105–F01, *Textiles – Test for colour fastness – Specification for wool adjacent fabric*

ISO 105–F02, *Textiles – Test for colour fastness – Specification for cotton and viscose adjacent fabrics.*

ISO 105–F03, *Textiles – Test for colour fastness – Specification for polyamid adjacent fabric*

ISO 1518–1, *Paints and varnishes – Determination of scratch resistance – Part 1: constant-loading method*