

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Household and similar electrical rice cookers – Methods for measuring the performance**

**Cuiseurs à riz électrodomestiques et analogues – Méthodes de mesure de l'aptitude à la fonction**



**THIS PUBLICATION IS COPYRIGHT PROTECTED**  
**Copyright © 2024 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 Secretariat  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://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 corrigendum or an amendment might have been published.

#### IEC publications search - [webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)

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 It also gives information on projects, replaced and withdrawn publications.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](http://webstore.iec.ch/justpublished)

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

#### IEC Customer Service Centre - [webstore.iec.ch/csc](http://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: [sales@iec.ch](mailto:sales@iec.ch).

#### IEC Products & Services Portal - [products.iec.ch](http://products.iec.ch)

Discover our powerful search engine and read freely all the publications provided, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

#### 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.

#### Recherche de publications IEC -

#### [webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)

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](http://webstore.iec.ch/justpublished)

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

#### Service Clients - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: [sales@iec.ch](mailto:sales@iec.ch).

#### IEC Products & Services Portal - [products.iec.ch](http://products.iec.ch)

Découvrez notre puissant moteur de recherche et consultez gratuitement tous les aperçus des publications, symboles graphiques et le glossaire. Avec un abonnement, vous aurez toujours accès à un contenu à jour adapté à vos besoins.

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 500 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 25 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Household and similar electrical rice cookers – Methods for measuring the performance**

**Cuiseurs à riz électrodomestiques et analogues – Méthodes de mesure de l'aptitude à la fonction**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

ICS 97.040.50

ISBN 978-2-8322-9796-4

**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.....	4
1 Scope.....	6
2 Normative references .....	6
3 Terms and definitions .....	6
4 List of measurements and tests .....	7
5 General conditions for measurements.....	8
5.1 General.....	8
5.2 Test environment.....	8
5.3 Limits of voltage variation .....	8
5.4 Test voltage.....	8
5.5 Test frequency.....	8
5.6 Test electrical supply system .....	8
5.7 Conditioning prior to the test.....	8
5.8 Requirements for measurement instruments .....	8
6 Measurements.....	9
6.1 Cooking inner pot.....	9
6.1.1 Volume of inner pot of rice cooker .....	9
6.1.2 Endurance of the inner pot coatings – Abrasion resistance .....	10
6.1.3 Endurance of the inner pot coatings – Corrosion resistance.....	11
6.2 Cooking control.....	12
6.2.1 Cooking uniformity.....	12
6.2.2 Moisture deviation .....	15
6.2.3 Burnt levels of the cooked rice.....	17
6.3 Temperature retention during keep-warm state .....	18
6.4 Energy efficiency .....	18
6.4.1 Control setting.....	18
6.4.2 Measurement of energy efficiency .....	19
6.5 Power consumption.....	19
6.5.1 Power consumption in stand-by mode.....	19
6.5.2 Power consumption in reservation state.....	19
6.5.3 Power consumption during keep-warm state .....	20
6.6 Performance in low-voltage supply.....	20
Annex A (informative) Physical characteristics of cooked rice .....	21
A.1 Expansion rate.....	21
A.2 Hardness and adhesiveness of cooked rice .....	22
Annex B (informative) Different types of "white point" in the standard for reference of the engineer for comparison .....	24
Annex C (normative) Different burnt levels of the cooked rice .....	27
Bibliography.....	34
Figure 1 – Drawing of top edge of inner pot with filled water .....	10
Figure 2 – Coating abrasion resistance test set up.....	11
Figure 3 – Cooked rice divided into 12 equal parts.....	12
Figure 4 – Evaluation procedures .....	15
Figure 5 – Sampling positions of the rice for moisture content .....	16

Figure 6 – Temperature change over time during keep-warm state .....	18
Figure A.1 – Texture characteristics curve from measurement of texture analyser .....	23
Figure B.1 – Reference pictures of "white points" .....	26
Figure C.1 – Example of Level 1 of burnt condition .....	27
Figure C.2 – Example of Level 2 of burnt condition .....	27
Figure C.3 – Example of Level 3 of burnt condition .....	28
Figure C.4 – Example of Level 4 of burnt condition .....	28
Figure C.5 – Example of Level 5 of burnt condition .....	29
Figure C.6 – Example of Level 6 of burnt condition .....	29
Figure C.7 – Example of Level 7 of burnt condition .....	30
Figure C.8 – Example of Level 8 of burnt condition .....	30
Figure C.9 – Example of Level 9 of burnt condition .....	31
Figure C.10 – Example of Level 10 of burnt condition .....	31
Figure C.11 – Example of Level 11 of burnt condition .....	32
Figure C.12 – Example of Level 12 of burnt condition .....	32
Figure C.13 – Example of Level 13 of burnt condition .....	33
Table A.1 – Texture analyser measuring parameters .....	22

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL RICE COOKERS –  
METHODS FOR MEASURING THE 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 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) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 63399 has been prepared by subcommittee 59L: Small household appliances, of IEC technical committee 59: Performance of household and similar electrical appliances. It is an International Standard.

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

Draft	Report on voting
59L/269/FDIS	59L/273/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

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

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

- reconfirmed,
- withdrawn, or
- revised.

**IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

# HOUSEHOLD AND SIMILAR ELECTRICAL RICE COOKERS – METHODS FOR MEASURING THE PERFORMANCE

## 1 Scope

This document applies to household and similar electrical **rice cookers**.

This document defines the main performance characteristics that are of interest to the user, and specifies methods for measuring these characteristics.

This document does not specify the requirements for performance.

This document does not apply to the pressure type **rice cooker** or the micro-pressure **rice cooker**.

This document does not apply to **rice cookers** with the **rated volume of rice cooker** larger than 8 L.

NOTE 1 The pressure type **rice cooker** refers to a **rice cooker** that cooks at a pressure more than 40 kPa.

NOTE 2 The micro-pressure **rice cooker** refers to a **rice cooker** that cooks at a pressure larger than 10 kPa but not more than 40 kPa.

NOTE 3 This document does not deal with safety requirements (covered in IEC 60335-2-15).

NOTE 4 Some of the tests which are specified in this document are not considered to be reproducible since the results can vary between laboratories. They are therefore intended for comparative testing purposes only.

## 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 62301, *Household electrical appliances – Measurement of standby power*

## 3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

### 3.1

#### **rice cooker**

appliance for cooking rice that is placed in a detachable inner pot, the inner pot being placed within the appliance when cooking