SVENSK STANDARD SS-EN 60456

Fastställd	Utgåva	Sida	Ansvarig kommitté
2016-06-29	5	1 (1+217)	SEK TK 59

Tvättmaskiner för hushållsbruk – Funktionsprovning

Clothes washing machines for household use – Methods for measuring the performance

Som svensk standard gäller europastandarden EN 60456:2016. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60456:2016.

Nationellt förord

Europastandarden EN 60456:2016

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 60456, Fifth edition, 2010 - Clothes washing machines for household use - Methods for measuring the performance**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 60456, utgåva 4, 2011, gäller ej fr o m 2018-12-14.

ICS 97.060.00

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Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60456

April 2016

ICS 97.060

Supersedes EN 60456:2011

English Version

Clothes washing machines for household use - Methods for measuring the performance (IEC 60456:2010 , modified)

Machines à laver le linge pour usage domestique - Méthodes de mesure de l'aptitude à la fonction (IEC 60456:2010 , modifiée)

Waschmaschinen für den Hausgebrauch - Verfahren zur Messung der Gebrauchseigenschaften (IEC 60456:2010 , modifiziert)

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 60456:2016 E

SEK Svensk Elstandard

Contents

European foreword

This document (EN 60456:2016) consists of the text of IEC 60456:2010 prepared by SC 59D “Home laundry appliances” of IEC/TC 59 "Performance of household and similar electrical appliances”, together with the common modifications prepared by CLC/TC 59X "Performance of household and similar electrical appliances".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-12-14
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2018-12-14

This document supersedes EN 60456:2011.

Significant technical differences are:

a) the test procedure to measure power and energy consumption in left-on-mode and the referenced standard has been corrected; (Z.A. 4.9);

b) deletion of RMS and two sided confidence level formulas (Z.A. 5.2);

c) corrections in evaluation of water extraction performance (formulas) are integrated (Z.A. 5.4);

d) corrections in evaluation of spin speed (formulas) are integrated (Z.A. 5.5);

e) corrections in evaluation of power and energy consumption measurements in left-on-mode (formulas and references) are integrated (Z.A. 5.9);

f) Table ZA17: Correction of the reported precision;

g) Annex ZB is re-phrased;

h) the normative references in Annex ZC are updated;

i) new Annexes ZZA and ZZB.

This European Standard also specifies, as far as necessary, the test methods which shall be applied in accordance with the COMMISSION DELEGATED REGULATION (EU) No 1061/2010 implementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of household washing machines and in accordance with the COMMISSION REGULATION (EU) No 1015/2010 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for household washing machines.

Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 60456:2010 are prefixed “Z”.

Annex ZA sets out the procedure to be applied for testing according to Commission Regulations with regard to energy labelling and ecodesign and provides all necessary links to all relevant clauses of this European Standard.

Annex ZB has been re-phrased and provides control procedures for checking measured values in comparison to values declared by the manufacturer and taking into account any permitted tolerances.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports Commission Regulation (EU) No. 1015/2010 and Commission Delegated Regulation (EU) No. 1061/201.

For the relationship with Commission Regulation (EU) No. 1015/2010 and Commission Delegated Regulation (EU) No. 1061/201 see informative Annex ZZA and ZZB, which are integral parts of this document.

Endorsement notice

The text of the International Standard IEC 60456:2010 was approved by CENELEC as a European Standard with agreed common modifications.

Annex ZC
(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu

Publication	Year	Title	EN/HD	Year
IEC 60335-2-7	-	Household and similar electrical appliances – Safety – Part 2-7: Particular requirements for washing machines	EN 60335-2-7	-
IEC 60704-2-4 (mod)	2011	Household and similar electrical appliances – Test code for the determination of airborne acoustical noise – Part 2-4: Particular requirements for washing machines and spin extractors	EN 60704-2-4	2012
IEC 60734	-	Household electrical appliances – Performance – Hard water for testing	EN 60734	-
IEC 62053-21	-	Electricity metering equipment (a.c.) – Particular requirements – Part 21: Static meters for active energy (classes 1 and 2)	EN 62053-21	-
IEC 62301	-	Electrical and electronic household and office equipment - Measurement of low power consumption	EN 50564	-
IEC Guide 109	-	Environmental aspects – Inclusion in electrotechnical product standards	-	-
ISO 31-0	1992 [1)]	Quantities and units – Part 0: General principles	-	-
ISO 2060	-	Textiles – Yarn from packages – Determination of linear density (mass per unit length) by the skein method	EN ISO 2060	-
ISO 2061	-	Textiles – Determination of twist in yarns – Direct counting method	EN ISO 2061	-
ISO 7211-2	-	Textiles – Woven fabrics – Construction – Methods of analysis – Part 2: Determination of number of threads per unit length	-	-
EN 12127	-	Textiles – Fabrics – Determination of mass per unit area using small samples	-	-

1) Superseded by ISO 80000-1:2009, *Quantities and units - Part 1: General.*

ISO 80000-1	2009	Quantities and units – Part 1: General	EN ISO 80000-1	2013

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

CLOTHES WASHING MACHINES FOR HOUSEHOLD USE – 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.
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International Standard IEC 60456 has been prepared by subcommittee 59D: Home laundry appliances, of IEC technical committee 59: Performance of household and similar electrical appliances.

This fifth edition cancels and replaces the fourth edition published in 2003 and constitutes a technical revision.

Experience with the use of the fourth edition of IEC 60456, together with some revised test conditions and the need for a more globally applicable standard, are the main reasons for this fifth edition.

This edition includes the following significant technical changes from the previous edition.

- Modified test load mass requirement for cases where rated capacity of test machine is not declared. Test load mass determination in case rated capacity is not declared was changed to remove the ambiguity in edition 4 and to encourage declaration.
- Introduction of soft water option.
- Expanded stain/soil set (for assessment of washing performance).

- Improved method of loading and folding test load items to better suit vertical axis, horizontal axis and twin tub systems.
- Revised and amended reference machine specification reflecting full qualification of new Electrolux Wascator CLS.
- New reference programmes for lower temperatures and vertical axis systems. New informative annex comparing reference programmes to typical household programmes.
- Refined rinsing efficiency method.
- Introduction of low power modes “Off” and “Left On” (for assessment of energy consumption).
- New annex about uncertainty of measurements.

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

FDIS	Report on voting
59D/358/FDIS	59D/360/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 2.

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 the stability 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 document using a colour printer.

CLOTHES WASHING MACHINES FOR HOUSEHOLD USE – METHODS FOR MEASURING THE PERFORMANCE

1 Scope

This International Standard specifies methods for measuring the performance of clothes **washing machines** for household use, with or without heating devices utilising cold and/or hot water supply. It also deals with appliances for water extraction by centrifugal force (**spin extractors**) and is applicable to appliances for both washing and drying textiles (**washer-dryers**) with respect to their washing related functions. This International Standard also covers **washing machines** which specify the use of no detergent for normal use.

NOTE 1 Tumble dryer performance is assessed to IEC 61121.

The object is to state and define the principal performance characteristics of electric household **washing machines** and **spin extractors** and to describe the test methods for measuring these characteristics.

NOTE 2 This international standard applies also to **washing machines** for communal use in blocks of flats or in launderettes. It does not apply to **washing machines** for commercial laundries. This International Standard is not intended to be used for the comparative evaluation of detergents.

NOTE 3 This International Standard does not specify acoustical noise requirements for **washing machines**. Acoustical noise measurements are specified in IEC 60704-1 and IEC 60704-2-4.

NOTE 4 This International Standard does not specify safety requirements for **washing machines**. Safety requirements are specified in IEC 60335-2-7.

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 60335-2-7, *Household and similar electrical appliances – Safety – Part 2-7: Particular requirements for washing machines*

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

IEC 62053-21, *Electricity metering equipment (a.c.) – Particular requirements – Part 21: Static meters for active energy (classes 1 and 2)*

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

IEC Guide 109, *Environmental aspects – Inclusion in electrotechnical product standards*

ISO 31-0:1992, *Quantities and units – Part 0: General principles*

ISO 2060, *Textiles – Yarn from packages – Determination of linear density (mass per unit length) by the skein method*

ISO 2061, *Textiles – Determination of twist in yarns – Direct counting method*

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

EN 12127, *Textiles – Fabrics – Determination of mass per unit area using small samples*