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Diskmaskiner för hushållsbruk – Funktionsprovning

*Electric dishwashers for household use –
Methods for measuring the performance*

Som svensk standard gäller europastandarden EN 50242:2016/EN 60436:2016. Den svenska standarden innehåller den officiella engelska språkversionen av EN 50242:2016/EN 60436:2016.

Nationellt förord

Europastandarden EN 50242:2016/EN 60436:2016

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 60436, Third edition, 2004^{*)} - Electric dishwashers for household use - Methods for measuring the performance**

utarbetad inom International Electrotechnical Commission, IEC.

Där innehållet i europastandarden avviker från texten i motsvarande avsnitt i IEC 60436 har detta markerats med röd färg.

För att visa sambandet med IEC 60436 har EN 50242 av CENELEC även fastställts med beteckningen EN 60436. De båda sistnämnda är identiska och en hänvisning till den ena gäller också den andra.

Tidigare fastställd svensk standard SS-EN 50242, utgåva 2, 2008 och SS-EN 50242/A11, utgåva 1, 2012, gäller ej fr o m 2018-04-11.

^{*)} Amendment No. 1:2009 och No. 2:2012 till IEC 60436:2004 är inarbetat i standarden.

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English Version

Electric dishwashers for household use -
Methods for measuring the performance
(IEC 60436:2004 , modified + A1:2009 , modified
+ A2:2012 , modified)

Lave-vaisselle électriques à usage domestique -
Méthodes de mesure de l'aptitude à la fonction
(IEC 60436:2004 , modifiée + A1:2009 , modifiée
+ A2:2012 , modifiée)

Elektrische Geschirrspüler für den Hausgebrauch -
Messverfahren für Gebrauchseigenschaften
(IEC 60436:2004 , modifiziert + A1:2009 , modifiziert
+ A2:2012 , modifiziert)

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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

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European foreword

This document (EN 50242:2016 / EN 60436:2016) consists of the text of IEC 60436:2004, IEC 60436:2004/A1:2009 and IEC 60436:2004/A2:2012 prepared by SC 59A "Electric dishwashers" 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 (dop) 2017-04-11
at national level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting (dow) 2018-04-11
with this document have to be withdrawn

This document supersedes EN 50242:2008 / EN 60436:2008.

EN 50242:2016 / EN 60436:2016 includes the following significant technical changes with respect to EN 50242:2008 / EN 60436:2008:

- a) introduction of new combined cleaning and drying performance assessment (Clause 7);
- b) new data on expanded measurement uncertainty (Annex ZB);
- c) new Annexes ZZA, ZZB and ZZC.

Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 60436:2004, IEC 60436:2004/A1:2009 and IEC 60436:2004/A2:2012 are prefixed "Z".

In this document, the common modifications to the International Standards are indicated **in red**.

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This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with Regulations (EU) No 1059/2010, (EU) No 1016/2010 and (EC) No 1275/2008, see informative Annexes ZZA, ZZB and ZZC, which are integral parts of this document.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRIC DISHWASHERS 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 60436 has been prepared by subcommittee 59A: Electric dishwashers, of IEC technical committee 59: Performance of household electrical appliances.

This consolidated version of IEC 60436 consists of the third edition (2004) [documents 59A/114A/FDIS and 59A/116/RVD], its amendment 1 (2009) [documents 59A/138/CDV and 59A/139/RVC] and its amendment 2 (2012) [documents 59A/152/CDV and 59A/160/RVC].

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 3.2.

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

This third edition cancels and replaces the second edition published in 1981 and constitutes a technical revision. Major changes introduced in the second edition include

- changes made to the soils used in the standard;
- the use of an oven and microwave oven to dry the soils;
- the alternate 15 to 18 hour air dry method to dry the soils;
- the addition of a reference dishwasher;
- the recognition of alternate supply voltages and frequencies;
- the recognition of a cold or hot water supply to the dishwasher;
- the detergent and rinse aid compositions have been updated to reflect current technology;
- the addition of the Aham load;
- the evaluation of the filter systems;
- the modification of the scoring system from 2 to 5 grades;
- the definition of program and cycle time;
- the temperature correction for energy testing;
- harmonization of ambient conditions.

The committee has decided that the contents of the base publication and its amendments 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 publication using a colour printer.

INTRODUCTION

In 1996, IEC subcommittee 59A charged its Working Group 2 with the revision of the second edition of IEC 60436 to make it suitable for the international needs and to make it suitable for the current levels of dishwasher performance and technology.

The second edition was published in 1981 and has not been significantly updated.

SC59A instructed the WG2 to take the Cenelec draft standard EN 50242 as the basis for the third edition.

An important reason for the third edition was the need to take into account the needs of all countries such as varying voltages and frequencies, different water supply temperatures and water hardness and availability of specified soils in the various countries.

To meet the goal the following significant technical changes were made.

- The repeatability and reproducibility of the test results have been improved by the introduction of the same model reference dishwasher specified for all locations.
- The soils have been changed to reflect the modern dishwasher's capability.
- The preparation of the soils has been improved to enhance repeatability and reproducibility by the introduction of new drying methods.
- The standard also recognizes various supply voltages and frequencies, cold or hot water supply, an alternate Aham load, the evaluation of dishwasher filter systems.
- The standard has updated the formulation of the detergent and rinse agents to reflect the products on the market today.
- The standard has increased the sensitivity of the grading scale from two to five points to improve repeatability and reproducibility.
- Ambient conditions have been brought closer to harmonization.
- More detailed instructions have been provided for the installation of the various designs of dishwashers.
- Correction formulae have been provided for the correction of energy consumption measurements for varying water supply temperature.

INTRODUCTION (to amendment 2)

This second amendment to the third edition of IEC 60436 (2004) covers the five following issues:

- An illustration for the through-circulation thermal cabinet to indicate the position of temperature sensors and a new position for the basket to prevent partial blockage of the inlet air path which will improve the consistency of the oven drying results. Furthermore an improved calibration procedure of the oven temperatures is included. It applies to Annex G of IEC 60436:2004.
- Revised small bowl specification – the current bowl (named “small serving bowl” as well as “fruit bowl”) is out of production and will become unavailable as the existing stock is depleted. This alternate bowl is necessary. This bowl (“dessert bowl”) has been tested and found to be acceptable. Throughout the standard the names “small serving bowl” and the “fruit bowl” have been changed to “dessert bowl”. This applies to Clause 6, Annex A and Annex B of IEC 60436:2004.
- The inclusion of standby power to cover the relevant low power modes for dishwashers as a new Annex O which references IEC 62301 for the measurement method. This Annex O is based on Annex L of draft 59D/343/CDV for washing machines and has been modified to be suitable for dishwashers.
- A more detailed description on how to calibrate and work with the new microwave oven was introduced with IEC 60436, Amendment 1:2009.
- Alternative replacement cutlery items for Annex A are described in A.2 and A.3.

ELECTRIC DISHWASHERS FOR HOUSEHOLD USE – METHODS FOR MEASURING THE PERFORMANCE

1 Scope

This international standard applies to electric dishwashers for household use that are supplied with hot and/or cold water.

The object is to state and define the principal performance characteristics of electric dishwashers for household use and to describe the standard methods of measuring these characteristics.

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

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 60350, *Electric cooking ranges, hobs, ovens and grills for household use – Methods for measuring performance*

IEC 60704-2-3, *Household and similar electrical appliances – Test code for the determination of airborne acoustical noise – Part 2-3: Particular requirements for dishwashers*

IEC 60704-3, *Test code for the determination of airborne acoustical noise emitted by household and similar electrical appliances – Part 3: Procedure for determining and verifying declared noise emission values*

IEC 60705, *Household microwave ovens – Methods for measuring performance*

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

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

ISO 607, *Surface active agents and detergents – Methods of sample division*

AHAM DW-1:2003: *Performance testing methods for household electric dishwashers*