



SLOVENSKI STANDARD
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Električni pralno-sušilni stroji za uporabo v gospodinjstvu - Metode za merjenje funkcionalnosti - Dopolnilo A12

Electric clothes washer-dryers for household use - Methods of measuring the performance

Elektrische Wasch-Trockner für den Hausgebrauch - Prüfverfahren zur Bestimmung der Gebrauchseigenschaften

Lavantes-séchantes électriques à usage domestique - Méthodes de mesure de l'aptitude à la fonction

Ta slovenski standard je istoveten z: EN IEC 62512:2020/A12:2023

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Electric clothes washer-dryers for household use - Methods of measuring the performance

Lavantes-séchantes électriques à usage domestique -
Méthodes de mesure de l'aptitude à la fonction

Elektrische Wasch-Trockner für den Hausgebrauch -
Prüfverfahren zur Bestimmung der
Gebrauchseigenschaften

This amendment A12 modifies the European Standard EN IEC 62512:2020; it was approved by CENELEC on 2023-06-29. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This amendment 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 IEC 62512:2020/A12:2023) has been 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 (dop) 2024-04-27 implemented at national level by publication of an identical national standard or by endorsement
- latest date by which the national standards (dow) 2026-10-27 conflicting with this document have to be withdrawn

This document introduces the following technical modifications:

- a) adjusted precision for washing efficiency index;
- b) in normative clauses undated references were dated;
- c) references to new amendment EN 60456:2016/prAB:2023 were updated.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document is read in conjunction with EN IEC 62512:2020 and EN IEC 62512:2020/A11:2020.

Clauses, notes, tables, figures and annexes which are additional to those in IEC 62512:2012 are prefixed "Z".

This document has been prepared under a standardization request addressed to CENELEC by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annexes ZZA and ZZB, which are an integral part of this document.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

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1 Modifications to Clause 2, “Normative references”

In Clause 2, **delete**

“

CLC/TS 50677, *Clothes washing machines and washer-dryers for household and similar use — Method for the determination of rinsing effectiveness by measurement of the surfactant content at textile materials*

CLC/TS 50707:2020, *Clothes washing machines and washer-dryers for household and similar use — Method for the determination of temperature inside the laundry load*

”

2 Modifications to Clause 4, “Requirements”

In 4.1, **replace** the 1st paragraph with the following:

“4.1 General

The requirements shall be in accordance with Clause 4 of EN 60456:2016¹ and of EN 61121:2013² as appropriate.”

In 4.2, **replace** the last paragraph as follows:

“4.2 Rated capacity

If the **rated washing capacity** in kg at 0,5 kg intervals is not declared, it shall be deduced from the volume of the drum according to EN 60456:2016¹, Annex N.”

3 Modifications to Clause 5, “Test conditions, materials, equipment and instrumentation”

In 5.1, **replace** the paragraph as follows:

“Test conditions, materials, equipment and instrumentation shall be in accordance with Clause 5 of EN 60456:2016¹; however, 5.2.2 and 5.2.3 of the same standard are modified as follows.”

In 5.2, **replace** the paragraph as follows:

“The water supply shall be in accordance with 5.2.2 of EN 60456:2016¹.”

In 5.4, **replace** the paragraph as follows:

“The specifications for base loads, stain test strips and detergent used for testing **washer-dryers** shall be in accordance with 5.3 of EN 60456:2016¹.”

In 5.5, **replace** entire text as follows:

“The specification for the **reference machine** is given in 5.4.2 of EN 60456:2016¹. The type 1 **reference machine** according to Annex D of EN 60456:2016¹ shall be used.

Specifications for other specialized test equipment required for **washer-dryer** testing to this document, including the spectrophotometer, equipment for **conditioning** the **base load** and the iron shall be in accordance with 5.4.3, 5.4.4 and 5.4.6 of EN 60456:2016¹ and in accordance with 5.5 of EN 61121:2013². Where these two standards give different values, the smaller value shall apply.

A checklist of other laboratory equipment which could be required for **washer-dryer** testing is provided in 5.4.8 of EN 60456:2016¹.”

¹ As amended by EN 60456:2016/prAB:2023.

² As amended by EN 61121:2013/A11:2019.

In 5.6, **replace** the paragraph as follows:

"Instruments used and measurements made according to this document shall comply with the specifications given in 5.5.2 and 5.5.3 of EN 60456:2016¹ and EN 61121:2013², 5.5, whichever is more precise."

4 Modifications to Clause 7, "Performance measurements — General requirements"

In Clause 7, **replace** the 1st paragraph as follows:

"The requirements in EN 60456:2016¹, Clause 7 related to the combined **test series** of the **eco 40-60 programme** with **full load**, **half load** and **quarter load** according to EN 60456:2016¹, Annex ZA is also applicable for the **washer-dryer** to measure the performance of the washing program."

In Clause 7, **replace** the 5th paragraph as follows:

"The following parameters shall be measured for the **reference machine** using a **test series** consisting of 5 runs as set out in EN 60456:2016¹, Clause 8 and using a 5 kg cotton **test load** as defined for the **reference machine**:

- washing performance;
- water extraction performance;
- spin speed;
- **programme time**;
- energy consumption;
- water consumption."

In Clause 7, **replace** the 6th paragraph as follows:

"The evaluation of these parameters for the **washer-dryer** is specified in Annex ZA. The evaluation of these parameters for the **reference machine** is specified in EN 60456:2016¹, Clause 9."

In Clause 7, **replace** the 10th paragraph as follows:

"Selected water hardness shall be hard water; refer to 5.2.2.2 of EN 60456:2016¹."

5 Modifications to Clause 8, "Tests for performance"

In 8.2, **replace** the second paragraph as follows:

"The rinsing effectiveness measurement for the combined **test series** of the **eco 40-60 programme** with **full load**, **half load** and **quarter load** according to Annex ZA of EN 60456:2016¹ and for the **test series** of the **wash and dry cycle** with **full load** and **half load** according to Annex ZA of this document shall be done in accordance with ZA.4.9."

In 8.3.4, **replace** the last paragraph as follows:

"For the test according to Annex ZA, the determination of the low power modes shall be made according to ZA.4.9 of EN 60456:2016¹."

6 Modifications to Clause 9, "Assessment of performance"

In 9.1, **replace** the 4th paragraph as follows:

"In bullets 2, 4 and 6 of step 3 in 9.1, replace "EN 60456" with "EN 60456:2016¹".

In 9.2, **replace** the first paragraph as follows:

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"Noise emission values shall be measured in accordance with EN IEC 60704-2-16:2019³."

In 9.2, replace the second paragraph as follows:

"For **test runs** according to ZA noise emission values shall be measured in the **eco 40-60 programme** using the full **rated washing capacity** in accordance to EN IEC 60704-2-16:2019³."

7 Modifications to Clause 10, "Data to be reported"

In Clause 10, replace the paragraph as follows:

"For the **test series** for the **wash and dry cycle** with **full load** and **half load** according to Annex ZA, data to be reported for the test **washer-dryer** are included in ZA.6. The relevant data for the **reference machine** shall be reported according to Annex S of EN 60456:2016¹."

8 Modification of Annex ZA, "Test procedure for assessing the performance of a washer-dryer with respect to the eco 40-60 programme and with respect to the wash and dry complete operation cycle"

In ZA.1.1:

Add the following paragraph above the first paragraph:

"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 document."

Replace a) as follows:

"

- a) **Full load, half load and quarter load** for the **washing cycle** of a **washer-dryer**. Testing of the **washing cycle** of the **washer-dryer** shall be performed according to EN 60456:2016¹."

In ZA.2, replace the entire text as follows:

"The requirements for the preparation of the **full load** and **half load** used in the test **washer-dryer** and the **test load** used in the **reference machine** shall be in accordance with Clause 6 of EN 60456:2016¹. All requirements of 6.4 of EN 60456:2016¹ are applied to define the **full load** for a **test series**. For the **test runs** with **half load** the **full load** shall be split into two parts. ZA.2 of EN 60456:2016¹ defines the splitting of the **full load** into the two **half loads (part A and part B)**."

In ZA.3, replace the 1st paragraph as follows:

"The complete energy label test consists of 2 **test series**. One is the **eco 40-60 programme** and the other is the **wash and dry cycle**. The preparation of the test **washer-dryer** following 6.2.1.3 of EN 60456:2016¹ is applicable for both **test series** regardless which the first in the performance test is. For the **test series** of the **wash and dry cycle** additionally 6.4 of EN 61121:2013² shall be applied."

In ZA.3, replace the 3rd paragraph as follows:

"In one **combined test series** with 3 **treatments** with 10 **test runs**, the performance of the **eco 40-60 programme** with **full load, half load and quarter load** shall be measured according to ZA.4 of EN 60456:2016¹. The evaluation of these parameters for the **test machine** is specified in ZA.5 of EN 60456:2016¹. The data to be reported for this **test series** are specified in ZA.6 of EN 60456:2016¹."

In ZA.3, replace the 5th paragraph as follows:

"For each **test series** performance parameters shall be measured for the **reference machine** using a single **test series** consisting of a total of 5 **test runs** as set out in Clause 8 of EN 60456:2016¹. The order of **test runs** for the **reference machine** and for the test series of the **wash and dry cycle** is set out in ZA.4.4."

³ As amended by EN 60704-2-16:2019/A11:2020.

In **ZA.3**, **replace** the last paragraph as follows:

“The evaluation of these parameters for the **reference machine** is specified in Clause 9 of EN 60456:2016¹.”

In **ZA.4.2**, **replace** the paragraph as follows:

“The test load composition and the loading sequence shall be in accordance with ZA.4.2 of EN 60456:2016¹.”

In **ZA.4.4**, below “A **test run** shall be considered to be invalid if one or more of the following occurs” **replace** the 3rd bullet point as follows:

“

— the reference machine operated in parallel fails to perform within the tolerances specified in EN 60456:2016¹, Annex D;”

In **ZA.4.5**, **replace** the paragraph as follows:

“To assess washing performance, measurements shall be carried out as specified in 8.3.3 of EN 60456:2016¹ and ZA.4.5 of EN 60456:2016¹.”

In **ZA.4.7**, **replace** the paragraph as follows:

“During the **test runs** instrumentation for the measurement of water volume, water temperature and electrical energy shall record the required parameters in accordance with ZA.4.8 of EN 60456:2016¹.”

In **ZA.4.8**, **replace** the paragraph as follows:

“Measurement to determine the power in low power modes shall be in accordance with the requirements of Annex ZD of EN 60456:2016¹.”

In **ZA.4.9**, **replace** the paragraph as follows:

“Measurement to determine the rinsing effectiveness shall be in accordance with the requirements of Annex ZF of EN 60456:2016¹.”

In **ZA.4.10**, **replace** the paragraph as follows:

“Measurement to determine the temperature inside the load shall be in accordance with the requirements of Annex ZE of EN 60456:2016¹.”

In **ZA.5.1**, **replace** the last paragraph as follows:

“Under no circumstances shall any data from an invalid **test run** in either the **test machine** or the **reference machine** be used for evaluation. For detailed definition of invalid **test runs** for the **test series** refer to ZA.4.4.”

In **ZA.5.2**, e), **delete** the whole paragraph.

In **ZA.5.3**, b), **replace** the paragraph as follows:

“

b) The Washing Efficiency Index $I_{W,z}$ shall be calculated per **treatment** as follows:

$$I_{W,z} = \frac{C_z}{C_{ref}}$$

where

C_z is the average value for the sum of the reflectance values for **treatment** z ($z = full, 1/2$);

C_{ref} is the average sum of the reflectance values for the **reference machine** out of all 5 **test runs** (as calculated in 9.2c of EN 60456:2016¹).”

In **ZA.5.3**, **replace** c) as follows:

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“

- c) The washing efficiency index I_W for the **test series** shall be calculated as follows and rounded to three decimal places:

$$I_W = \min(I_{W,full}, I_{W,\frac{1}{2}})$$

where

$I_{W,\frac{1}{2}}$ is the washing efficiency index for **treatment half**;

$I_{W,full}$ is the washing efficiency index for **treatment full**.

“

In ZA.6.1, replace the first paragraph as follows:

“This clause presents the data to be reported for the test **washer-dryer**. The data to be reported for the **reference machine** is the same as shown in Annex S of EN 60456:2016¹.”

In ZA.6.2, replace the first paragraph as follows:

“The data for the test **washer-dryer** can be reported in Table ZA.15 of EN 60456:2016¹.”

In ZA.6.3, replace the first paragraph as follows:

“For a **test series** used to determine the performance parameters of a test **washer-dryer** when applying the combined **test series** of the **eco 40-60 programme** with **full load**, **half load** and **quarter load** according to Annex ZA of EN 60456:2016¹, the data shown in Table ZA.16, Table ZA.17 and Table ZA.18 of EN 60456:2016¹ shall be reported.”

In ZA.6.3, replace the second paragraph as follows:

“For **test runs** carried out on the reference machine, the data shown in Table S.2a of EN 60456:2016¹ shall be reported.”

In ZA.6.3, replace Table ZA.19 and Table ZA.20 as follows:

“