
Električni pralno-sušilni stroji za uporabo v gospodinjstvu - Metode za merjenje lastnosti - Dopolnilo AB

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

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This draft amendment prAB, if approved, will modify the European Standard EN IEC 62512:2020; it is submitted to CENELEC members for enquiry.

Deadline for CENELEC: 2023-03-17.

It has been drawn up by CLC/TC 59X.

If this draft becomes an amendment, 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.

This draft amendment was established by CENELEC in three official versions (English, French, German).

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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20 European foreword

21 This document (EN IEC 62512:2020/prAB:2022) has been prepared by CLC/TC 59X "Performance of
22 household and similar electrical appliances".

23 This document is currently submitted to the Enquiry.

24 The following dates are proposed:

- latest date by which the existence of this (doa) dor + 6 months
document has to be announced at national
level
- latest date by which this document has to be (dop) dor + 12 months
implemented at national level by publication of
an identical national standard or by
endorsement
- latest date by which the national standards (dow) dor + 36 months
conflicting with this document have to be (to be confirmed or
withdrawn modified when voting)

25 This document introduces the following technical modifications:

- 26 a) adjusted precision for washing efficiency index;
- 27 b) in normative clauses undated references were dated;
- 28 c) references to new amendment EN 60456:2016/prAB:2022 were updated.

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

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

31 This document has been prepared under a Standardization Request given to CENELEC by the European
32 Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s)
33 / Regulation(s).

34 For relationship with EU Directive(s) / Regulation(s), see informative Annexes ZZA and ZZB, which are an
35 integral part of this document.

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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 the maximum temperature inside the 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 Clause 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 60456:2016¹Error! Bookmark not defined.”

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.”

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.”

¹ As amended by EN 60456:2016/prAB:2022.

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

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 washing machine** using a **test series** consisting of 5 runs as set out in EN 60456:2016¹, Clause 8 and using a 5,0 kg cotton **test load** as defined for the **reference washing 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 washing 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 first 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 8.2, 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, add the phrase: “(in accordance with Clause 9 of EN 60456:2016¹”
Bookmark not defined.)” after “according to 8.3.2”.

In 9.1, replace the 8th paragraph as follows:

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

In 9.1, replace the 9th 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 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 Clause 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 Clause 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 washing 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

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

test runs for the **reference washing machine** and for the test series of the **wash and dry cycle** is set out in ZA.4.4.”

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

“The evaluation of these parameters for the **reference washing 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).”

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

- “
- 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:

“

Table ZA.19 — Performance results of the test runs

Laboratory												
Checked / approved by												
Machine identification												
Internal test identifier												
Reference machine internal test series identifier												
Programme and options selected:												
nominal required test load mass												
Reason for extra test run (if applicable)												
"End of programme" indication (see 3.1.24 of EN 60456:2016 ¹)												
Treatment	symbol (refer to 3.2)	symbol as given in regulation	unit	reported precision (note 4)	Report for each drum (multi-drum only)	wash and dry full load			wash and dry half load			
Test run						1	2	3	1	2	3	4
Date of the test run	-	-	yyyy-mm.dd	-								
Mass of conditioned base load (without test strips) (see Note 2)	m_0	-	g	1	yes							
Mass of base load for before each test run (without test strips) (see Note 2)	m_{dry}	-	g	1	yes							
Mass of test load after drying (without strips)	m_f	-	g	1	yes							
Mass of detergent used	m_{det}	-	g	1	yes							
Cold water consumption during main wash	V_{cm}	-	L	0,1								
Hot water consumption during main wash(if connected)	V_{hm}	-	L	0,1								
Total cold water consumption	V_{ct}	-	L	0,1								
Total hot water consumption (if connected)	V_{ht}	-	L	0,1								
Total water consumption (cold + hot if connected)	V_t	-	L	1								
Total electrical energy metered during the test	W_{et}	-	kWh	0,001								
Calculated total hot water energy determined during the test (see Note 1)	W_{ht}	-	kWh	0,001								
Total energy (programme energy)	W_{total}	-	kWh	0,001								
Ambient temperature (test room)	ϑ_a	-	°C	0,1								
Laboratory supply water pressure cold	p_c	-	kPa	10								
Laboratory supply water pressure hot (if connected)	p_h	-	kPa	10								
Laboratory supply water total hardness cold	-	-	mmol/L	0,01								