



**SLOVENSKI STANDARD**  
**oSIST prEN IEC 60436:2024/oprAA:2024**  
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**Električni pomivalni stroji za gospodinjstva - Metode za merjenje učinkovitost delovanja - Dopnilo AA**

Electric dishwashers for household use - Methods for measuring the performance

Elektrische Geschirrspüler für den Hausgebrauch - Messverfahren für Gebrauchseigenschaften

Lave-vaisselle électriques à usage domestique - Méthodes de mesure de l'aptitude à la fonction

**Ta slovenski standard je istoveten z: prEN IEC 60436:2024/prAA:2024**

**ICS:**

97.040.40 Pomivalni stroji Dishwashers

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
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**DRAFT**  
**prEN IEC 60436:2024**

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ICS

English Version

## Electric dishwashers for household use - Methods for measuring the performance

Lave-vaisselle électriques à usage domestique - Méthodes de mesure de l'aptitude à la fonction

Elektrische Geschirrspüler für den Hausgebrauch - Messverfahren für Gebrauchseigenschaften

This draft amendment prAA, if approved, will modify the European Standard prEN IEC 60436:2024; it is submitted to CENELEC members for enquiry.

Deadline for CENELEC: 2024-07-19.

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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## 28 European foreword

29 This document (prEN IEC 60436:2024/prAA:2024) has been prepared by CLC/TC 59X "Performance of  
30 household and similar electrical appliances".

31 This document is currently submitted to the Enquiry.

32 The following dates are proposed:

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- latest date by which the national standards conflicting with this document have to be withdrawn (dow) dor + 36 months (to be confirmed or modified when voting)

33 This document will modify prEN IEC 60436:2024 and all of its amendments and corrigenda (if any).

34 prEN 60436:2024 includes the following significant technical changes with respect to EN 60436:2020:

35 — Implementation of a new reference machine, which better reflects modern dishwasher energy and water  
36 saving technologies. Its ability to function as a reference machine for the cleaning assessment was  
37 assessed in a Round Robin Test.

38 — Implementation of the new reference detergent type E, which better reflects market detergents formulations.  
39 It includes upgraded enzymes and a lower content of silicates to reduce the alkalinity which simplifies the  
40 worldwide transportation by avoiding dangerous goods labelling and therefore improves the usage all over  
41 the world.

42 — Implementation of an alignment factor for the cleaning performance assessment as proposed in a scientific  
43 study done by a university to align test results of the previous version to the new version of this standard  
44 with the new reference system described above.

45 — Introduction of alternatives for the oven pan and knives as the production of the current load items were  
46 stopped.

47 — Improvement of the control of the room temperature due to a temperature measurement inside the  
48 dishwasher prior to the start of the test programme.

49 — Update of the weight of different load items and the specified ranges to anneal the requirements in the  
50 standard to the actual weight of the items.

51 — New requirements for the loading and handling instructions for test institutes.

52 — Update of supplier information annex.

53 — Update of Annex ZC Test report template and ZD Uncertainty of measurement.

54 This document is read in conjunction with prEN IEC 60436:2024.

**prEN IEC 60436:2024/prAA:2024 (E)**

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

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<https://standards.iteh.ai/catalog/standards/sist/144f921a-9df9-4a6a-889d-1db25c37363f/osist-pren-iec-60436-2024-opraa-2024>

## 58 1 Modifications to Clause 5 “General conditions for measurements”

59 *In 5.1.1 “General information”, replace the second paragraph with the following:*

60 “Refer to manufacturer’s instructions concerning relevant test conditions for the **test machine**, including  
61 installation instructions, **detergent** amounts, **rinse aid** settings, **water softener** settings and any other  
62 information relevant to identifying **regeneration operations** (if applicable), filter type, and loading  
63 plans/instruction.”

64 *Add in 5.1.1 “General information”, the following paragraph after the second paragraph:*

65 “Loading plans/instruction provided by the manufacturer containing additional loading parts or accessories that  
66 are not intended to be applied by the user and that are not described in the user instructions shall be disregarded  
67 for testing.”

68 *Replace in 5.1.1 “General information” the first sentence of the third paragraph with the following:*

69 “Performance tests according to this document are generally carried out on a conditioned machine (5.2), with a  
70 **reference machine** running parallel with the **test machine(s)**, i.e. at the same time under the same conditions  
71 using soil prepared at the same time from the same batch.”

72 *Replace the first paragraph of 5.2 “Sequence of test procedures and conditioning of the test machine”, with  
73 the following:*

74 “Before conducting performance tests on a **dishwasher**, it shall be operated for at least three **cycles**, using a  
75 **programme** suitable for normally or heavily soiled **tableware**, with reference **detergent** (specified in 5.7) and  
76 with reference **rinse aid** (specified in 5.8), to remove residues; a clean load or no load may be used.”

77 *Add in 5.2 “Sequence of test procedures and conditioning of the test machine” the following sentences after  
78 the first paragraph:*

79 “Performance of an aged and/or used **dishwasher** can differ from a new and/or unused machine. Tracking the  
80 history (storage, tests done, use cases, modifications to software and hardware, etc.) of the **test machine** is  
81 recommended.”

82 *Replace in 5.3.1.1 “Voltage” the paragraph with the following:*

83 “The supply voltage of the **test machine** shall be set at 230 V and maintained within the range of  $\pm 1$  %  
84 throughout the test. The supply voltage measured during the tests shall be recorded.”

85 *Replace in 5.3.1.2 “Frequency” the paragraph with the following:*

86 “The supply frequency shall be set at 50 Hz and maintained within  $\pm 1$  % throughout the test. The measured  
87 frequency shall be reported.”

88 *Replace in 5.4 “Test programme” the first paragraph with the following:*

89 “For energy labelling and ecodesign purposes, the **programme** to be tested for performance measurements  
90 shall be the “ECO” **programme** which is intended to clean normally soiled **tableware** (standard cleaning and  
91 drying **cycle**).

92 NOTE Z1 For noise testing see Clause 9.”

93 *Replace in 5.5 “Ambient conditions” the relative humidity range with the following:*

94 “– Relative humidity:  $(55 \pm 5)$  %”

95 *Add in 5.6.2 “Water temperature” the following paragraph after the note:*

96 “For energy labelling and ecodesign purposes, the use of hot water is not permitted.”

97 *Replace in 5.6.3 “Water hardness” the undated reference with the following dated reference:*

98 “EN 60734:2012”

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99 **Add** in 5.6.3 “Water Hardness” the following paragraph after the first paragraph:

100 “For energy labelling and ecodesign purposes, if the appliance is not equipped with a water softener, the hardest  
101 water which is permitted by the manufacturer's instructions shall be used, otherwise only water of  $(2,5 \pm 0,5)$   
102 mmol/l shall be used.”

103 **Replace** in 5.7 “Detergent” the undated reference with the following dated reference:

104 “ISO 607:1980”

105 **Replace** in 5.8 “rinse aid” the last sentence with the following:

106 “For machines without **automatic dispensers**, the **rinse aid** shall be added manually, if so recommended by  
107 the manufacturer to the user and in accordance with their instructions.”

108 **Add** in 5.10 “Intermittently recurring functions” the following sentence at the beginning:

109 “For energy labelling and ecodesign purposes, this subclause does not apply.”

## 110 **2 Modifications to Clause 6 “Combined cleaning and drying performance tests”**

111 **Add** the following paragraph in 6.4.2.1 “General” after the last paragraph:

112 “For energy labelling and ecodesign purposes, UHT milk shall be used.”

113 **Add** the following paragraph in 6.4.3.1 “General” after the last paragraph:

114 “For energy labelling and ecodesign purposes, tea as described in Annex L shall be used.”

115 **Add** in 6.4.3.5 “Pre-drying for air drying method” the following paragraph after the last paragraph:

116 “For energy labelling and ecodesign purposes, this subclause is not applicable.”

117 **Add** in 6.4.6.1 “General” the following paragraph after the last paragraph:

118 “For energy labelling and ecodesign purposes, oat flakes as described in Annex L shall be used.”

119 **Add** in 6.4.6.3 “Application” the following paragraph after the last paragraph:

120 “For energy labelling and ecodesign purposes, the use of alternate load items is not permitted.”

121 **Add** in 6.4.7.1 “General” the following paragraph after the note: <https://standards.iteh.ai/catalog/standards/sist/1449211-9109-416a-8891-14b25c177361/pr-en-iec-60436-2024-opraa-2024>

122 “For energy labelling and ecodesign purposes, spinach as described in Annex L shall be used.”

123 **Add** in 6.5.3 “Air drying method” the following sentence after the last paragraph:

124 “For energy labelling and ecodesign purposes, this subclause is not applicable.”

125 **Add** in 6.6.2 “Operating” the following paragraph after the third paragraph:

126 “For energy labelling and ecodesign purposes, filter cleaning during a **test series** is not permitted.”

## 127 **3 Modification of Clause 7 “Combined cleaning and drying performance 128 assessment”**

129 **Add** in 7.3.4 “Assessing In WC” the following sentence after the note:

130 “For energy labelling and ecodesign purposes, only the cleaning index without filter cleaning shall be used.”

## 131 **4 Modifications to Clause 8 “Energy consumption, water consumption, programme 132 time“**

133 **Replace** in 8.3.1 “General” the text with the following:

134 “When calculating the arithmetical mean value of the energy, water consumption and **programme** time for  
135 **dishwashers**, where the **regeneration** of the **water softener** depends on demand and water hardness, and



136 does not take place on every **cycle**, **test runs** where **regeneration** took place within the **test series** shall be  
 137 disregarded when increased water, energy consumption and **programme** time are in line with manufacturer's  
 138 instructions to the consumer in regard to the following points:

139 — The total impact on the quantity of water, and electrical energy and the period of time associated with one  
 140 complete **regeneration**;

141 — the frequency with which the **water softener** is regenerated;

142 — the moment(s) in time during the **programme** that the **regeneration** takes place.

143 The **regeneration** process may consist of several stages. It may start during one **test run** and finish during the  
 144 following **test run**. For this purpose, when the **regeneration operation** is in line with manufacturer's instructions  
 145 to the consumer, **test runs** during which a **regeneration operation** took place within the **test series** shall be  
 146 disregarded for the purposes of calculating the mean consumption values. However, no more than two **test**  
 147 **runs** in a **test series** of five runs, and no more than three **test runs** in a **test series** of six to eight runs shall be  
 148 disregarded.

149 NOTE Z1 The information expected to be provided includes **regeneration** information regarding the water used for testing  
 150 according to this document.

151 NOTE Z2 The measured energy, water, and time of **regeneration operations** can vary. If these values differ by more  
 152 than 10 % from the consumption values provided by the manufacturer, then the laboratory can seek further guidance from  
 153 the manufacturer.

154 If the information provided by the manufacturer is not in line with the measurement or in the absence of  
 155 consumer information regarding the impact of **regeneration operations** on water, energy, and time, data from  
 156 all **test runs** shall be used for the calculation of the mean value for the **test series**.

157 In the test report, the **test runs** in which **regeneration** of the **water softener** occurred shall be identified."

158 **Replace in 8.3.2 "Energy consumption" the second paragraph with the following:**

159 "The mean energy consumption shall be calculated from the energy consumption for every whole **test run**  
 160 except those **test runs** where a **regeneration operation** has been identified in accordance with the  
 161 manufacturer's instructions to the consumer as described in 8.3.1."

162 **Replace in 8.3.4 "Water consumption" both paragraphs with the following:**

163 "The mean water consumption shall be calculated from the water consumption for every whole **test run** except  
 164 those **test runs** where a **regeneration operation** has been identified in accordance with the manufacturer's  
 165 instructions to the consumer as described in 8.3.1."

166 **Replace in 8.3.5 "Time" the second paragraph with the following:**

167 "The mean **programme** time shall be calculated from the **programme** time for every whole **test run** except  
 168 those **test runs** where a **regeneration operation** has been identified in accordance with the manufacturer's  
 169 instructions to the consumer as described in 8.3.1."

## 170 **5 Modifications to Clause 9 "Airborne acoustical noise"**

171 **Replace the text with:**

172 "Where an airborne acoustical noise measurement is required, it shall be measured according to  
 173 prEN IEC 60704-2-3:2024, Clause 6."

174 For energy labelling and ecodesign purposes, the **programme** to be tested for airborne acoustical noise shall  
 175 be the "ECO" **programme** which is intended to clean normally soiled **tableware** (standard cleaning and drying  
 176 **cycle**), using reference **detergent** E, as described in Annex E, and the test load in accordance with 6.2 and  
 177 Annexes A and B."

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178 **6 Modification to Annex A, “Place settings and serving pieces”**179 *Add in the end of Clause A.2 “Test load specifications” the following sentence:*

180 “For energy labelling and ecodesign purposes, the use of alternate load items is not permitted.”

181 **7 Modification to Annex B, “Tableware specifications” and Annex D, “Pictures of**  
182 **soiled items”**183 *Modify all ‘IEC’ references of included pictures to ‘EN’.*184 **8 Modification to Annex E, “Test additives”**185 *Replace the following sentence under Clause E.1 “General” with the following:*186 “Trademark information is provided for the convenience of users of this document and does not constitute an  
187 endorsement by CENELEC of this trademark. Items of similar specification may be used if they can be shown  
188 to lead to equivalent results.”189 **9 Modification to Annex F, “Microwave oven”**190 *Replace in F.2 “Calibration of the microwave oven” both undated references with the following dated reference::*

191 “EN 60705:2019”

192 **10 Modifications to Annex K, “Additional aspects of energy consumption of**  
193 **dishwasher”**194 *Add the following sentence after the first paragraph:*195 “For energy labelling and ecodesign purposes, the **left-on mode** is not relevant.”196 *Add the following sentence after the fifth paragraph:*197 “For energy labelling and ecodesign purposes, the **left-on mode** is not relevant.”198 *Replace the undated references with a dated reference and replace “IEC” with “EN”:*199 “Power measurements for **left-on mode**, **off mode**, **standby mode**, **standby mode in condition of networked**  
200 **standby** and **delay start mode** shall be made in accordance with the requirements of EN 50564:2011 and  
201 EN IEC 63474:2023. However, subclause 5.3. (procedure) and the requirement defining air speed in subclause  
202 4.2 (test room) of EN 50564:2011 shall not apply.”203 *Add the following sentence at the end of K.2 (Determination of **left-on mode** power):*204 “For energy labelling and ecodesign purposes, the **left-on mode** power is not relevant.”205 *Add the following sentence at the end of K.3 (Determination of **left-on mode** power duration):*206 “For energy labelling and ecodesign purposes, the **left-on mode** duration is not relevant.”207 *Replace the sixth paragraph in K.7 “Determination of **delay start mode** power” with the following:*208 “Electric power measurements in **delay start mode** shall commence at the earliest 15 min after the moment  
209 the **delay start mode** is activated and shall continue for at least 10 min (delay start setting shall cover a minimum  
210 of 25 min) and shall end at any time before the selected **programme** begins.”211 *Add the following sentence at the end Table K.1 “Measurement procedure for low power modes”:*212 “For energy labelling and ecodesign purposes, the **left-on mode** (step 20 to step 23) is not relevant.”213 *Add the following table at the end of Annex K:*

214 “