

SLOVENSKI STANDARD SIST EN 60456:2016/oprAB:2023

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Gospodinjski pralni stroji - Metode za merjenje funkcionalnosti - Dopolnilo AB

Clothes washing machines for household use - Methods of measuring the performance

Waschmaschinen für den Hausgebrauch - Verfahren zur Messung der Gebrauchseigenschaften

Machines à laver le linge pour usage domestique - Méthodes de mesure de l'aptitude à la fonction

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Clothes washing machines for household use - Methods of measuring the performance

Machines à laver le linge pour usage domestique -Méthodes de mesure de l'aptitude à la fonction Waschmaschinen für den Hausgebrauch - Verfahren zur Messung der Gebrauchseigenschaften

This draft amendment prAB, if approved, will modify the European Standard EN 60456:2016; it is submitted to CENELEC members for enquiry.

Deadline for CENELEC: 2023-05-05.

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.

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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

35

- 36 This document (EN 60456:2016/prAB:2023) has been prepared by CLC/TC 59X "Performance of household
- 37 and similar electrical appliances".
- 38 This document is currently submitted to the Enquiry.
- 39 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 latest date by which the national standards conflicting with this document have to be withdrawn (dow) dor + 36 months (to be confirmed or modified when voting)

- 40 This document introduces the following technical modifications:
- 41 a) the **programme** to be tested for the **combined test series** is the new introduced **eco 40-60 programme**.
- This **programme** needs to be tested with default settings with the given temperature;
- 43 b) the **test loads** that have to be used for testing are full, half and quarter of the **rated capacity** of the **washing machine**. Therefore, a new **quarter load** is introduced and defined to be approximately a quarter of the **rated capacity** (see Table ZA.15). The **quarter load** is treated as a separate load and not created by dividing **full load** or **half load**;
- the number of **test runs** per **treatment** for the **combined test series** changed to 3 tests with **full load**, 4 tests with **half load** and 3 tests with **quarter load**;
- 49 d) the time between two subsequent **test runs** within one day changed from 2 h to one hour;
- 50 e) the normalization run is included in the calculation of the load age. The maximum number of usages for 51 **base load** with a load mass greater or equal to 4.5 kg was changed to be between 35 and 60 normalization runs and test runs and the maximum number of usages for **base load** with a load mass less than 4.5 kg was changed to be between 30 and 67 normalization runs and test runs
- 54 f) Annex ZE is integrated, which defines the test procedure for temperature inside the load;
- 55 g) Annex ZF is integrated, which defines the test procedure for rinsing effectiveness;
- 56 h) the procedure to measure low power modes is modified (see Annex ZD);
- 57 i) specific weighting factors are introduced for the calculation of the weighted average value of the combined test series and
- 59 j) Annex ZB Tolerances and control procedures is deleted. Annex ZB is replaced by a new Annex ZB which defines the testing procedure for multi-drum **washing machines**.
- 61 k) A new standard powder detergent IEC-P is introduced (see Annex B), that substitutes the standard 62 powder detergent IEC-A* by replacing the bleach component sodium perborate with sodium percarbonate 63 due to Commission Regulation (EU) 2020/171 amending Annex XIV to Regulation (EC) No 1907/2006 of

- the European Parliament and of the Council concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH). According to REACH Regulation Article 56, the substances which are listed in the Annex XIV cannot be used or placed on the market after the "sunset date", unless the authorization is granted. Sodium perborate has a sunset date of 27th of May 2023 after having been classified as toxic to reproduction.
- The tolerances for the remaining moisture content in Table E.2 are adapted, due to change in the commercially available material.
- 71 m) In normative clauses undated references were dated.
- 72 This document has been prepared under a Standardization Request given to CENELEC by the European
- 73 Commission and the European Free Trade Association, and supports essential requirements of EU
- 74 Directive(s) / Regulation(s).
- 75 For the relationship with EU Directive(s) / Regulation(s), see informative Annexes ZZA and ZZB, which are an
- 76 integral part of this document.

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- 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.

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1 Modification to Clause 2, "Normative references"

- 80 **Add** the following references:
- 81 EN 60704-2-4:2012,1 Household and similar electrical appliances Test code for the determination of airborne
- 82 acoustical noise Part 2-4: Particular requirements for washing machines and spin extractors
- 83 EN 50564:2011, Electrical and electronic household and office equipment Measurement of low power
- 84 consumption
- 85 EN 50643:2018,² Electrical and electronic household and office equipment Measurement of networked
- 86 standby power consumption of edge equipment

2 Modification to Clause 3, "Terms, definitions and symbols"

88 **Add** the following table before 3.1.1:

89

90

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Table 3.1 — Reference table for terms in alphabetical order

automatic machine base load 3.1.18 combined cycle time 3.1.219 combined programme time 3.1.217 combined rated capacity 3.1.217 combined test series 3.1.210 Cycle 3.1.25 delay start 3.1.222 eco 40–60 3.1.224 end of programme 3.1.24 full load 3.1.21 half load 3.1.22 horizontal axis washing machine left on mode main wash duration manual washing machine 3.1.24 multi-drum mode 3.1.214 multi-drum washing machine 3.1.213 network 3.1.221 nominal test load mass 3.1.21 off-mode 3.1.28	Term	subclause
combined cycle time combined programme time combined rated capacity combined test series 3.1.Z17 combined test series 3.1.Z10 Cycle 3.1.15 cycle time 3.1.222 eco 40–60 3.1.Z24 end of programme 3.1.Z4 full load 3.1.Z1 half load 3.1.Z2 horizontal axis washing machine left on mode 3.1.29 main wash duration 3.1.Z6 manual washing machine 3.1.Z1 multi-drum mode 3.1.Z14 multi-drum washing machine 3.1.Z13 network 3.1.Z21 nominal test load mass 3.1.Z1	automatic machine	3.1.10
combined programme time combined rated capacity combined test series 3.1.Z10 Cycle 3.1.15 cycle time 3.1.Z22 eco 40–60 3.1.Z24 end of programme full load 3.1.Z1 half load 3.1.Z2 horizontal axis washing machine left on mode main wash duration manual washing machine 3.1.Z1 multi-drum mode multi-drum washing machine 3.1.Z1 metwork 3.1.Z21 nominal test load mass 3.1.Z21 3.1.Z13 3.1.Z21 3.1.Z21	base load	3.1.18
combined rated capacity combined test series 3.1.Z10 Cycle 3.1.15 cycle time desired capacity 3.1.Z22 eco 40–60 and of programme full load solution and an assistant capacity start solution and an assistant capacity solution assistant capacity solution soluti	combined cycle time	3.1.Z19
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cycle time cd/sist-en-60456-2016-0 3.1.2523 delay start 3.1.Z22 eco 40–60 3.1.Z24 end of programme 3.1.Z1 half load 3.1.Z2 horizontal axis washing machine 3.1.8 left on mode 3.1.29 main wash duration 3.1.26 manual washing machine 3.1.9 multi-drum mode 3.1.Z14 multi-drum washing machine 3.1.Z13 network 3.1.Z21 nominal test load mass 3.1.Z1	combined rated capacity	3.1.Z17
cycle time d/sist-en-60456-2016-or 3.1.2523 delay start 3.1.Z22 eco 40–60 3.1.Z24 end of programme 3.1.Z4 full load 3.1.Z1 half load 3.1.Z2 horizontal axis washing machine 3.1.8 left on mode 3.1.29 main wash duration 3.1.26 manual washing machine 3.1.9 multi-drum mode 3.1.Z14 multi-drum washing machine 3.1.Z13 network 3.1.Z21 nominal test load mass 3.1.Z1	combined test series	3.1.Z10
delay start eco 40–60 3.1.Z24 end of programme 3.1.24 full load 3.1.Z1 half load 3.1.Z2 horizontal axis washing machine left on mode main wash duration manual washing machine 3.1.26 manual washing machine multi-drum mode 3.1.Z14 multi-drum washing machine 3.1.Z14 multi-drum washing machine 3.1.Z13 network 3.1.Z21 nominal test load mass 3.1.Z1	Cycle ai/catalog/standards/sist/ac77	3.1-15 _{d78-46b2}
eco 40–60 end of programme 3.1.24 full load 3.1.Z1 half load 3.1.Z2 horizontal axis washing machine left on mode 3.1.29 main wash duration 3.1.26 manual washing machine 3.1.9 multi-drum mode 3.1.Z14 multi-drum washing machine 3.1.Z14 nominal test load mass 3.1.Z21	cycle time cd/sist-en-60456-2016-op	3.1.2523
end of programme full load full load 3.1.Z1 half load 3.1.Z2 horizontal axis washing machine left on mode 3.1.29 main wash duration manual washing machine 3.1.26 manual washing machine 3.1.Z14 multi-drum washing machine 3.1.Z13 network 3.1.Z21 nominal test load mass 3.1.21	delay start	3.1.Z22
full load half load horizontal axis washing machine left on mode main wash duration manual washing machine 3.1.26 manual washing machine multi-drum mode multi-drum washing machine network nominal test load mass 3.1.21	eco 40-60	3.1.Z24
half load 3.1.Z2 horizontal axis washing machine left on mode 3.1.29 main wash duration 3.1.26 manual washing machine 3.1.9 multi-drum mode 3.1.Z14 multi-drum washing machine 3.1.Z13 network 3.1.Z21 nominal test load mass 3.1.21	end of programme	3.1.24
horizontal axis washing machine 3.1.8 left on mode 3.1.29 main wash duration 3.1.26 manual washing machine 3.1.9 multi-drum mode 3.1.Z14 multi-drum washing machine 3.1.Z13 network 3.1.Z21 nominal test load mass 3.1.21	full load	3.1.Z1
left on mode 3.1.29 main wash duration 3.1.26 manual washing machine 3.1.9 multi-drum mode 3.1.Z14 multi-drum washing machine 3.1.Z13 network 3.1.Z21 nominal test load mass 3.1.21	half load	3.1.Z2
main wash duration3.1.26manual washing machine3.1.9multi-drum mode3.1.Z14multi-drum washing machine3.1.Z13network3.1.Z21nominal test load mass3.1.21	horizontal axis washing machine	3.1.8
manual washing machine3.1.9multi-drum mode3.1.Z14multi-drum washing machine3.1.Z13network3.1.Z21nominal test load mass3.1.21	left on mode	3.1.29
multi-drum mode 3.1.Z14 multi-drum washing machine 3.1.Z13 network 3.1.Z21 nominal test load mass 3.1.21	main wash duration	3.1.26
multi-drum washing machine 3.1.Z13 network 3.1.Z21 nominal test load mass 3.1.21	manual washing machine	3.1.9
network 3.1.Z21 nominal test load mass 3.1.21	multi-drum mode	3.1.Z14
nominal test load mass 3.1.21	multi-drum washing machine	3.1.Z13
	network	3.1.Z21
off-mode 3.1.28	nominal test load mass	3.1.21
	off-mode	3.1.28

¹ As amended by EN 60704-2-4:2012/A11:2020.

² As amended by EN 50643:2018/A1:2020.

Term	subclause
operation	3.1.13
part A	3.1.Z3
part B	3.1.Z4
programme	3.1.14
programme time	3.1.23
quarter load	3.1.Z5
rated capacity	3.1.22
rated voltage	3.1.30
reference machine	3.1.3
remaining moisture content	3.1.27
simultaneous cycle	3.1.Z16
simultaneous programme	3.1.Z15
spin extraction	3.1.16
spin extractor	3.1.5
spin speed	3.1.17
standard extractor	3.1.6
standby mode	3.1.Z20
test load	3.1.19
test load mass	3.1.20
test run iteh ai/catalog/standards/sis	3.1.11 157-0478
test series (95eccd/sist-en-60456-20	13.1.12 ab-2023
test washing machine	3.1.2.
Treatment	3.1.Z6
treatment full	3.1.Z7
treatment half	3.1.Z8
treatment quarter	3.1.Z9
vertical axis washing machine	3.1.7
washer-dryer	3.1.4
washing machine	3.1.1
wrinkle guard function	3.1.Z23

91

Replace the term 3.1.12 and terms 3.1.22 to 3.1.24 and 3.1.28 with the following:

92 93

- 94 3.1.12
- 95 test series
- 96 repetitions of **test runs** with the same **treatment** which, collectively, are used to assess the performance for
- 97 one treatment
- 98 3.1.22
- 99 rated capacity
- 100 maximum mass of dry textiles of a particular type which the manufacturer declares can be treated in the **test**
- 101 washing machine on the programme selected
- Note Z1 to entry: For **multi-drum mode washing machines** the **rated capacities** are for each individual drum.
- Note Z2 to entry: For different textile types the rated capacity of a multi-drum washing machine is usually different.
- 104 **3.1.23**
- 105 programme time
- 106 time from the initiation of the programme (excluding any user programmed delay) until the end of the
- 107 programme
- Note Z1 to entry: If the **end of programme** is not indicated, the **programme time** is equal to the **cycle time**.
- 109 **3.1.24**
- 110 end of programme
- the time when the **test washing machine** indicates the end of the **programme** and the load is accessible to
- 112 the user
- 113 Note Z1 to entry: Where there is no end of programme indicator and the door is locked during operation, the
- 114 programme is complete when the load is accessible to the user. Where there is no end of programme indicator and the
- door is not locked during **operation**, the **programme** is complete when the power consumption of the appliance drops to
- some steady-state condition and is not performing any function.
- Note Z2 to entry: An indication of the end of the **programme** may be in the form of a light (on or off), a sound, an indicator
- shown on a display or the release of a door or latch. In some washing machines there may be a short delay from an end
- of programme indicator until the load is accessible by the user.
- 120 **3.1.28**
- 121 off-mode
- 122 condition in which the **test washing machine** is connected to the mains and is not providing any function
- Note Z1 to entry: The following is also considered as **off mode**:
- 124 (a) conditions providing only an indication of off-mode;
- 125 (b) conditions providing only functionalities intended to ensure electromagnetic compatibility.
- 126 "
- 127 Replace terms 3.1.Z1 to 3.1.Z10 and terms 3.1.Z13 and 3.1.Z14 with the following:
- 128 '
- 129 **3.1.Z1**
- 130 full load
- 131 test load used for a combined test series according to Annex ZA, having a nominal mass that is equal to the
- 132 rated capacity of the test washing machine

133 134 135 136	3.1.Z2 half load test load, part A or part B, used for a combined test series according to Annex ZA, having a nominal mass that is approximately equal to a half of the rated capacity of the test washing machine
137 138 139	3.1.Z3 part A one half of the full load
140 141 142	3.1.Z4 part <i>B</i> remaining part of the full load excluding part <i>A</i>
143 144 145 146	3.1.Z5 quarter load test load used for a combined test series according to Annex ZA, having a nominal mass that is approximately equal to a quarter of the rated capacity (see Table ZA.15) of the test washing machine
147 148 149	3.1.Z6 treatment combination of test load and programme to be used for a test run within a test series
150 151 152	3.1.Z7 treatment full eco 40-60 programme with full load AND ARD PREVIEW
153 154 155	3.1.Z8 treatment half eco 40-60 programme with half load (Standards.iteh.ai)
156 157 158	3.1.Z9 SIST EN 60456:2016/oprAB:2023 treatment quarter ttps://standards.iteh.ai/catalog/standards/sist/ac778157-0d78-46b2-bfa7-eco 40-60 programme with quarter load 95eccd/sist-en-60456-2016-oprab-2023
159 160 161	3.1.Z10 combined test series combination of test series with different treatments which, collectively, are used to assess the performance
162 163 164	3.1.Z13 multi-drum washing machine washing machine equipped with more than one drum whether in separate units or in the same casing
165 166 167	3.1.Z14 multi-drum mode programme where some or all of the drums of a multi-drum washing machine are operated simultaneously
168 169 170	Note Z1 to entry: A washing machine with more than one drum for the treatment of the textiles, where drums cannot be operated simultaneously is not regarded as having a multi-drum mode . In this case each drum has to be tested separately.
171 172	Note Z2 to entry: This definition may apply only for specific programmes . In this case only these programmes can be tested in multi-drum mode .
173	<i>α</i>
174	Add the following terms:
175	и

- 176 **3.1.Z15**
- 177 simultaneous programme
- series of **operations** which are pre-defined within the **multi-drum washing machine** and which are declared
- 179 by the manufacturer as suitable for washing certain textile types in two or more drums at the same time
- 180 **3.1.Z16**
- 181 simultaneous cycle
- 182 complete washing process, started at the same time for two or more drums, as defined by the **simultaneous**
- 183 programme selected, consisting of a series of operations (wash, rinse, spin, etc.) and including any
- operations that occur after the completion of the simultaneous programme
- Note Z1 to entry: Examples of **operations** that may occur after the completion of the **programme** are pumping, monitoring
- and anti-creasing (where applicable).
- 187 **3.1.Z17**
- 188 combined rated capacity
- sum of rated capacities of all drums suitable for running a simultaneous programme
- 190 **3.1.Z18**
- 191 combined programme time
- 192 the time from the simultaneous initiation of the programme for two or more drums (excluding any user
- 193 programmed delay) until the end of the simultaneous programme
- Note Z1 to entry: If the end of programme is not indicated, the combined programme time is equal to the combined
- 195 cycle time.
- 196 **3.1.Z19**
- 197 combined cycle time
- 198 time from the simultaneous initiation of the programme for two or more drums (excluding any user
- 199 programmed delay) until all activity ceases
- 200 Note Z1 to entry: Activity is considered to have ceased when the power consumption reverts to a steady-state condition
- that persists indefinitely without user intervention. If there is no activity after the end of the **programme**, the **combined**
- 202 cycle time is equal to the combined programme time.
- 203 Note Z2 to entry: Cycle time includes any activity that may occur after the programme is completed. This could include
- any electronic activity or any additional mechanical activity that occurs for a limited period after any end of programme
- indicator. Any cyclic event that occurs indefinitely is considered to be steady-state.
- 206 **3.1.Z20**
- 207 standby mode
- 208 condition where the test washing machine is connected to the mains and provides only the following
- 209 functions, which can persist for an indefinite time:
- 210 (a) reactivation function, or reactivation function and a mere indication of enabled reactivation function; and/or
- 211 (b) reactivation function through a connection to a **network**; and/or
- 212 (c) information or status display; and/or
- 213 (d) detection function for emergency measures
- 214 **3.1.Z21**
- 215 network
- communication infrastructure with topology of links, an architecture, including the physical components,
- 217 organizational principles, communication procedures and formats protocols

- 218 **3.1.Z22**
- 219 **delay start**
- condition where the user has selected a specified delay to the beginning of the **cycle** of the selected
- 221 programme
- 222 **3.1.Z23**
- 223 wrinkle guard function
- 224 operation of the test washing machine after completion of a programme to prevent excessive wrinkle
- building of the laundry
- 226 **3.1.Z24**
- 227 eco 40-60
 - name of the programme to be able to clean normally soiled cotton laundry declared to be washable at 40 °C or 60 °C, together in the same washing cycle
- 230 "

228

229

- 231 **Replace** 3.2.Z1 with the following:
- 232 "

233

3.2.Z1 Symbols relating to Annex ZA, Annex ZD and Annex ZF

Symbol in this document	Symbol in IEC 60456: 2010	Unit Teh	TAND A Description	Clause (first appearance)
	-	-	rounding up to full integer values (no decimal places) as defined in EN ISO 80000-2:2019	ZA.2
	-	-	Rounding to nearest integer values (no decimal places) as defined in EN ISO 80000-2:2019	ZA.2
$I_{W,z}$	https://s	tandards 98	Washing Efficiency Index for treatment z ($z = full$, $1/2$, $1/4$)	ZA.5.4
Α	-	-	weighting factor for the full rated capacity	ZA.5.3.2
Asp _a	-	Α	average absorbance	ZF.3.2.4
Asp _{avg,j}	-	Α	average net absorbance for test run j	ZF.3.2.4
Asp _i	-	Α	net absorbance for specimen i	ZF.3.2.4
Asp _{i,223}	-	Α	absorbance reading at 223 nm for specimen i	ZF.3.2.4
Asp _{i,330}	-	Α	absorbance reading at 330 nm for specimen i	ZF.3.2.4
Asp _m	-	Α	peak absorbance at wavelength m	ZF.3.2.4
Asp _{r,m}	-	Α	relative peak absorbance at wavelength m	ZF.3.2.4
В	-	-	weighting factor for half of the rated capacity	ZA.5.3.2
С	-	-	weighting factor for a quarter of the rated capacity	ZA.5.3.2
С	-	kg	rated capacity to calculate the Standard Annual Energy Consumption of the test washing machine	ZA.5.3.2
c _j	-	mg/L	concentration of the detergent of test run j	ZF.3.3.5
C _{S1}	-	mg/L	concentration of Stock 1 solution	ZF.5.4
C _{S2}	-	mg/L	concentration of Stock 2 solution	ZF.5.5

Symbol in this document	Symbol in IEC 60456: 2010	Unit	Description	Clause (first appearance)
C _{WSS}	-	mg/L	detergent concentration of working standard solution	ZF.5
$C_{z,i}$	-	-	sum of the average reflectance values (Y-values) for treatment z ($z = full$, 1/2, 1/4) for each test run i ($i = 1, 2, 3, 4$)	ZA.5.4
C_{ref}	$\frac{-}{C_{ref}}$	-	average sum of the reflectance values in each test run of the reference machine out of all 5 runs	ZA.5.4
Cz	-	-	average value for the sum of the reflectance values for treatment full, treatment half and treatment quarter	ZA.5.4.
D	-	%	average value for the remaining moisture content for the combined test series	ZA.5.5
D _{1/2,part}	-	%	remaining moisture content of test run with half load part (part = part A, part B)	ZA.5.5
D_j	-	mg/g	mass of detergent recovered per gram of test swatches per test run j	ZA.3.3.5
DL_l	iTel	g/kg	ratio of mass of detergent per kg of load for the test	ZA.6.2
R _{max}	-	g/kg	rinsing effectiveness for the combined test series	ZA.6.2
$D_{z,i}$	-	%	remaining moisture content of test run i for the treatment z ($z = full$, 1/2, 1/4)	ZA.5.5
е	https://standa	rds.iteh.a	slope of the detergent concentration curve	ZF.3
EEI	-	98c4df9:	Energy Efficiency Index of a test washing machine	ZA.5.10
f	-	-	intercept of the detergent concentration curve	ZF.3.3.5
i	-	-	test run	ZE.5
k	-	-	data logger number	ZE.5
L _j	-	mg/g	ratio of mass of detergent and test swatch j	ZF.3.3.5
т	-	-	total number of data loggers	ZE.5
<i>m</i> _{det}	-	-	mass of detergent	ZF.5.4
<i>m</i> ₁	-	-	mass of transferred Stock 1 solution	ZF.5.5
<i>m</i> ₂	-	-	mass of transferred Stock 2 solution	ZF.5.6
m _j	-	g	weight of test swatch <i>j</i>	ZF.3.3.5
$m_{w,j}$	-	g	weight of water in sample <i>j</i>	ZF.3.3.5
М	М	g	mass of the conditioned base load	ZA.6.2
M _{det}	M _{det}	g	mass of detergent used	ZA.6.2
M _{dry}	M _{dry}	g	mass of base load before each test run (without test strips)	ZA.6.2
Mn _{part}	-	kg	nominal partial test load mass	ZA.2

Symbol in this document	Symbol in IEC 60456: 2010	Unit	Description	Clause (first appearance)
M _{part}	-	g	mass of the conditioned half load (part = part A, part B)	ZA.5.5
$M_{r,1/2,part,i}$	-	g	mass of the half load part ($part = part A$, $part B$) at the end of the test run i ($i = 1, 2, 3, 4$)	ZA.5.5
$M_{r,z,i}$	-	g	mass of base load for treatment z ($z = full$, 1/4) at the end of the test run i ($i = 1, 2, 3$)	ZA.5.5
n _{PC}	-	-	number of pillowcases at rated test load mass	ZA.2
n _{PC,A}	-	-	number of pillowcases in part A	ZA.2
n _{PC,B}	-	-	number of pillowcases in part B	ZA.2
n _{SH}	-	-	number of sheets at rated test load mass	ZA.2
n _{SH,A}	-	-	number of sheets in part A	ZA.2
n _{SH,B}	-	-	number of sheets in part B	ZA.2
n _{STS,A}	-	-	number of stain test strips in part A	ZA.2
n _{STS,B}	-	-	number of stain test strips in part B	ZA.2
n_T	-	-	number of towels at rated test load mass	ZA.2
$n_{T,A}$	- İ	leh	number of towels in part A	ZA.2
n _{T,B}	-	-	number of towels in part B	ZA.2
nz	-	-	number of test runs for treatment z	ZA.5.3
part	-	-	half load identifier (part = part A, part B)	ZA.5.5
p _c	pctps://s	ta kPa d	laboratory supply water pressure cold 57-0d78-46b.	l-bfa'ZA.6.2
P _{ds}	-	w ⁹⁸	power consumption in delay start Prab-2023	ZD.1
p _h	p _h	kPa	laboratory supply water pressure hot (if connected)	ZA.6.2
P _{ns}	-	W	Power consumption in standby mode in condition of network standby	ZD.1
Pom	-	W	Power consumption in off mode	ZD.1
P _{sm}	-	W	Power consumption in standby mode	ZD.1
R	-	g/kg	rinsing effectiveness (average of all test runs)	ZF.3.3.5
Rj	-	g/kg	ratio of mass of detergent of test run j	ZF.3.3.5
R _{1/4}	-	g/kg	is the average value for rinsing effectiveness for treatment quarter	ZA.5.11
R _{1/2}	-	g/kg	is the average value for rinsing effectiveness for treatment half	ZA.5.11
R _{full}	-	g/kg	average value for rinsing effectiveness for treatment full	ZA.5.11
S 1/4	-	min⁻¹	maximum spin speed for treatment quarter	ZA.5.6
S 1/2	-	min⁻¹	maximum spin speed for treatment half	ZA.5.6
SCE _c	-	kWh	Standard Cycle Energy Consumption	ZA.5.10
Sfull	-	min⁻¹	maximum spin speed for treatment full	ZA.5.6

Symbol in this document	Symbol in IEC 60456: 2010	Unit	Description	Clause (first appearance)
Sz	-	-	standard deviation for treatment z	ZA.5.3
s _R	-	g/kg	standard deviation of the rinsing effectiveness	ZA.3.3.5
S _{r,j}	-	g/kg	standard deviation of the ratio of mass of detergent recovered per gram of test swatch for test run <i>j</i>	
$S_{z,i}$	-	min ⁻¹	maximum spin speed of test run i for treatment z $(z = full, 1/2, 1/4)$	ZA.5.6
ta	t _a	°C	ambient temperature (test room)	ZA.6.2
t _c	t _c	°C	measured average cold water inlet temperature	ZA.6.2
t _h	t _h	°C	measured average hot water inlet temperature	ZA.6.2
tz	-	min	average value for the programme time for treatment z ($z = full$, 1/2, 1/4)	ZA.5.8
$t_{z,i}$	-	min	programme time for test run i for treatment z $(z = full, 1/2, 1/4)$	ZA.5.8
∂ _{max,z}	-	°C	total average maximum temperature for each treatment z (z = full, 1/2, 1/4)	ZE.5
$oldsymbol{artheta}_{ extit{max}, extit{z}, i}$	iTel	°C [average maximum temperature for the test run i with treatment z (z = full, 1/2, 1/4)	ZE.5
∂ max,z,i,k	-	°CS1	maximum temperature for the data logger k ($k = 1$, 2, 3) for test run i ($i = 1, 2, 3, 4$) for the treatment z ($z = \text{full}$, 1/2, 1/4)	ZE.5
V	_ nttps://standa	L <u>SIS</u> rds.iteh.a	weighted average value for the total water consumption for the combined test series	ZA.5.7
V _{1/4}	-	98c <u>4</u> df9:	water consumption for treatment with quarter load	ZA.5.7
V _{1/2}	-	L	water consumption for treatment with half load	ZA.5.7
V _{cm}	V _{cm}	L	volume of cold water used during the main wash	ZA.6.2
V_{ct}	V _{ct}	L	volume of cold water used in the test run	ZA.6.2
$V_{\it full}$	-	L	water consumption for treatment with full load	ZA.5.7
V_{hm}	V_{hm}	L	volume of supply hot water used during the main wash	ZA.6.2
V _{ht}	V _{ht}	L	volume of supply hot water used in the test run	ZA.6.2
V _m	V _m	L	water consumption during the main wash	ZA.6.2
Vz	-	L	water consumption for treatment z ($z = full$, 1/2, 1/4)	ZA.5.7
$V_{z,i}$	-	L	water consumption for test run i for treatment z $(z = full, 1/2, 1/4)$	ZA.5.7
W	-	kWh	value for the total energy consumption for the combined test series	ZA.5.9
W _{1/4}	-	kWh	energy consumption for treatment quarter	ZA.5.9
W _{1/2}	-	kWh	energy consumption for treatment half	ZA.5.9
W _{et}	W _{total}	kWh	total electrical energy metered during the test	ZA.6.2