



BSI Standards Publication

Durability — Measurement method for the assessment of the reliability of washing machines for household use

National foreword

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The UK participation in its preparation was entrusted to Technical Committee CPL/59, Performance of household electrical appliances.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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English Version

Durability - Measurement method for the assessment of the reliability of washing machines for household use

Durabilité - Méthode de mesure pour l'évaluation de la fiabilité des machines à laver pour usage domestique

Funktionsbeständigkeit - Messverfahren zur Bewertung der Zuverlässigkeit von Waschmaschinen für den Hausgebrauch;

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41 **European foreword**

42 This document (EN 50731:2025) has been prepared by CLC/TC 59X "Performance of household and similar
43 electrical appliances".

44 The following dates are fixed:

- latest date by which this document has to be (dop) 2026-06-30
implemented at national level by publication of
an identical national standard or by
endorsement
- latest date by which the national standards (dow) 2028-06-30
conflicting with this document have to be
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49 Introduction

50 As energy-related products (ErP) can often not be completely recycled, and the benefits associated with material
51 recovery cannot fully compensate the energy and material demand of the whole production chain, each
52 disposed ErP also means losses in energy and materials. Therefore, increasing the durability of ErPs can
53 contribute to a reduction in the quantity of raw materials used and energy required for the production and end-
54 of-life treatment of ErPs and consequently reduces adverse environmental impacts.

55 Due to the general longevity of washing machines and their long-running hours per annum, the assessment of
56 the reliability of these products can be very time-consuming and costly. Methods and approaches that may be
57 used to quantify these aspects are included in this document. The transportation and storage of washing
58 machines is usually considered as a separate aspect from the durability and reliability of the product. It is
59 generally expected that the product will arrive at the end consumer in a state where it can fulfil its intended
60 function.

61 The procedure described in this document is under consideration in light of a validation test being conducted at
62 the time of writing this document.

63 The validation test is conducted via APPLiA Home Appliances Europe

1 Scope

This document provides a measurement method to assess the reliability of washing machines for household use. This document defines the functional analysis, limiting events/states, environmental conditions and test conditions of washing machines. It also elaborates on the level of confidence on the measurement results.

NOTE 1 The method is based on EN 45552 (General method for the assessment of the durability of energy-related products) and takes into account EN 45554 (General methods for the assessment of the ability to repair, reuse and upgrade energy-related products).

This document provides information about the interrelations of reliability, repairability and upgradeability with consideration towards a durability assessment for washing machines for household use.

This document provides input/results about the investigation on the assessment of repairability and upgradeability for washing machines for household use.

This document is not intended to be used to assess the reliability of:

- washing machines, intended for commercial or industrial use;
- washer-dryers.

NOTE 2 A testing method for washing machines unable to provide heated washing programmes have a low market relevance and will be considered in a future edition of this standard.

This document does not address the ability of washing machines to be reused.

Product functions related to the safety of washing machines are out of the scope of this document.

NOTE 3 EN 60335-2-7 addresses safety requirements for household appliances. It includes aging tests that are relevant to safety.

This document is intended to be used for the validation of a reliability declaration.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 60456:2016,¹ *Clothes washing machines for household use - Methods for measuring the performance*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp/>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1 durability

<of a part or a product> ability to function as required, under defined conditions of use, maintenance and repair, until a limiting state is reached

Note 1 to entry: The degree to which maintenance and repair are within the scope of durability will vary by product or product-group.

¹ As impacted by EN 60456:2016/A12:2023.

101 Note 2 to entry: Durability can be expressed in units appropriate to the part or product concerned, e.g. calendar time,
102 operating cycles, distance run, etc. The units should always be clearly stated.

103 [SOURCE: EN 45552:2020, 3.1.1.1, Note 2 to entry substituted]

104 **3.2**

105 **reliability**

106 probability that a product functions as required under given conditions, including maintenance, for a given
107 duration without a limiting event

108 Note 1 to entry: The intended function(s) and given conditions are described in the information for use provided with the
109 product.

110 Note 2 to entry: Duration can be expressed in units appropriate to the part or product concerned, e.g. calendar time,
111 operating cycles, distance run, etc.

112 [SOURCE: EN 45552:2020, 3.1.1.2, last sentence of Note 2 to entry deleted]

113 **3.3**

114 **limiting event**

115 occurrence which results in a primary or secondary function no longer being delivered

116 Note 1 to entry: Examples of limiting events are failure, wear-out failure or deviation of any analogue signal.

117 [SOURCE: EN 45552:2020, 3.1.1.3]

118 **3.4**

119 **limiting state**

120 condition after one or more limiting event(s)

121 Note 1 to entry: A limiting state can be changed to a functional state by maintenance or repair of the appliance.

122 Note 2 to entry: A limiting state can change to EoL-status, if maintenance or repair is no longer viable due to socio-
123 economic or technical reasons.

124 [SOURCE: EN 45552:2020, 3.1.1.4]

125 **3.5**

126 **primary function**

127 function fulfilling the intended use

128 Note 1 to entry: There can be more than one primary function.

129 [SOURCE: EN 45552:2020, 3.1.2.1]

130 **3.6**

131 **secondary function**

132 function that enables, supplements or enhances the primary function(s)

133 [SOURCE: EN 45552:2020, 3.1.2.2]

134 **3.7**

135 **tertiary function**

136 function other than a primary or a secondary function

137 [SOURCE: EN 45552:2020, 3.1.2.3]

3.8**maintenance**

action carried out by the user to retain a product in a condition where it is able to function as specified by the manufacturer

Note 1 to entry: Examples of such actions include inspection, adjustments, cleaning, lubrication, automatic software update. Such actions are performed by users in accordance with instructions provided with the equipment; any repair process or other actions performed by service personnel in order to ensure that parts with a known time to failure are replaced in order to keep the product functioning are not considered maintenance.

3.9**repair**

process of returning a faulty product to a condition where it can fulfil its intended use

[SOURCE: EN 45554:2020, 3.1.4]

3.10**part**

hardware, firmware or software constituent of a product

[SOURCE: EN 45554:2020, 3.1.1]

3.11**washing cycle**

complete washing process as defined by a selected programme, consisting of a series of different operations including washing, rinsing, and spinning procedure

3.12**reference test**

initial procedure for determining the reference values of monitored parameters in the programmes used for conducting the reliability test

3.13**parameter monitoring**

procedure for monitoring defined parameters through the measurement of their values and assessing deviation from reference values

3.14**time tracking**

recording of values of defined parameters in relation to the test time

3.15**spin speed**

rotational frequency of a drum during spin extraction

[SOURCE: EN 60456:2016, 3.1.17]

3.16**rinse and spin cycle**

programme with the purpose of rinsing and spin drying the load

3.17**mid cycle**

washing programme for cotton textiles which maximum temperature is closest to 60°C

3.18**high cycle**

washing programme for heavily soiled textiles at the highest maximum temperature