



BSI Standards Publication

**Household and similar electric appliances –
Methods for measuring the performance of clothes
washing machines intended for commercial use**

National foreword

This British Standard is the UK implementation of EN 50640:2018. It supersedes PD CLC/TS 50640:2015, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee CPL/59/1, Dishwashers and washing machines.

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

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English Version

Household and similar electric appliances - Methods for measuring the performance of clothes washing machines intended for commercial use

Appareils électrodomestiques et analogues - Méthodes de mesure de l'aptitude à la fonction pour les machines à laver le linge à usage commercial

Waschmaschinen für den gewerblichen Gebrauch - Verfahren zur Messung der Gebrauchseigenschaften

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European foreword

This document (EN 50640:2018) 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 implemented at national level by publication of an identical national standard or by endorsement (dop) 2019-04-23
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2021-04-23

This document supersedes CLC/TS 50640:2015.

This European Standard is a new standard, but it is based on portions from EN 60456:2011.

The procedures described in this European Standard are modified substantially compared to the procedures described in EN 60456. Therefore results of tests according to this European Standard cannot and are bound not to be compared to results of similar procedures of EN 60456.

Significant technical differences from EN 60456 are:

- a) the method includes procedures for measuring steam heated and gas heated **washing machines**;
- b) the introduction of a new type of **base load**;
- c) a new reference **programme**;
- d) a new formulation of the standard detergent.

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 has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

1 Scope

This European Standard deals with the performance of clothes **washing machines** intended to be used by trained users e.g. in hotels, hospitals, factories, in light industry and on farms. It also covers **washing machines** declared for commercial use in public areas and operated by lay persons e.g. in launderettes, apartment houses and communal laundry rooms. The clothes **washing machines** can be utilizing cold and/or hot water supply and without heating or with heating devices for electricity, steam or gas. This European Standard covers top, front and side loaded clothes **washing machines** with horizontal or vertical axis and with one or more wash compartments. It also deals with appliances for both washing and drying textiles (**washer-dryers**) with respect to their washing related functions and to separate **spin extractors** related to their dewatering capabilities.

NOTE 1 Performance of tumble dryers declared for commercial use is assessed in EN 50594.

NOTE 2 The object is to state and define the principal performance characteristics of clothes **washing machines** declared for commercial use and to describe the test methods for measuring these characteristics.

NOTE 3 This European Standard does not apply to continuous batch **washing machines** (e.g. tunnel washers) or **washing machines** only possible to operate with automatic loading and unloading.

NOTE 4 This European Standard does not specify safety requirements for **clothes washing machines declared for commercial use**. Safety requirements are specified in EN 50571 and the EN ISO 10472- series.

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 437:2003+A1:2009, *Test gases — Test pressures — Appliance categories*

CEN/TR 1749:2014, *European scheme for the classification of gas appliances according to the method of evacuation of the combustion products (types)*

EN 12953-10, *Shell boilers — Part 10: Requirements for feedwater and boiler water quality*

EN 50571, *Household and similar electrical appliances — Safety — Particular requirements for commercial electric washing machines*

EN 60456, *Clothes washing machines for household use — Methods for measuring the performance (IEC 60456)*

EN 60734, *Household electrical appliances — Performance — Water for testing (IEC 60734)*

EN ISO 80000-1:2013, *Quantities and units — Part 1: General (ISO 80000-1:2009 + Cor 1:2011)*

IAPWS-IF97, *IAPWS Industrial Formulation 1997 for the Thermodynamic Properties of Water and Steam* [International Association for the Properties of Water and Steam]

3 Terms, definitions and symbols

3.1 Terms and definitions

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

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

• IEC Electropedia: available at <http://www.electropedia.org/>

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•ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1.1

washing machine

appliance for cleaning and rinsing of textiles using water which may also have a means of extracting excess water from the textiles

3.1.2

test washing machine

washing machine that is subjected to part or all of the requirements in this European Standard in order to determine its performance

Note 1 to entry: **Test washing machine** can include **washing machines** according to 3.1.6, 3.1.7.

3.1.3

reference machine

specially constructed **washing machine** of known performance which is used to increase repeatability and reproducibility of results

Note 1 to entry: It can be used to provide a known performance level within a laboratory against which to compare selected performance parameters on **test washing machines** as defined in this European Standard – refer to 5.5.2.

3.1.4

washer-dryer

washing machine which includes means for drying the textiles, usually by heating and tumbling

Note 1 to entry: This European Standard only covers the **operations** which relate to the **washing machine** function – see Clause 1.

3.1.5

spin extractor

separate water-extracting appliance in which water is removed from textiles by centrifugal action (**spin extraction**)

3.1.6

horizontal axis washing machine

washing machine in which the load is placed in a drum which rotates around an axis with an angle less than 45° to horizontal

Note 1 to entry: The classification of vertical axis or horizontal axis in this European Standard is only used to define the placement of the load into the drum.

3.1.7

vertical axis washing machine

washing machine in which the load is placed in a drum which rotates around an axis which rotates with an angle of 45° or more related to horizontal

Note 1 to entry: The classification of vertical axis or horizontal axis in this European Standard is only used to define the placement of the load into the drum.

3.1.8

automatic machine

washing machine where the load is fully treated by the machine without the need for user intervention at any point during the **cycle** prior to its completion

3.1.9**top loaded machine**

washing machine where the load is placed in the wash compartment from the top, and which may be of a horizontal or vertical axis type

3.1.10**side loaded machine**

washing machine where the load is placed in the wash compartment from the side, and which is of a horizontal axis type

3.1.11**pullman machine**

washing machine where the wash compartment is divided in two compartments

3.1.12**Y-pocket machine**

washing machine where the wash compartment is divided in three compartments

3.1.13**test run**

single performance assessment as specified in Clause 8 of this European Standard

3.1.14**test series**

group of **test runs** on a **test washing machine** which, collectively, are used to assess the performance of a **washing machine**

3.1.15**operation**

each performance of a function that occurs during the **washing machine programme** such as pre-wash, washing, rinsing, draining or spinning

3.1.16**programme**

series of **operations** which are pre-defined within the **washing machine** and which are declared by the manufacturer as suitable for washing certain textile types

3.1.17**cycle**

complete washing process until the load is accessible to the user, as defined by the **programme** selected, consisting of a series of **operations** (wash, rinse, spin, etc.)

3.1.18**spin extraction**

water-extracting function by which water is removed from textiles by centrifugal action, which is included as a function (built in **operation**) of an **automatic washing machine** but may also be performed in a **spin extractor**

3.1.19**spin speed**

rotational frequency of a drum during **spin extraction**

Note 1 to entry: A method for determination of **spin speed** is not defined in this European Standard.

3.1.20**base load**

unsoiled textiles used for testing

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3.1.21

test load

base load used for testing plus stain test strips

3.1.22

test load mass

actual mass of the **base load** including stain test strips

3.1.23

nominal test load mass

mass of dry textiles of a particular type for which the performance of the **test washing machine** shall be tested (**rated capacity** or part load)

Note 1 to entry: Target value for the conditioned **test load mass**.

3.1.24

rated capacity

maximum mass in kilograms of dry textiles of a particular type which the manufacturer declares can be treated in the **washing machine** on the selected **programme**

3.1.25

end of cycle

when the load is accessible to the user and next programme can be started

3.1.26

cycle time

time from the initiation of the **programme** (excluding any user programmed delay) until the **end of cycle**

3.1.27

main wash duration

time from the commencement of the initial water intake for the main wash until the commencement of the initial water intake for the first rinse

Note 1 to entry: Variations in the laboratory water supply pressure can affect the **main wash duration**. This definition is only applicable to **test washing machines**. The **reference machine** wash time used for calibration of the **reference machine** is defined differently. Refer to Table E.1.

3.1.28

remaining moisture content

measure of the additional amount of moisture that is contained in the **base load** in relation to the equilibrium condition for **base load** items which have been conditioned in a controlled space (refer to 6.4.5.2)

Note 1 to entry: This equilibrium condition is defined as 0 % **remaining moisture content** in this European Standard. Hence it is possible for a **base load** or load items to have a negative **remaining moisture content** when treated with a tumble drier. Refer also to Annex F.

3.1.29

rated voltage

voltage assigned to the appliance by the manufacturer

3.1.30

cycle energy

energy consumed during the **cycle time** in one **test run**