Clothes washing machines for household use – Methods for measuring the performance
CONTENTS

FOREWORD........................................................................................................................................... 7

1 Scope.................................................................................................................................................. 9

2 Normative references ....................................................................................................................... 9

3 Terms, definitions and symbols ................................................................................................... 10
   3.1 Terms and definitions................................................................................................................... 10
   3.2 Symbols ...................................................................................................................................... 13
      3.2.1 Symbols relating to Subclause 9.2 – washing performance............................................. 13
      3.2.2 Symbols relating to Subclause 9.3 – water extraction (spinning)................................. 14
      3.2.3 Symbols relating to Subclause 9.4 – rinsing performance............................................ 14
      3.2.4 Symbols relating to Subclause 9.5 – energy, water and time ....................................... 14
      3.2.5 Symbols relating to Clause 10 – wool shrinkage............................................................ 14
      3.2.6 Symbols relating to Annex G ......................................................................................... 15
      3.2.7 Symbols relating to Annex I ......................................................................................... 15
      3.2.8 Symbols relating to Annex L ......................................................................................... 15

4 Requirements .................................................................................................................................. 15
   4.1 General ...................................................................................................................................... 15
   4.2 Rated capacity ............................................................................................................................ 16
   4.3 Dimensions ............................................................................................................................... 16

5 Test conditions, materials, equipment and instrumentation ..................................................... 17
   5.1 General ...................................................................................................................................... 17
   5.2 Ambient conditions .................................................................................................................... 17
      5.2.1 Electricity supply .............................................................................................................. 17
      5.2.2 Water supply .................................................................................................................... 17
      5.2.3 Ambient temperature and humidity ............................................................................... 18
   5.3 Test materials ............................................................................................................................. 19
      5.3.1 General ............................................................................................................................. 19
      5.3.2 Base loads ......................................................................................................................... 19
      5.3.3 Stain test strips .................................................................................................................. 19
      5.3.4 Wool shrinkage specimens .............................................................................................. 20
      5.3.5 Detergents ......................................................................................................................... 20
   5.4 Equipment ..................................................................................................................................... 20
      5.4.1 General ............................................................................................................................. 20
      5.4.2 Reference machine .......................................................................................................... 21
      5.4.3 Spectrophotometer .......................................................................................................... 21
      5.4.4 Equipment for conditioning the base load ...................................................................... 22
      5.4.5 Standard extractor ............................................................................................................ 22
      5.4.6 Iron for preparation of stain test strips after washing .................................................... 23
      5.4.7 Titration equipment ......................................................................................................... 23
      5.4.8 Other equipment .............................................................................................................. 23
   5.5 Instrumentation and accuracy ................................................................................................... 24
      5.5.1 General ............................................................................................................................. 24
      5.5.2 Instruments ....................................................................................................................... 24
      5.5.3 Measurements ................................................................................................................... 25

6 Preparation for testing .................................................................................................................. 25
   6.1 General ...................................................................................................................................... 25
   6.2 Test washing machine and reference machine preparation.................................................. 25
6.2.1 Test washing machine ................................................................. 25
6.2.2 Reference machine ................................................................. 26
6.3 Detergent ..................................................................................... 26
   6.3.1 General ................................................................................. 26
   6.3.2 Detergent dose ................................................................. 27
   6.3.3 Mixing detergent .............................................................. 27
   6.3.4 Detergent placement ........................................................ 27
6.4 Test loads ................................................................................... 28
   6.4.1 General ................................................................................. 28
   6.4.2 Pre-treatment of new base load items prior to use .......... 30
   6.4.3 Requirements regarding the age of base load items .......... 30
   6.4.4 Normalization of base load items before a new test series ... 31
   6.4.5 Conditioning of base load items before a new test series ... 32
   6.4.6 Test load composition ...................................................... 33
   6.4.7 Addition of stain test strips or wool shrinkage specimens to the base load ........................................................... 36
7 Performance measurements – general requirements .................. 37
8 Tests for performance .................................................................... 38
   8.1 General ................................................................................. 38
   8.2 Test procedure for performance tests ..................................... 38
     8.2.1 Test conditions, materials and preparation for testing .... 38
     8.2.2 Test load and loading ...................................................... 39
     8.2.3 Programme ...................................................................... 39
     8.2.4 Test procedure .............................................................. 39
     8.2.5 Test series ........................................................................ 40
   8.3 Measurements to determine washing performance ............... 42
     8.3.1 General ............................................................................. 42
     8.3.2 Removal and drying of stain test strips ......................... 42
     8.3.3 Assessment of stain test strips ........................................ 42
   8.4 Measurements to determine water extraction performance .... 43
     8.4.1 General ............................................................................. 43
     8.4.2 Washing machines ......................................................... 43
     8.4.3 Spin extractors ............................................................... 43
   8.5 Measurements to determine rinsing performance ................. 44
     8.5.1 General ............................................................................. 44
     8.5.2 Spin extraction and sampling ........................................ 44
     8.5.3 Alkalinity measurements ............................................... 45
   8.6 Measurements to determine water and energy consumption and programme time ............................................................. 46
     8.6.1 General ............................................................................. 46
     8.6.2 Procedure ................................................................. 46
9 Assessment of performance .......................................................... 47
   9.1 General ................................................................................. 47
   9.2 Evaluation of washing performance ...................................... 47
   9.3 Evaluation of water extraction performance ....................... 49
   9.4 Evaluation of rinsing performance ........................................ 50
     9.4.1 General ............................................................................. 50
     9.4.2 Calculations ................................................................. 50
     9.4.3 Evaluation ................................................................. 50
9.5 Evaluation of water and energy consumption and programme time .................... 51
9.5.1 General ........................................................................................................ 51
9.5.2 Water volumes .......................................................................................... 51
9.5.3 Programme time ....................................................................................... 51
9.5.4 Energy consumption .................................................................................. 51

10 Shrinkage during the wool wash programme ................................................. 53
10.1 General ............................................................................................................ 53
10.2 Overview ........................................................................................................ 53
  10.2.1 General ................................................................................................... 53
  10.2.2 Determination of reference shrinkage ................................................. 53
10.3 Procedure ....................................................................................................... 53
  10.3.1 Preparation of wool shrinkage specimens ........................................... 53
  10.3.2 Wool programme test .......................................................................... 55
  10.3.3 Evaluation .............................................................................................. 56

11 Data to be reported .......................................................................................... 57
Annex A (normative) Specification of stain test strips with standardized soiling ... 58
Annex B (normative) Reference detergent A* ..................................................... 62
Annex C (normative) Specifications for base loads ............................................. 64
Annex D (normative) Reference machine specification ....................................... 67
Annex E (normative) Reference machine programme definitions ..................... 72
Annex F (informative) Reference programmes and examples of comparable washing machine programmes ................................................................. 75
Annex G (normative) The bone-dry method of conditioning ............................... 76
Annex H (normative) Folding and loading the test load ....................................... 78
Annex I (normative) Calculation of weighted average age of the cotton base load 95
Annex J (normative) Loading a large standard extractor (rinsing performance) ...... 97
Annex K (informative) Laboratory internal testing guide ..................................... 101
Annex L (normative) Measurement of energy consumption in low power modes of washing machines ................................................................. 106
Annex M (normative) Testing procedure for manual washing machines ............. 109
Annex N (normative) Procedure to determine test load size where rated capacity is not declared ................................................................. 111
Annex O (informative) Additional evaluation of washing performance .............. 113
Annex P (informative) Testing deviations to reduce costs and their limitations ..... 118
Annex Q (informative) Uncertainty of measurements in IEC 60456 .................... 124
Annex R (informative) Environmental aspects of washing machine use determined in IEC 60456 ................................................................. 127
Annex S (normative) Test report – data to be reported ...................................... 130
Annex T (normative) Wool shrinkage specimens .............................................. 138
Annex U (informative) Sources of materials and supplies ................................. 139
Bibliography .......................................................................................................... 140

Figure 1 – Load item preparation prior to a test series ........................................ 29
Figure 2 – Load composition and age requirements ............................................ 30
Figure 3 – Attached test strip ............................................................................ 37
Figure 4 – Test series: process and decisions for load mass and age ................... 41
Table 1 – Detergent dose ...................................................................................................... 27
Table 2 – Number of items in the cotton test load for various test load masses ......................... 34
Table 3 – Number of items in the synthetics/blends test load for various test load masses .................. 35
Table 4 – Number of items in the wool programme test load for various test load masses .................. 36
Table A.1 – Ratios and tolerances of standardized soils, Reference Machine CLS and MP Lab ............. 61
Table B.1 – Composition of the reference detergent A* ................................................................ 62
Table C.1 – Specification of the cotton base load items ............................................................... 64
Table C.2 – Specification of the synthetics/blends base load items ............................................. 66
Table D.1 – Description of the reference washing machine and method of use type 1 .................. 68
Table D.2 – Description of the reference washing machine and method of use type 2 ................. 70
Table D.3 – Programmed volume for type 2 reference machine ............................................ 71
Table E.1 – Specification of reference washing programmes............................................... 73
Table E.2 – Tolerances given for some procedure parameters .......................................... 74
Table F.1 – Reference programmes and examples of comparable washing machine programmes.......................................................................................................................... 75
Table H.1 – Vertical axis washing machines, loading sequence example for a synthetics/blends load .................................................................................................................................. 84
Table H.2 – Horizontal axis washing machines, loading sequence .................................... 86
Table H.3 – Horizontal axis washing machine, loading example (5 kg) ............................... 88
Table H.4 – Vertical axis washing machines, small loads without sheets (1,0 kg to 2,5 kg) ... 90
Table H.5 – Vertical axis washing machines, medium loads with two sheets (3,0 kg to 7,0 kg) .................................................................................................................................. 91
Table H.6 – Vertical axis washing machines, large loads with three sheets (7,5 kg to 8,5 kg) .................................................................................................................................. 92
Table H.7 – Vertical axis washing machines, very large loads with four sheets (9,0 kg to 10,0 kg) ................................................................................................................................ 93
Table H.8 – Vertical axis washing machine – loading example (5 kg) ................................. 94
Table S.1 – Data for test washing machine ........................................................................... 130
Table S.2 – Data, parameters and performance results, cotton or synthetics/blends base loads .................................................................................................................................. 132
Table S.2a – Data, parameters and results, cotton or synthetics/blends base loads ............ 132
Table S.2b – Performance results, cotton or synthetics/blends base loads ......................... 133
Table S.3 – Data, parameters and results – wool shrinkage – polyester base load ............... 134
Table S.4 – Weighted average age – cotton load ................................................................. 135
Table S.5 – Materials ......................................................................................................... 136
Table S.6 – Equipment ....................................................................................................... 137
FOREWORD

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International Standard IEC 60456 has been prepared by subcommittee 59D: Home laundry appliances, of IEC technical committee 59: Performance of household and similar electrical appliances.

This fifth edition cancels and replaces the fourth edition published in 2003 and constitutes a technical revision.

Experience with the use of the fourth edition of IEC 60456, together with some revised test conditions and the need for a more globally applicable standard, are the main reasons for this fifth edition.

This edition includes the following significant technical changes from the previous edition.

- Modified test load mass requirement for cases where rated capacity of test machine is not declared. Test load mass determination in case rated capacity is not declared was changed to remove the ambiguity in edition 4 and to encourage declaration.
- Introduction of soft water option.
- Expanded stain/soil set (for assessment of washing performance).
• Improved method of loading and folding test load items to better suit vertical axis, horizontal axis and twin tub systems.
• Revised and amended reference machine specification reflecting full qualification of new Electrolux Wascator CLS.
• New reference programmes for lower temperatures and vertical axis systems. New informative annex comparing reference programmes to typical household programmes.
• Refined rinsing efficiency method.
• Introduction of low power modes “Off” and “Left On” (for assessment of energy consumption).
• New annex about uncertainty of measurements.

The text of this standard is based on the following documents:

<table>
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<tr>
<th>FDIS</th>
<th>Report on voting</th>
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<tr>
<td>59D/358/FDIS</td>
<td>59D/360/RVD</td>
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Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

Words in **bold** in the text are defined in Clause 3.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

• reconfirmed,
• withdrawn,
• replaced by a revised edition, or
• amended.

A bilingual version of this publication may be issued at a later date.

The contents of the corrigendum of September 2011 have been included in this copy.

**IMPORTANT** – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.
1 Scope

This International Standard specifies methods for measuring the performance of clothes washing machines for household use, with or without heating devices utilising cold and/or hot water supply. It also deals with appliances for water extraction by centrifugal force (spin extractors) and is applicable to appliances for both washing and drying textiles (washer-dryers) with respect to their washing related functions. This International Standard also covers washing machines which specify the use of no detergent for normal use.

NOTE 1 Tumble dryer performance is assessed to IEC 61121.

The object is to state and define the principal performance characteristics of electric household washing machines and spin extractors and to describe the test methods for measuring these characteristics.

NOTE 2 This international standard applies also to washing machines for communal use in blocks of flats or in launderettes. It does not apply to washing machines for commercial laundries. This International Standard is not intended to be used for the comparative evaluation of detergents.

NOTE 3 This International Standard does not specify acoustical noise requirements for washing machines. Acoustical noise measurements are specified in IEC 60704-1 and IEC 60704-2-4.

NOTE 4 This International Standard does not specify safety requirements for washing machines. Safety requirements are specified in IEC 60335-2-7.

2 Normative references

The following referenced documents are indispensable for the application 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.

IEC 60335-2-7, Household and similar electrical appliances – Safety – Part 2-7: Particular requirements for washing machines

IEC 60734, Household electrical appliances – Performance – Hard water for testing

IEC 62053-21, Electricity metering equipment (a.c.) – Particular requirements – Part 21: Static meters for active energy (classes 1 and 2)

IEC 62301, Household electrical appliances – Measurement of standby power

IEC Guide 109, Environmental aspects – Inclusion in electrotechnical product standards

ISO 31-0:1992, Quantities and units – Part 0: General principles

ISO 2060, Textiles – Yarn from packages – Determination of linear density (mass per unit length) by the skein method

ISO 2061, Textiles – Determination of twist in yarns – Direct counting method

ISO 7211-2, Textiles – Woven fabrics – Construction – Methods of analysis – Part 2: Determination of number of threads per unit length
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EN 12127, Textiles – Fabrics – Determination of mass per unit area using small samples