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TECHNICAL SPECIFICATION

Washing machines for household use – Method for measuring the microbiological performance



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WASHING MACHINES FOR HOUSEHOLD USE – METHOD FOR MEASURING THE MICROBIOLOGICAL PERFORMANCE

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IEC TS 63429 has been prepared by subcommittee 59D: Performance of household and similar electrical laundry appliances, of IEC Technical Committee 59: Performance of household and similar electrical appliances. It is a Technical Specification.

The text of this Technical Specification is based on the following documents:

Draft	Report on voting
59D/498/DTS	59D/503A/RVDTS

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Technical Specification is English.

In this document, the following print type is used:

– terms defined in Clause 3: **bold type**.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

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- withdrawn,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

INTRODUCTION

This Technical Specification describes a method to measure the microbial contamination reduction performance of household **washing machines**. Microbial reduction due to any potential or claimed antimicrobial action of detergents other than the base powder of the required detergent, as well as of bleach systems or any other additives, is not addressed.

This first edition has been developed to provide a globally applicable and agreed method to measure the reduction of the microbial contamination of household **washing machines** and their **programmes**, to be measured with textile pieces contaminated with test microorganisms under standardized conditions.

The reduction of the microbial contamination is just one of the performance parameters measurable for a **washing machine**. Therefore, it is not used as the only parameter to describe the performance of a washing **programme,** but it is measured along with the other performance parameters considered for that **programme**.

NOTE The use of the reference **washing machine** as defined in IEC 60456 as a reference process for the reduction of microbial contamination is under consideration.

The test microorganisms requested for this Technical Specification require BSL-1 and 2 laboratories. BSL-1 laboratories are restricted to the use of *Staphylococcus arlettae* and *Saccharomyces cerevisiae*, whereas BSL-2 laboratories shall use *Pseudomonas aeruginosa, Staphylococcus aureus, Candida albicans*, or all five test microorganisms.

Classification of test microorganisms can change and can differ on national levels. It is the responsibility of the user to ensure compliance with applicable national classification.

Different type strains of the same microbial species described in this Technical Specification can be used if the achievement of comparable results is proven.

Additional test microorganisms can be used besides the test strains described in this Technical Specification, but their result cannot be used to claim compliance with the Technical Specification and shall not be reported in the same test report.

The ATCC numbers are the collection numbers of strains supplied by the American Type Culture Collections (ATCC). This information is given for the convenience of users of this Technical Specification and does not constitute an endorsement by IEC of the product named.

This document does not purport to address all the safety aspects, if any, associated with its use. It is the responsibility of the user to establish appropriate health and safety practices and to ensure compliance with any national, regional or international regulatory conditions.

A warning about the use of this document is included in Clause 4.

WASHING MACHINES FOR HOUSEHOLD USE – METHOD FOR MEASURING THE MICROBIOLOGICAL PERFORMANCE

1 Scope

This Technical Specification provides a test method for measuring the microbial contamination reduction performance of household **washing machines** with textile pieces contaminated with test microorganisms under standardized conditions. The microbial numbers on the contaminated textile pieces are measured before and after the washing **programme** and the reduction is calculated. Furthermore, a potential **cross contamination** from contaminated to uncontaminated textile pieces within the washing **programme** is measured.

This document does not address the microbial contamination reduction due to any potential or claimed antimicrobial action of detergents as well as of bleach systems or any additives.

This document applies to **washing machines** for household use, within the meaning that the scope of TC 59 indicates for household use, including the washing related functions of **washer-dryers.**

This document does not apply to professional **washing machines** nor to commercial laundry **operations** associated with food service, hospital linens or other non-residential applications.

This document deals with measurement procedures regarding the reduction of microbial contamination resulting from the use of electrical appliances for household and similar use. This document specifies methods that enable reproducible measurements. These derived measurement results can only be used for a relative statement. Absolute statements, i.e., health-related claims or conclusions about prevention or treatment of a disease or health improvement, are reserved for explicit regulatory action after a medical assessment.

This document does not apply to appliances intended to be used in medical, veterinary, or pharmaceutical applications.

This document does not address sanitization, disinfection, or sterilization measures.

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.

IEC 60456:2010*, Clothes washing machines for household use – Methods for measuring the performance*
IEC 60456:2010/AMD1:2022

ISO 2267, *Surface active agents – Evaluation of certain effects of laundering – Methods of preparation and use of unsoiled cotton control cloth*

ISO 19458:2006, *Water quality – sampling for microbiological analysis*

EN 12353, *Chemical disinfectants and antiseptics. Preservation of test organisms used for the determination of bactericidal (including Legionella), mycobactericidal, sporicidal, fungicidal and virucidal (including bacteriophages) activity*

3 Terms, definitions and symbols

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/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1 Terms and definitions

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

[SOURCE: IEC 60456:2010, 3.1.1]

3.1.2
test run
performance assessment of one **programme** execution in the test **washing machine**

3.1.3
test series
set of **test runs** which are collectively used to assess performance

[SOURCE: IEC 60456:2010, 3.1.12]

3.1.4
operation
each performance of a function that occurs during the **washing machine programme** such as pre-wash, washing, rinsing, draining, or spinning

[SOURCE: IEC 60456:2010, 3.1.13]

3.1.5
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 for hygiene purposes

[SOURCE: IEC 60456:2010, 3.1.14, modified – "for hygiene purposes" has been added to the end of the definition.]

3.1.6
cycle
complete washing process, as defined by the **programme** selected, consisting of a series of **operations** (wash, rinse, spin, etc.) and including any **operations** that occur after the completion of the **programme**

[SOURCE: IEC 60456:2010, 3.1.6, modified – The note has been omitted.]

3.1.7
base load
textile load used for testing without **biomonitor cloths** and **biomonitors**