

English Version

Clothes washing machines and washer-dryers for household and similar use - Method for the determination of rinsing effectiveness by measurement of the surfactant content at textile materials

Machines à laver le linge et machines à laver et à sécher pour usages domestiques et analogues - Méthode pour la détermination de l'efficacité de rinçage par la mesure de la teneur en tensioactifs des matières textiles

Waschmaschinen und Wäschetrockner für den Hausgebrauch und ähnliche Zwecke - Verfahren zur Bestimmung der Spülwirkung durch Messung des Tensidgehalts an Textilien

This Technical Specification was approved by CENELEC on 2022-04-18.

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European foreword

This document (CLC/TS 50677:2022) has been prepared by CLC/TC 59X "Performance of household and similar electrical appliances".

This document supersedes CLC/TS 50677:2019 and all of its amendments and corrigenda (if any).

CLC/TS 50677:2021 includes the following significant technical changes with respect to CLC/TS 50677:2019:

- Reduced requirements for UV spectrophotometer.
- Implemented simplified extraction procedure with reduced effort by extracting maximum 5 swatches of each test run in one extraction bottle.
- Single swatch extraction was moved to Annex F.

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 Standardization Request given to CENELEC by the European Commission and the European Free Trade Association.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

1 Scope

This document provides a method for the evaluation of the rinsing effectiveness of household clothes washing machines, washer dryers and commercial washing machines. The amount of residual linear alkylbenzene sulfonate surfactant (LAS) extracted from the unstained test swatches of the strips used in the washing performance test is determined. This is accomplished by measuring the ultraviolet (UV) light absorbance at the wavelength particular to LAS, a key ingredient of the detergent.

Assuming a fixed linear relationship between LAS amount and quantity of detergent mixture and using a concentration versus absorbance curve developed as part of this procedure, the absorbance values are then converted into detergent concentrations, which together with the test solution mass data, yields detergent quantities. This assumption is done, because in the frame of this test it is not possible to determine the exact amount of LAS involved, even in the concentration curves, but only the amount of detergent used.

On the textiles, this linear relationship is not given, but it is nevertheless used to express the amount of LAS as determined by UV light absorbance measurements in terms of a detergent amount.

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/A11:2020, *Clothes washing machines for household use - Methods for measuring the performance*

EN IEC 62512:2020/A11:2020, *Electric clothes washer-dryers for household use - Methods for measuring the performance*

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

4 Symbols and abbreviated terms

4.1 The variables for rinsing effectiveness calculations are defined as:

Asp_a	average absorbance
$Asp_{avg,j}$	average net absorbance of the sample j^a
Asp_j	net absorbance for specimen i^a
$Asp_{i,223}$	absorbance reading at 223 nm for specimen i^a
$Asp_{i,330}$	absorbance reading at 330 nm for specimen i^a
Asp_m	peak absorbance at wavelength m^a
$Asp_{r,m}$	relative peak absorbance at wavelength m^a
Cs_j	concentration of detergent in sample j^a
Ds_j	mass of detergent recovered from sample j^a