

Framework for performance testing for dishwasher detergents

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0. Background

This framework serves as a proof to show compliance with the criterion "fitness for use" of the Commission Decision 2017/1216 establishing EU Ecolabel criteria for dishwasher detergents.

The test is for products that fall under the scope of the product group "dishwasher detergents", this means any detergent for dishwashers or rinse aid falling under the scope of Regulation (EC) No 648/2004 on detergents which are intended to be marketed and used exclusively in household dishwashers and in automatic dishwashers for professional use, the size and usage of which is similar to that of household dishwashers.

The product shall show compliance with the criterion through any of both tests based on: the most updated version of the IKW or the most updated standard EN 50242/ EN 60436 modified according to point 2 of this document.

1. Laboratory requirements to conduct the testing

The manufacturer's test laboratory or/and an external test laboratory can be approved to conduct testing to document effectiveness of hard surface cleaners if the following requirements are met:

- it must be possible for EU Ecolabel competent bodies to monitor the performance of testing (e.g. on-site visits to the laboratory),
- the EU Ecolabel Competent Body must have access to all data on the product (e.g. technical data sheets),
- whenever possible, the samples must be made anonymous for the test laboratory (e.g. product A and product B).
- the test laboratories must be equipped with the devices described in the test method,
- performance of the effectiveness test as well as the test method must be described in the quality control system.

Competent bodies shall preferentially recognise attestations which are issued by bodies accredited in accordance with the relevant harmonised standard for testing and calibration laboratories and verifications by bodies that are accredited in accordance with the relevant harmonised standard for bodies certifying products, processes and services. Accreditation shall be carried out in accordance with Regulation (EC) No 765/2008 of the European Parliament and of the Council.

2. Modifications to EN 50242/ EN 60436

If EN 50242/ EN 60436 is used the following modifications shall apply:

- The tests for cleaning performance shall be carried out at $50 \pm 2^{\circ}\text{C}$ (or at a lower temperature if the detergent claims to be efficient at a temperature below 50°C) with a rinse temperature of 55°C and with cold pre-wash without detergent. The reference product shall be always tested at 50°C , regardless the claims of the testing product. If only the rinse aid is tested the rinse temperature shall be 65°C .
- The machine used in the test shall be connected to cold water and must hold 12 place settings, width of 60 cm and a cleaning performance (oven drying method) in average values of $3,55 \pm 0,20$ as described in Annex N of the EN50242/ EN 60436.
- A weak acidic rinsing agent in accordance with the standard (formula III) shall be used.
- The rinsing aid dosage shall be a setting at level 3. When applying for rinse aids in combination with dishwasher detergents, the rinse aid shall be used in the test instead of the reference rinse aid.
- The dosage of dishwasher detergent shall be as recommended by the manufacturer.
- Three attempts shall be carried out at water hardness in accordance with the standard EN 50242/ EN 60436. The water hardness of sump water in the 2 heated rinses shall be $\leq 0,5 \text{ mmol/l}^*$.
- An attempt consists of 5 washes where the result is read after the fifth wash without the dishes being cleaned between the washes.
- The result shall be better than or equal to the reference detergent after the fifth wash.
- Recipe for the reference detergent¹ and rinsing agent (formula III), can be found in Annex D in the standard EN 50242/ EN 60436. The quantities (dosage used) shall be as recommended by the manufacturer of the reference product, but shall not be more than the limits included in the section 5.7 of the standard EN 50242/ EN 60436 for the detergent and section 5.8 of the standard EN 50242/ EN 60436 for the rinse aid agent.

If rinse aid function is a part of a multifunctional product the effect of the claimed function must be documented by test (e.g. drying performance test included in the standard EN 50242/ EN 60436).

* When the machine is run on reference programme or equivalent with a clean load installed and no detergent, the values specified in this criterion shall be achieved. The hardness is to be within the prescribed range.

3. IKW test

The test performance should be carried out in accordance with the most updated version of the IKW test available at:

https://www.ikw.org/fileadmin/ikw/downloads/Haushaltspflege/2016_EQ_Dishwasher_Detergents_Part_B_Update_2015.pdf

A marketed reference detergent or a generic formulation² shall be used as reference detergent and a cleaning temperature of 45°C or 50°C and a rinse temperature of 55°C shall be used for testing the cleaning performance.

The test detergent must achieve a cleaning performance using the recommended dosage that at least corresponds to the reference detergent or reference rinse aid, the effectiveness of these functions must also be verified in a test.

¹ At the time of writing this framework the standard detergent is Detergent B IEC 436. EN 50242 is currently under revision and Detergent D IEC 436 will become the standard detergent.

² If detergent IEC 60436 Type D is used a dosage of 20g shall be used

In the case of rinse aids, only the rinse aid function needs to be verified in a test. In order to achieve optimal rinsing performance results the rinse temperature shall be 65 ° C. The testing rinse aids should be tested against another marketed reference product or a generic formulation (e.g. IEC 60436 rinse aid Formula III KS-C (acid)) using in both cases the same dishwasher detergent. The cleaning performance is considered acceptable when it fulfils one of the following alternatives:

3.1 All 7 soils are tested:

a) the test product cleans the soiled items as well as or better than the reference product in all 4 classes (bleachable, persistent/alkali-sensitive, starchy-amylase-sensitive, proteinaceous, protease-sensitive) meaning that the results for at least one soil are as good as or better than the reference product for each soil class

or

b) the average value for all 7 soils for the tested product is better than the average value for the reference product. For this purpose, the results firstly need to be standardised to achieve comparative basis.

3.2 Only 4 soils are tested:

If only 4 soils are tested, these must be black tea, starch mix, egg yolk and milk. The tested product cleans as good as or better than the reference product for all 4 soils. Calculating an average value for the 4 results in comparison to the reference product is not permitted.

4. Results and reporting

If the modified standard EN 5024 / IEC 60436 has been followed, the applicant shall provide the following information:

- Information on the recommended dosage and the lowest recommended cleaning temperature at which the product claims to be effective
- The product's ability to remove soiling from the dishes, cutlery or kitchenware and to dry the dishes. Test product can only claim to be efficient on those soils where it cleans equal or better than the reference product.
- Information about the reference product against which the test product has been tested: composition, dosage used, temperature, date of purchase and date of testing
- Description of the standard conditions used to perform the testing
- Results of the tests performed and statistical analysis, if done.

If the most updated version of the IKW test performance protocol has been followed, the applicant shall provide the following information:

- Information on the recommended dosage and the lowest recommended cleaning temperature at which the product claims to be effective
- Description of the type of soils and preparation procedure
- The product's ability to remove soiling and dry the dishes. The effectiveness of other products the detergent shall be used with (e.g. rinse aids) shall be reported
- Information about the reference product against which the test product has been tested: the lowest recommended dosage or dosage used for the reference product, temperature, date of purchase and date of testing
- Description of the conditions used to perform the testing
- Results of the tests performed and statistical analysis, if done

Annex 1: example

A template for reporting the description of the procedures and the results of the tests is available [here](http://ec.europa.eu/environment/ecolabel/documents/dd.xlsx) (http://ec.europa.eu/environment/ecolabel/documents/dd.xlsx). This template is not mandatory to show compliance with criterion 6 Fitness for use.