

**DRAFT ANNEXES**

**OF**

**COMMISSION REGULATION (EU) .../...**

**implementing Directive 2009/125/EC of the European Parliament and of the Council  
with regard to ecodesign requirements for household dishwashers**

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## ANNEX I

### *Ecodesign requirements*

#### 1. GENERIC ECODESIGN REQUIREMENTS

From [1 December 2020],

- (1) For the calculation of the energy consumption and other parameters for household dishwashers, the cycle which cleans normally soiled tableware shall be used (hereafter ECO cycle). This cycle shall be clearly identifiable on the programme selection device of the household dishwasher or the household dishwasher display or the network-connected application, if any, and named 'ECO' and shall be set as the default cycle for household dishwashers equipped with automatic programme selection or any function for automatically selecting a cleaning programme or maintaining the selection of a programme. The name 'ECO' shall be used once and exclusively for this programme. The only other additional information which could be combined with the term 'ECO' is temperature.
- (2) Other programme names that could divert the user from using the ECO cycle for normally soiled tableware shall not be used. Therefore, programme names such as 'normal', 'daily' or 'standard' shall not be used on the machine.
- (3) The booklet of instructions provided by the manufacturer shall provide:
  - (a) Information that the standard cleaning cycle referred to as 'ECO' is suitable to clean normally soiled tableware and that it is the most efficient programme in terms of its combined energy and water consumption for that type of tableware;
  - (b) information that loading the machine up to the capacity indicated by the manufacturer will contribute to energy and water savings;
  - (c) indicative information on the programme time, energy and water consumption for the main cleaning programmes;
  - (d) information that manual pre-rinsing of dishware items leads to increased water and energy consumption and is not needed to achieve the minimum cleaning performance;
  - (e) information that automatic dishwashing usually consumes less energy and water than hand dishwashing when the dishwasher is used according to the booklet of instructions;
  - (f) Information on the power consumption of the low-power modes (left-on mode, off mode, network mode and any mode before the initiation of the dishwashing cycle).
- (4) Moreover, the booklet of instructions shall contain instructions for the user to perform maintenance operations for the purpose of ensuring durability and repair, in addition to any instructions automatically delivered by the appliance when equipped with this feature. Such maintenance instructions shall as a minimum include instructions for:

- (a) correct installation (including level positioning, connection to mains, connection to hot or cold water inlets);
- (b) correct and incorrect loading of dishware;
- (c) correct dosage of detergent, salt and other additives, and consequences of inadequate dosage;
- (d) energy and water saving, including programme and sub-programme option selection;
- (e) foreign object removal from the appliance;
- (f) periodical cleaning, including optimal frequency, and procedure;
- (g) door opening between cycles, if applicable;
- (h) periodical checks of filters, including optimal frequency, and procedure;
- (i) identification of errors, the meaning of the errors, and the action required, including identification of errors requiring professional assistance;
- (j) access to professional repair (internet webpages, addresses, contact details);
- (k) implications of self-repair or non-professional repair for the legal guarantee, and when applicable, also to the commercial guarantee;
- (l) Information on the period during which or the date until which the spare parts necessary for the use of the household dishwasher are available.

The requirements under (3) and (4) above are without prejudice that at the point of sale, further information may be added complementing the information contained in the booklet.

## 2. ADDITIONAL GENERIC ECODESIGN REQUIREMENTS ON REPAIR AND END-OF-LIFE ASPECTS

From [1 December 2020], household dishwashers shall be provided with the following information

### (1) Information requirements for refrigeration gases

Manufacturers of household dishwashers equipped with a heat pump shall mark clearly in the back panel of the appliances the chemical name of the principal component of the refrigerant gas used.

### (2) Requirements for dismantling for the purpose of avoiding pollution, and for material recovery and recycling of the household dishwasher

Manufacturers shall ensure that household dishwashers are designed so that the access to and the extraction of the following components (when present) must be possible without proprietary and not commonly available tools:

- Printed circuit boards (larger than 10 cm<sup>2</sup>);
- Electrolyte capacitors containing substances of concern (height > 25 mm, diameter > 25 mm or proportionately similar volume).
- Liquid crystal displays (larger than 100 cm<sup>2</sup>);
- Batteries;

- Heat pumps.

Accessing components shall be facilitated by documenting the sequence of dismantling operations needed to access the targeted components, including for each of these operations, the type and the number of fastening techniques(s) to be unlocked, and tool(s) required.

### (3) Spare part availability

Information issued by the manufacturer or importer of household dishwashers to the retailer, on the period during which or the date until which the spare parts necessary for the repair of the appliance are available, shall be shown on any commercial document accompanying the sale of the appliance. The minimum period during which the spare parts for household dishwashers are available shall be seven years, counting from the production date of the machine.

Such information shall be disclosed to the consumer by the retailer, visibly and legibly, before concluding the sale, in the booklet of instructions, as stated in point 1(4) of this Annex.

### (4) Spare part maximum delivery time

Until the date or during the period declared in application of point 3 of this Annex, the manufacturer or importer shall supply the spare parts necessary for the repair of the household dishwasher within three weeks to retailers, to repairers, or directly to consumers.

### (5) Access to Repair and Maintenance Information

#### 1. Manufacturers' obligations

Manufacturers shall provide unrestricted access to appliance repair and maintenance information to independent operators through websites or other easily accessible means of information using a standardised format for requesting and accessing the information, in a manner which is non-discriminatory compared to the provision given or access granted to authorised retailers and repairers. With a view to facilitating the achievement of this objective, the information shall be provided consistently and continuously.

The appliance repair and maintenance information referred to in the previous paragraph shall include:

- (a) an unequivocal appliance identification;
- (b) a disassembly map and exploded view;
- (c) technical manuals;
- (d) component and diagnosis information (such as minimum and maximum theoretical values for measurements);
- (e) wiring and connection diagrams;
- (f) diagnostic trouble codes (including manufacturer specific codes);
- (g) information concerning, and delivered by means of, proprietary tools and equipment; and

(h) data record information.

Authorised retailers or repairers within the distribution system of a given appliance manufacturer shall be regarded as independent operators for the purposes of this Regulation to the extent that they provide repair or maintenance services for appliances in respect of which they are not members of the appliance manufacturer's distribution system.

The information on diagnostic tools, repair and test equipment necessary for the appliance repair shall be provided by the manufacturer or importer on a non-discriminatory basis to any repairer and for any requested component, diagnostic tools or test equipment.

## 2. Fees for access to appliance repair and maintenance information

Manufacturers may charge reasonable and proportionate fees for access to household dishwasher's repair and maintenance information covered under point 5(1). A fee is not reasonable or proportionate if it discourages access by failing to take into account the extent to which the independent operator uses it.

Manufacturers shall make available appliance repair and maintenance information on a daily, monthly, and yearly basis, with fees for access to such information that may vary in accordance with the respective periods of time for which access is granted.

## 3. SPECIFIC ECODESIGN REQUIREMENTS

Household dishwashers shall comply with the following requirements:

From [1 December 2020]:

- (a) the Energy Efficiency Index (EEI) shall be less than 58, except for household dishwashers with a rated capacity equal to or less than 7 place settings;
- (b) the Energy Efficiency Index (EEI) shall be less than 63 for household dishwashers with a rated capacity equal to or less than 7 place settings;
- (c) the Cleaning Efficiency Index ( $I_C$ ) shall be greater than 1.12;
- (d) the Drying Efficiency Index ( $I_D$ ) shall be greater than 1.08;
- (e) the power consumption of the 'left-on mode' or any other condition after any programme shall not exceed 1.00W;
- (f) the duration of the 'left-on mode' after the end of any programme shall not exceed 20 minutes after which the power management function is switching the machine automatically to off-mode;
- (g) the power consumption of the 'off mode' shall not exceed 0.50W;
- (h) the power consumption of any mode before the initiation of the cleaning programme, including the delay start mode, shall not exceed 2.00 W.

The Energy Efficiency Index (EEI), the Cleaning Efficiency Index ( $I_C$ ) and the Drying Efficiency Index ( $I_D$ ) of household dishwashers are calculated in accordance with Annex II.

## ANNEX II

### *Measurements*

#### 1. CALCULATION OF THE ENERGY EFFICIENCY INDEX

For the calculation of the Energy Efficiency Index (EEI) of a household dishwasher model, the ECO Cycle Energy Consumption (CEC) of the household dishwasher is compared to its Standard Cycle Energy Consumption (SCEC).

- (a) The Energy Efficiency Index (EEI) is calculated as follows and rounded to one decimal place:

$$EEI = \frac{CEC}{SCEC} \times 100$$

CEC = ECO Cycle Energy Consumption of the household dishwasher;

SCEC = Standard Cycle Energy Consumption of the household dishwasher.

- (b) The Standard Cycle Energy Consumption (SCEC) is calculated in kWh/cycle as follows:

- (i) for household dishwashers with rated capacity  $ps \geq 11$ :

$$SCEC = 0.025 \times ps + 1.350$$

- (ii) for household dishwashers with rated capacity  $ps \leq 10$ :

$$SCEC = 0.090 \times ps + 0.450$$

where:

ps = number of place settings

#### 2. CALCULATION OF THE CLEANING EFFICIENCY INDEX

For the calculation of the Cleaning Efficiency Index ( $I_C$ ) of a household dishwasher model, the cleaning efficiency of the household dishwasher is compared to the cleaning efficiency of a reference dishwasher, where the reference dishwasher shall have the characteristics indicated in the generally recognised state-of-the-art measurement methods, including methods set out in documents the reference numbers of which have been published for that purpose in the Official Journal of the European Union.

- (a) The Cleaning Efficiency Index ( $I_C$ ) is calculated as follows and rounded to two decimal places:

$$\ln I_C = \frac{1}{n} \times \sum_{i=1}^n \ln \left( \frac{C_{T,i}}{C_{R,i}} \right)$$

where:

$C_{T,i}$  = cleaning efficiency of the household dishwasher under test for one test cycle (i)

$C_{R,i}$  = cleaning efficiency of the reference dishwasher for one test cycle (i)

n = number of test cycles,  $n \geq 5$

- (b) The cleaning efficiency (C) is the average of the soil score of each load item after completion of a standard cleaning cycle. The soil score is calculated as shown in Table 1:

Table 1

Number of small dot-shaped soil particles (n)	Total soiled area ( $A_S$ ) in $\text{mm}^2$	Soil score
n = 0	$A_S = 0$	5 (most efficient)
$0 < n \leq 4$	$0 < A_S \leq 4$	4
$4 < n \leq 10$	$0 < A_S \leq 4$	3
$10 < n$	$4 < A_S \leq 50$	2
Not applicable	$50 < A_S \leq 200$	1
Not applicable	$200 < A_S$	0 (least efficient)

### 3. CALCULATION OF THE DRYING EFFICIENCY INDEX

For the calculation of the Drying Efficiency Index ( $I_D$ ) of a household dishwasher model, the drying efficiency of the household dishwasher is compared to the drying efficiency of a reference dishwasher, where the reference dishwasher shall have the characteristics indicated in the generally recognised state-of-the-art measurement methods, including methods set out in documents the reference numbers of which have been published for that purpose in the Official Journal of the European Union.

- (a) The Drying Efficiency Index ( $I_D$ ) is calculated as follows and rounded to two decimal places:

$$\ln I_D = \frac{1}{n} \times \sum_{i=1}^n \ln\left(\frac{D_{T,i}}{D_{R,i}}\right)$$

where:

$D_{T,i}$  = drying efficiency of the household dishwasher under test for one test cycle (i)

$D_{R,i}$  = drying efficiency of the reference dishwasher for one test cycle (i)

n = number of test cycles,  $n \geq 5$

(b) The Drying Efficiency (D) is the average of the wet score of each load item after completion of a standard cleaning cycle. The wet score is calculated as shown in Table 2:

*Table 2*

<b>Number of water traces (<math>W_T</math>) or wet streak (<math>W_S</math>)</b>	<b>Total wet area (<math>A_w</math>) in <math>mm^2</math></b>	<b>Wet score</b>
$W_T = 0$ and $W_S = 0$	Not applicable	2 (most efficient)
$1 < W_T \leq 2$ or $W_S = 1$	$A_w < 50$	1
$2 < W_T$ or $W_S = 2$ or $W_S = 1$ and $W_T = 1$	$A_w > 50$	0 (least efficient)



### ANNEX III

#### *Product compliance verification by market surveillance authorities*

The verification tolerances defined in this Annex relate only to the verification of the measured parameters by Member State authorities and shall not be used by the manufacturer or importer as an allowed tolerance to establish the values in the technical documentation or in interpreting these values with a view to achieving compliance or to communicate better performance by any means.

When verifying the compliance of a product model with the requirements laid down in this Regulation pursuant to Article 3(2) of Directive 2009/125/EC, for the requirements referred to in this Annex, the authorities of the Member States shall apply the following procedure:

- (1) The Member State authorities shall verify one single unit of the model.
- (2) The model shall be considered to comply with the applicable requirements if:
  - (a) the values given in the technical documentation pursuant to point 2 of Annex IV to Directive 2009/125/EC (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the manufacturer or importer than the results of the corresponding measurements carried out pursuant to paragraph (g) thereof; and
  - (b) the declared values meet any requirements laid down in this Regulation, and any required product information published by the manufacturer or importer does not contain values that are more favourable for the manufacturer or importer than the declared values; and
  - (c) when the Member State authorities test the unit of the model, the determined values (the values of the relevant parameters as measured in testing and the values calculated from these measurements) comply with the respective verification tolerances as given in Table 1.
- (3) If the results referred to in point 2(a) or (b) are not achieved, the model and all models that have been listed as equivalent household dishwasher models in the manufacturer's or importer's technical documentation shall be considered not to comply with this Regulation.
- (4) If the result referred to in point 2(c) is not achieved, the Member State authorities shall select three additional units of the same model for testing. As an alternative, the three additional units selected may be of one or more different models that have been listed as equivalent models in the manufacturer's or importer's technical documentation.
- (5) The model shall be considered to comply with the applicable requirements if, for these three units, the arithmetical mean of the determined values complies with the respective verification tolerances given in Table 1.
- (6) If the result referred to in point 5 is not achieved, the model and all models that have been listed as equivalent household dishwasher models in the manufacturer's or importer's technical documentation shall be considered not to comply with this Regulation.
- (7) The Member State authorities shall provide all relevant information to the authorities of the other Member States and to the Commission without delay after a decision being taken on the non-compliance of the model according to points 3 and 6.

Member States' authorities shall use measurement procedures which take into account the generally recognised, state-of-the-art, reliable, accurate and reproducible measurement

methods, including methods set out in documents whose reference numbers have been published for that purpose in the Official Journal of the European Union. The Member State authorities shall use the measurement and calculation methods set out in Annex II.

The Member State authorities shall only apply the verification tolerances that are set out in Table 1 and shall use only the procedure described in points 1 to 7 for the requirements referred to in this Annex. No other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

*Table 3*

<b>Measured parameter</b>	<b>Verification tolerances</b>
ECO cycle energy consumption (CEC)	The determined value shall not exceed the declared value of CEC by more than 5 %. Where three additional units need to be selected, the arithmetic mean of the determined values of these three units shall not exceed the declared value of CEC by more than 5 %.
Cleaning efficiency index ( $I_C$ )	The determined value shall not be less than the declared value of $I_C$ by more than 14 %.
Drying efficiency index ( $I_D$ )	The determined value shall not be less than the declared value of $I_D$ by more than 10 %.
Power consumption in off mode and left-on mode ( $P_o$ and $P_l$ )	The determined values of power consumption $P_o$ and $P_l$ of more than 0.50 W shall not exceed the declared values of $P_o$ and $P_l$ by more than 10 %. The determined values of power consumption $P_o$ and $P_l$ of less than or equal to 0.50 W shall not exceed the declared values of $P_o$ and $P_l$ by more than 0.05 W.
Power consumption in modes before the initiation of the cleaning programme ( $P_b$ )	The determined values of power consumption $P_b$ of more than 1W shall not exceed the declared values of $P_b$ by more than 10%. The determined values of power consumption $P_b$ of less than or equal to 1 W shall not exceed the declared values of $P_b$ by more than 0.10W
Power consumption in networked-standby mode ( $P_n$ )	The determined values of power consumption $P_n$ of more than 2W shall not exceed the declared values of $P_n$ by more than 10%. The determined values of power consumption $P_n$ of less than or equal to 2 W shall not exceed the declared values of $P_n$ by more than 0.20W
Duration of left-on mode ( $T_l$ )	The determined value shall not exceed the declared value of $T_l$ by more than 10 %.

## ANNEX IV

### *Indicative benchmarks*

#### 1. INDICATIVE BENCHMARKS FOR HOUSEHOLD DISWASHERS ON WATER AND ENERGY CONSUMPTION, AIRBORNE ACOUSTICAL NOISE EMISSIONS AND PROGRAMME TIME

At the time of entry into force of this Regulation, the best available technology on the market for household dishwashers in terms of their energy efficiency, energy and water consumption, cleaning and drying efficiency and airborne acoustical noise emissions for the ECO cycle is identified as follows:

(1) Household dishwashers with 14 place settings (without heat pump technology):

- (a) energy consumption: 0.67 kWh/cycle;
- (b) water consumption: 9.9 litres/cycle;
- (c) airborne acoustical noise emissions: 44 dB(A);
- (d) programme time: 222 minutes (3 hours and 42 minutes).

(2) Household dishwashers with 13 place settings (with heat pump technology):

- (a) energy consumption: 0.55 kWh/cycle;
- (b) water consumption: 8.8 litres/cycle;
- (c) airborne acoustical noise emissions: 44 dB(A);
- (d) programme time: 295 minutes (4 hours and 55 minutes).

(3) Household dishwashers with 10 place settings:

- (a) energy consumption: 0.66 kWh/cycle;
- (b) water consumption: 9.5 litres/cycle;
- (c) airborne acoustical noise emissions: 44dB(A);
- (d) programme time: 195 minutes (3 hours and 15 minutes).

(4) Household dishwashers with 6 place settings:

- (a) energy consumption: 0.62 kWh/cycle;
- (b) water consumption: 8.0 litres/cycle;
- (c) airborne acoustical noise emissions: 48dB(A);
- (d) programme time: 225 minutes (3 hours and 45 minutes).

#### 2. INDICATIVE BENCHMARKS FOR HOUSEHOLD DISWASHERS ON SPARE PARTS AVAILABILITY AND DELIVERABLE TIME OF SPARE PARTS

At the time of entry into force of this Regulation, the fastest delivery times of spare parts for household dishwasher are between 7 and 10 days. The longest availability of spare parts necessary for the use of the household dishwasher is around 10 years.

## ANNEX V

### *List of energy-using products covered by Annex I, point 1 to Regulation (EC) No 1275/2008*

#### 1. Household appliances

Washing machines

Clothes dryers

Cooking:

Electric ovens

Electric hot plates

Microwave ovens

Toasters

Fryers

Grinders, coffee machines and equipment for opening or sealing containers or packages

Electric knives

Other appliances for cooking and other processing of food, cleaning, and maintenance of clothes

Appliances for hair cutting, hair drying, tooth brushing, shaving, massage and other body care appliances

Scales