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ANNEXES 1 to 7

ANNEXES

to the

COMMISSION REGULATION

implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for household washing-machines and household washer-dryers,

and repealing Regulation (EU) No 1015/2010 with regard to ecodesign requirements for household washing machines and amending Regulation (EC) No 1275/2008 with regard to ecodesign requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment

ANNEX I

Definitions applicable for the Annexes

In addition to the definitions set out in Directive 2009/125/EC and the definitions set out in Article 2 of this Regulation, the following definitions shall apply:

(1) 'multi-drum washing machine' means a washing machine equipped with more than one drum, whether in separate units or in the same casing;

(2) ‘automatic washing machine’ means a washing machine where the load is fully treated by the machine without the need for user intervention at any point during the programme;

(3) ‘programme’ means a series of operations that are pre-defined and which are declared by the manufacturer as suitable for washing, drying or continuously washing and drying certain types of textile;

(4) ‘Washing cycle’ means a complete washing process as defined by the required programme, consisting of a series of different operations including washing, rinsing, and spinning;

(5) ‘Drying cycle’ means a complete drying process as defined by the required programme, consisting of a series of different operations including heating and spinning;

(6) ‘Complete cycle’ means a washing and drying process, consisting of a washing and a drying cycle;

(7) ‘Continuous complete cycle’ means a complete cycle without interruption of the process and with no need for user intervention at any point during the programme;

(8) ‘Rated capacity’ means the maximum mass in kilograms stated by the manufacturer at 0.5 kg intervals of dry textiles of a particular type, which can be treated in one complete cycle of a household washing machine or a household washer-drier respectively on the selected programme, when loaded in accordance with the manufacturer’s instructions;

(9) ‘Remaining moisture content’ means for household washing machines the amount of moisture contained in the load at the end of the spinning phase, and for household washer-dryers the amount of moisture contained in the load at the end of the drying phase;

(10) ‘Partial load’ means part of the full rated capacity of a household washing machine or household washer-dryer for a given programme, e.g. half or a quarter of the load;

(11) ‘Programme duration’ means the time that elapses from the initiation of the programme until the completion of the programme, excluding any delay start and any interactive mode;

(12) ‘Off-mode’ means a condition in which the equipment is connected to the mains power source and is not providing any function; the following shall also be considered as off mode:

a) conditions providing only an indication of off-mode;

b) conditions providing only functionalities intended to ensure electromagnetic compatibility pursuant to Directive 2004/108/EC;

(13) ‘Standby mode’ means a condition where the equipment is connected to the means power source, and provides only the following functions, which may persist for an indefinite time:

(a) reactivation function, or reactivation function and only an indication of enabled reaction function, and/or

(b) information or status display, and/or

(c) safety function;

(14) ‘Interaction mode’ means a condition in which the equipment is connected to the mains power source and provides functionalities intended for interaction with the user such as programme set-up, delay start set-up, or information to the user;

(15) ‘Delay start’ means a condition in which the equipment automatically starts its main function at a later time as programmed by the user;

(16) ‘Active mode’ means a condition in which the equipment is connected to the mains power source and at least one of the main function(s) providing the intended service of the equipment has been activated;

(17) ‘Main function(s)’ means the main service(s) for which a product is designed for, and that correspond to the intended use of the product;

(18) ‘Network standby’ is defined as in Regulation (EC) No 1275/2008 [as amended by Regulation (EU) No 801/2013];

(19) 'Equivalent model' means a model with the same relevant technical and performance characteristics but placed on the market under a different model identifier;

(20) ‘Spare part’ means a separate part that can replace a part with the same or similar function in an appliance;

(21) ‘Necessary spare part’ means a spare part necessary for the use of the appliance that cannot function as intended without that part;

(22) ‘Professional repairer’ means an operator or undertaking which provides services of repair and maintenance of household appliances, or distribution of repair equipment, tools or spare parts for household appliances.

ANNEX II
Ecodesign requirements

1. 40-60 ECO PROGRAMME

From 1 April 2021:

(1) Household washing machines and the washing process of household washer-dryers shall provide:

(1) a washing cycle which is able to clean normally soiled cotton laundry declared to be washable at 40 °C or 60 °C, together in the same cycle. This programme shall be indicated as '40-60 eco'. The name '40-60 eco' shall be used exclusively for this programme. Other programme indications for normally soiled cotton laundry declared to be washable at 40 °C and 60 °C such as 'normal', 'daily', 'regular' or 'standard' that could divert the end user from using '40-60 eco' shall not be used.

(2) a washing cycle at 20 °C.

(2) These cycles shall be clearly identifiable on the programme selection, on the display and through the network connection, depending on the functionalities provided by the equipment.

(3) For the requirements set out in points 3(1), 3(3), 4(1), 4(3), 5 and 6, the '40-60 eco' programme shall be used.

2. WASH AND DRY PROGRAMME

From 1 April 2021:

(1) Household washer-dryers shall provide a complete cycle for cotton laundry, called 'wash and dry':

- which is continuous if the washer-dryer provides continuous complete cycles, or segmented if this is not the case;
- where the washing cycle is a '40-60 eco' cycle as defined in point 1, and
- where the drying cycle achieves the 'cupboard dry' status, i.e. the laundry shall be dried to a remaining moisture content of 0 %.

(2) The 'wash and dry' programme shall be clearly identifiable on the programme selection, on the display and through the network connection, depending on the functionalities provided by the equipment.

(3) If the household washer-dryer provides continuous complete cycles, the 'wash and dry' programme shall be selected by default and the rated capacity of the 'wash and dry' programme shall be the maximum capacity for this complete cycle.

(4) If the household washer-dryer does not provide continuous complete cycles, the rated capacity of the 'wash and dry' programme shall be the lowest value between the maximum capacity of the '40-60 eco' washing cycle (i.e. the 'rated washing capacity') and the maximum capacity of the drying cycle achieving 'cupboard dry' status (i.e. the 'rated drying capacity').

(5) For the requirements set out in points 3(2), 3(4), 4(2) and 4(4), the 'wash and dry' programme shall be used.

3. ENERGY EFFICIENCY REQUIREMENTS

From 1 April 2021:

(1) The Energy Efficiency Index (EEI) for household washing machines and the washing process of household washer-dryers shall be lower than 109.

(2) The Energy Efficiency Index (C) for the wash and dry programme of household washer-dryers shall be lower than 110.

From 1 April 2024:

(3) The Energy Efficiency Index (EEI) for household washing machines and the washing process of household washer-dryers shall be lower than 92.

(4) The Energy Efficiency Index (C) for the wash and dry programme of household washer-dryers shall be lower than 90.

The Energy Efficiency Indexes (EEI and C) shall be calculated in accordance with Annex III.

4. FUNCTIONAL REQUIREMENTS

From 1 April 2021:

(1) For household washing machines with a rated capacity higher than 3 kg and for the washing cycle of household washer-dryers with a rated capacity higher than 3 kg, the Washing Efficiency Index (I_w) of the ’40-60 eco’ programme at full, half and quarter load shall be greater than 1.03.

(2) For household washer-dryers with a rated capacity higher than 3 kg, the Washing Efficiency Index (I_w) of the ‘wash and dry’ programme at full and half load shall be greater than 1.03.

(3) For household washing machines with a rated capacity higher than 3 kg and for the washing cycle of household washer-dryers with a rated capacity higher than 3 kg, the Rinsing Efficiency (I_R) of the ’40-60 eco’ programme at full load shall be smaller than or equal to 6.0 mg/g.

(4) For household washer-dryers with a rated capacity higher than 3 kg, the Rinsing Efficiency (I_R) of the ‘wash and dry’ programme at full load shall be smaller than or equal to 6.0 mg/g.

The Washing Efficiency Index (I_w) shall be calculated in accordance with Annex III. The Rinsing Efficiency (I_R) shall be calculated using harmonised standards the reference numbers of which have been published for this purpose in the *Official Journal of the European Union*, or other reliable, accurate and reproducible method based on the detection of the LAS marker.

5. REQUIREMENT ON DURATION

From 1 April 2021:

The duration of the ’40-60 eco’ programme should be lower than or equal to the time limit t_{cap}, which depends on the rated capacity as follows:

(1) For the full loading (i.e. at rated capacity), the time limit is given by the following equation:

$$t_{cap}(in\,\mathrm{min}) = 137 + c * 10.2$$

(2) For the half and the quarter loading, the time limit is given by the following equation:

$$t_{cap}(in\,\min) = 132 + c * 6$$

where c is the rated capacity of the household washing machine or the rated washing capacity of the household washer-dryer for the '40-60 eco' programme.

6. WEIGHTED WATER CONSUMPTION REQUIREMENT

From 1 April 2021:

(1) For household washing machines and the washing process of household washer-dryers, the weighted water consumption (Wt, litres/cycle) shall be:

$Wt \leq 2.25 \times c + 30$

where c is the rated capacity of the household washing machine or the rated washing capacity of the household washer-dryer for the '40-60 eco' programme.

(2) For household washer-dryers, the weighted water consumption (Wt, litres/cycle) for the 'wash and dry' programme shall be:

$Wt \leq 10 \times c + 30$

where c is the rated capacity of the household washer-dryer for the 'wash and dry' programme.

The weighted water consumption (Wt) shall be calculated in accordance with Annex III.

7. LOW POWER MODES

From 1 April 2021:

(a) Household washing machines and household washer-dryers shall have an off-mode or a stand-by mode or both. The power consumption of these modes shall not exceed 0.5 W.
By exception, if the stand-by mode includes the display of information or status, the power consumption of the stand-by mode shall not exceed 0.8 W.

(b) If the equipment (household washing machine or household washer-dryer) has the provision of network standby, the power consumption of this mode shall not exceed 2.0 W.

(c) After switching on the equipment, it shall be in interaction mode. Interaction mode shall enable the user to switch to active mode, to delay start or to network standby, depending on the functionalities provided by the equipment.

(d) In interaction mode, if there is no interaction with the equipment for 15 minutes, the household washing machine or the household washer-dryer shall switch automatically to off-mode, standby mode or network standby.

(e) If the equipment has the provision of a delay start, the power consumption of this condition shall not exceed 6.0 W. The delay start shall not be programmed for more than 24h.

(f) The standby mode and network standby shall switch to interaction mode in the case of reactivation by the user or reactivation through the network connection.

(g) After the end of a programme and therefore of the active mode, the equipment shall be in interaction mode.

(h) If the delay start or the active mode is interrupted by the user, either through direct interaction or through a network connection, the equipment shall switch to interaction mode.

(i) The above requirements are without prejudice to emergency measures.

8. RESOURCE EFFICIENCY REQUIREMENTS

From 1 April 2021:

(1) Availability of necessary spare parts

Manufacturers or importers of household washing machines and household washer-dryers shall make available necessary spare parts for a minimum period of seven years after placing the last unit of the model on the market.

The list of necessary spare parts concerned by this measure and the procedure for ordering them shall be publicly available, for example on the manufacturer's website, at the latest two years after the placing on the market of the first unit of a model or of an equivalent model and until the end of the period of availability of these necessary spare parts, and the list shall contain at least the following:

- Motor
- Pumps
- Shock absorbers
- Washing drum, drum spider and related ball bearings
- Heaters and heating elements
- Door hinge and seal
- Door locking assembly separable into its constituent sub-components
- Piping and related equipment including all hoses, valves and filters
- Printed circuit boards
- Liquid crystal displays
- Thermostats

(2) Maximum delivery time of necessary spare parts

During the period mentioned under (1), the manufacturer or importer shall deliver the necessary spare parts for household washing machines and household washer-dryers within three weeks after having received the request.

(3) Access to Repair and Maintenance Information

(a) After a period of two years after the placing on the market of the first unit of a model or of an equivalent model, the manufacturer or importer shall provide unrestricted access to the appliance repair and maintenance information to professional repairers upon their request. The manufacturer's website, or an equivalent means of information, shall indicate the process for repairers to make such a request and standard forms as appropriate.

(b) Before granting such a request and provided it does not cause undue delay to the timeframe mentioned under (2), manufacturers or importers may require the professional repairer to declare that:

i. The repairer complies with the applicable regulations for repairers of electrical equipment in the Member State where the professional repairer operates. Reference to an official registration system covering this compliance, where such system exists in the Member State where the professional repairer operates, shall be provided in support of the declaration.

ii. The repairer is covered by relevant insurance, covering liabilities resulting from its activity, as required in the Member State where the professional repairer operates.

(c) The appliance repair and maintenance information referred to in (a) shall include:

- an unequivocal appliance identification;
- a disassembly map and exploded view;
- technical manuals;
- list of necessary repair and test equipment;
- component and diagnosis information (such as minimum and maximum theoretical values for measurements);
- wiring and connection diagrams;
- diagnostic fault and error codes (including manufacturer-specific codes); and
- data record information.

(d) Manufacturers or importers may charge reasonable and proportionate fees for access to the repair and maintenance information. 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.

(4) Information requirements for refrigerant gases

Household washing machines and household washer-dryers equipped with a heat pump shall clearly and permanently display on the exterior of the appliance, for example on the back panel, the chemical name or equivalent reference of the principal component of the refrigerant gas used. Where the refrigerant gas is covered by Regulation (EU) No 517/2014, the requirements of that regulation apply.

(5) Requirements for disassembly for the purpose of repair and for material recovery and recycling while avoiding pollution.

Household washing machines and household washer-dryers shall be designed so that the access to and the removal of the following components (when present) is possible without the use of any tool which is not readily available for purchase:

- printed circuit boards (larger than 10 cm^2);
- electrolyte capacitors containing substances of concern (height > 25 mm, diameter > 25 mm or proportionately similar volume);
- liquid crystal displays;

- batteries;
- motor;
- piping and related equipment including all hoses, valves and filters;
- heat pump.

Manufacturers shall document the sequence of dismantling operations needed to access the components listed above, including for each of these operations, the type and the number of fastening techniques(s) to be unlocked, and tool(s) required. This information should be accessible under the same conditions as the repair and maintenance information under (3).

9. INFORMATION REQUIREMENTS

From 1 April 2021:

User instructions shall be provided on a free access website of the manufacturer, their authorised representative and importers, and possibly in the form of a user manual or set of documents, and shall include:

(1) the following general information:

(a) information that the ’40-60 eco’ programme is able to clean normally soiled cotton laundry declared to be washable at 40 °C or 60 °C, together in the same cycle, and that this programme is the standard for testing. The most efficient programmes in terms of energy and water consumption are generally those that perform at lower temperatures and longer duration;

(b) information that loading the machine up to the capacity indicated by the manufacturer for the respective programmes will contribute to energy and water savings;

(c) recommendations on the type of detergents suitable for the various washing temperatures and washing programmes;

(d) information on the power consumption of the low-power modes and recommendations on their use;

(2) indicative data on the following parameters:

(a) rated capacity in kg;

(b) programme time, expressed in hours: minutes;

(c) energy consumption, expressed in kWh/cycle;

(d) water consumption, expressed in litres/cycle;

(e) maximum temperature reached in the laundry core for at least 5 minutes, expressed in degrees Centigrade; and

(f) remaining moisture content after cycle finalisation, expressed in percentage of water content;

for each of the following programmes (at least):

(a) ‘40-60 eco’ programme at full load, half load and quarter load;

(b) one programme at 20°C at full load;

(c) one cotton programme at nominal temperature higher than or equal to 60°C (if present) at full load;

(d) one programme for other textiles than cotton or a mix of textiles (if present) at full load;

(e) one programme with a short duration (if present) at full load;

(f) one programme for heavily soiled textiles (if present) at full load; and

(g) for washer-dryers: the 'wash and dry' programme at full and half load.

For the '40-60 eco' programme, the washing efficiency index (I_W) at full load, half load and quarter load, and the rinsing efficiency (I_R) at full load shall also be provided, after calculation in accordance with Annex III.

For washer-dryers: for the 'wash and dry' programme, the washing efficiency index (I_W) at full and half load, and the rinsing efficiency (I_R) at full load shall also be provided, after calculation in accordance with Annex III.

(3) The user instructions shall also include instructions for the user to perform maintenance operations and operations for ensuring durability and repair, in addition to any instructions automatically delivered by the appliance when equipped with this feature. Such instructions shall as a minimum include instructions for:

(a) correct installation (including level positioning, connection to mains, connection to water inlets, cold and/or hot if appropriate);

(b) correct dosage of detergent, softeners and other additives, and consequences of inadequate dosage;

(c) foreign object removal from the appliance;

(d) periodic cleaning, including optimal frequency, and procedure;

(e) door opening between cycles, if appropriate;

(f) periodic checks of filters, including optimal frequency, and procedure;

(g) identification of errors, the meaning of the errors, and the action required, including identification of errors requiring professional assistance;

(h) access to professional repair (internet webpages, addresses, contact details);

(i) implications of self-repair or non-professional repair for the legal guarantee, and when applicable, also to the commercial guarantee;

(j) information on the period during which the spare parts necessary for the use of the household washing machine or the household washer-dryer are available.

10. TECHNICAL DOCUMENTATION

From 1 April 2021:

The technical documentation for the purposes of conformity assessment pursuant to Article 4 shall contain the following elements:

(1) A copy of the information provided in accordance with point 9(2) and the results of the calculations undertaken in accordance with Annex III.

The publication of the elements in the product database, according to [labelling regulation on household washing machines and household washer-dryers], Article

3(1)(b), replaces the obligation of including such elements in the technical documentation.

(2) A list of all equivalent household washing machine or household washer-dryer models.

Where the information included in the technical documentation for a particular model has been obtained:

(a) from an equivalent model of the same or a different manufacturer, or

(b) by calculation on the basis of design or extrapolation from another model of the same or a different manufacturer, or both,

the technical documentation shall include the details of such calculation, the assessment undertaken by manufacturers to verify the accuracy of the calculation and, where appropriate, the declaration of identity between the models of different manufacturers.

ANNEX III
Measurement and calculation methods

For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards the reference numbers of which have been published for this purpose in the *Official Journal of the European Union*, or other reliable, accurate and reproducible methods, which takes into account the generally recognised state-of-the-art, and in line with the following provisions.

Numbers shall be rounded to the nearest integer in accordance with B.3 Rule B of ISO 80000-1:2009. If the rounding takes place in decimals, the omitted places shall not be filled with zeros.

1. ENERGY EFFICIENCY INDEX

A. Energy Efficiency Index of household washing machines and the washing cycle of household washer-dryers

For the calculation of the Energy Efficiency Index (EEI) of a household washing machine model or the washing cycle of a household washer-dryer model, the weighted energy consumption of the '40-60 eco' programme at full, half and quarter loads is compared to its standard energy consumption.

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

$$EEI = \frac{E_t}{SCE_c} \text{ x } 100$$

where:

E_t = weighted cycle energy consumption of the household washing machine or the washing cycle of the household washer-dryer;

SCE_C = standard cycle energy consumption of the household washing machine or the washing cycle of the household washer-dryer.

(b) The standard cycle energy consumption (SCE_c) is calculated in kWh per cycle and rounded to two decimal places as follows:

$$SCE_c = -0.0025\ x\ c2 + 0.0846\ x\ c + 0.3920$$

where:

c is the rated capacity of the household washing machine or the rated washing capacity of the washer-dryer for the 40-60 eco programme.

(c) The weighted energy consumption (*Et)* is calculated in kWh per cycle as follows and rounded to three decimal places:

$$E_t = A\ x\ E_{t,40,full} + Bx\ E_{t,40,\frac{1}{2}load} + C\ x\ E_{t,40,\frac{1}{4}}$$

Where:

$E_{t,40,full}$ is the energy consumption of the 40-60 eco programme at full rated washing capacity;

$E_{t,40,½}$ is the energy consumption of the 40-60 eco programme at half of the rated washing capacity;

$E_{t,40,1/4}$ is the energy consumption of the 40-60 eco programme at a quarter of the rated washing capacity;

A is the weighting loading factor for the full rated washing capacity;

B is the weighting loading factor for half of the rated washing capacity;

C is the weighting loading factor for a quarter of the rated washing capacity.

The values of the weighting loading factors depend on the rated capacity according to the following equations:

$$A = -0.0391\ x\ c + 0.6918$$

$$B = -0.0109x\ c + 0.3582$$

$$C = 1 - (A + B)$$

where:

c is the rated capacity of the washing machine or the washing rated capacity of the washer dryer.

B. Energy Efficiency Index of the complete cycle of household washer-dryers

For the calculation of the Energy Efficiency Index (C) of a household washer-dryer model, the weighted energy consumption of the 'wash and dry' programme at full and half loads is compared to its standard energy consumption.

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

$$C = \frac{Et}{SCEc}$$

where:

E_t = weighted cycle energy consumption of the household washer-dryer;

SCE_C = standard cycle energy consumption of the household washer-dryer.

(b) The standard cycle energy consumption (SCE_c) is calculated in kWh per cycle and rounded to two decimal places as follows:

$$SECc = 0.0088 * c^2 - 0.2494 * c + 2.296$$

where:

c is the rated capacity of the household washer-dryer for the 'wash and dry' programme.

(c) The weighted energy consumption (*Et)* is calculated in kWh per cycle as follows and rounded to three decimal places:

$$E_t = \frac{[3\ x\ E_{tfull} + 2\ x\ E_{t,\frac{1}{2}load}]}{5}$$

where:

$E_{t,full}$ is the energy consumption of the 'wash and dry' programme at full load, i.e. at rated capacity;

$E_{t,½load}$ is the energy consumption of the 'wash and dry' programme at half load, i.e. at half the rated capacity.

2. CALCULATION OF THE WASHING EFFICIENCY INDEX

For the calculation of the Washing Efficiency Index (I_w) of household washing machines and of the washing cycle of household washer-dryers, the washing efficiency for the '40-60 eco' programme is compared to the washing efficiency of a reference washing machine, where the reference washing machine 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.

For the calculation of the Washing Efficiency Index (I_w) of household washer-dryers, the washing efficiency for the 'wash and dry' programme is compared to the washing efficiency of a reference washer-dryer, where the reference washer-dryer 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 Washing Efficiency Index of one programme (p) is calculated as follows:

$$I_{W,P} = \frac{1}{n} \times \sum_{i=1}^{n} \frac{W_{T,i}}{W_{R,a}}$$

where:

$W_{T,i}$ = Washing Efficiency of the household washing machine or household washer-dryer under test for one test cycle (i);

$W_{R,a}$ = average Washing Efficiency of the reference washing machine or reference washer-dryer;

n = number of test cycles,

(b) The Washing Efficiency (W_T) is the reflectance values of each test strip after completion of a test cycle.

3. CALCULATION OF THE WEIGHTED WATER CONSUMPTION

(1) The weighted water consumption (W_t) of a household washing machine or the washing cycle of a household washer-dryer is calculated in litres and rounded to the nearest integer:

$$W_t = (A \times W_{t,full} + B \times W_{t,1/2} + C \times W_{t,1/4})$$

where:

$W_{t,full}$ is the water consumption of the '40-60 eco' programme at rated washing capacity, in litres and rounded to one decimal place;

$W_{t,½}$ is the water consumption of the '40-60 eco' programme at half of the rated washing capacity, in litres and rounded to one decimal place;

$W_{t,1/4}$ is the water consumption of the '40-60 eco' programme at a quarter of the rated washing capacity, in litres and rounded to one decimal place;

A, B and C are the weighting loading factors as described in point (1)A.(c)

(2) The weighted water consumption (W_t) of the 'wash and dry' programme of a household washer-dryer is calculated as follows and rounded to the nearest integer:

$$W_t = \frac{[3\ x\ W_{t,full} + 2\ x\ W_{t,\frac{1}{2}load}]}{5}$$

where:

$W_{t,full}$ is the water consumption of the 'wash and dry' programme of a household washer-dryer, in litres and rounded to one decimal place;

$W_{t,½\ load}$ is the water consumption of the 'wash and dry' programme of a household washer-dryer, in litres and rounded to one decimal place.

4. CALCULATION OF THE REMAINING MOISTURE CONTENT

The weighted remaining moisture content (D) of a household washing machine and the washing cycle of a household washer-dryer is calculated in percentage as follows and rounded to the nearest whole percent:

$$D = \left[A\ x\ D_{t,full} + B\ x\ D_{t,\frac{1}{2}load} + C\ x\ D_{t,\frac{1}{4}load}\right]$$

where:

$D_{t,full}$ is the residual moisture content for the '40-60 eco' programme at rated washing capacity, in percentage and rounded to the nearest whole per cent;

$D_{t,1/2load}$ is the energy consumption of the '40-60 eco' programme at half of the rated washing capacity in percentage and rounded to the nearest whole per cent;

$D_{t,1/4load}$ is the energy consumption of the '40-60 eco' programme at a quarter of the rated washing capacity in percentage and rounded to the nearest whole per cent;

A, B and C are the weighting loading factors as described in point (1)A.(c)

ANNEX IV
Verification procedure for market surveillance purposes

1. Verification of ecodesign specific parameters

The verification tolerances defined in this Annex relate only to the verification of the declared 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 3.

(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 washing machine or household washer-dryer 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 3.

(6) If the result referred to in point (5) is not achieved, the model and all models that have been listed as equivalent household washing machine or household washer-dryer 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 III.

The Member State authorities shall only apply the verification tolerances that are set out in Table 3 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 - Verification tolerances

Parameter	**Verification tolerances**
Weighted energy consumption (E_t)	The determined value shall not exceed the declared value of E_t by more than 10 %. Where three additional units are selected, the arithmetic mean of the determined values of these three units shall not exceed the declared value of Et by more than 10 %.
Weighted water consumption (W_t)	The determined values shall not exceed the declared values of W_t by more than 10 %.
Washing efficiency index (I_W)	The determined value shall not be less than the declared value of I_W by more than 4 %.
Rinsing efficiency (I_R)	The determined value shall not be greater than the declared value of I_W by more than 2.0 mg/g.
Duration of the programme	The determined value of the programme duration shall not exceed the declared value by more than 5% or by more than 10 minutes, whichever is smaller.
Temperature inside the laundry (T)	The determined value shall not be smaller than the declared values by more than 2K and it shall not exceed the declared value by more than 2K.
Remaining moisture content (D)	The measured value shall not be greater than the rated value of D by more than 10 %.
Power consumption in off mode (P_{off})	The determined value of power consumption P_{off} shall not exceed the declared value by more than 10%.
Power consumption in standby mode (P_{sm})	The determined value of power consumption P_{sm} shall not exceed the declared value by more than 10%.
Power consumption in network standby (P_{ns})	The determined value of power consumption P_{ns} shall not exceed the declared value by more than 10%.
Power consumption in delay start (P_{ds}) and duration	The determined value of power consumption P_{ds} shall not exceed the declared value by more than 10%. The programming interface shall not allow the user to program a delay start exceeding 24 hours.
Duration of the interaction mode (T_{im})	The determined value of duration T_{im} shall not exceed the declared value by more than 10%.

2. Verification of resource efficiency parameters

When verifying the compliance of a product model with one of the requirements referred to under Annex II point 8, the following procedure shall apply:

(1) ‘Availability of necessary spare parts’

The verification of compliance to this requirement shall be planned by the Market Surveillance Authority at one or more times chosen in the following period:

(a) More than two years after the first product of the model under verification is placed on the market; if this event is not known by the market surveillance authority, the date of declaration of conformity of the model can be used as the beginning of the two year period;

(b) Less than seven years after the last product of the model under verification is placed on the market; if this event is not known by the market surveillance authority, the date of declaration of conformity of the model can be used as the beginning of the seven year period.

The market surveillance authorities shall: (i) check that the list of necessary spare parts and the procedure for ordering them are publicly available and check that the list of necessary spare parts cover the items listed in point (1); (ii) select one or more of the items in the list of point (1) and order the said item(s) from the manufacturer or importer, following the relevant procedure; (iii) check that the part delivered corresponds to the order. In the event that the items delivered do not correspond to the order, the order shall be repeated.

The manufacture or importer is considered as not fulfilling the Regulation’s requirement if the list of necessary spare parts or the procedure for ordering them are not publicly available, or if the necessary spare parts selected are not available for order or if the delivered items do not correspond to the order for two separate orders of the same parts.

(2) 'Necessary spare parts maximum delivery time'

Market surveillance authorities shall verify that the necessary spare parts ordered under the previous point (1) have been delivered within three weeks. The date of the order shall be the starting date of the three weeks period. In the event that the parts ordered are delivered correctly but not within the three weeks period, the market surveillance authority shall repeat the verification with another sample of necessary spare parts.

A manufacturer or importer is considered as not fulfilling the Regulation's requirements if, for the same product, three discrete orders of necessary spare parts do not meet the three weeks maximum delivery time without acceptable justification or an event of force majeure.

(3) 'Access to Repair and Maintenance Information'

Market surveillance authorities shall check that the access to repair and maintenance information is provided and includes the information requested. The market surveillance authorities may organise a blind test with a professional repairer meeting the conditions listed under point (3) to verify that the information is accessible to professional repairers in non-discriminatory conditions.

A manufacturer or importer is considered as not fulfilling the Regulation's requirement if the access to information is denied, or if the conditions of access are considered discriminatory or if the information provided does not correspond to the information listed under point (3) or to the sub-set of information requested by the repairer on this list.

(4) 'Information requirements for refrigeration gases'

Market surveillance authorities shall access the relevant parts of the appliance (heat pump) and check that the chemical name, or an equivalent reference, of the principal component of the refrigerant gas is visibly and legibly marked on the exterior of the appliance. The market surveillance authorities shall ask the manufacturer to show evidence, for example through the documentation of chemicals used in production, that the name or reference corresponds to the refrigerant gas used for this model. A reference, other than the scientific name of the chemical, is considered equivalent if it is commonly used and understandable by recyclers in the Member State concerned. More than one reference can be used for the same chemical if the manufacturer considers it useful.

A manufacturer or importer is considered as not fulfilling the Regulation's requirement if no marking is found, or if (at least one of) the reference(s) used is not considered understandable or if there is no evidence that the refrigerant used corresponds to the name or reference marked. Where the refrigerant gas is covered by Regulation (EU) No 517/2014, the verification procedure implemented by the Member State in implementation of that Regulation replaces the procedure above.

(5) 'Requirements for disassembly for the purpose of repair and for material recovery and recycling while avoiding pollution'

Market surveillance authorities shall disassemble with commonly available tools the components listed under point (5) when present in the appliance, or a selection of them, following the manufacturer's instructions and check that the type and the number of fastening techniques(s) to be unlocked and the tool(s) required correspond to the document provided.

A manufacturer or importer is considered as not fulfilling the Regulation's requirements if the documentation required is not available or if the operation requires a tool which is not common or not readily available for purchase, or if the type or number of fastening techniques differs significantly from the type documented.

If the compliance of a manufacturer or importer with the requirements above is considered as unsatisfactory, the market surveillance authority shall take appropriate measures to ensure compliance. The manufacturer shall then take subsequent corrective actions, amendments and/or supplements as requested by the market surveillance authorities and provide proof of compliance within a period of 1 month.

ANNEX V
Benchmarks

1. INDICATIVE BENCHMARKS FOR HOUSEHOLD WASHING MACHINES ON WATER AND ENERGY CONSUMPTION, WASHING EFFICIENCY AND AIRBORNE ACOUSTICAL NOISE EMISSIONS

At the time of entry into force of this Regulation, the best available technology on the market for household washing machines, in terms of their water and energy consumptions, washing efficiency and airborne acoustical noise emissions during washing/spinning for the standard 60 °C cotton programme at full and partial load and for the standard 40 °C cotton programme at partial load, is identified as follows[1]:

(1) Household washing machine with a rated capacity of 5 kg:

(a) energy consumption: 0.56 kWh/cycle (or 0.11 kWh/kg) corresponding to an overall annual consumption of 82 kWh/year;

(b) water consumption: 40 litres/cycle, corresponding to 8800 litres/year for 220 cycles;

(c) washing efficiency index of $1.03 \geq I_w > 1.00$;

(d) airborne acoustical emissions during washing/spinning: 58/82 dB(A).

(2) Household washing machine with a rated capacity of 6 kg:

(a) energy consumption: 0.55 kWh/cycle (or 0.092 kWh/kg) corresponding to an overall annual consumption of 122 kWh/year;

(b) water consumption: 40.45 litres/cycle, corresponding to 8900 litres/year for 220 cycles;

(c) washing efficiency index of $1.03 \geq I_w > 1.00$;

(d) airborne acoustical emissions during washing/spinning: 47/77 dB(A).

(3) Household washing machine with a rated capacity of 7 kg:

(a) energy consumption: 0.6 kWh/cycle (or 0.15 kWh/kg) corresponding to an overall annual consumption of 124 kWh/year;

(b) water consumption: 39 litres/cycle, corresponding to 8500 litres/year for 220 cycles;

(c) washing efficiency index of $1.03 \geq I_w > 1.00$;

(d) airborne acoustical emissions during washing/spinning: 52/73 dB(A).

(4) Household washing machine with a rated capacity of 8 kg (when equipped with a heat pump):

(a) energy consumption: 0.52 kWh/cycle (or 0.065 kWh/kg) corresponding to an overall annual consumption of 98 kWh/year;

[1] For evaluation of the water and energy consumptions and washing efficiency, the calculation methods set out in Annex II of Regulation 1015/2010 with regard to ecodesign requirements for household washing-machines was used; for airborne acoustical noise emissions during washing/spinning, the standard measurement according to EN 60704 was used.

(b) water consumption: 44.55 litres/cycle, corresponding to 9800 litres/year for 220 cycles;

(c) washing efficiency index of $1.03 \geq I_w > 1.00$;

(d) airborne acoustical emissions during washing/spinning: --/-- dB(A).

(5) Household washing machine with a rated capacity of 8 kg (when not equipped with heat pump technology):

(a) energy consumption: 0.54 kWh/cycle (or 0.067 kWh/kg) corresponding to an overall annual consumption of 116 kWh/year;

(b) water consumption: 36,82 litres/cycle, corresponding to 8100 litres/year for 220 cycles;

(c) washing efficiency index of $1.03 \geq I_w > 1.00$;

(d) airborne acoustic emissions during washing/spinning: --/-- dB(A).

(6) Household washing machine with a rated capacity of 9 kg:

(a) energy consumption: 0.35 kWh/cycle (or 0.038 kWh/kg) corresponding to an overall annual consumption of 76 kWh/year;

(b) water consumption: 47.72 litres/cycle, corresponding to 10499 litres/year for 220 cycles;

(c) washing efficiency index of $1.03 \geq I_w > 1.00$;

(d) airborne acoustic emissions during washing/spinning: --/-- dB(A).

2. INDICATIVE BENCHMARKS FOR HOUSEHOLD WASHER-DRYERS ON WATER AND ENERGY CONSUMPTION, WASHING EFFICIENCY AND AIRBORNE ACOUSTICAL NOISE EMISSIONS

At the time of entry into force of this Regulation, the best available technology on the market for household washer-dryers, in terms of their water and energy consumptions, washing efficiency and airborne acoustical noise emissions during washing/spinning/drying for the standard 60 °C cotton washing cycle at full capacity and the 'dry cotton' drying cycle, is identified as follows[2]:

(1) Household washer dryer with a washing rated capacity of 6 kg:

(a) energy consumption of a complete cycle (washing, spinning and drying) at full load and at standard 60°C cotton programme: 3.64 kWh/cycle corresponding to an overall annual consumption of 800.8 kWh/year;

(b) energy consumption of a washing cycle (washing and spinning only) at full load and at standard 60°C cotton programme: 0.77 kWh/cycle corresponding to an overall annual consumption of 169.4 kWh/year;

(c) water consumption of a complete cycle (washing, spinning and drying) at full load and at standard 60°C cotton programme: 78 litres/cycle, corresponding to 17 160 litres/year for 220 cycles;

[2] For evaluation of the water and energy consumptions and washing performance, the calculation methods set out in Directive 96/60/EC with regard to energy labelling of washer-driers was used; for airborne acoustical noise emissions during washing/spinning/drying, the standard measurement according to EN 60704 was used

(d) washing efficiency index of $1.03 \geq I_w > 1.00$;

(e) airborne acoustic emissions during washing/spinning/drying : 51/77/66 dB(A)

(2) Household washer dryer with a washing rated capacity of 7 kg:

(a) energy consumption of a complete cycle (washing, spinning and drying) at full load and at standard 60°C cotton programme: 4.76 kWh/cycle corresponding to an overall annual consumption of 1047 kWh/year;

(b) energy consumption of a washing cycle (washing and spinning only) at full load and at standard 60°C cotton programme: 0.8 kWh/cycle corresponding to an overall annual consumption of 176 kWh/year;

(c) water consumption of a complete cycle (washing, spinning and drying) at full load and at standard 60°C cotton programme: 72 litres/cycle, corresponding to 15840 litres/year for 220 cycles;

(d) washing efficiency index of $1.03 \geq I_w > 1.00$;

(e) airborne acoustic emissions during washing/spinning/drying: 47/73/58 dB(A)

(3) Household washer dryer with a washing rated capacity of 8 kg:

(a) energy consumption of a complete cycle (washing, spinning and drying) at full load and at standard 60°C cotton programme: 3.8 kWh/cycle corresponding to an overall annual consumption of 836 kWh/year;

(b) energy consumption of a washing cycle (washing and spinning only) at full load and at standard 60°C cotton programme: 1.04 kWh/cycle corresponding to an overall annual consumption of 229 kWh/year;

(c) water consumption of a complete cycle (washing, spinning and drying) at full load and at standard 60°C cotton programme: 70 litres/cycle, corresponding to 15 400 litres/year for 220 cycles;

(d) washing efficiency index of $1.03 \geq I_w > 1.00$;

(e) airborne acoustic emissions during washing/spinning/drying: 49/73/66 dB(A)

(4) Household washer dryer with a washing rated capacity of 9 kg:

(a) energy consumption of a complete cycle (washing, spinning and drying) at full load and at standard 60°C cotton programme: 3.67 kWh/cycle corresponding to an overall annual consumption of 807 kWh/year;

(b) energy consumption of a washing cycle (washing and spinning only) at full load and at standard 60°C cotton programme: 1.09 kWh/cycle corresponding to an overall annual consumption of 240 kWh/year;

(c) water consumption of a complete cycle (washing, spinning and drying) at full load and at standard 60°C cotton programme: 69 litres/cycle, corresponding to 15180 litres/year for 220 cycles;

(d) washing efficiency index of $1.03 \geq I_w > 1.00$;

(e) airborne acoustic emissions during washing/spinning/drying: 49/75/66 dB(A)

3. INDICATIVE BENCHMARKS FOR HOUSEHOLD WASHING MACHINES AND HOUSEHOLD WASHER-DRYERS 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 necessary for the use of the household washing machines and household washer-dryers are between 7 and 10 days. The longest availability of spare parts necessary for the use of the washing machines and household washer-dryers is around 11 years.

ANNEX VI

Multi-drum household washing machines

The provisions of Article 3 of this Regulation are applicable to each of the drums with a rated capacity equal to or larger than 4 kg in multi-drum household washing machines. The provisions of Article 3 also apply to any drum (in multi-drum household washing machines) with a rated capacity equal to or larger than 3 kg if this drum provides a programme proposed for normally soiled cotton laundry or any programme with a nominal temperature above 30 °C.

The provisions of Article 3 are applicable to each of the drums independently, except when the drums are built in the same casing and can only operate simultaneously in all programmes, in which case the provisions of Article 3 are applicable to the multi-drum household washing machine as a whole, as follows:

(a) the energy and water consumption of the overall household washing machine is the total of the energy, respectively water consumption, of each drum (summing up rated capacity and considering overall energy);

(b) the Energy Efficiency Index (EEI) is calculated considering the overall rated capacity and energy consumption;

(c) the low power modes and noise declarations apply to the whole washing machine;

(d) the residual moisture content is calculated as the weighted average, according to each drum load capacity;

(e) each drum shall comply individually and separately with the minimum washing efficiency and the minimum rinsing efficiency requirements.

ANNEX VII

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

1. Household appliances

Dishwashers

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