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ANNEXES 1 to 6

ANNEXES

to the

COMMISSION REGULATION

laying down ecodesign requirements for household washing machines and household washer-dryers pursuant to Directive 2009/125/EC of the European Parliament and of the Council, amending Commission Regulation (EC) No 1275/2008

and repealing Commission Regulation (EU) No 1015/2010

ANNEX I

Definitions applicable for the annexes

For the purpose of the annexes, the following definitions shall apply:

(1) ‘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;

(2) ‘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;

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

(4) ‘complete cycle’ means a washing and drying process, consisting of a washing and a drying cycle;

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

(6) ‘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 washing cycle of a household washing machine, or in one complete cycle of a household washer-drier respectively, on the selected programme;

(7) ‘rated washing 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 washed in one washing cycle of a household washing machine, or in one washing cycle of a household washer-dryer respectively, on the selected programme;

(8) ‘rated drying 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 dried in one drying cycle of a household washer-dryer on the selected programme;

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

(10) ‘final moisture content’ means for household washer-dryers the amount of moisture contained in the load at the end of the drying phase;

(11) ‘programme duration’ means the length of time beginning with the initiation of the programme selected, excluding any user programmed delay, until an end of programme indicator is activated and the user has access to the load;

(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 2014/30/EU of the European Parliament and of the Council[1];

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

(a) reactivation function, possibly through network connection, or reactivation function and only an indication of enabled reaction function, and/or

(b) information or status display, and/or

(c) detection function for emergency measures;

(14) 'wrinkle guard function' means an operation of the machine after completion of a programme to prevent excessive wrinkle building of the laundry;

(15) 'delay start' means a condition where the user has selected a specified delay to the beginning of the cycle of the selected programme;

(16) 'spare part' means a separate part that can replace a part with the same or similar function in an appliance;

(17) 'necessary spare part' means a spare part necessary for the use of the appliance that cannot function as intended without that part;

(18) 'professional repairer' means an operator or undertaking which provides services of repair and maintenance of household washing machines or of household washer-dryers.

[1] Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (OJ L 96, 29.3.2014, p. 79).

ANNEX II

Ecodesign requirements

1. ECO 40-60 PROGRAMME

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

(a) a washing cycle called ‘eco 40-60’, which is able to clean normally soiled cotton laundry declared to be washable at 40°C or 60°C, together in the same cycle;

(b) a washing cycle at 20°C.

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.

(2) The ‘eco 40-60’ programme shall be named 'eco 40-60' on the programme selection, on the display and through the network connection, depending on the functionalities provided by the equipment.

The name ‘eco 40-60’ shall be used exclusively for this programme. The formatting of ‘eco 40-60’ is not restricted in terms of font, font size, case sensitivity, colour or accentuations.

The indications ‘normal’, ‘daily’, ‘regular’ and ‘standard’, and their translations in all EU official languages, shall not be used on the household washing machine, neither alone nor in combination with other information.

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

2. WASH AND DRY CYCLE

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

– which is continuous if the household washer-dryer provides continuous complete cycles;

– where the washing cycle is a ‘eco 40-60’ programme as defined in point 1, and

– where the drying cycle achieves the ‘cupboard dry’ status, i.e. the laundry shall be dried to a final moisture content of 0 %.

(2) The ‘wash and dry’ cycle 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 rated capacity of the ‘wash and dry’ cycle 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’ cycle shall be the lowest value between the maximum capacity of the ‘eco 40-60’ 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), 4(4) and 6(2), the 'wash and dry' cycle shall be used.

3. ENERGY EFFICIENCY REQUIREMENTS

(1) The Energy Efficiency Index (EEI) for household washing machines and the washing cycle of household washer-dryers shall be lower than 105.

(2) The Energy Efficiency Index (C) for the wash and dry cycle of household washer-dryers shall be lower than 105.

(3) The EEI for household washing machines and the washing cycle of household washer-dryers shall be lower than 91.

(4) The C for the wash and dry cycle of household washer-dryers shall be lower than 88.

The EEI and C shall be calculated in accordance with Annex III.

4. FUNCTIONAL REQUIREMENTS

(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 'eco 40-60' programme shall be greater than or equal to 1,03 for each of the following loading sizes: full rated capacity, half of the rated capacity and a quarter of the rated capacity.

(2) For household washer-dryers with a rated capacity higher than 3 kg, the Washing Efficiency Index (J_w) of the 'wash and dry' cycle shall be greater than or equal to 1,03 at full rated capacity and at half of the rated capacity.

(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 'eco 40-60' programme shall be smaller than or equal to 5,0 mg/g for each of the following loading sizes: full rated capacity, half of the rated capacity and a quarter of the rated capacity.

(4) For household washer-dryers with a rated capacity higher than 3 kg, the Rinsing Efficiency (J_R) of the 'wash and dry' cycle shall be smaller than or equal to 5,0 mg/g at full rated capacity and at half of the rated capacity.

The I_w, J_w, I_R and J_R shall be calculated in accordance with Annex III.

5. REQUIREMENT ON DURATION

The duration of the 'eco 40-60' programme (t_w) 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 at rated capacity, the time limit is given by the following equation:

$$t_{cap}(in\,\text{min}) = 137 + c * 10{,}2$$

(2) For loadings at half rated capacity and a quarter of the rated capacity, the time limit is given by the following equation:

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

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

The ‘eco 40-60’ programme shall not be followed by any activity altering the performance of the household washing machine or the household washer-dryer for any of the parameters related to the requirements set out in points 3 and 4, during 15 minutes after the end of the programme.

6. WEIGHTED WATER CONSUMPTION REQUIREMENT

(1) For household washing machines and the washing process of household washer-dryers, the weighted water consumption (Wt, in litres/cycle) for the ‘eco 40-60’ programme 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 ‘eco 40-60’ programme.

(2) For household washer-dryers, the weighted water consumption (W_d, litres/cycle) for the ‘wash and dry’ cycle shall be:

$$W_d \leq 10 \times d + 30$$

where d is the rated capacity of the household washer-dryer for the ‘wash and dry’ cycle.

The Wt and W_d shall be calculated in accordance with Annex III.

7. LOW POWER MODES

(1) 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 0,50 W.

(2) If the stand-by mode includes the display of information or status, the power consumption of this mode shall not exceed 1,00 W.

(3) If the stand-by mode provides for network connectivity and the network connection is in the condition of networked standby as defined in Commission Regulation (EU) No 801/2013[2], the power consumption of this mode shall not exceed 2,00 W.

(4) After the equipment has been switched on or after the end of any programme and associated activities or after interruption of the wrinkle guard function, if no other mode is triggered and there is no interaction with the equipment for 15 minutes, the equipment shall switch automatically to off-mode or standby mode.

(5) If the equipment provides for a delay start, the power consumption of this condition, including any standby mode, shall not exceed 6,00 W. The user shall not be able to programme a delay start for more than 24h.

(6) During measurements of energy consumption in low power modes, the display or not of information and the activation or not of network connection shall be checked and recorded. If the equipment provides for wrinkle guard function, this operation shall be interrupted by opening the equipment door or any other appropriate intervention

[2] Commission Regulation (EU) No 801/2013 of 22 August 2013 amending Regulation (EC) No 1275/2008 with regard to ecodesign requirements for standby, off mode electric power consumption of electrical and electronic household and office equipment, and amending Regulation (EC) No 642/2009 with regard to ecodesign requirements for televisions (OJ L 225, 23.8.2013)

15 minutes before the measurement. When assessing the delay start, it shall be checked that the user is not able to program a delay start exceeding 24 hours.

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

8. RESOURCE EFFICIENCY REQUIREMENTS

(1) Availability of necessary spare parts

Manufacturers or importers of household washing machines and household washer-dryers shall make available necessary spare parts to professional repairers, in the same conditions described for repair and maintenance information in point (3)(a), 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 (separately or bundled)
- heaters and heating elements (separately or bundled)
- door hinge and seal (separately or bundled)
- 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 to professional repairers within 15 working days after having received the order.

(3) Access to Repair and Maintenance Information

After a period of 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 mentioned under (1), the manufacturer or importer shall provide access to the appliance repair and maintenance information to professional repairers in the following conditions:

(a) the manufacturer's website, or an equivalent means of information, shall indicate the process for professional repairers to register for access to information; to accept such a request, manufacturers or importers may require the professional repairer to demonstrate that

(i) the professional repairer complies with the applicable regulations for repairers of electrical equipment in the Member States where it operates. Reference to an official registration system as professional repairer, where such system exists in the Member States concerned, shall be accepted as proof;

(ii) the professional repairer is covered by relevant insurance, covering liabilities resulting from its activity.

(b) Once registered, a professional repairer shall have access, within 24 hours after requesting it, to the requested repair and maintenance information for any product model of the manufacturer in the scope of this Regulation. The information may be provided for an equivalent model or model of the same family, if relevant.

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

- an unequivocal appliance identification;
- a disassembly map or 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, where applicable); and
- data records of reported failure incidents stored on the dishwasher (where applicable).

(d) Manufacturers or importers may charge reasonable and proportionate fees for access to the repair and maintenance information or for receiving regular updates. A fee is reasonable if it does not discourage access by failing to take into account the extent to which the professional repairer 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 of the European Parliament and of the Council[3], the requirements of that regulation apply.

(5) Requirements for dismantling for material recovery and recycling while avoiding pollution.

Manufacturers shall ensure that household washing machines and household washer-dryers are designed in such a way that the materials and components referred to in

[3] Regulation (EU) No 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006 (OJ L 150, 20.5.2014, p. 195–230)

Annex VII to Directive 2012/19/EU can be removed without the use of any tool which is not readily available for purchase.

Manufacturers shall provide information free of charge about preparation for re-use and treatment of household washing machines and household washer-dryers to preparation for re-use facilities and to treatment and recycling facilities, as provided in Point 1 or Article 15 of Directive 2012/19/EU.

9. INFORMATION REQUIREMENTS

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 'eco 40-60' 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 used to assess the compliance with the EU Ecodesign legislation and to determine the energy class on the label. The most efficient programmes in terms of energy and water consumption are generally those that perform at lower temperatures and longer duration;

(b) for household washer-dryers: information that the 'wash and dry' cycle is able to clean normally soiled cotton laundry declared to be washable at 40°C or 60°C, together in the same cycle, and to dry it in such a way that it can be immediately stored in a cupboard, and that this programme is used to assess the compliance with the EU Ecodesign legislation and to determine the energy class on the label;

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

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

(2) indicative values for the following parameters:

(a) rated capacity in kg;

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

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

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

(e) maximum temperature reached for minimum 5 minutes inside the laundry, expressed in degrees Centigrade; and

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

for each of the following programmes (at least):

(a) 'eco 40-60' programme at full rated capacity, half of the rated capacity and a quarter of the rated capacity;

(b) one programme at 20°C at the maximum load for this programme;

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

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

(e) one programme for the quick washing of lightly soiled laundry (if present) at the maximum load for this programme;

(f) one programme for heavily soiled textiles (if present) at the maximum load for this programme;

(g) for household washer-dryers: the 'wash and dry' cycle at full rated capacity and at half of the rated capacity; and

the information that the values given for programmes other than the 'eco 40-60' programme and the 'wash and dry' cycle are indicative only and are not verified for compliance to this Regulation.

(3) user instructions shall also include instructions for the user to perform maintenance operations and information related to 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 use 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) any implications of self-repair or non-professional repair for the safety of the end-user and 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

The technical documentation for the purpose 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 Regulation (EU) *[OP- please insert here the number of the accompanying 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 by any of the following methods, or both:

– from a model that has the same technical characteristics relevant for the technical information to be provided but is produced by a different manufacturer;

– by calculation on the basis of design or extrapolation from another model of the same or a different manufacturer,

the technical documentation shall include the details of such calculation, the assessment undertaken by the manufacturer 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 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

1.1. Energy Efficiency Index (EEI) of household washing machines and the washing cycle of household washer-dryers

For the calculation of the EEI, the weighted energy consumption of the 'eco 40-60' programme at full, half and quarter loads is compared to its standard cycle energy consumption.

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

$$EEI = (E_t / SCE_C) \times 100$$

where:

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

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

(b) The SCE_C is calculated in kWh per cycle and rounded to three decimal places as follows:

$$SCE_C = -0{,}0025 \times c^2 + 0{,}0846 \times c + 0{,}3920$$

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

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

$$E_t = A \times E_{t,full} + B \times E_{t,\frac{1}{2}} + C \times E_{t,\frac{1}{4}}$$

where:

$E_{t,full}$ is the energy consumption of the eco 40-60 programme at full rated washing capacity and rounded to three decimal places;

$E_{t,½}$ is the energy consumption of the eco 40-60 programme at half of the rated washing capacity and rounded to three decimal places;

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

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

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

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

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

$$A = -0{,}0391\ x\ c + 0{,}6918$$

$$B = -0{,}0109 x\ c + 0{,}3582$$

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

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

1.2. 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 cycle energy consumption.

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

$C = (E_d / S_C) \times 100$

where:

E_d is the weighted cycle energy consumption of the household washer-dryer;

S_C is the standard cycle energy consumption of the household washer-dryer.

(b) The S_C is calculated in kWh per cycle and rounded to three decimal places as follows:

$S_C = -0{,}0502 \times d^2 + 1{,}1742 \times d - 0{,}644$

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

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

$$E_d = \frac{[3\ x\ E_{d,full}\ +\ 2\ x\ E_{d,\frac{1}{2}}]}{5}$$

where:

$E_{d,full}$ is the energy consumption of the 'wash and dry' programme at full rated capacity and rounded to three decimal places;

$E_{d,½}$ is the energy consumption of the 'wash and dry' programme at half of the rated capacity and rounded to three decimal places.

2. WASHING EFFICIENCY INDEX

The washing efficiency index of household washing machines and of the washing cycle of household washer-dryers (Iw) and the washing efficiency index of the complete cycle of household washer-dryers (Jw) 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 methods, which takes into account the generally recognised state-of-the-art, and rounded at two decimals.

3. RINSING EFFICIENCY

The rinsing efficiency of household washing machines and of the washing cycle of household washer-dryers (I_R) and the rinsing efficiency of the complete cycle of household washer-dryers (J_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, and rounded at one decimal.

4. 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 'eco 40-60' programme at full rated washing capacity, in litres and rounded to one decimal place;

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

A, B and C are the weighting factors as described in point 1.1.(c).

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

$$W_d = \frac{[3\ x\ W_{d,full} + \ 2\ x\ W_{d,\frac{1}{2}}]}{5}$$

where:

$W_{d,full}$ is the water consumption of the 'wash and dry' cycle of a household washer-dryer at full rated capacity, in litres and rounded to one decimal place;

$W_{d,½}$ is the water consumption of the 'wash and dry' cycle of a household washer-dryer at half of the rated capacity, in litres and rounded to one decimal place.

5. REMAINING MOISTURE CONTENT

The weighted remaining moisture content after washing (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:

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

where:

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

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

$D_{t,1/4}$ is the energy consumption of the 'eco 40-60' 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 factors as described in point 1.1.(c).

6. FINAL MOISTURE CONTENT

For the drying cycle of a household washer-dryer, the ‘cupboard dry’ status corresponds to 0% final moisture content, which is the thermodynamic equilibrium of the load with the ambient air conditions of temperature (tested at 20 ± 2 °C) and relative humidity (tested at 65 ± 5 %).

The final moisture content is calculated in accordance with the harmonized standards the reference of which have been published for this purpose in the Official Journal of the European Union and rounded to one decimal place.

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

Table 1 - Verification tolerances

Parameter	**Verification tolerances**
Weighted energy consumption (E_t and E_d)	The determined value* shall not exceed the declared value of E_t, respectively E_d, by more than 10 %.
Weighted water consumption (W_t and W_d)	The determined value* shall not exceed the declared values of W_t, respectively W_d, by more than 10 %.
Washing efficiency index (I_W and J_W)	The determined value* shall not be less than the declared value of I_W, respectively J_w, by more than 8 %.
Rinsing efficiency (I_R and J_R)	The determined value* shall not exceed the declared value of I_R, respectively J_R, by more than 1,0 mg/g.
Duration of the eco 40-60 programme (t_w)	The determined value* of the programme duration shall not exceed the declared value of t_w by more than 5 % or by more than 10 minutes, whichever is smaller.
Duration of the wash and dry cycle (t_d)	The determined value of the cycle duration shall not exceed the declared value of t_d by more than 5 %.
Temperature inside the laundry (T)	The determined value shall not be less than the declared values by more than 5 K and it shall not exceed the declared value by more than 5 K.
Remaining moisture content after washing (D)	The determined value* shall not exceed the declared value of D by more than 20 %.
Final moisture content after drying	The determined value* shall not exceed 3,0 %.
Power consumption in off mode (P_o)	The determined value* of power consumption P_o shall not exceed the declared value by more than 0,10 W.
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 % if the declared value is higher than 1,00 W, by more than 0,10 W if the declared value is lower than or equal to 1,00 W.
Power consumption in delay start (P_{ds})	The determined value* of power consumption P_{ds} shall not exceed the declared value by more than 10 % if the declared value is higher than 1,00 W, by more than 0,10 W if the declared value is lower than or equal to 1,00 W.

* In the case of three additional units tested as prescribed in point 4, the determined value means the arithmetic average of the values determined for these three additional units.

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 Member States authorities 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;

(b) Less than seven years after the last product of the model under verification is placed on the market.

The Member States 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 or to a satisfactory alternative. In the event that the items delivered do not correspond to the order or to a satisfactory alternative, 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'

Member States authorities shall verify that the necessary spare parts ordered under the previous point (1) have been delivered within 15 working days. The date of the order shall be the starting date of the 15 working days period. In the event that the parts ordered are delivered correctly but not within the 15 working days period, the Member States authorities 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 15 working days maximum delivery time without acceptable justification or an event of force majeure.

(3) 'Access to Repair and Maintenance Information'

Member States authorities shall check that the access to repair and maintenance information is provided and includes the information requested. The Member States 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’

Member States 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 Member States 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.

If the compliance of a manufacturer or importer with the requirements above is considered as unsatisfactory by the Member States authorities, the Member States authorities shall take appropriate measures to ensure compliance. The manufacturer shall then take corrective actions, amendments and/or supplements and provide proof of compliance as requested by the Member States authorities.

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[4]:

(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 8 800 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 8 900 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 8 500 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;

(b) water consumption: 44,55 litres/cycle, corresponding to 9 800 litres/year for 220 cycles;

(c) washing efficiency index of $1,03 \geq I_w > 1,00$;

[4] 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.

(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 8 100 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 10 499 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[5]:

(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;

(d) washing efficiency index of $1{,}03 \geq J_w > 1{,}00$;

(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:

[5] 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

(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 1 047 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 15 840 litres/year for 220 cycles;

(d) washing efficiency index of $1{,}03 \geq J_w > 1{,}00$;

(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 $1{,}03 \geq J_w > 1{,}00$;

(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 15 180 litres/year for 220 cycles;

(d) washing efficiency index of $1{,}03 \geq J_w > 1{,}00$;

(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

For multi-drum household washing machines, the provisions of Annex II to this Regulation shall apply to any drum with a rated capacity equal to or higher than 3 kg, following the measurement and calculation methods set out in Annex III, with the exception of drums with a rated capacity smaller than 4 kg and proposing no programme for normally soiled cotton laundry and no programme with a nominal temperature above 30 °C.

Where applicable as per the previous paragraph, the provisions of Annex II shall apply 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 Annex II shall apply 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 after washing 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.