Technical Regulation Laying Down Minimum Energy Performance (Ecodesign) Requirements for Household Washing Machines and Household Washer-Dryers in Lebanon. (November 2023)

Notes

This Notes section shall be removed prior to the promulgation of this Technical Regulation!

"Ecodesign" is a general term covering different aspects of environmental design (energy, water, etc.) addressed by the framework regulations and the specific implementing technical regulations. It is therefore preferable to use this term (Ecodesign) in order to ensure consistency between all regulations on energy-related products.

The Regulation establishing a **framework** for the setting of Minimum Energy Performance (Ecodesign) Requirements for Energy-related Products is presented in the **Overarching Policy** Document (Annex 1). It will be promulgated before or at the same time as this Technical Regulation, as it is a Regulatory Framework on which this Technical Regulation is based.

In order for this Technical Regulation to be effective, the competent authority shall confirm or amend the following key information on the document:

- The proposed date of entry into force in Article 8,
- The proposed energy performance requirements in Annex 2.

Background

This document is a technical regulation establishing minimum energy performance (Ecodesign) requirements for Household Washing Machines and Household Washer-dryers in Lebanon. Considering the extensive experience with MEPS and energy labels implementation in the European Union, and its influence on the Lebanese market, this technical regulatory document is based on the Commission Regulation (EU) 2019/2013 of 1 October 2019.

Article 1 – Purpose and Scope

1.1 This Technical Regulation establishes Ecodesign requirements for the placing on the market or the putting into service of electric mains-operated household washing machines and household washer-dryers, including built-in household washing machines and household washer-dryers and electric mains-operated household washing machines and household washer-dryers that can also be powered by batteries.

1.2 This Technical Regulation shall not apply to:

a) washing machines and washer-dryers which are classified as professional appliances; and
b) battery-operated household washing machines and household washer-dryers that can be connected to the mains through an AC/DC converter purchased separately.

1.3 The requirements in points 1 to 6, 9(1)(a) and (c), and 9(2)(i) and (vii) of Annex 2 shall not apply to:

a) household washing machines with a rated capacity lower than 2 kg ; and
b) household washer-dryers with a rated washing capacity lower than 2 kg.

Article 2 – Legal Basis

This Technical Regulation is based on the Regulation establishing a framework for the setting of Minimum Energy Performance (Ecodesign) requirements for Energy related Products (ErPs).

Article 3 – Definitions

The following definitions shall apply for the purpose of this Technical Regulation:

(3.1) '*mains'* or '*electric mains*' means the electricity supply from the grid of 230 (± 10 %) volts of alternating current at 50 Hz;

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

(3.3) '*household washing machine*' means an automatic washing machine which cleans and rinses household laundry by using water, chemical, mechanical and thermal means, which also has a spin extraction function;

(3.4) '*household washer-dryer*' means a household washing machine which, in addition to the functions of an automatic washing machine, in the same drum includes a means for drying the textiles by heating and tumbling;

(3.5) '*built-in household washing machine*' means a household washing machine that is designed, tested and marketed exclusively:
- (a) to be installed in cabinetry or encased (top and/or bottom, and sides) by panels;
- (b) to be securely fastened to the sides, top or floor of the cabinetry or panels; and
- (c) to be equipped with an integral factory-finished face or to be fitted with a custom front panel;

(3.6) '*built-in household washer-dryer*' means a household washer-dryer that is designed, tested and marketed exclusively:
- (a) to be installed in cabinetry or encased (top and/or bottom, and sides) by panels;
- (b) to be securely fastened to the sides, top or floor of the cabinetry or panels; and
- (c) to be equipped with an integral factory-finished face or to be fitted with a custom front panel;

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

(3.8) '*multi-drum household washer-dryer*' means a household washer-dryer equipped with more than one drum, whether in separate units or in the same casing;

(3.9) '*equivalent model*' means a model which has the same technical characteristics relevant for the technical information to be provided, but which is placed on the market or put into service by the same manufacturer, importer or authorised representative as another model with a different model identifier;

(3.10) '*model identifier*' means the code, usually alphanumeric, which distinguishes a specific product model from other models with the same trademark or the same manufacturer's, importer's or authorised representative's name;

(3.11) '*product database*' means a collection of data concerning products, which is arranged in a systematic manner and consists of a consumer-oriented public part, where information concerning individual product parameters is accessible by electronic means, an online portal for accessibility and a compliance part, with clearly specified accessibility and security requirements, as laid down in the Regulation establishing a framework for the setting of energy labelling requirements for Energy related Products (ErPs);

(3.12) '*eco 40-60*' means the name of the programme declared by the manufacturer, importer or authorised representative as able to clean normally soiled cotton laundry declared to be washable at 40 °C or 60 °C, together in the same washing cycle, and to which the Ecodesign requirements on energy efficiency, washing efficiency, rinsing effectiveness, programme duration, maximum temperature inside the laundry and water consumption relate;

(3.13) '*programme*' means a series of operations that are pre-defined and which are declared by the manufacturer, importer or authorised representative as suitable for washing, drying or continuously washing and drying certain types of textile;

(3.14) '*washing cycle*' means a complete washing process as defined by a selected programme, consisting of a series of different operations including washing, rinsing, and spinning.

For the purpose of the annexes, additional definitions are set out in Annex 1.

Article 4 – Ecodesign Requirements

The Ecodesign requirements set out in Annex 2 and Annex 5 shall apply.

Article 5 – Conformity Assessment

5.1 For the purposes of the conformity assessment pursuant to Article 6 of Regulation establishing a framework for the setting of Minimum Energy Performance (Ecodesign) Requirements for Energy related Products, the technical documentation shall contain the declared values of parameters listed in points 3 to 7 of Annex 2 and the details and results of the calculations undertaken in accordance with Annex 3.

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

(a) from a model that has the same technical characteristics relevant for the technical information to be provided but is produced by 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 the manufacturer to verify the accuracy of the calculation and, where appropriate, the declaration of identity between the models of different manufacturers.

The technical documentation shall include a list of all equivalent models, including the model identifiers.

5.3 The technical documentation shall include the information in the order and as set out in Annex 6 of Technical Regulation laying down energy labelling requirements for household washing machines and household washer-dryers.

Article 6 - Verification Procedure for Market Surveillance Purposes

The market surveillance authority shall apply the verification procedure set out in Annex 4 when performing the market surveillance checks referred to in point 2 of Article 5 of Regulation establishing a framework for the setting of minimum energy performance (Ecodesign) requirements for Energy related Products (ErPs).

Article 7 – Circumvention and Software Updates

7.1 The manufacturer, importer or authorised representative shall not place on the market products designed to be able to detect they are being tested (for example by recognising the test conditions or test cycle) and to react specifically by automatically altering their performance during the test with the aim of reaching a more favourable level for any of the parameters in the technical documentation or included in any documentation provided.

7.2 The energy consumption of the product and any of the other declared parameters shall not deteriorate after a software or firmware update when measured with the same test standard originally used for the declaration of conformity, except with explicit consent of the end-user prior to the update. No performance change shall occur as a result of rejecting the update.

7.3 A software update shall never have the effect of changing the product's performance in a way that makes it non- compliant with the Ecodesign requirements applicable for the declaration of conformity.

Article 8 – Entry Into Force

This Technical Regulation shall enter into force on, 2 January 2025.

Annex 1: Definitions applicable for the annexes

The following definitions shall apply:

(1) '*Energy Efficiency Index*' (EEI) means the ratio of the weighted energy consumption to the standard cycle energy consumption;

(2) '*drying cycle*' means a complete drying process as defined by the required programme, consisting of a series of different operations including heating and tumbling;

(3) '*complete cycle*' means a washing and drying process, consisting of a washing cycle and a drying cycle;

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

(5) '*rated capacity*' means the maximum mass in kilogram stated by the manufacturer, importer or authorised representative 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-dryer respectively, on the selected programme, when loaded in accordance with the manufacturer's, importer's or authorised representative's instructions;

(6) '*rated washing capacity*' means the maximum mass in kilogram stated by the manufacturer, importer or authorised representative 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 washing cycle of a household washer-dryer respectively, on the selected programme, when loaded in accordance with the manufacturer's, importer's or authorised representative's instructions;

(7) '*rated drying capacity*' means the maximum mass in kilogram stated by the manufacturer, importer or authorised representative at 0.5 kg intervals of dry textiles of a particular type, which can be treated in one drying cycle of a household washer-dryer on the selected programme, when loaded in accordance with the manufacturer's, importer's or authorised representative's instructions;

(8) '*weighted energy consumption (E_W)*' means the weighted average of the energy consumption of the washing cycle of a household washing machine or a household washer-dryer for the eco 40-60 programme at rated washing capacity, and at half and at a quarter of the rated washing capacity, expressed in kilowatt hour per cycle;

(9) '*weighted energy consumption (E_{WD})*' means the weighted average of the energy consumption of the household washer-dryer for the wash and dry cycle at rated capacity and at half of the rated capacity, expressed in kilowatt hour per cycle;

(10) '*wash and dry*' means the name of the complete cycle of a household washer-dryer, which consists of the eco 40-60 programme for the washing cycle, and of a drying cycle achieving cupboard dry status;

(11) '*standard cycle energy consumption (SCE)*' means the energy consumption taken as a reference as a function of the rated capacity of a household washing machine or of a household washer-dryer, expressed in kilowatt hour per cycle;

(12) '*weighted water consumption (W_W)*' means the weighted average of the water consumption of the washing cycle of a household washing machine or of a household washer-dryer for the eco 40-60 programme at rated washing capacity, and at half and at a quarter of the rated washing capacity, expressed in litres per cycle;

(13) '*weighted water consumption (W_{WD})*' means the weighted average of the water consumption of a household washer-dryer for the wash and dry cycle at rated capacity and at half of the rated capacity, expressed in litres per cycle;

(14) '*washing efficiency index*' means the ratio of the washing efficiency of the washing cycle of a household washing machine or of a household washer-dryer (I_W), or of the complete cycle of a household washer-dryer (J_W), to the washing efficiency of a reference household washing machine;

(15) '*rinsing effectiveness*' means the concentration of the residual content of linear alkylbenzene sulfonate (LAS) in the treated textiles after the washing cycle of a household washing machine or of a household washer-dryer (I_R), or after the complete cycle of a household washer-dryer (J_R), expressed in gram per kilogram of dry textile;

(16) '*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 washing cycle;

(17) '*final moisture content*' means for household washer-dryers the amount of moisture contained in the load at the end of the drying cycle;

(18) '*cupboard dry*' means the status of treated textiles dried in a drying cycle to a final moisture content of 0 %;

(19) '*programme duration (t_W)*' means the length of time beginning with the initiation of the programme selected, excluding any user programmed delay, until the end of the programme is indicated and the user has access to the load;

(20) '*cycle duration (t_{WD})*' means, for the complete cycle of a household washer-dryer, the length of time beginning with the initiation of the programme selected for the washing cycle, excluding any user programmed delay, until the end of the drying cycle is indicated and the user has access to the load;

(21) '*off mode (P_o)*' means a condition in which the household washing machine or the household washer-dryer is connected to the mains 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 relevant regulations adopted at national level;

(22) '*standby mode (P_{sm})*' means a condition where the household washing machine or the household washer-dryer is connected to the mains, and provides only the following functions, which may persist for an indefinite time:
(a) reactivation function, or reactivation function and a mere indication of enabled reactivation function; and/or
(b) reactivation function through a connection to a network; and/or
(c) information or status display; and/or
(d) detection function for emergency measures;

(23) '*network*' means a communication infrastructure with a topology of links, an architecture, including the physical components, organisational principles, communication procedures and formats (protocols);

(24) '*wrinkle guard function*' means an operation of the household washing machine or of the household washer-dryer after completion of a programme to prevent excessive wrinkle building in the laundry;

(25) '*delay start (P_{ds})'* means a condition where the user has selected a specified delay to the beginning or end of the cycle of the selected programme;

26) '*spare part*' means a separate part that can replace a part with the same or similar function in a product;

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

(28) '*guarantee*' means any undertaking by the retailer or a manufacturer to the consumer to:
(a) reimburse the price paid;
(b) replace, repair or handle the household washing machine and the household washer-dryer in any way if they do not meet the specifications set out in the guarantee statement or in the relevant advertising.

(29) '*declared values*' means the values provided by the manufacturer, importer or authorised representative for the stated, calculated or measured technical parameters in accordance with Article 5, for the verification of compliance by the market surveillance authority.

Annex 2: Ecodesign requirements

1. PROGRAMME REQUIREMENTS

Household washing machines and household washer-dryers shall meet the following requirements:

(1) household washing machines and 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 called '20 °C', which is able to clean lightly soiled cotton laundry, at a nominal temperature of 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 household washing machine or household washer-dryer;

(2) for the requirements set out in points 3(1), 3(3), 4(1), 4(2), 4(5), 5 and 6(1), the 'eco 40-60' programme shall be used;

(3) 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 household washing machine or the household washer-dryer;

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 or colour. No other programme may have in its name the term 'eco';

the eco 40-60 programme shall be set as the default programme for automatic programme selection or any function maintaining the selection of a programme, or, if there is no automatic programme selection, shall be available for direct selection without the need for any other selection such as a specific temperature or load;

the indications 'normal', 'daily', 'regular' and 'standard', and their translations in French and Arabic languages, shall not be used in programme names for household washing machines or household washer-dryers, either alone or in combination with other information.

2. WASH AND DRY CYCLE

Household washer-dryers shall meet the following requirements:

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

- which is continuous if the household washer-dryer provides a continuous cycle;
- where the washing cycle is an eco 40-60 programme as defined in point 1; and
- where the drying cycle achieves cupboard dry status;

(2) the wash and dry cycle shall be clearly identifiable in the user instructions referred to in point 9 of this Annex;

(3) if the household washer-dryer provides a continuous cycle, the rated capacity of the wash and dry cycle shall be the rated capacity for this cycle;

(4) if the household washer-dryer does not provide a continuous cycle, the rated capacity of the wash and dry cycle shall be the lower value of the rated washing capacity of the eco 40-60 programme and the rated drying capacity of the drying cycle achieving cupboard dry status;

(5) for the requirements set out in points 3(2), 3(4), 4(3), 4(4), 4(6) and 6(2), the wash and dry cycle shall be used.

3. ENERGY EFFICIENCY REQUIREMENTS

Household washing machines and household washer-dryers shall meet the following requirements:

(1) the Energy Efficiency Index (EEI_W) for household washing machines and the washing cycle of household washer-dryers shall be lower than 91;

(2) the Energy Efficiency Index (EEI_{WD}) for the wash and dry cycle of household washer-dryers shall be lower than 88.

The EEI_W and EEI_{WD} shall be calculated in accordance with Annex 3.

4. FUNCTIONAL REQUIREMENTS

Household washing machines and household washer-dryers shall meet the following 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 1.03 for each of the following loading sizes: rated washing capacity, half of the rated washing capacity and a quarter of the rated washing capacity;

(2) for household washing machines with a rated capacity lower than or equal to 3 kg and for the washing cycle of household washer-dryers with a rated capacity lower than or equal to 3 kg, the Washing Efficiency Index (I_w) of the eco 40-60 programme shall be greater than 1.00 at rated washing capacity;

(3) 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 1.03 at rated capacity and at half of the rated capacity;

(4) for household washer-dryers with a rated capacity lower than or equal to 3 kg, the Washing Efficiency Index (J_w) of the wash and dry cycle shall be greater than 1.00 at rated capacity;

(5) 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 Effectiveness (I_R) of the eco 40-60 programme shall be smaller than or equal to 5.0 g/kg for each of the following loading sizes: rated washing capacity, half of the rated washing capacity and a quarter of the rated washing capacity;

(6) for household washer-dryers with a rated capacity higher than 3 kg, the Rinsing Effectiveness (J_R) of the wash and dry cycle shall be smaller than or equal to 5.0 g/kg at 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 3.

5. REQUIREMENTS ON DURATION

Household washing machines and household washer-dryers shall meet the following requirements:

the duration of the eco 40-60 programme (t_W), expressed in hours and minutes and rounded to the nearest minute, shall be lower than or equal to the time limit t_{cap}, which depends on the rated capacity as follows:

(1) for the rated washing capacity, the time limit is given by the following equation:

$$t_{cap}(\text{in min}) = 137 + c \times 10.2$$

with a maximum of 240 minutes;

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

$$t_{cap}(\text{in min}) = 120 + c \times 6$$

with a maximum of 180 minutes;

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.

6. WEIGHTED WATER CONSUMPTION REQUIREMENT

Household washing machines and household washer-dryers shall meet the following requirements:

(1) for household washing machines and the washing cycle of household washer-dryers, the weighted water consumption (W_W, in litres/cycle) for the eco 40-60 programme shall be:

$$W_W \leq 2.25 \times c + 30$$

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_{WD}, in litres/cycle) for the wash and dry cycle shall be:

$$W_{WD} \leq 10 \times d + 30$$

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

The W_W and W_{WD} shall be calculated in accordance with Annex 3.

7. LOW POWER MODES

Household washing machines and household washer-dryers shall meet the following requirements:

(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 a connection to a network and provides networked standby, the power consumption of this mode shall not exceed 2.00 W;

(4) at the latest 15 minutes after the household washing machine and household washer-dryer have been switched on or after the end of any programme and associated activities or after interruption of the wrinkle guard function or after any other interaction with the household washing machine and household washer-dryer, if no other mode, including emergency measures, is triggered, the household washing machine and household washer-dryer shall switch automatically to off-mode or standby mode;

(5) if the household washing machine and household washer-dryer provide for a delay start, the power consumption of this condition, including any standby mode, shall not exceed 4.00 W. The delay start shall not be programmable by the user for more than 24 h;

(6) any household washing machine and any household washer-dryer that can be connected to a network shall provide the possibility to activate and deactivate the network connection(s). The network connection(s) shall be deactivated by default.

8. RESOURCE EFFICIENCY REQUIREMENTS

Household washing machines and household washer-dryers shall meet the following requirements:

(1) availability of spare parts:

(a) manufacturers, importers or authorised representatives of household washing machines and household washer-dryers shall make available to professional repairers at least the following spare parts, for a minimum period of 10 years after placing the last unit of the model on the market:

- motor and motor brushes;
- transmission between motor and drum;
- pumps;
- shock absorbers and springs;
- washing drum, drum spider and related ball bearings (separately or bundled);
- heaters and heating elements, including heat pumps (separately or bundled);
- piping and related equipment including all hoses, valves, filters and aquastops (separately or bundled);
- printed circuit boards;
- electronic displays;
- pressure switches;
- thermostats and sensors;
- software and firmware including reset software;

(b) manufacturers, importers or authorised representatives of household washing machines and household washer-dryers shall make available to professional repairers and end-users at least the following spare parts: door, door hinge and seals, other seals, door locking assembly and plastic peripherals such as detergent dispensers, for a minimum period of 10 years after placing the last unit of the model on the market;

(c) manufacturers, importers or authorised representatives of household washing machines and household washer-dryers shall ensure that the spare parts mentioned in points (a) and (b) can be replaced with the use of commonly available tools and without permanent damage to the household washing machine or household washer-dryer;

(d) the list of spare parts concerned by point (a) and the procedure for ordering them shall be publicly available on the free access website of the manufacturer, importer or authorised representative, at the latest two years after the placing on the market of the first unit of a model and until the end of the period of availability of these spare parts;

(e) the list of spare parts concerned by point (b) and the procedure for ordering them and the repair instructions shall be publicly available on the free access website of the manufacturer, importer or authorised representative, when placing the first unit of a model on the market and until the end of the period of availability of these spare parts;

(2) maximum delivery time of spare parts:

during the period mentioned under (1), the manufacturer, importer or authorised representative shall ensure the delivery of the spare parts within 15 working days after having received the order;

in the case of spare parts concerned by point (1)(a), the availability of spare parts may be limited to professional repairers registered in accordance with point (3)(a) and (b);

(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 and until the end of the period mentioned under (1), the manufacturer, importer or authorised representative shall provide access to the household washing machine or household washer-dryer repair and maintenance information to professional repairers in the following conditions:

(a) the manufacturer's, importer's or authorised representative's website shall indicate the process for professional repairers to register for access to information; to accept such a request, the manufacturers, importers or authorised representatives may require the professional repairer to demonstrate that:
    (i) the professional repairer has the technical competence to repair household washing machines and household washer-dryers and complies with the applicable regulations for repairers of electrical equipment. Reference to an official registration system as professional repairer shall be accepted as proof of compliance with this point;
    (ii) the professional repairer is covered by insurance covering liabilities resulting from its activity;

(b) manufacturers, importers or authorised representatives shall accept or refuse the registration within 5 working days from the date of request;

(c) manufacturers, importers or authorised representatives 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 the information;

(d) once registered, a professional repairer shall have access, within one working day after requesting it, to the requested repair and maintenance information. The information may be provided for an equivalent model or model of the same family, if relevant;

(e) the household washing machine or household washer-dryer repair and maintenance information referred to in (a) shall include:

- the unequivocal household washing machine or household washer- dryer identification;
- a disassembly map or exploded view;
- technical manual of instructions for repair;
- 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);
- instructions for installation of relevant software and firmware including reset software; and
- information on how to access data records of reported failure incidents stored on the household washing machine or washer-dryer (where applicable);

(4) information requirements for refrigerant gases:

For household washing machines and household washer-dryers equipped with a heat pump, the chemical name of the refrigerant gas used, or equivalent reference such as a commonly used and understood symbol, label or logo, shall be displayed permanently and in a visible and readable way on the exterior of the household washing machines or household washer-dryers, for example on the back panel. More than one reference can be used for the same chemical name;

(5) requirements for dismantling for material recovery and recycling while avoiding pollution:

manufacturers, importers or authorised representatives shall ensure that household washing machines and household washer-dryers are designed in such a way the materials and components of which they are made can be removed with the use of commonly available tools;

9. INFORMATION REQUIREMENTS

Household washing machines and household washer-dryers shall meet the following requirements:

user and installer instructions shall be provided in the form of a user manual on a free access website of the manufacturer, importer or authorised representative, 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 Lebanese Ecodesign legislation;

(b) information that the most efficient programmes in terms of energy consumption are generally those that perform at lower temperatures and longer duration;

(c) 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 Lebanese Ecodesign legislation;

(d) information that loading the household washing machine or the household washer-dryer up to the capacity indicated by the manufacturer for the respective programmes will contribute to energy and water savings;

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

(f) information that noise and remaining moisture content are influenced by the spinning speed: the higher the spinning speed in the spinning phase, the higher the noise and the lower the remaining moisture content;

(g) information on how to activate and deactivate the network connection (if applicable) and impact on energy consumption;

(h) instruction on how to find the model information stored in the product database, as defined in Technical Regulation laying down energy labelling requirements for household washing machines and household washer-dryers by means of a weblink that links to the model information as stored in the product database or a link to the product database and information on how to find the model identifier on the product;

(2) values for the following parameters:

(a) rated capacity in kg;
(b) programme duration, expressed in hours and 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 being treated in the washing cycle, expressed in degrees centigrade; and
(f) remaining moisture content after the washing cycle, expressed in percentage of water content, and spinning speed at which this was achieved;

for each of the following programmes (at least):

(i) the eco 40-60 programme at the rated capacity, half of the rated capacity and a quarter of the rated capacity;
(ii) the 20 °C programme at the rated capacity for this programme;
(iii) one cotton programme at nominal temperature higher than or equal to 60 °C (if present) at the rated capacity for this programme;
(iv) one programme for other textiles than cotton or a mix of textiles (if present) at the rated capacity for this programme;
(v) one programme for the quick washing of lightly soiled laundry (if present) at the rated capacity for this programme;
(vi) one programme for heavily soiled textiles (if present) at the rated capacity for this programme;
(vii) for household washer-dryers: the wash and dry cycle at the 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;

(3) the user instructions shall also include instructions for the user to perform maintenance operations. 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 main consequences of incorrect dosage;

(c) foreign object removal from the household washing machine or household washer-dryer;

(d) periodic cleaning, including optimal frequency, and limescale prevention 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) how to access professional repair (internet webpages, addresses, contact details);

such instructions shall also include information on:

(i) any implications of self-repair or non-professional repair for the safety of the end-user and for the guarantee;

(j) the minimum period during which the spare parts for the household washing machine or the household washer-dryer are available.

Annex 3: Measurement methods and calculations

For the purposes of compliance and verification of compliance with the requirements of this Technical Regulation, measurements and calculations shall be made using referenced standards if available or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art, and in line with the following provisions.

Where a parameter is declared pursuant to Article 5, its declared value shall be used by the manufacturer, importer or authorised representative for the calculations in this Annex.

When measuring the parameters defined in Annex 2 and in this annex for the eco 40-60 programme and for the wash and dry cycle, the highest spin speed option for the eco 40-60 programme shall be used at rated capacity, at half of the rated capacity and at a quarter of the rated capacity.

For household washing machines with a rated capacity lower than or equal to 3 kg and for household washer-dryers with a rated washing capacity lower than or equal to 3 kg, the parameters for the eco 40-60 programme and for the wash and dry cycle shall be measured at rated capacity only.

The duration of the eco 40-60 programme (t_W) and the duration of the wash and dry cycle (t_{WD}) shall be expressed in hours and minutes and rounded to the nearest minute.

1. ENERGY EFFICIENCY INDEX

1.1. Energy Efficiency Index (EE_{IW}) of household washing machines and the washing cycle of household washer-dryers

For the calculation of the EE_{IW}, the weighted energy consumption of the eco 40-60 programme at the rated washing capacity, half of the rated washing capacity and a quarter of the rated washing capacity is compared to its standard cycle energy consumption.

(a) The EE_{IW} is calculated as follows, and is rounded to one decimal place:

$$EE_{IW} = (E_W/SCE_W) \times 100$$

where:

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

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

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

$$SCE_W = -0.0025 \times c^2 + 0.0846 \times c + 0.3920$$

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 E_W is calculated in kWh per cycle as follows, and is rounded to three decimal places:

$$E_W = A \times E_{W,full} + B \times E_{W,1/2} + C \times E_{W,1/4}$$

where:

$E_{W,full}$ is the energy consumption of the household washing machine or of the washing cycle of the household washer-dryer for the eco 40-60 programme at the rated washing capacity and rounded to three decimal places;

$E_{W,½}$ is the energy consumption of the household washing machine or of the washing cycle of the household washer-dryer for the eco 40-60 programme at half of the rated washing capacity and rounded to three decimal places;

$E_{W,1/4}$ is the energy consumption of the household washing machine or of the washing cycle of the household washer-dryer for 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 rated washing capacity and rounded to three decimal places;

B is the weighting factor for half of the rated washing capacity and rounded to three decimal places;

C is the weighting factor for a quarter of the rated washing capacity and rounded to three decimal places;

for household washing machines with a rated capacity lower than or equal to 3 kg and for household washer-dryers with a rated washing capacity lower than or equal to 3 kg, A shall be equal to 1; B and C shall be equal to 0;

for other household washing machines and household washer-dryers, the values of the weighting factors depend on the rated capacity according to the following equations:

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

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

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

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

1.2. Energy Efficiency Index (EEIWD) of the complete cycle of household washer-dryers

For the calculation of the EEI_{WD} of a household washer-dryer model, the weighted energy consumption of the wash and dry cycle at the rated capacity and half of the rated capacity is compared to its standard cycle energy consumption.

(a) The EEI_{WD} is calculated as follows, and is rounded to one decimal place:

$$EEI_{WD} = (E_{WD}/SCE_{WD}) \times 100$$

where:
E_{WD} is the weighted energy consumption of the complete cycle of the household washer-dryer;

SCE_{WD} is the standard cycle energy consumption of the complete cycle of the household washer-dryer.

(b) The SCE_{WD} is calculated in kWh per cycle as follows, and is rounded to three decimal places:

$$SCE_{WD} = -0.0502 \times d^2 + 1.1742 \times d - 0.644$$

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

(c) For household washer-dryers with a rated washing capacity lower than or equal to 3 kg, the weighted energy consumption is the energy consumption at rated capacity and rounded to three decimal places.

(d) For other household washer-dryers, the weighted energy consumption (E_{WD}) is calculated in kWh per cycle as follows, and is rounded to three decimal places:

$$E_{WD} = [3 \times E_{WD,full} + 2 \times E_{WD,1/2}]/5$$

where:
$E_{WD,full}$ is the energy consumption of the household washer-dryer for the wash and dry cycle at rated capacity and rounded to three decimal places;

$E_{WD,½}$ is the energy consumption of the household washer-dryer for the wash and dry cycle 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 (I_W) and the washing efficiency index of the complete cycle of household washer-dryers (J_W) shall be calculated using referenced standards if available or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art, and rounded to three decimal places.

3. RINSING EFFECTIVENESS

The rinsing effectiveness of household washing machines and of the washing cycle of household washer-dryers (I_R) and the rinsing effectiveness of the complete cycle of household washer-dryers (J_R) shall be calculated using referenced standards if available or other reliable, accurate and reproducible method based on the detection of the linear alkylbenzene sulfonate (LAS) marker, and rounded to one decimal place.

4. MAXIMUM TEMPERATURE

The maximum temperature reached for 5 minutes inside the laundry being treated in the household washing machines and in the washing cycle of household washer-dryers shall be determined using referenced standards if available or other reliable, accurate and reproducible method and rounded to the nearest integer.

5. WEIGHTED WATER CONSUMPTION

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

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

where:

$W_{W,full}$ is the water consumption of the household washing machine or of the washing cycle of a household washer-dryer for the eco 40-60 programme at rated washing capacity, in litres and rounded to one decimal place;

$W_{W,½}$ is the water consumption of the household washing machine or of the washing cycle of a household washer-dryer for the eco 40-60 programme at half of the rated washing capacity, in litres and rounded to one decimal place;

$W_{W,1/4}$ is the water consumption of the household washing machine or of the washing cycle of a household washer-dryer for 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) For household washer-dryers with a rated washing capacity lower than or equal to 3 kg, the weighted water consumption of the wash and dry cycle is the water consumption at rated capacity and rounded to the nearest integer.

For other household washer-dryers, the weighted water consumption (W_{WD}) of the wash and dry cycle of a household washer-dryer is calculated as follows, and is rounded to the nearest integer:

$$W_{WD} = [3 \times E_{WD,full} + 2 \times E_{WD,1/2}]/5$$

where:

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

$W_{WD,½}$ 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.

6. REMAINING MOISTURE CONTENT

The weighted remaining moisture content after washing (D) of a household washing machine and of the washing cycle of a household washer-dryer is calculated in percentage as follows, and is rounded to one decimal place:

$$D = [A \times D_{full} + B \times D_{1/2} + C \times D_{1/4}]$$

where:

D_{full} is the remaining moisture content for the eco 40-60 programme at rated washing capacity, in percentage and rounded to two decimal places;

$D_{1/2}$ is the remaining moisture content of the eco 40-60 programme at half of the rated washing capacity in percentage and rounded to two decimal places;

$D_{1/4}$ is the remaining moisture content of the eco 40-60 programme at a quarter of the rated washing capacity in percentage and rounded to two decimal places;

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

7. FINAL MOISTURE CONTENT

For the drying cycle of a household washer-dryer, 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 using referenced standards if available or other reliable, accurate and reproducible method and rounded to one decimal place.

8. LOW POWER MODE

Where applicable, the power consumption of the off mode (P_o), standby mode (P_{sm}) and delay start (P_{ds}) are measured, expressed in W, and rounded to two decimal places.

During measurements of the power consumption in low power modes, the following shall be checked and recorded:

- the display or not of information;
- the activation or not of a network connection.

If a household washing machine or a household washer-dryer provides for a wrinkle guard function, this operation shall be interrupted by opening the household washing machine or household washer-dryer door, or any other appropriate intervention 15 minutes before the measurement of power consumption.

Annex 4: Verification procedure for market surveillance purposes

The verification tolerances defined in this Annex relate only to the verification by the market surveillance authority of the declared values and shall not be used by the manufacturer, importer or authorised representative 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.

Where a model has been designed to be able to detect it is being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering its performance during the test with the objective of reaching a more favourable level for any of the parameters specified in this Technical Regulation or included in the technical documentation or included in any of the documentation provided, the model and all equivalent models shall be considered not compliant.

As part of verifying the compliance of a product model with the requirements laid down in this Technical Regulation pursuant to Article 5(2) of Regulation establishing a framework for the setting of minimum energy performance (Ecodesign) requirements for Energy related Products (ErPs), for the requirements referred to in this Annex, the market surveillance authority shall apply the following procedure:

(1) the market surveillance authority 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 (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the manufacturer, importer or authorised representative than the results of the corresponding measurements carried out; and

   (b) the declared values meet any requirements laid down in this Technical Regulation, and any required product information published by the manufacturer, importer or authorised representative does not contain values that are more favourable for the manufacturer, importer or authorised representative than the declared values; and

   (c) when the market surveillance authority checks the unit of the model, it finds that the manufacturer, importer or authorised representative has put in place a system that complies with the requirements in the second paragraph of Article 7; and

   (d) when the market surveillance authority checks the unit of the model, it complies with the requirements in the third paragraph of Article 7, the programme requirements in points 1 and 2, resource efficiency requirements in point 8 and information requirements in point 9 of Annex 2; and

   (e) when the market surveillance authority tests 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), (b), (c) or (d) are not achieved, the model and all equivalent models shall be considered not to comply with this Technical Regulation;

(4) if the result referred to in point (2)(e) is not achieved, the market surveillance authority 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 equivalent models;

(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 equivalent models shall be considered not to comply with this Technical Regulation;

The market surveillance authority shall use the measurement and calculation methods set out in Annex 3.

The market surveillance authority shall only apply the verification tolerances that are set out in Table 1 and shall use only the procedure described in points 1 to 6 for the requirements referred to in this Annex. For the parameters in Table 1, no other verification tolerances, such as those set out in referenced standards or in any other measurement method, shall be applied.

Table 1

Verification tolerances

Parameter	Verification tolerances
$E_{W,full}$, $E_{W,½}$, $E_{W,1/4}$, $E_{WD,full}$, $E_{WD,½}$	The determined value (*) shall not exceed the declared value of $E_{W,full}$, $E_{W,½}$, $E_{W,1/4}$, $E_{WD,full}$ and $E_{WD,½}$, respectively, by more than 10 %.
Weighted energy consumption (E_W and E_{WD})	The determined value (*) shall not exceed the declared value of E_W and E_{WD}, respectively, by more than 10 %.
$W_{W,full}$, $W_{W,½}$ $W_{W,1/4}$, $W_{WD,full}$, $W_{WD,½}$	The determined value (*) shall not exceed the declared value of $W_{W,full}$, $W_{W,½}$ $W_{W,1/4}$, $W_{WD,full}$ and $W_{WD,½}$, respectively, by more than 10 %.
Weighted water consumption (W_W and W_{WD})	The determined value (*) shall not exceed the declared value of W_W and W_{WD}, respectively, by more than 10 %.
Washing efficiency index (I_W and J_w) at all relevant loads	The determined value (*) shall not be less than the declared value of I_W, and J_w, respectively by more than 8 %.
Rinsing effectiveness (I_R and J_R) at all relevant loads	The determined value (*) shall not exceed the declared value of I_R and J_R, respectively by more than 1.0 g/kg.
Duration of the eco 40-60 programme (t_W) at all relevant loads	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 the smaller.
Duration of the wash and dry cycle (t_{WD}) at all relevant loads	The determined value (*) of the cycle duration shall not exceed the declared value of t_{WD} by more than 5 % or by more than 10 minutes, whichever is the smaller.
Maximum temperature inside the laundry (T) during the washing cycle at all relevant loads	The determined value (*) shall not be less than the declared value of T by more than 5 K and it shall not exceed the declared value of T by more than 5 K.
Weighted remaining moisture content after washing (D)	The determined value (*) shall not exceed the declared value of D by more than 10 %.
Final moisture content after drying at all relevant loads	The determined value (*) shall not exceed 3.0 %.
Spin speed (S) at all relevant loads	The determined value (*) shall not be less than the declared value of S by more than 10 %.
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, or 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, or 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 arithmetical mean of the values determined for these three additional units.	

Annex 5: Multi-drum household washing machines and multi-drum household washer-dryers

For multi-drum household washing machines and multi-drum household washer-dryers, the provisions of points 1 to 6 and 9(2) of Annex 2, following the measurement and calculation methods set out in Annex 3, shall apply to any drum. The provisions of points 7, 8, 9(1) and 9(3) of Annex 2, apply to all multi-drum household washing machines and all multi-drum household washer-dryers.

The provisions of points 1 to 6 and 9(2) of Annex 2, shall apply to each of the drums independently, except when the drums are built in the same casing and can, in the eco 40-60 programme or in the wash and dry cycle, only operate simultaneously. In the latter case, these provisions shall apply to the multi-drum household washing machine or to the multi-drum household washer-dryer as a whole, as follows:

(a) the rated washing capacity is the sum of the rated washing capacities of each drum; for multi-drum household washer-dryers, the rated capacity is the sum of the rated capacities of each drum;

(b) the energy and water consumption of the multi-drum household washing machine and of the washing cycle of the multi-drum household washer-dryer is the sum of the energy consumption, or water consumption, of each drum;

(c) the energy and water consumption of the complete cycle of the multi-drum household washer-dryer is the sum of the energy consumption, or water consumption, of each drum;

(d) the Energy Efficiency Index (EEI_W) is calculated using the rated washing capacity and energy consumption; for multi-drum household washer-dryers, the Energy Efficiency Index (EEI_{WD}) is calculated using the rated capacity and energy consumption;

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

(f) each drum shall comply individually with the requirement on duration applicable to the drum with the largest rated capacity;

(g) the requirements on low power modes apply to the whole household washing machine or the whole household washer-dryer;

(h) the remaining moisture content after washing is calculated as the weighted average, according to each drum's rated capacity;

(i) for household multi-drum washer-dryers, the requirement on final moisture content after drying applies individually to each drum.

The verification procedure set out in Annex 4 applies to the multi-drum household washing machine and to the multi-drum household washer-dryer as a whole, with the verification tolerances applying to each of the parameters determined in application of this Annex.