ANNEX I

Definitions applicable for the annexes

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

1. ‘Energy Efficiency Index’ or ‘EEI’ means the ratio of the weighted energy consumption to the standard drying cycle energy consumption of a specific tumble dryer model;
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. ‘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;
4. ‘rated capacity’ means the maximum mass in kilograms, declared 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 tumble dryer on the selected programme, when loaded in accordance with the manufacturer’s instructions;
5. ‘partial load’ means half of the rated capacity of a household tumble dryer for a given programme;
6. ‘condensation efficiency’ means the ratio between the mass of moisture condensed by a condenser tumble dryer and the mass of moisture removed from the load at the end of a cycle;
7. ‘initial moisture content’ means the amount of moisture contained in the load at the beginning of the drying cycle;
8. ‘remaining moisture content’ means the amount of moisture contained in the load at the end of the drying cycle;
9. ‘off mode’ or ‘Po’means a mode in which the household tumble dryer is connected to the mains and is not providing any function; the following shall also be considered as off mode:
	* + 1. conditions providing only an indication of off mode;
			2. conditions providing only functionalities intended to ensure electromagnetic compatibility pursuant to Directive 2014/30/EU of the European Parliament and of the Council[[1]](#footnote-1);
10. ‘standby mode’ or ‘Psm’ means a mode in which the household tumble dryer is connected to the mains, and provides only the following functions, which may persist for an indefinite time:
	* + 1. reactivation function, or reactivation function and indication of enabled reactivation function or
			2. reactivation function through a connection to a network or
			3. information or status display; or
			4. detection function for emergency measures, or
			5. more than one of the functions from (a) to (d);
11. ‘network’ means a communication infrastructure with a topology of links, an architecture, including the physical components, organisational principles, communication procedures and formats (protocols);
12. ‘wrinkle guard function’ means an operation of the household tumble dryer after completion of a programme to prevent excessive wrinkle building in the laundry;
13. ‘delay start’ means a condition where the user has selected a specified delay to the beginning of the cycle of the selected programme;
14. ‘spare part’ means a separate part that can replace a part with the same or similar function in a product;
15. ‘professional repairer’ means an operator or undertaking which provides services of repair and professional maintenance of household tumble dryers;
16. ‘eco programme’ means the name of the programme declared by the manufacturer, importer or authorised representative as to be able to dry cotton laundry with an initial moisture content of the load of 60 % down to a remaining moisture content of the load of 0 %, and to which ecodesign requirements relate. The declared rated capacity for the eco programme shall not be lower than the highest declared rated capacity among all the cotton programmes of the tumble dryer.
17. ‘programme’ means a series of operations that are pre-defined and which are declared by the manufacturer, importer or authorised representative as suitable for drying certain types of textile.
18. ‘networked standby mode’ or ‘Pnsm’ means a mode in which the local space heater is able to activate another function by way of a remotely initiated trigger from a network connection;

ANNEX II

Ecodesign requirements

# Programme requirements

Household tumble dryers shall meet the following requirements:

1. Household tumble dryers shall provide a drying programme called ‘eco programme’ which is able to dry cotton laundry from an initial moisture content of the load of 60 % to a remaining moisture content of the load of 0 %.

This programme shall be clearly identifiable on the programme selection, on the display and through the network connection, depending on the functionalities provided by the household tumble dryer.

1. The ‘eco programme’ shall be named as ‘eco’ on the programme selection, on the display and through the network connection, depending on the functionalities provided by the tumble dryer.

The name ‘eco shall be used exclusively for this programme. The formatting of the name is not restricted in terms of font type, font size, case sensitivity or colour. No other programme may have in its name the term ‘eco’.

1. The ‘eco 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 time or load.
2. For the requirements set out in points 2, 3 and 4 of this Annex the ‘eco programme’ shall be used.

# Energy efficiency requirements

1. The EEI of household tumble dryers shall not be higher than 85.

The EEI shall be calculated in accordance with Annex III. Tumble dryers with a rated capacity below 4,5 kg shall be exempted from this requirement.

1. The maximum duration of a cycle for all programmes shall be 240 minutes.

# Condensation efficiency requirements

The condensation efficiency of condenser tumble dryers shall not be lower than 80 %.

The condensation efficiency shall be calculated in accordance with Annex III.

# Low power modes

Household tumble dryers shall meet the following requirements:

1. They shall feature an off-mode or a standby mode or both. The power consumption of these modes shall not exceed 0,50 W.
2. If the standby mode includes the display of information or status, the power consumption of this mode shall not exceed 1,00 W.
3. If the tumble dryer features a networked standby mode, the power consumption of this mode shall not exceed 2,00 W.
4. At the latest 15 minutes after the household tumble dryer has 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 tumble dryer, and if no other mode including emergency measures is triggered, the tumble dryer shall switch automatically to off-mode or to standby mode.
5. If the household tumble dryer provides 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 24h.
6. Any household tumble 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.

# Resource efficiency requirements

1. Availability of spare parts
	* + 1. Manufacturers, importers or authorised representatives of household tumble dryers shall make at least the following spare parts available to both users and professional repairers for a minimum period of 10 years after placing the last unit of the model on the market:

- doors, door handles, locks and hinges,

- lint filters

- air filters,

- plastic peripherals,

- gaskets and seals;

- switches and knobs;

- condensate pump and condensate tank.

* + - 1. Manufacturers, importers or authorised representatives of household tumble dryers shall make at least the following spare parts available to professional repairers for a minimum period of ten years after placing the last unit of the model on the market:

- motors and motor brushes;

- transmissions between motor and drum;

- fan and fan wheels;

- drums and bearings;

- piping and related equipment including hoses, valves and filters;

- cables and plugs;

- printed circuit boards;

- electronic displays;

- pressure switches;

- thermostats and temperature sensors;

- software and firmware updates, including software reset;

- shock absorbers and springs;

- heaters and heating elements;

- electric fuses;

- tension pulley, support roller.

* + - 1. Manufacturers, importers or authorised representatives of household tumble dryers shall ensure that the spare parts listed in points (a) and (b) can be replaced with the use of commonly available tools and without permanent damage to the tumble dryer.
			2. The list of spare parts set out in 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.
			3. Professional repairers with access to the list of spare parts set out in point (b) will need to be registered in accordance with point (3).
1. Maximum delivery time of spare parts

During the period of 10 years of availability of spare parts mentioned in point (1), the manufacturer, importer or authorised representative shall ensure the delivery of the spare parts within 15 working days after having received the order.

1. Access to repair and maintenance information

After a period of two years after the placing on the market of the first unit of a tumble dryer model and until the end of the period of 10 years for the availability of spare parts set out in point (1)(a) the manufacturer, importer or authorised representative shall provide access to professional repairers to the repair and maintenance information of that model in the following conditions:

* + - 1. 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 tumble dryers and 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 of compliance with this point;

(ii) the professional repairer is covered by insurance covering liabilities resulting from its activity regardless of whether this is required by the Member State.

* + - 1. The manufacturers, importers or authorised representatives shall accept or refuse the registration within 5 working days from the date of request;
			2. 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.
			3. 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.
			4. The household tumble dryer repair and maintenance information shall include:

- the unequivocal tumble 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 tumble dryer (where applicable).

1. Information requirements for refrigerant gases

Without prejudice to Regulation (EU) No 517/2014 of the European Parliament and of the Council the chemical name of the refrigerant gas used in tumble dryers equipped with a heat pump, or equivalent reference such as a commonly used and understood symbol, label or logo, shall be displayed permanently in a place of the outside of the appliance that is visible and can be easily readable by the end-user, for example on the back panel. More than one reference can be used for the same chemical name.

1. Requirements for dismantling for material recovery and recycling while avoiding pollution
	* + 1. Manufacturers, importers or authorised representatives shall ensure that household tumble dryers are designed in such a way that the materials and components referred to in Annex VII to Directive 2012/19/EU can be removed from the appliance with the use of commonly available tools.

Manufacturers, importers or authorised representatives shall fulfil the obligations laid down in Article 15, Point 1 of Directive 2012/19/EU.

* + - 1. after a period of two years after the placing on the market of the first unit of a model and until 10 years after placing on the market the last unit of that model the manufacturer, importer or authorised representative shall provide access to information for dismantling of the materials and components referred to in Annex VII to Directive 2012/19/EU. The information for dismantling shall be publicly available on the free access website of the manufacturer, importer or authorised representative.

# End-user Information 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:
	* + 1. information that the ‘eco programme’ is suitable to dry normal wet cotton laundry, and that this programme is used to assess the compliance with the EU Ecodesign legislation;
			2. information that the ‘eco programme’ is the most efficient programme in terms of energy consumption for drying wet cotton laundry;
			3. information that the most efficient programmes in terms of energy consumption are generally those that perform at lower temperatures;
			4. information that loading the tumble dryer up to the maximum capacity indicated by the manufacturer for the respective programmes will contribute to energy savings;
			5. if applicable, information on how to activate and deactivate the network connection and impact on energy consumption;
			6. instructions on how to find the model information stored in the product database, as defined in Commission Delegated Regulation (EU) [OP -Please insert regulation number energy labelling regulation for household tumble 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:
	* + 1. rated capacity in kg;
			2. programme duration, expressed in hours and minutes;
			3. energy consumption in kWh/cycle;
			4. remaining moisture content after the drying cycle;

the values for the parameters from (a) to (d) shall be provided for at least the following programmes:

- ‘eco programme’ at rated capacity and half of the rated capacity;

- synthetics normal dry at the rated capacity;

- delicates/wool drying at the rated capacity;

- cotton extra/very dry at rated capacity and half of the rated capacity;

- cotton iron dry at rated capacity and half of the rated capacity;

- synthetics extra/very dry at the rated capacity for this programme;

- synthetics iron dry at the rated capacity for this programme

The rated capacity shall be the one declared by the manufacturer for each specific programme.

1. The user instructions shall also include instructions for the user to perform maintenance operations, including as a minimum:
	* + 1. correct installation (including level positioning, connection to mains, connection to water outlet (if relevant), connection to gas (if relevant), installation of ventilation hose (if relevant);
			2. cleaning of filters, including optimal frequency, and procedure, and main consequences of insufficient cleaning of filters;
			3. emptying of water tank for condenser dryers in case the appliance is not connected to water outlet;
			4. periodic cleaning, including optimal frequency;
			5. door opening between cycles, if appropriate;
			6. identification of errors, the meaning of the errors, and the action required, including identification of errors requiring professional assistance;
			7. how to access professional repair services (internet webpages, addresses, contact details);

such instructions shall also include information on:

* + - 1. any implications of self-repair or non-professional repair for the safety of the end-user and for the guarantee;
			2. the minimum period during which the spare parts are available.

ANNEX III

Measurement methods and calculations

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

The eco programme shall be used for the measurement and calculation of the EEI, the Condensation Efficiency Index and the programme duration. The energy consumption, condensation efficiency and programme duration shall be measured concurrently.

The duration of the eco programme at full load and at partial load is expressed in minutes and rounded to the nearest minute.

Airborne acoustical noise emissions are measured in dB(A) with respect to 1 pW and rounded to the nearest integer.

# Energy Efficiency Index

For the calculation of the EEI of a household tumble dryer model, the weighted average energy consumption per cycle for the eco programme at full and partial load is compared to the standard energy consumption per cycle.

* + - 1. The EEI is calculated as follows and rounded to one decimal place:

where

*EtC* = weighted average energy consumption per cycle,

*SEC* = standard energy consumption per cycle.

* + - 1. SEC is calculated in kWh as follows and rounded to two decimal places:

(i) for non-air vented tumble dryers:

(ii) for air-vented tumble dryers:

where

*c* is the rated capacity of the tumble dryer for the eco programme,

*Tt* is the weighted programme time for the eco programme.

* + - 1. EtC is calculated in kWh as follows and rounded to two decimal places:

where

*Edry* = energy consumption of the eco programme at full load, in kWh and rounded to two decimal places,

*Edry½* = energy consumption of the eco programme at partial load, in kWh and rounded to two decimal places.

(i) for gas-fired tumble dryers

where

*Egdry* = gas consumption of the eco programme at full load, in kWh and rounded to two decimal places,

*Egdry½* = gas consumption of the eco programme at partial load, in kWh and rounded to two decimal places,

*Egdry,a* = auxiliary electricity consumption of the eco programme at full load, in kWh and rounded to two decimal places,

*Egdry½,a* = auxiliary electricity consumption of the eco programme at partial load, in kWh and rounded to two decimal places,

*fg* = 2,1.

* + - 1. Tt for the eco programme is calculated in minutes as follows and rounded to the nearest minute:

where

*Tdry* = programme time for the eco programme at full load, in minutes and rounded to the nearest minute,

*Tdry½* = programme time for the eco programme at partial load, in minutes and rounded to the nearest minute.

# Condensation efficiency

The condensation efficiency of a programme (*Ct*) is the ratio between the mass of moisture condensed and collected in the container of a condenser tumble dryer and the mass of moisture removed from the load by the programme, the latter being the difference between the mass of the wet test load before drying and the mass of the test load after drying.

* + - 1. Ct is calculated as a percentage and rounded to the nearest whole percent as:

where

*Cdry* = average condensation efficiency of the eco programme at full load,

*Cdry½* = average condensation efficiency of the eco programme at partial load.

* + - 1. *Cdry* and *Cdry1/2* are calculated from the condensation efficiencies of test runs and expressed as a percentage:

where

*n* is the number of test runs, comprising at least four valid test runs for the eco programme,

*j* is the test run number,

*Wwj* is the mass of water collected in the condenser reservoir during test run j,

*Wi* is the mass of the wet test load before drying,

*Wf* is the mass of the test load after drying.

# Low power modes

The power consumption of the off mode (*Po*), standby mode (*Psm*) and, where applicable, networked standby mode (*Pnsm*) and delay start (*Pds*) are measured. The measured values are 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 the tumble dryer features a wrinkle guard function, this operation shall be interrupted by opening the door of the appliance or any other appropriate intervention 15 minutes before the measurement of energy consumption.

# Acoustic airborne emission

The acoustic airborne noise emission of the drying phase of a household tumble dryer shall be calculated for the eco programme at full load, using harmonised standards which reference numbers have been published for this purpose in the *Official Journal of the European Union*, or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art, and rounded to the nearest integer.

ANNEX IV

Verification procedure for the purpose of market surveillance

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, importer or authorised representatives 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 recognizing 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 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.

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, 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:
	* + 1. 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, importer or authorised representative than the results of the corresponding measurements carried out pursuant to paragraph (g) thereof; and
			2. the declared values meet any requirements laid down in this 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 or importer than the declared values; and
			3. when the Member State authorities check the unit of the model, they find that the manufacturer, importer or authorised representative has put in place a system that complies with the requirements in the second paragraph of Article 6; and
			4. when the Member State authorities check the unit of the model, it complies with the programme requirements in point 1, resource efficiency requirements in point 5 and information requirements in point 6 of Annex II; and
			5. 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), (b), (c) or (d) are not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
4. If the values referred to in point (2)(e) are not compliant with the verification tolerances in Table 1, or if the test is not valid because either some of the preconditions requested in the relevant harmonised standards to obtain test results were not met or due to any other cause preventing the normal development of the test, 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 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 Regulation. This includes situations for which one of the three tests is not valid because either some of the preconditions requested in the relevant harmonised standards to obtain test results were not met or due to any other cause preventing the normal development of the test.
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) or (6).

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. For the parameters in table 1 no other 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** |
| Edry and Edry½ | The determined value\* shall not exceed the declared value of Edry and Edry½ by more than 6 %. |
| Egdry and Egdry½ | The determined value\* shall not exceed the declared value of Egdry and Egdry½ by more than 6 %. |
| Egdry,a and Egdry½,a | The determined value\* shall not exceed the declared value of Egdry,a and Egdry½,a by more than 6 %. |
| EtC | The determined value\* shall not exceed the declared value of Et by more than 6 %. |
| Ct | The determined value\* shall not be less than the declared value of Ct by more than 6 %. |
| Tdry and Tdry½ | The determined value\* shall not exceed the declared value of Tdry and Tdry½ by more than 6 %. |
| Tt | The determined value\* shall not exceed the declared values of Tt by more than 6 %. |
| Po | The determined value\* of Po shall not exceed the declared value by more than 0,10 W. |
| Psm | The determined value\* of Psm 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. |
| Pds | The determined value\* of Pds 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. |
| Airborne acoustical noise emissions | The determined value\* shall not exceed the declared value by more than 2 dB re 1 pW. |

\* 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 V

Benchmarks

At the time of entry into force of this Regulation, the best available technology on the market for household tumble dryers is identified as follows:

1. Condenser heating element tumble dryer with a rated capacity of 7 kg
	* + 1. energy consumption: 3,07 kWh/cycle for the eco programme cycle (\*)
			2. cycle time: 89 minutes for the eco programme cycle (\*)
			3. airborne acoustical noise emissions: 66 dB(A)
2. Heat pump tumble dryer with a rated capacity of 7 kg:
	* + 1. energy consumption: 0,95 kWh/cycle for the eco programme cycle (\*)
			2. cycle time: 124 minutes for the eco programme cycle (\*)
			3. airborne acoustical noise emissions: 66 dB(A)
3. Air-vented heating element tumble dryer with a rated capacity of 7 kg:
	* + 1. energy consumption: 2,91 kWh/cycle for the eco programme cycle (\*)
			2. cycle time: 98 minutes for the eco programme cycle (\*)
			3. airborne acoustical noise emissions: 69 dB(A)
4. Gas fired tumble dryer with a rated capacity of 7 kg:
	* + 1. energy consumption: 1,38 kWh/cycle for the eco programme cycle (\*)
			2. cycle time: 94 minutes for the eco programme cycle (\*)
			3. airborne acoustical noise emissions: 62 dB(A)

(\*) Calculated based on a weighted average between 3 cycles at full load (at the rated capacity), and 4 cycles at 50% of the rated capacity.

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). [↑](#footnote-ref-1)