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COMMISSION REGULATION (EU) No 932/2012

of 3 October 2012

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

(Text with EEA relevance)

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Article 1

Subject matter and scope

1. This Regulation establishes ecodesign requirements for the placing on the market of electric mains-operated and gas-fired household tumble driers and built-in household tumble driers, including those sold for non-household use.

2. This Regulation shall not apply to household combined washer-driers and household spin-extractors.

Article 2

Definitions

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

(1) ‘household tumble drier’ means an appliance in which textiles are dried by tumbling in a rotating drum through which heated air is passed and which is designed to be used principally for non-professional purposes;

(2) ‘built-in household tumble drier’ means a household tumble drier intended to be installed in a cabinet, a prepared recess in a wall or a similar location, requiring furniture finishing;

(3) ‘household combined washer-drier’ means a household washing machine which includes both a spin extraction function and also a means for drying the textiles, usually by heating and tumbling;

(4) ‘household spin-extractor’, also known commercially as ‘spin-drier’, means an appliance in which water is removed from the textiles by centrifugal action in a rotating drum and drained through an automatic pump and which is designed to be used principally for non-professional purposes;

(5) ‘air-vented tumble drier’ means a tumble drier that draws in fresh air, passes it over the textiles and vents the resulting moist air into the room or outside;

(6) ‘condenser tumble drier’ means a tumble drier which includes a device (either using condensation or any other means) for removing moisture from the air used for the drying process;

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(7) ‘automatic tumble drier’ means a tumble drier which switches off the drying process when a certain moisture content of the load is detected, for example through conductivity or temperature sensing;

(8) ‘non-automatic tumble drier’ means a tumble drier which switches off the drying process after a predefined period, usually controlled by a timer, but which may also be manually switched off;

(9) ‘programme’ means a series of operations that are predefined and which are declared by the manufacturer as suitable for drying certain types of textile;

(10) ‘cycle’ means a complete drying process, as defined for the selected programme;

(11) ‘programme time’ means the time that elapses from the initiation of the programme until the completion of the programme, excluding any end-user programmed delay;

(12) ‘rated capacity’ means the maximum mass in kilograms, indicated by the manufacturer in 0,5 kilogram increments of dry textiles of a particular type, which can be treated in a household tumble drier with the selected programme, when loaded in accordance with the manufacturer’s instructions;

(13) ‘partial load’ means half of the rated capacity of a household tumble drier for a given programme;

(14) ‘condensation efficiency’ means the ratio between the mass of moisture condensed by a condenser tumble drier and the mass of moisture removed from the load at the end of a cycle;

(15) ‘off-mode’ means a condition where the household tumble drier is switched off using appliance controls or switches accessible to and intended for operation by the end-user during normal use to attain the lowest power consumption that may persist for an indefinite time while the household tumble drier is connected to a power source and used in accordance with the manufacturer’s instructions; where there is no control or switch accessible to the end-user, ‘off-mode’ means the condition reached after the household tumble drier reverts to a steady-state power consumption on its own;

(16) ‘left-on mode’ means the lowest power consumption mode that may persist for an indefinite time after completion of the programme without any further intervention by the end-user besides unloading of the household tumble drier;

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(17) ‘equivalent household tumble drier’ means a model of household tumble drier placed on the market with the same rated capacity, technical and performance characteristics, energy consumption, condensation efficiency where relevant, standard cotton programme time and airborne acoustical noise emissions during drying as another model of household tumble drier placed on the market under a different commercial code number by the same manufacturer.

(18) ‘standard cotton programme’ means the cycle which dries cotton laundry with an initial moisture content of the load of 60 % up to a remaining moisture content of the load of 0 %.

Article 3

Ecodesign requirements

The generic ecodesign requirements for household tumble driers are set out in point 1 of Annex I. The specific ecodesign requirements for household tumble driers are set out in point 2 of Annex I.

No ecodesign requirement is necessary regarding any other ecodesign parameter referred to in Annex I, Part 1, of Directive 2009/125/EC.

Article 4

Conformity assessment

1. The conformity assessment procedure referred to in Article 8 of Directive 2009/125/EC shall be the internal design control set out in Annex IV to that Directive or the management system set out in Annex V to that Directive.

2. For the purposes of conformity assessment pursuant to Article 8 of Directive 2009/125/EC, the technical documentation shall include a copy of the calculations set out in Annex II to this Regulation.

Where the information included in the technical documentation for a particular household tumble drier model has been obtained by calculation on the basis of design or by extrapolation from other equivalent household tumble driers, or both, the technical documentation shall include details of such calculations or extrapolations, or both, and of tests undertaken by manufacturers to verify the accuracy of the calculations undertaken. In such cases, the technical documentation shall also include a list of all other equivalent household tumble drier models where the information included in the technical documentation was obtained in the same way.

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Article 5

Verification procedure for market surveillance purposes

Member States shall apply the verification procedure described in Annex III to this Regulation when performing the market surveillance checks referred to in Article 3(2) of Directive 2009/125/EC for compliance with requirements set out in Annex I to this Regulation.

Article 6

Benchmarks

The indicative benchmarks for best-performing household tumble driers available on the market at the time of entry into force of this Regulation are set out in Annex IV.

Article 7

Revision

The Commission shall review this Regulation in the light of technological progress no later than five years after its entry into force and present the result of that review to the Ecodesign Consultation Forum. The review shall in particular assess the verification tolerances set out in Annex III and the efficiency of air-vented appliances.

Article 8

Entry into force and application

1. This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

2. It shall apply from 1 November 2013.

However:

(a) the generic ecodesign requirements set out in points 1.1 and 1.2 of Annex I shall apply from 1 November 2014;

(b) the specific ecodesign requirements set out in point 2.2 of Annex I shall apply from 1 November 2015.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

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ANNEX I

Ecodesign requirements

1. **Generic ecodesign requirements**

1.1. For the calculation of the energy consumption and other parameters for household tumble driers, the cycle which dries cotton laundry (with an initial moisture content of the load of 60 %) up to a remaining moisture content of the load of 0 % (hereinafter the 'standard cotton programme') shall be used. That cycle shall be clearly identifiable on the programme selection device(s) of the household tumble drier or the household tumble drier display, if any, or both, and indicated as 'standard cotton programme' or by a uniform symbol or an appropriate combination thereof, and shall be set as the default cycle for household tumble driers equipped with automatic programme selection or any function for automatically selecting a drying programme or maintaining the selection of a programme. If the tumble drier is automatic tumble drier the 'standard cotton programme' shall be automatic.

1.2. The booklet of instructions provided by the manufacturer shall provide:

(a) information about the 'standard cotton programme' and shall specify that it is suitable to dry normal wet cotton laundry and that it is the most efficient programme in terms of energy consumption for drying wet cotton laundry;

(b) the power consumption of the off-mode and the left-on mode;

(c) indicative information on the programme time and energy consumption for the main drying programmes at both full, and, if applicable, partial load;

2. **Specific ecodesign requirements**

Household tumble driers shall comply with the following requirements:

2.1. From 1 November 2013:

— the energy efficiency index (*EEI*) shall be less than 85,

— for condenser household tumble driers the weighted condensation efficiency shall be not lower than 60 %.

2.2. From 1 November 2015:

— for condenser household tumble driers the energy efficiency index (*EEI*) shall be less than 76,

— for condenser household tumble driers, the weighted condensation efficiency shall be not lower than 70 %.

The energy efficiency index (*EEI*) and the weighted condensation efficiency are calculated in accordance with Annex II.

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ANNEX II

Method for calculating the energy efficiency index and weighted condensation efficiency

1. CALCULATION OF THE ENERGY EFFICIENCY INDEX

For the calculation of the energy efficiency index (*EEI*) of a household tumble drier model, the weighted annual energy consumption of a household tumble drier for the standard cotton programme at full and partial load is compared to its standard annual energy consumption.

(a) The energy efficiency index (*EEI*) is calculated as follows and rounded to one decimal place:

$$EEI = \frac{AE_C}{SAE_C} \times 100$$

where:

— AE_C = weighted annual energy consumption of the household tumble drier,

— SAE_C = standard annual energy consumption of the household tumble drier.

(b) The standard annual energy consumption (SAE_C) is calculated in kWh/year as follows and rounded to two decimal places:

— for all household tumble driers that are not air-vented:

$$SAE_C = 140 \times c^{0,8}$$

— for air-vented household tumble driers:

$$SAE_C = 140 \times c^{0,8} - \left(30 \times \frac{T_t}{60}\right)$$

where:

— c is the rated capacity of the household tumble drier for the standard cotton programme,

— T_t is the weighted programme time for the standard cotton programme.

(c) The weighted annual energy consumption (AE_C) is calculated in kWh/year as follows and is rounded to two decimal places:

(i)

$$AE_C = E_t \times 160 + \frac{\left[P_o \times \frac{525\,600 - (T_t \times 160)}{2} + P_l \times \frac{525\,600 - (T_t \times 160)}{2}\right]}{60 \times 1\,000}$$

where:

— E_t = weighted energy consumption, in kWh and rounded to two decimal places,

— P_o = power in ‘off-mode’ for the standard cotton programme at full load, in W and rounded to two decimal places,

— P_l = power in ‘left-on mode’ for the standard cotton programme at full load, in W and rounded to two decimal places,

— T_t = weighted programme time, in minutes and rounded to the nearest minute,

— *160* = total number of drying cycles per year.

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(ii) When the household tumble drier is equipped with a power management system, with the household tumble drier reverting automatically to 'off-mode' after the end of the programme, the weighted annual energy consumption (AE_C) is calculated taking into consideration the effective duration of the 'left-on mode', according to the following formula:

$$AE_C = E_t \times 160 + \frac{\{(P_l \times T_l \times 160) + P_o \times [525\ 600 - (T_t \times 160) - (T_l \times 160)]\}}{60 \times 1\ 000}$$

where:

— T_l = duration of the 'left-on mode' for the standard cotton programme at full load, in minutes and rounded to the nearest minute.

(d) The weighted programme time (T_t) for the standard cotton programme is calculated in minutes as follows and rounded to the nearest minute:

$$T_t = (3 \times T_{dry} + 4 \times T_{dry½})/7$$

where:

— T_{dry} = programme time for the standard cotton programme at full load, in minutes and rounded to the nearest minute,

— $T_{dry½}$ = programme time for the standard cotton programme at partial load, in minutes and rounded to the nearest minute.

(e) The weighted energy consumption (E_t) is calculated in kWh as follows and rounded to two decimal places:

$$E_t = (3 \times E_{dry} + 4 \times E_{dry½})/7$$

where:

— E_{dry} = energy consumption of the standard cotton programme at full load, in kWh and rounded to two decimal places,

— $E_{dry½}$ = energy consumption of the standard cotton programme at partial load, in kWh and rounded to two decimal places.

(f) For gas-fired household tumble driers, the energy consumption for the standard cotton programme at full and partial load is calculated in kWh, rounded to two decimal places, as:

$$E_{dry} = \frac{Eg_{dry}}{f_g} + Eg_{dry,a}$$

$$E_{dry½} = \frac{Eg_{dry½}}{f_g} + Eg_{dry½,a}$$

where:

— Eg_{dry} = gas consumption of the standard cotton programme at full load, in kWh and rounded to two decimal places,

— $Eg_{dry½}$ = gas consumption of the standard cotton programme at partial load, in kWh and rounded to two decimal places,

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— $Eg_{dry,a}$ = auxiliary electricity consumption of the standard cotton programme at full load, in kWh and rounded to two decimal places,

— $Eg_{dry½,a}$ = auxiliary electricity consumption of the standard cotton programme at partial load, in kWh and rounded to two decimal places,

— f_g = 2,5.

2. CALCULATION OF THE WEIGHTED CONDENSATION EFFICIENCY

The condensation efficiency of a programme is the ratio between the mass of moisture condensed and collected in the container of a condenser household tumble drier 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. For calculating the weighted condensation efficiency, the average condensation efficiency of the standard cotton programme at both full and partial load is considered.

The weighted condensation efficiency (C_t) of a programme is calculated as a percentage and rounded to the nearest whole percent as:

$$C_t = (3 \times C_{dry} + 4 \times C_{dry½})/7$$

where:

— C_{dry} = average condensation efficiency of the standard cotton programme at full load,

— $C_{dry½}$ = average condensation efficiency of the standard cotton programme at partial load.

The average condensation efficiency C is calculated from the condensation efficiencies of test runs and expressed as a percentage:

$$C = \frac{1}{(n-1)} \sum_{j=2}^{n} \left(\frac{W_{wj}}{W_i - W_f} \times 100 \right)$$

where:

— n is the number of test runs, comprising at least four valid test runs for the selected programme,

— j is the test run number,

— W_{wj} is the mass of water collected in the condenser reservoir during test run j,

— W_i is the mass of the wet test load before drying,

— W_f is the mass of the test load after drying.

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ANNEX III

Product compliance verification by market surveillance authorities

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

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

(1) The Member State authorities shall verify one single unit of the model.

(2) The model shall be considered to comply with the applicable requirements if:

(a) the values given in the technical documentation pursuant to point 2 of Annex IV to Directive 2009/125/EC (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the manufacturer or importer than the results of the corresponding measurements carried out pursuant to paragraph (g) thereof; and

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

(c) when the Member State authorities test the unit of the model, the determined values (the values of the relevant parameters as measured in testing and the values calculated from these measurements) comply with the respective verification tolerances as given in Table 1.

(3) If the results referred to in point 2(a) or (b) are not achieved, the model and all models that have been listed as equivalent household tumble drier 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 tumble drier 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.

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The Member State authorities shall use measurement procedures which take into account the generally recognised, state-of-the-art, reliable, accurate and reproducible measurement methods, including methods set out in documents whose reference numbers have been published for that purpose in the *Official Journal of the European Union*. The Member State authorities shall use the measurement and calculation methods set out in Annex II.

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

Table 1

Verification tolerances

Parameters	Verification tolerances
Weighted annual energy consumption *(AE_C)*	The determined value shall not exceed the declared value of AE_C by more than 6 %.
Weighted energy consumption *(E_t)*	The determined value shall not exceed the declared value of E_t by more than 6 %.
Weighted condensation efficiency *(C_t)*	The determined value shall not be less than the declared value of C_t by more than 6 %.
Weighted programme time *(T_t)*	The determined values shall not exceed the declared values of T_t by more than 6 %.
Power consumption in off mode and left-on mode (P_o and P_l)	The determined values of power consumption P_o and P_l of more than 1,00 W shall not exceed the declared values of P_o and P_l by more than 6 %. The determined values of power consumption P_o and P_l of less than or equal to 1,00 W shall not exceed the declared values of P_o and P_l by more than 0,10 W.
Duration of the left-on mode *(T_l)*	The determined value shall not exceed the declared value of T_l by more than 6 %.

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ANNEX IV

Benchmarks

At the time of entry into force of this Regulation, the best available technology on the market for household tumble driers, in terms of their energy consumption and airborne acoustical noise emissions during drying for the standard cotton programme, is identified as follows:

(1) Air-vented household tumble drier with a rated capacity of 3 kg:

(a) energy consumption: 1,89 kWh/cycle for the standard cotton cycle at full load, equal to about 247 kWh/year (*);

(b) airborne acoustical noise emissions: 69 dB.

(2) Air-vented household tumble drier with a rated capacity of 5 kg:

(a) energy consumption: 2,70 kWh/cycle for the standard cotton cycle at full load, equal to about 347 kWh/year (*);

(b) airborne acoustical noise emissions: not available.

(3) Gas fired air-vented household tumble driers with a rated capacity of 5 kg:

(a) Gas energy consumption: 3,25 kWh_{Gas}/cycle equivalent to 1,3 kWh for the standard cotton cycle at full load. Annual energy consumption not available.

(b) airborne noise emissions: not available.

(4) Condenser household tumble drier with a rated capacity of 5 kg:

(a) energy consumption: 3,10 kWh/cycle for the standard cotton cycle at full load, equal to about 396 kWh/year (*);

(b) airborne acoustical noise emissions: not available.

(5) Air-vented household tumble drier with a rated capacity of 6 kg:

(a) energy consumption: 3,84 kWh/cycle for the standard cotton cycle at full load, equal to about 487 kWh/year (*);

(b) airborne acoustical noise emissions: 67 dB.

(6) Condenser household tumble drier with a rated capacity of 6 kg:

(a) energy consumption: 1,58 kWh/cycle for the standard cotton cycle at full load, equal to about 209 kWh/year (*);

(b) airborne acoustical noise emissions: not available.

(7) Air-vented household tumble drier with a rated capacity of 7 kg:

(a) energy consumption: 3,9 kWh/cycle for the standard cotton cycle at full load, equal to about 495 kWh/year (*);

(b) airborne acoustical noise emissions: 65 dB.

(8) Gas fired air-vented household tumble driers with a rated capacity of 7 kg:

(a) Gas energy consumption: 3,4 kWh_{Gas}/cycle equivalent to 1,36 kWh for the standard cotton cycle at full load. Annual energy consumption not available.

(b) airborne noise emissions: not available

(*) Calculated assuming 160 drying cycles per year with an energy consumption for the standard cotton programme at partial load equal to 60 % of the energy consumption at full load, and an additional annual energy consumption in low power modes of 13,5 kWh.

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(9) Condenser household tumble drier with a rated capacity of 7 kg:

(a) energy consumption: 1,6 kWh/cycle for the standard cotton cycle at full load, equal to about 211 kWh/year (*);

(b) airborne acoustical noise emissions: 65 dB.

(10) Air-vented household tumble drier with a rated capacity of 8 kg:

(a) energy consumption: 4,1 kWh/cycle for the standard cotton cycle at full load, equal to about 520 kWh/year (*);

(b) airborne acoustical noise emissions: 65 dB.

(11) Condenser household tumble drier with a rated capacity of 8 kg:

(a) energy consumption: 2,30 kWh/cycle for the standard cotton cycle at full load, equal to about 297 kWh/year (*);

(b) airborne acoustical noise emissions: not available.

(*) Calculated assuming 160 drying cycles per year with an energy consumption for the standard cotton programme at partial load equal to 60 % of the energy consumption at full load, and an additional annual energy consumption in low power modes of 13,5 kWh.