



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, XXX
C(2009) YYY final

Draft

COMMISSION REGULATION (EC) No .../..

implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for household washing machines

Draft

COMMISSION REGULATION (EC) No .../..

implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for household washing machines

(Text with EEA relevance)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Directive 2005/32/EC of the European Parliament and of the Council of 6 July 2005 establishing a framework for the setting of ecodesign requirements for energy-using products and amending Council Directive 92/42/EEC and Directives 96/57/EC and 2000/55/EC of the European Parliament and of the Council¹, and in particular Article 15 (1) thereof,

After consulting the Ecodesign Consultation Forum,

Whereas:

- (1) Under Directive 2005/32/EC ecodesign requirements should be set by the Commission for energy-using products representing significant volumes of sales and trade, having significant environmental impact and presenting significant potential for improvement in terms of their environmental impact without entailing excessive costs.
- (2) Article 16(2), first indent, of Directive 2005/32/EC provides that in accordance with the procedure referred to in Article 19(3) and the criteria set out in Article 15(2), and after consulting the Ecodesign Consultation Forum, the Commission shall, as appropriate, introduce an implementing measure for domestic appliances, including household washing machines.
- (3) The Commission has carried out a preparatory study to analyse the technical, environmental and economic aspects of household washing machines typically used in households. The study has been developed together with stakeholders and interested parties from the Community and third countries, and the results have been made publicly available.
- (4) This Regulation should cover products designed for washing laundry in households.
- (5) The environmental aspect of the products covered, identified as significant for the purposes of this Regulation, is energy and water consumption in the use phase. The annual electricity and water consumption of products subject to this Regulation was estimated to have been 35 TWh and 2 213 million m³, respectively, in the Community in 2005. Unless specific measures are taken, annual electricity and water consumption is predicted to increase to 37.7 TWh and 2 051 million m³ in 2020. The preparatory study shows that the electricity and water consumption of products subject to this Regulation can be significantly reduced.

¹ OJ L 191, 22.7.2005, p. 29.

- (6) The preparatory study shows that requirements regarding other ecodesign parameters referred to in Annex I, Part 1, of Directive 2005/32/EC are not necessary as electricity and water consumptions of household washing machines in the use phase are by far the most important environmental aspect.
- (7) The electricity and water consumptions of products subject to this Regulation should be made more efficient by applying existing non-proprietary cost-effective technologies that can reduce the combined costs of purchasing and operating these products that can reduce the combined costs of purchasing and operating these products.
- (8) The ecodesign requirements should not affect functionality from the end-user's perspective and should not negatively affect health, safety or the environment. In particular, the benefits of reducing electricity and water consumption during the use phase should more than offset any additional environmental impacts during the production phase.
- (9) The ecodesign requirements should be introduced gradually in order to provide a sufficient timeframe for manufacturers to re-design products subject to this Regulation. The timing should be such as to avoid negative impacts on the functionalities of equipment on the market, and to take into account cost impacts for end-users and manufacturers, in particular small and medium-sized enterprises, while ensuring timely achievement of the objectives of this Regulation.
- (10) Measurements of the relevant product parameters should be performed through reliable, accurate and reproducible measurement methods, which take into account the recognised state of the art measurement methods including, where available, harmonised standards adopted by the European standardisation bodies, as listed in Annex I to Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society services².
- (11) In accordance with Article 8 of Directive 2005/32/EC, this Regulation should specify the applicable conformity assessment procedures.
- (12) In order to facilitate compliance checks, manufacturers should provide information in the technical documentation referred to in Annexes V and VI of Directive 2005/32/EC insofar as this information relates to the requirements laid down in this Regulation.
- (13) In addition to the legally binding requirements laid down in this Regulation, indicative benchmarks for best available technologies should be identified to ensure the wide availability and easy accessibility of information on the life-cycle environmental performance of products subject to this Regulation.
- (14) The measures provided for in this Regulation are in accordance with the opinion of the Committee established by Article 19(1) of Directive 2005/32/EC,

² OJ L 204, 21.7.1998, p. 37.

HAS ADOPTED THIS REGULATION:

Article 1
Subject matter and scope

1. This Regulation establishes eco-design requirements for the placing of the market of electric mains-operated automatic household washing machines and electric mains-operated automatic household washing machines that can also be powered by batteries, including those sold for non-household use.
2. This Regulation shall not apply to:
 - (a) household washing machines with no spin extraction;
 - (b) combined washer-driers.

Article 2
Definitions

In addition to the definitions set out in Article 2 of Directive 2005/32/EC, the following definitions shall apply:

- (1) “household washing machine” means a machine which cleans and rinses textiles using water which may also have a spin extraction function and which is designed to be used principally for non-professional purposes;
- (2) “automatic washing machine” means a washing machine where the load is fully treated by the machine without the need for user intervention at any point during the programme;
- (3) “combined washer-dryer” 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) “programme” means a series of functions that are pre-defined and which are declared as suitable by the manufacturer for washing certain types of textile;
- (5) “cycle” means a complete washing, rinsing and spinning process, as defined for the selected programme;
- (6) “programme time” means the time that elapses from the initiation of the programme (excluding any end-user programmed delay) until the completion of the programme;
- (7) “rated capacity” means the maximum mass in kg of dry textiles of a household washing machine, as stated by the manufacturer, at 0.5 kg intervals, which can be cleaned and rinsed when loaded in accordance with the manufacturer's instructions;
- (8) “partial load” means half of the rated capacity of a household washing machine for a given programme;
- (9) “remaining moisture content” means the amount of moisture contained in the load;
- (10) “off-mode” means a condition where the household washing machine is switched off using 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 washing machine is connected to a power source and used in accordance with the manufacturer's instructions. Where there are no

controls, ‘off-mode’ means the condition reached after the household washing machine is left to revert to a steady-state power consumption of its own accord;

- (11) “left-on mode” means the lowest power consumption mode that may persist for an indefinite time after completion of the programme and unloading of the machine without any further intervention by the end-user;
- (12) “equivalent washing machine” means a model of household washing machine placed on the market with the same rated capacity, technical and performance characteristics, energy and water consumption and airborne acoustical noise emissions during washing and spinning as another model of household washing machine placed on the market under a different commercial code number by the same manufacturer.

Article 3 ***Ecodesign requirements***

The generic ecodesign requirements for household washing machines are set out in Annex I, point 1. The specific ecodesign requirements for household washing machines are set out in Annex I, point 2.

Article 4 ***Conformity assessment***

1. The conformity assessment procedure referred to in Article 8 of Directive 2005/32/EC shall be the internal design control system 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 2005/32/EC, the technical documentation file shall contain the copy of the calculation set out in Annex II to this Regulation.

Where the information included in the technical documentation for a particular household washing machine model has been obtained by calculation on the basis of design, or extrapolation from other equivalent washing machines, 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 washing machine models where the information included in the technical documentation was obtained on the same basis.

Article 5 ***Verification procedure for market surveillance purposes***

When performing the market surveillance checks referred to in Article 3(2) of Directive 2005/32/EC for compliance with requirements set out in Annex I to this Regulation, the Member States authorities shall apply the verification procedure described in Annex III to this Regulation.

Article 6 ***Benchmarks***

The indicative benchmarks for best-performing household washing machines 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 this review to the Ecodesign Consultation Forum.

Article 8
Entry into force

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. The generic ecodesign requirements set out in point 1 of Annex I shall apply from 1 July 2011.

The specific ecodesign requirements for the Energy Efficiency Index set out in point 2(1) of Annex I shall apply from 1 July 2010.

The specific ecodesign requirements for the Energy Efficiency Index set out in point 2(2) of Annex I shall apply from 1 July 2013.

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

Done at Brussels,

For the Commission

Member of the Commission

ANNEX I
Ecodesign requirements

1. Generic ecodesign requirements

- (1) For the calculation of the energy consumption and other parameters for household washing machines, the cycles which clean normally soiled cotton laundry (hereafter 'standard cotton programmes') at 40 °C and 60 °C shall be used. These cycles shall be clearly identifiable on the programme selection device of the household washing machines or the household washing machines display, if any, or both, and named 'standard 60°C cotton programme' and 'standard 40°C cotton programme'.
- (2) The booklet of instructions provided by the manufacturer shall indicate:
 - (a) the standard 60 °C and 40 °C cotton programmes, referred to as 'standard 60 °C cotton programme' and 'standard 40 °C cotton programme', and shall specify that they are suitable to clean normally soiled cotton laundry and that they are the most efficient programmes in terms of combined energy and water consumptions for washing that type of cotton laundry.
 - (b) the energy and water consumption in each programme at full and partial load.

2. Specific ecodesign requirements

Household washing machines shall comply with the following requirements:

- (1) From 1 July 2010:
 - for all household washing machines, the Energy Efficiency Index (EEI) shall be less than 68;
 - for household washing machines with a rated capacity higher than 3 kg, the Washing Efficiency Index (I_w) shall be greater than 1.03;
 - for household washing machines with a rated capacity equal to or lower than 3 kg, the Washing Efficiency Index (I_w) shall be greater than 1.00;
 - for all household washing machines, the Water Consumption (W_t) shall be:

$$W_t \leq 5 \times c + 35$$

where c is the household washing machine's rated capacity for the standard 60°C cotton programme at full load or for the standard 40°C cotton programme at full load, whichever is the lower.

- (2) From 1 July 2013:
 - for household washing machines with a rated capacity equal to or higher than 4 kg, the Energy Efficiency Index (EEI) shall be less than 59;
 - for all household washing machines, the water consumption shall be:

$$W_t \leq 5 \times c_{1/2} + 35$$

where $c_{1/2}$ is the household washing machine's rated capacity for the standard 60°C cotton programme at partial load or for the standard 40°C cotton programme at partial load, whichever is the lower.

The Energy Efficiency Index (EEI), the Washing Efficiency Index (I_w) and the Water Consumption (W_t) are calculated in accordance with Annex II.

ANNEX II
Method for calculating the Energy Efficiency Index, washing performance and water consumption

1. CALCULATION OF THE ENERGY EFFICIENCY INDEX

For the calculation of the Energy Efficiency Index (EEI) of a household washing machine model, the energy consumption of a household washing machine for the standard 60 °C cotton programme at full load is compared to the standard energy consumption of a household washing machine with the same rated capacity.

- (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 = annual energy consumption of the household washing machine;

SAE_C = standard annual energy consumption of the household washing machine.

- (b) The Standard Annual Energy Consumption (SAE_C) is calculated in kWh/year as follows and rounded to two decimal places:

$$SAE_C = 47,0 \times c + 51,7$$

where:

c = rated capacity of the household washing machine for the standard 60 °C cotton programme at full load.

- (c) The Annual Energy Consumption (AE_C) is calculated in kWh/year as follows and is rounded to two decimal places:

- (i)

$$AE_C = E_t \times 220 + \frac{\left[P_o \times \frac{525.600 - (T_t \times 220)}{2} + P_l \times \frac{525.600 - (T_t \times 220)}{2} \right]}{60 \times 1.000}$$

where:

E_t = energy consumption;

P_o = power in 'off-mode' of the standard 60 °C cotton programme at full load, in W and rounded to two decimal places;

P_l = power in the 'left-on mode' of the standard 60 °C cotton programme at full load, in W and rounded to two decimal places;

T_t = programme time of the standard 60 °C cotton programme at full load, in minutes and rounded to the nearest minute;

220 = total number of standard washing cycles per year.

- (ii) When power management is enforced, with the household washing machine reverting automatically to 'off-mode' after the end of the programme, the Annual Energy Consumption (AE_C) is calculated taking into consideration the effective duration of 'left-on mode', according to the following formula:

$$AE_C = E_t \times 220 + \frac{\{(P_t \times T_t \times 220) + P_o \times [525.600 - (T_t \times 220) - (T_t \times 220)]\}}{60 \times 1.000}$$

where:

T_t = time in 'left-on mode' of the standard 60 °C cotton programme at full load, in minutes and rounded to the nearest minute.

- (d) The energy consumption (E_t) is calculated in kWh as follows and rounded to three decimal places:

$$E_t = [3 \times E_{t,60} + 2 \times (0,8 \times E_{t,60}) + 2 \times (0,64 \times E_{t,60})]/7$$

where:

$E_{t,60}$ = energy consumption of the standard 60 °C cotton programme at full load, in kWh and rounded to three decimal places.

2. CALCULATION OF THE WASHING EFFICIENCY INDEX

For the calculation of the Washing Efficiency Index (I_w), the washing efficiency of the household washing machine for the standard 60°C cotton programme at full load is compared to the washing efficiency of a reference household washing machine where the reference household washing machine shall have the same characteristics for all suppliers.

- (a) The Washing Efficiency Index (I_w) is calculated as follows and rounded to three decimal places

$$I_w = I_{w,60} = \frac{1}{n} \times \sum_{i=1}^n \left(\frac{W_{T,i}}{W_{R,i}} \right)$$

where:

$I_{w,60}$ = Washing Efficiency Index of the standard 60°C cotton programme at full load.

$W_{T,i}$ = Washing Efficiency of the household dishwasher under test for one test cycle (i)

$W_{R,i}$ = Washing Efficiency of the reference household dishwasher for one test cycle (i)

n = number of test cycles, $n \cdot 5$

- (b) The Washing Efficiency (W) is the average of the reflectance values of each load item after completion of a test cycle.

3. CALCULATION OF WATER CONSUMPTION

The water consumption (W_t) is calculated as follows and rounded to one decimal place:

$$W_t = W_{t,60}$$

where:

$W_{t,60}$ = water consumption of the standard 60°C cotton programme at full load.

ANNEX III

Verification procedure for market surveillance purposes

For the purposes of checking conformity with the requirements laid down in Annex I, Member State authorities shall test a single household washing machine. If the measured parameters do not meet the declared values within the meaning of Article 5(2) of the manufacturer within the ranges set out in Table 1, the measurements shall be carried out on three more household washing machines. The arithmetic mean of the measured values of these three household washing machines shall meet the requirements within the ranges set out in Table 1.

Otherwise, the model and all other equivalent household washing machines models shall be considered not to comply with the requirements laid down in Annex I.

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

Table 1

Measured parameter	Measurement accuracy
Annual energy consumption	The measured value shall not be greater than the rated value* of AE_C by more than 10 %.
Washing efficiency index	The measured value shall not be less than the rated value of W_P by more than 4 %.
Energy consumption	The measured value shall not be greater than the rated value of E_t by more than 10 %.
Programme time	The measured value shall not be longer than the rated values T_t by more than 10 %.
Water consumption	The measured value shall not be greater than the rated value of W_t by more than 10 %.
Power consumption in off-mode and left-on mode	The measured value of power consumption P_o and P_l of more than 1,00 W shall not be greater than the rated value by more than 10 %. The measured value of power consumption P_o and P_l of less than or equal to 1,00 W shall not be greater than the rated value by more than 0,10 W in accordance with Commission Regulation (EC) No ^o 1275/2008 ³ .
Duration of the left-on mode	The measured value shall not be longer than the rated value of T_l by more than 10 %.

* “rated value” means a value that is declared by the manufacturer

³ OJ L 339, 18.12.2008, p.45

ANNEX IV Benchmarks

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

- (1) Household washing machines with a rated capacity of 3kg:
 - (a) energy consumption: 0.70 kWh/cycle (or 0,23 kWh/kg), corresponding to an overall annual energy consumption of 141.86 kWh/year, of which 129.36 kWh/year for 220 cycles and 12.5 kWh/year during the low-power modes
 - (b) water consumption: 39 litres/cycle, corresponding to 8 580 litres/year for 220 cycles
 - (c) washing efficiency index: I_w of 1.03
 - (d) airborne acoustical noise emissions during washing/spinning: 53/74 dB(A) re 1pW.
- (2) Household washing machines with a rated capacity of 4.5kg:
 - (a) energy consumption: 0.76 kWh/cycle (or 0.17 kWh/kg) corresponding to an overall annual energy consumption of 152.95 kWh/year, of which 140.45 kWh/year for 220 cycles and 12.5 kWh/year during the low-power modes
 - (b) water consumption: 40 litres/cycle, corresponding to 8 800 litres/year for 220 cycles
 - (c) washing efficiency index: I_w of 1.03
 - (d) airborne acoustical noise emissions during washing/spinning (1 000 rpm): 55/70 dB(A) re 1pW.
- (3) Household washing machines with a rated capacity of 5 kg:
 - (a) energy consumption: 0.850 kWh/cycle (or 0.17 kWh/kg) corresponding to an overall annual energy consumption of 169.60 kWh/year, of which 157.08 kWh/year for 220 cycles and 12,5 kWh/year during the low-power modes
 - (b) water consumption: 39 litres/cycle, corresponding to an annual water consumption of 8 580 litres for 220 cycles
 - (c) washing efficiency index: I_w of 1.03
 - (d) airborne acoustical noise emissions during washing/spinning (1 200 rpm): 53/73 dB(A) re 1pW.
- (4) Household washing machines with a rated capacity of 6 kg:
 - (a) energy consumption: 1.02 kWh/cycle (or 0.17 kWh/kg) corresponding to an overall annual energy consumption of 201.00 kWh/year, of which 188.50 kWh/year for 220 cycles and 12.5 kWh/year during the low-power modes
 - (b) water consumption: 39 litres/cycle, corresponding to an annual water consumption of 8 580 litres for 220 cycles
 - (c) washing efficiency index: I_w of 1.03

- (d) airborne acoustical noise emissions during washing/spinning (1 600 rpm): 54/78 dB(A) re 1pW.
- (5) Household washing machines with a rated capacity of 7 kg:
- (a) energy consumption: 1.02 kWh/cycle (or 0.15 kWh/kg) corresponding to an overall annual energy consumption of 201.00 kWh/year, of which 188.50 kWh/year for 220 cycles and 12.5 kWh/year during the low-power modes
 - (b) water consumption: 43 litres/cycle, corresponding to an annual water consumption of 9 460 litres for 220 cycles
 - (c) washing efficiency index: I_w of 1,03
 - (d) airborne acoustical noise emissions during washing/spinning (1 000 rpm): 57/73 dB(A) re 1pW
 - (e) airborne acoustical noise emissions during washing/spinning (1 400 rpm): 59/76 dB(A) re 1pW
 - (f) airborne acoustical noise emissions during washing/spinning (1 200 rpm): 48/62 dB(A) re 1pW (for built-in household washing machines).
- (6) Household washing machines with a rated capacity of 8 kg:
- (a) energy consumption: 1.200 kWh/cycle (or 0.15 kWh/kg) corresponding to an overall annual energy consumption of 234.26 kWh/year, of which 221.76 kWh/year for 220 cycles and 12.5 kWh/year during the low-power modes
 - (b) water consumption: 56 litres/cycle, corresponding to an annual water consumption of 12 320 litres for 220 cycles
 - (c) washing efficiency index: I_w of 1.03
 - (d) airborne acoustical noise emissions during washing/spinning (1 400 rpm): 54/71 dB(A) re 1pW
 - (e) airborne acoustical noise emissions during washing/spinning (1 600 rpm): 54/74 dB(A) re 1pW.

*For evaluation of the annual energy consumption, the calculation method set out in Annex II was used for a programme time of 90 min along with an off-mode power of 1W and a left-on mode power of 2 W.