

Working Document on a possible

COMMISSION REGULATION

**implementing Directive 2009/125/EC of the European Parliament and of the Council
with regard to Ecodesign requirements for vacuum cleaners**

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THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of Ecodesign requirements for energy-related products¹, and in particular Article 15(1) thereof,

After consulting the Ecodesign Consultation Forum,

Whereas:

- (1) Under Directive 2009/125/EC Ecodesign requirements should be set by the Commission for energy-related 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 2009/125/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 vacuum cleaners.
- (3) The Commission has carried out a preparatory study to analyse the technical, environmental and economic aspects of vacuum cleaners typically used in households and commercial premises. 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) Wet vacuum cleaners have particular characteristics and should therefore be exempted from the scope of this Regulation.
- (5) The environmental aspect of the products covered, identified as significant for the purposes of this Regulation, is energy consumption in the use phase. The annual electricity consumption of products subject to this Regulation was estimated to have been **XX** TWh in the Community in 20**XX**. Unless specific measures are taken, annual electricity consumption is predicted to be **XXX** TWh in 2020. The preparatory study shows that the energy consumption of products subject to this Regulation can be significantly reduced.
- (6) The preparatory study shows that energy consumption is the most significant Ecodesign parameters referred to in Annex I, Part 1, of Directive 2009/125/EC, in addition the health benefits of vacuum cleaners, and in particular their removal of small particulates from the indoor environment are important.

¹ OJ L 285, 31.10.2009, p. 10–35

- (7) The energy consumption 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.
- (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 energy consumption during the use phase should more than offset any additional environmental impacts during the production phase and the disposal.
- (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 2009/125/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 2009/125/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 2009/125/EC,

HAS ADOPTED THIS REGULATION:

Article 1

Subject matter and scope

1. This Regulation establishes eco-design requirements for the placing on the market of electric mains-operated vacuum cleaners that are placed on the market after [date to be inserted: 12 months after entry into force of the delegated Regulation].
2. This Regulation shall not apply to

² OJ L 204, 21.7.1998, p. 37.

- § Wet,
- § Wet and dry
- § battery operated,
- § Robot
- § Industrial, or
- § Central vacuum cleaners.
- § Or to floor polishers

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) “vacuum cleaner” means an appliance that removes dry material (dust, fibre, threads) from the surface to be cleaned by an airflow created by a vacuum developed within the unit. The material thus removed is separated in the appliance and the cleaned suction air is returned;
- 2) “wet and dry vacuum cleaner” means a vacuum cleaner designed to remove a significant volume, of more than 2.5 litres of liquid
- 3) “wet vacuum cleaner” means an electrically operated appliance that removes dry and/or wet material (soil) from the surface by use of water-based detergent or steam to be cleaned by an airflow created by a vacuum developed within the unit. The material thus removed is separated in the appliance and cleaned suction air is returned to the ambient;
- 4) “floor polisher” means an electrical appliance that creates a shiny effect on certain kind of floor. The process usually needs to put a polish mean on the floor and remove, by the polisher, part of the material. Floor polisher, as accessory function, usually removes the excessive material from the floor by an air-flow created by a vacuum developed within the appliance.
- 5) “water filter vacuum cleaner” means a vacuum cleaner that uses water as the main filter medium; the suction air is forced through the water entrapping the removed dry material as it passes through. Vacuum cleaners which use less than [1] litre of water shall not be considered “water filter vacuum cleaners”.
- 6) “Robot VC” means a battery powered automatic floor cleaner that can be operated without (or with) human control within a defined perimeter. The robot VC consists of the mobile part and may have a docking station and /or other accessories to assist its operation.
- 7) “central vacuum cleaner” means a vacuum cleaner with a fixed (not movable) vacuum source location. The hose connections are located at fixed positions in the building.
- 8) “household vacuum cleaner” means a vacuum cleaner (including hybrid products that can be both mains and/or battery powered) used primarily in household or domestic situations; the manufacturer declares the product's compliance with the Low Voltage Directive (LVD) in the Declaration of Conformity (DoC).

- 9) “commercial vacuum cleaner”: means a vacuum cleaner for professional housekeeping purposes and intended to be used by laymen, cleaning staff or contracting cleaners in office, shop, hospital and hotel environments; the manufacturer declares the product's compliance with the Machinery Directive (MD) in the Declaration of Conformity (DoC).
- 10) “industrial vacuum cleaner”: means a mobile or stationary vacuum cleaner designed to be part of a production process, and is neither a household nor a commercial vacuum cleaner. Vacuum cleaners designed :
- For hazardous material
 - As part of an industrial machine or tool
- Shall be considered “industrial vacuum cleaner”:
- 11) Hard floor vacuum cleaner means a vacuum cleaner supplied without any nozzle which is designed or suitable for use on carpets.
- 12) Carpet vacuum cleaner means a vacuum cleaner supplied without any nozzle which is designed or suitable for use on hard floors.
- 13) “double stroke” means one forward and one return strokes to be carried out at a specified stroke speed over the test area according to the appropriate stroke pattern;
- 14) “cleaning cycle” means a sequence of two double strokes;
- 15) “dust removal” means the capacity of removing dust from specific surface(s) during the cleaning cycle;
- 16) “Dust re-emission efficiency”: is the ratio (in percent) of the all dust of a specific particle size which emitted by a vacuum cleaner to dust of the same particles when dust of a specific amount and particle size is fed to the suction inlet while the vacuum cleaner is operating at its maximum power setting. The value includes not only dust measured at the vacuum cleaner outlet but also dust emitted elsewhere either from leaks, or generated by the vacuum cleaner (e.g. from brushes in the motor).
- 17) “equivalent vacuum cleaner” means a model of vacuum cleaner placed on the market with the same input power, technical and performance characteristics, energy consumption and airborne acoustical noise as another model of vacuum cleaner placed on the market under a different commercial code number by the same manufacturer.
- 18) “battery operated vacuum cleaner” means a vacuum cleaner powered only by batteries.
- 19) “battery operated active nozzle” means a cleaning head provided with an agitation device powered by batteries to assist dirt removal.

Article 3 ***Ecodesign requirements***

The generic Ecodesign requirements for vacuum cleaners are set out in point 1 of Annex I. The specific Ecodesign requirements for vacuum cleaners are set out in point 2 of Annex I.

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 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 2009/125/EC, the technical documentation file shall contain a copy of the calculation set out in Annex II to this Regulation.

Where the information included in the technical documentation for a particular vacuum cleaner model has been obtained by calculation on the basis of design, or extrapolation from other equivalent vacuum cleaners, 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 vacuum cleaner 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 2009/125/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 vacuum cleaners 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. The review shall in particular assess the verification tolerances set out in Annex III.

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 specific Ecodesign requirements set out in point 1(1) of Annex I shall apply from [date to be inserted: [2] years after the entry into force of the Regulation].
The specific Ecodesign requirements set out in point 1(2) of Annex I shall apply from [date to be inserted: [5] year after the entry into force of the Regulation]

This Regulation shall be binding in its entirety and directly applicable in all Member States.
Done at Brussels,

For the Commission

The President

ANNEX I

Ecodesign requirements

For the calculation of the Energy Efficiency, the dust removal ability the standard cleaning cycles on a test carpet and on a standard hard floor with crevice shall be used.

1. Specific Ecodesign requirements

Vacuum cleaners shall comply with the following requirements:

- (1) From [date to be inserted: [2] year after the entry into force of the Regulation]:
 - the Annual Energy Consumption shall be less than [62kWh/year]. This limit shall not apply to water filter vacuum cleaners.

- (2) From [date to be inserted: [5] years after the entry into force of the Regulation]:
 - the Annual Energy Consumption shall be less than [36] kWh/year
 - Dust re-emission shall be no more than [3%]

The Annual Energy consumption, and dust re-emission is measured and calculated in accordance with Annex II.

2. INFORMATION TO BE PROVIDED BY MANUFACTURERS

- (1) The booklet of instructions and free access websites of manufacturers, their authorised representatives, or importers shall contain the following elements:
 - (i) Any information required to be published in respect of the vacuum cleaner under any delegated acts adopted under directive Directive 2010/30/EU³
 - (ii) Short Title or Reference to the measurement and calculation methods used to establish compliance with the above requirements.
 - (iii) information relevant for disassembly, recycling or disposal at end-of-life.
 - (iv) for 'hard floor' vacuum cleaners, mention that they are not suitable for use on carpets.

for 'carpet' vacuum cleaners, mention that they are not suitable for use on hard floors.

³ Directive 2010/30/EU of the European Parliament and of the Council of 19 May 2010 on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products (Text with EEA relevance)

OJ L 153, 18.6.2010, p. 1–12

ANNEX II
Method for calculating the Annual energy

1. CALCULATION OF THE ANNUAL ENERGY CONSUMPTION

The average Annual Energy Consumption (AE_C) is calculated, in kWh/year and rounded to one decimal place, as follows:

$$AE_C = \left(\frac{SE_C}{10} \times F_C \times P_C \times A_C + \frac{SE_{hf}}{10} \times F_{hf} \times P_{hf} \times A_{hf} \right) \times 50 + (t_i \times P_{eff}) \text{ kWh}$$

Where

- SE_C = average Specific Energy Consumption on 10m² of test carpet and
- SE_{hf} = average Specific Energy Consumption on 10m² test hard floor with crevice
- in kWh
- A_C = average floor area of carpet to be cleaned (m²)
- A_{hf} = average floor area of hard floor to be cleaned (m²)
- $F_C = \begin{cases} 1 & \text{if } DP_{cr}(2) > 55 \\ 55 / DP_{cr}(2) & \text{if } DP_{cr}(2) \leq 55 \end{cases}$
- $F_{hf} = \begin{cases} 1 & \text{if } DP_{hf}(2) > 55 \\ 55 / DP_{hf}(2) & \text{if } DP_{hf}(2) \leq 55 \end{cases}$
- $P_C = \begin{cases} 1 & \text{if } PR_{cr} < 25 \text{ N (Newtons)} \\ PR_{cr} / 25 \text{ N} & \text{if } PR_{cr} \geq 25 \text{ N} \end{cases}$
- $P_{hf} = \begin{cases} 1 & \text{if } PR_{hf} < 25 \text{ N (Newtons)} \\ PR_{hf} / 25 \text{ N} & \text{if } PR_{hf} \geq 25 \text{ N} \end{cases}$
- 50 is the standard number of cleaning tasks per year
- t_i = annual time in idle mode 5 (h)
- P_{eff} = average effective power intake (in kW).
- $DP_{cr}(2)$ is the percentage dust removal on carpet after 2 double strokes and
- $DP_{hf}(2)$ is the percentage dust removal on hard floor after 2 double strokes
- PR_{cr} is the maximum movement resistance of the head during the carpet test
- PR_{hf} is the maximum movement resistance of the head during the carpet hard floor test

(b) The average household floor area to be cleaned is ,

	Ac	Ahf
Hard floor Vacuum cleaners	0	87m ²
Carpet Vacuum cleaners	87m ²	0
All Other Vacuum cleaners	40 m ²	47m ²

(c) The average time in idle mode (t_i), in hours, is $t_i = 5$ hours

For both Carpets and hard floors (where applicable)

(d) The average Specific Energy Consumption (SE) (calculated in Wh per 10 square meter (Wh/10m²), rounded to the first decimal place as:

$$SE = 10M^2 \times P_{eff} \times 2ds \times 100x2 / (HW \times Vel \times 60x60)$$

where

P_{eff} is the average power consumption during the test. [W]. However, if the measured P_{eff} is less than 90% of the rated power input of the vacuum cleaner, the value of 90% of the rated power input shall be declared and used in all calculations. *It shall include the average power consumption of any "battery operated active nozzle".*

Vel is 0.5M/second (the required velocity of the head in the test)

HW is the width of the relevant vacuum cleaner head in cm. (however for domestic cleaners HW shall be set at most as [30 cm], and for commercial cleaners it shall be at most [40cm])

NB the above limits implies that the normal annual cleaning time for a domestic cleaners with a 28cm head is 40 hours – compared to an average 62 hours for the study's base case.

Annex II Measurement and calculation methods

1. For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using a reliable, accurate, and reproducible method, which takes into account the generally recognised state of the measurement and calculation methods, including methods set out in documents the reference numbers of which have been published for the purpose in the Official Journal of the European Union.

2. **These methods and calculations shall either**

- § **Follow an interim measurement and calculation method : published for the purpose in the Official Journal of the European Union or;**
- § **Follow methods for which the reference numbers have been published referred to in point 1 above.**

3. Where the Vacuum Cleaner allows power input to be adjusted the maximum power setting shall be selected (with the vacuum cleaner set to 'hard floor' or 'carpet' respectively).

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 vacuum cleaner. If the measured parameters do not meet the declared values of the manufacturer within the ranges set out in Table 1, the measurements shall be carried out on three more vacuum cleaners. The arithmetic mean of the measured values of these three vacuum cleaners shall meet the requirements within the ranges set out in Table 1.

Otherwise, the model and all other equivalent vacuum cleaner models (within the meaning of Article 4(2)) 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	Verification tolerances
average Annual Energy Consumption	The measured value shall not be greater than the rated value* by more than [10] %.
average effective power intake	The measured value shall not be less than the rated value of P_{eff} by more than [4] %. It shall also be no less than [94] % of the rated input power.
Head width	The measured value shall not be greater than the rated value. (0%)
dust removal ability from a carpet	The measured value shall not be less than the rated value of D_c by more than [3] % of the weight of test dust placed on the carpet.
dust removal ability from a hard floor with crevice	The measured value shall not be less than the rated value of D_{hf} by more than [3] % of the weight of test dust in the swept part of the crevice.
Dust re-emission	The measured value shall not be greater than 115% of the rated value.

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

ANNEX IV
Benchmarks (to be done)

At the time of entry into force of this Regulation, the best available technology on the market for vacuum cleaners, in terms of their energy consumptions, condensing efficiency and airborne acoustical noise emissions standard cleaning cycle:

- (1) Vacuum cleaner:
 - (a) energy consumption:
 - (b) dust re-emission
 - (c) airborne acoustical noise emissions: XX dB (A) re 1pW.

Transitional measurement method (to be done)

DRAFT Commission communication in the framework of the implementation of the Commission Regulation (EC) No XX/20XX of implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for vacuum cleaners

- (1) Publication of titles and references of transitory measurement methods⁴ for the implementation of Regulation (EC) No xx/2010, including in particular Annex III of that Regulation.

Measured parameter	Organisation	Reference	Title
		pr EN 60132	
Noise	International Electro-technical Commission	IEC 60704-2-XX	

⁴ These transitory measurement methods are meant to be replaced by harmonised standard(s). When available, the reference(s) of harmonised standard(s) will be published in the Official Journal of the European Union in accordance with Articles 9 and 10 of Directive 2005/32/EC.