European Commission

Guidelines accompanying

2019

Commission Regulation (EU) No 666/2013 of 8 July 2013 implementing Directive 2009/125/EC with regard to **ecodesign requirements for vacuum cleaners**

Energy

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1. PURPOSE OF THE GUIDELINES AND DISCLAIMER

The Ecodesign and Energy Labelling regulations for vacuum cleaners were published in 2013. The Energy Labelling Regulation was annulled by the General Court of the European Court of Justice in its entirety (Case T-544/13 RENV) on 8 November 2018. The judgment of the Court took effect on 19 January 2019 without providing any transitional measures. The Commission did not appeal the General Court judgment, meaning that the energy labelling Regulation for vacuum cleaners is annulled from 19 January 2019, with retroactive effect as if the regulation had never existed. A notice about the annulment of the vacuum cleaner regulation has been published in the Official Journal of the European Union on 13 March 2019 (OJ C 96)[1].

The ecodesign regulation establishes minimum requirements for the products in its scope. These guidelines aim to help relevant stakeholders, including industry and public authorities, to implement the regulation and their requirements into practice. They also summarise the most relevant information from the regulation to give SMEs an introduction to the subject matter and answer the most common questions.

The guidelines are intended to be used only for facilitating the implementation of the regulation. They are not intended to replace the regulation nor to provide legal "interpretation". The guidelines only reflect the opinion of the Commission services and are not legally binding. A finally binding legal interpretation of EU legislation may only be provided by the European Court of Justice. The guidelines are without prejudice to the position the Commission might take should an issue arise in a procedure before the European Court of Justice.

1.1. The Regulation

The Commission has published the following regulation concerning vacuum cleaners:

- ✓ Commission Regulation (EU) No 666/2013 of 8 July 2013 implementing Directive 2009/125/EC with regard to ecodesign requirements for vacuum cleaners
- ✓ Amended by Commission Regulation (EU) 2016/2282 of 30 November 2016 with regard to the use of tolerances in verification procedures (OJ L 346 p. 51, 20.12.2016)

1.2. Review

The regulation is due to be reviewed by 2019/2020. Key topics to be reviewed include:

- ✓ Tolerances set in the verification procedure for market surveillance purposes
- ✓ Whether full size battery operated vacuum cleaners should be included in the scope
- ✓ Whether it is feasible to use measurement methods based on a part loaded rather than an empty receptacle

[1] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C_.2019.096.01.0035.01.ENG&toc=OJ:C:2019:096:TOC

2. SCOPE

The scope of the ecodesign regulation covers electric mains-operated vacuum cleaners intended for domestic and commercial cleaning, including canister, upright and cyclonic vacuum cleaners. Some types of vacuum cleaners are excluded such as robot machines and central vacuum cleaners. The regulation does not differentiate between household and commercial vacuum cleaners and is applicable to both.

2.1. Types of vacuum cleaners not covered by the regulation

Article 1 in the regulation specifies which types of vacuum cleaners or similar appliances are outside the scope of the regulations:

- ✓ Wet, wet & dry, battery-operated, robot, industrial and central vacuum cleaners
- ✓ Floor polishers
- ✓ Outdoor vacuum cleaners (e.g. to collect grass clippings)

The appliances depicted and described below are not explicitly mentioned in Article 1, but they are also out of scope for the reasons provided below.

Left to right: hand-held vacuum cleaner, mattress cleaner, ash cleaner

2.1.1. (Corded) hand-held vacuum cleaners

There is no definition of hand-held vacuum cleaner in the regulation, because the intention was not to cover them: they are not used for cleaning hard-floors or carpets by the user from an erect standing position; they are normally used for cleaning desks, tables, etc. Thus, hand-held vacuum cleaners are out of the scope.

2.1.2. (Corded) mattress cleaners

These products are also hand-held, but designed especially to clean mattresses. They are not used for hard-floors or carpets. Thus, mattress vacuum cleaners are out of the scope.

2.1.3. Ash cleaners

Ash cleaners are specially designed cleaners with the aim of sucking cold ash from fireplaces. Ash cleaners do not incorporate accessories for carpets or hard-floors. Ash cleaners do not fall within any of the definitions of vacuum cleaner as set out in the regulation. They do not fall under the definition of 'vacuum cleaner'[2], because they do

[2] Ecodesign Regulation, Article 2(1)

not pick up soil, and they do not fall under 'dry vacuum cleaner'[3], as ash is not among the examples of dry soil that are given in that definition. Thus, ash cleaners are out of the scope of the regulation.

3. ECODESIGN REQUIREMENTS

3.1. Responsibilities

The table below provides an overview of the responsibilities established by the regulation for manufacturers, importers or their authorised representatives. The definition of manufacturer is provided in the Ecodesign Directive[4].

Actor	From date	Responsibilities
Manufacturer	1 September 2014	✓ Ensure that vacuum cleaners comply with the following limits: • Annual energy consumption: less than 62 kWh/year • Rated input power: less than 1600 W • Minimum dust pick up on carpet (dpu_c): 0.70 • Minimum dust pick up on hard floor (dpu_{hf}) : 0.95 ✓ Provide specific information and technical documentation[5]
	1 September 2017	✓ Ensure that vacuum cleaners comply with the following limits: • Annual energy consumption: less than 43 kWh/year • Rated input power: less than 900 W • Minimum dust pick up on carpet (dpu_c): 0.75 • Minimum dust pick up on hard floor (dpu_{hf}) : 0.98 • Maximum dust re-emission: 1,00 % • Maximum sound power level: 80 dB(A) • Minimum durability of the hose (if any): still usable after 40 000 oscillations under strain • Minimum operational motor lifetime: 500 hours ✓ Provide specific information and technical documentation[6]

[3] Ecodesign Regulation (EU) No 666/2013 on vacuum cleaners, Article 2(5)
[4] Ecodesign Directive 2009/125/EC, Article 2(6)
[5] Ecodesign Regulation, Annex I, point 2.
[6] *See above footnote*

3.2. Placing on the market

Detailed explanations on the concept of placing on the market can be found in the Guide to the Implementation of Directives based on the New Approach and the Global Approach[7].

3.3. Types of vacuum cleaners with different requirements

3.3.1. Carpet vacuum cleaners

Carpet vacuum cleaners are vacuum cleaners that have a fixed nozzle designed specifically for carpets that cannot be adapted for cleaning hard floors or vacuum cleaners supplied only with one or more detachable nozzles designed specifically for carpets that cannot be adapted for cleaning hard floors. The requirements for dust pick-up on hard floors do not apply to them and manufacturers are required to indicate in their documentation that they are not suitable for use on hard floors.

3.3.2. Hard floor vacuum cleaners

Hard floor vacuum cleaners are vacuum cleaners that have a fixed nozzle designed specifically for hard floors that cannot be adapted for cleaning carpets or vacuum cleaners supplied only with one or more detachable nozzles designed specifically for hard floors that cannot be adapted for carpets. The requirements for dust pick-up on carpets do not apply to them and manufacturers are required to indicate in their documentation that they are not suitable for use on carpets.

3.3.3. Water filter vacuum cleaners

Specific ecodesign requirements for water filter vacuum cleaners apply from 1 September 2017[8] (following the availability of a suitable measurement method).

3.3.4. Vacuum cleaners that are enabled to function also for other purposes than vacuum cleaning

Vacuum cleaners that are enabled to function also for other purposes than vacuum cleaning, such as floor polishing, are covered by the regulation. Because of the other purpose(s), the rated input power of such appliances can be higher than the input power required for vacuum cleaning only. If this is the case, only the input power relevant to vacuum cleaning is taken into account for the requirement on rated input power of the Ecodesign Regulation[9]. The technical documentation should specifically indicate the input power relevant to the function of vacuum cleaning only[10].

3.3.5. Hybrid vacuum cleaners

Hybrid vacuum cleaners should be tested without taking into account the batteries of the vacuum cleaner itself, but with the batteries required for the operation of active nozzles[11].

[7] The Blue Guide 2016
[8] Ecodesign Regulation, Annex I, point 1a
[9] Ecodesign Regulation, Annex II, point 2k
[10] Ecodesign Regulation, Annex I, point 2a
[11] Ecodesign Regulation, Annex II, point 9;

4. TESTING

4.1. Measurement and calculation methods

Measurement and calculation methods can be found in Annex II of the Ecodesign Regulation. These measurement and calculation methods are mandatory. Further detail on these methods is provided in harmonised standards. Alternatively, other reliable, accurate and reproducible methods that take into account the generally recognised state-of-the-art measurement and calculation methods can be used if they comply with the measurement and calculation methods set out in the regulation.

Harmonised standards of which the reference numbers have been published for that purpose in the Official Journal of the European Union provide a presumption of conformity with the ecodesign regulation. This means that vacuum cleaners tested according to those standards and for which the test results are found to be within the limits are deemed to meet the requirements of the Ecodesign Regulation.

The regulation requires that the technical documentation indicates which standards/methods have been applied.[12]

4.2. Harmonised standards

There are four standards concerning vacuum cleaners of which references have been published in the Official Journal of the European Union:

- ✓ EN 60312-1:2017 Vacuum cleaners for household use -Part 1: Dry vacuum cleaners -Methods for measuring the performance; *addressing annual energy consumption, dust pick up on carpet, dust pick up on hard floor, dust re-emission, durability of the hose and operational motor lifetime*

- ✓ EN 60704-2-1:2015 Household and similar electrical appliances – Test code for the determination of airborne acoustical noise Part 2-1: Particular requirements for vacuum cleaners; *addressing sound power level for household vacuum cleaners*

- ✓ EN 60335-2-2:2010 + A11:2012 + A1:2013 Household and similar electrical appliances – Safety – Part 2-2: Particular requirements for vacuum cleaners and water suction cleaning appliances; *addressing rated input power for household vacuum cleaners*

- ✓ EN 60335-2-69:2012 Household and similar electrical appliances – Safety – Part 2-69: Particular requirements for wet and dry vacuum cleaners, including power brush, for commercial use; *addressing rated input power and sound power level for commercial vacuum cleaners*

These are the relevant standards at the time of publication of these guidelines. When newer versions are published by the European Standardisation Organisations, the

[12] Ecodesign Regulation, Annex I, point 2, second indent;

Commission may decide to update its publication of references to standards in the Official Journal of the European Union.

The following table provides references to where in the standards the necessary detailed methods can be found, including specific notes for clarification.

Parameter in legislation	**Harmonised standard reference**	**Notes**
EN 60312-1:2017		
general conditions for testing appliances including water filter appliances (hard floor test, carpet test, dust re-emission)	4 General conditions for testing, 7.3.12 Mechanical operator, 7.3.Z2 Dust collecting box	
hard floor test	5.2 Dust removal from hard floors with crevices, 4.6 Operation of the vacuum cleaner	
hard floor test: test equipment	7.3.2 Test plate with crevice, 7.3.4 Hold-downs and guides	
artificial dust (for test crevice)	7.2.2.1 Mineral dust - type 1	
carpet test	5.3 Dust removal from carpets	
carpet test: test equipment	7.3.3 Carpet-beating machine, 7.3.4 Hold-downs and guides, 7.3.5 Dust spreader, 7.3.6 Rollers for embedding	
Wilton carpet	7.2.1.3.2 Wilton Carpet, Annex C.1 Wilton Carpet (7.2.1.3.2)	Wilton carpet 'B.I.C. generation 2' should not be used, since it has been found not to give sufficiently reproducible results compared to the other generations. Wilton carpet 'B.I.C. generation 4' is under production at the time of publication of these guidelines.
test dust (carpet test)	5.3.4 Distribution of test dust, 7.2.2.2 Mineral dust - type 2	
P_{hf}	6.16.2.1 Test requirement, 6.16.2.2 Test procedure, 6.16.2.3 Establishing the average effective power intake	

Parameter in legislation	Harmonised standard reference	Notes
P_c	6.16.1.1 Test requirement, 6.16.1.2 Test procedure, 6.16.1.3 Establishing the average effective power intake	
NP	6.16.2.Z1 Energy consumption of battery powered nozzles, 6.16.2.Z2 Energy consumption of the powered battery pack fully charged, 6.16.2.Z3 Energy consumption of powered battery pack after its use	
dpu_{hf}	5.2.3 Determination of dust removal ability	expressed as ratio instead of percentage
dpu_m	5.3.7 Determination of dust removal ability	corresponds to $K_T(i)$, but expressed as ratio instead of percentage
dpu_{cal}	6.Z1.2.2 Reference level	corresponds to K_c; refers to master carpet in its original condition
dpu_{ref}	6.Z1.2.2	corresponds to K_{ref}
reference vacuum cleaner system	4.Z1 Reference vacuum cleaner system	If the difference between dpu_{cal} and dpu_{ref} is greater than 5% it is recommended to 1) change the carpet and/or; 2) re-calibrate the reference vacuum cleaner system and/or; 3) check laboratory process and testing procedure.
dust re-emission	5.11 Filtration efficiency and dust re-emission of the vacuum cleaner	Dust re-emission is the opposite of filtration efficiency; the dust re-emission fraction is the ratio of number of all particles of the stated size range downstream versus upstream.
dust re-emission: test equipment	7.3.8 Test equipment for determining the fractional filtration efficiency of the vacuum cleaner	
dust (for dust re-emission)	7.2.2.5 Mineral dust – type 4	As indicated in the citation in the OJEU the test dust should be *A2 fine test dust*

Parameter in legislation	Harmonised standard reference	Notes
		as referred to in ISO 12103-1
durability of the hose	6.9 Repeated bending of the hose	
operational motor lifetime	~~6.10 Life test~~	The clause '6.10 Life test' refers to the ability of the vacuum cleaner to maintain its air flow performance with a partly filled dust receptacle but not to operational motor lifetime. The clause '6.Z3 Operational motor life-time test' of EN 60312-1:2017 was not harmonised.
EN 60704-2-1:2015		
sound power level (household vacuum cleaners)	*All sections*	Details are in EN 60704-1:2010 and 60704-3:2006
EN 60335-2-2:2010 + A11:2012 + A1:2013		
rated input power (household vacuum cleaners)	10 Power input and current	Details are in EN 60335-1:2012, 10 Power input and current
EN 60335-2-69:2012		
rated input power (commercial vacuum cleaners)	10 Power input and current	Details are in EN 60335-1:2012, 10 Power input and current
sound power level (commercial vacuum cleaners)	Annex EE Emission of acoustical noise	

4.3. Selection of nozzle and nozzle settings for testing

4.3.1. Nozzles

Some vacuum cleaners have more than one detachable nozzle, for example providing the consumer with a universal nozzle (for both carpets and hard floor) and one or more nozzles for special purposes. For such cases the regulation does not specify which nozzle has to be used for testing to verify compliance with ecodesign requirements (except that where the vacuum cleaner is equipped with battery operated active nozzles, the regulation specifies that the average power equivalent of battery operated active nozzles has to be taken into account).

Therefore, if more than one nozzle is provided with the vacuum cleaner, manufacturers are requested to indicate in the technical documentation which nozzle was used for the test on hard floor and on carpet, respectively. The nozzle used in the test should be a nozzle that is delivered with the vacuum cleaner and that is suitable for the floor type in question and one that is recommended for such floor type in the user manual. If a battery operated nozzle is supplied with the vacuum cleaner, this should be used for the tests if it is suitable for the floor type in question.

For tests on carpet, the same nozzle should be used to establish the dust pick-up on carpet, the average specific energy consumption on carpet and the sound power level. For tests on hard floor, the same nozzle should be used to establish the dust pick-up on hard floor and the average specific energy consumption on hard floor. If a nozzle is suitable for both carpet and hard floor, that nozzle may be used in all these tests.

4.3.2. Nozzle settings

Some nozzles may have multiple settings, e.g. one to clean hard floor and another to clean carpets. For such cases, the regulation does not specify which nozzle settings have to be used for testing to verify compliance with ecodesign requirements (except that where the vacuum cleaner is equipped with battery-operated active nozzles, the regulation specifies that the average power equivalent of battery-operated active nozzles has to be taken into account).

Therefore, if the nozzle used for a test has multiple settings manufacturers are requested to indicate in the technical documentation which settings were used for the test on hard floor and on carpet, respectively. The nozzle settings used in the test should be settings that are suitable for the floor type in question and settings that are recommended for such floor type in the user manual.

For tests on carpet, the same settings should be used to establish the dust pick-up on carpet, the average specific energy consumption on carpet and the sound power level. For tests on hard floor, the same settings should be used to establish the dust pick-up on hard floor and the average specific energy consumption on hard floor.

4.3.3. Sound power level test for hard floor vacuum cleaners

The test to establish sound power level has to be done on carpet. For hard floor vacuum cleaners, the nozzle and nozzle settings to be used in this test on carpet should be the same as those that are used to establish the dust pick-up on hard floor and the average specific energy consumption on hard floor.

4.4. Tolerances

The tolerances set out in the regulation[13] relate only to the verification of the measured parameters by Member State authorities. They are not to be used by others as an allowed tolerance to establish the values in the technical documentation. The values used to evaluate conformity with the ecodesign requirements cannot be more favourable for the manufacturer than the values reported in the technical documentation.

[13] Ecodesign Regulation, Annex III, Table 1

5. RELATION WITH OTHER ECODESIGN REGULATIONS

5.1. Standby regulation (Regulation (EC) No 1275/2008)

The Standby regulation applies to vacuum cleaners since they fall under its Annex I, point 1 "Other appliances for cooking and other processing of food, cleaning, and maintenance of clothes". The relevant requirements depend on the type of vacuum cleaner.

5.2. Industrial fans regulation (Regulation (EU) No 327/2011)

The Industrial fans regulation has been amended by the Ecodesign regulation for vacuum cleaners[14] and no longer applies to the types of fans that are used in vacuum cleaners.

5.3. Electric motor regulation (Regulation (EC) No 640/2009)

The Electric motor regulation does not apply to vacuum cleaners, because the regulation applies to three phase motors and not to the single phase motors used for vacuum cleaners.

6. FREQUENTLY ASKED QUESTIONS

Further general and product-specific answers to frequently asked questions on ecodesign are available at DG Enterprise's website.

[14] Ecodesign Regulation Article 8