

Brussels, XXX

[...] (2024) XXX draft

COMMISSION REGULATION (EU) .../...

of XXX

implementing Directive 2009/125/EC of the European Parliament and of the Council with regards to ecodesign requirements for vacuum cleaners[, amending Commission Regulation (EU) 2023/826]¹ and repealing Commission Regulation (EU) 666/2013

(Text with EEA relevance)

This draft has not been adopted or endorsed by the European Commission. Any views expressed are the preliminary views of the Commission services and may not in any circumstances be regarded as stating an official position of the Commission. The information transmitted is intended only for the Member State or entity to which it is addressed for discussion and may contain confidential and/or privileged material.

¹ Only if this act will set low mode/maintenance power requirements for robot vacuum cleaners.

COMMISSION REGULATION (EU) ...

(Text with EEA relevance)

Article 1

Subject matter and scope

1. This Regulation establishes ecodesign requirements for the placing on the market of mains-operated and battery-operated dry vacuum cleaners for household or commercial use, including hybrid vacuum cleaners and robot dry vacuum cleaners².
2. This Regulation shall not apply to:
 - (a) wet, wet and dry, industrial, or central vacuum cleaners;
 - (b) floor polishers;
 - (c) outdoor vacuums;
 - (d) handheld non-floor vacuum cleaners;
 - (e) floor mopping systems including robot mop and robot 2:1.

Article 2

Definitions

For the purpose of this Regulation the following definitions shall apply:

- (1) ‘*mains*’ means the electricity supply from the grid of 230 (± 10 %) volts of alternating current at 50 Hz;
- (2) ‘*battery*’ means any device delivering electrical energy generated by direct conversion of chemical energy, having internal or external storage, and consisting of one or more non-rechargeable or rechargeable battery cells, modules or of packs of them, and includes a battery that has been subject to preparation for re-use, preparation for repurposing, repurposing or remanufacturing;
- (3) ‘*vacuum cleaner*’ means an appliance that removes dust and/or debris from a floor surface to be cleaned by means of an airflow created by underpressure developed within the unit and is mains-operated, battery-operated or hybrid;
- (4) ‘*battery-operated vacuum cleaner*’ means a vacuum cleaner powered by a portable, rechargeable battery³;
- (5) ‘*portable battery*’ means a battery that is sealed, weighs 5 kg or less, is not designed specifically for industrial use and is neither an electric vehicle battery nor an automotive battery;

² “robot dry vacuum cleaners”: only if this act will set low mode/maintenance power requirements for them.

³ Put cordless in the definition for consistency with the name of the standards.

- (6) *'rechargeable battery'* means a battery that is designed to be electrically recharged;
- (7) *'dry vacuum cleaner'* means a vacuum cleaner designed to remove dust and/or debris that is principally dry (dust, fibre, threads), including types equipped with a battery-operated active nozzle;
- (8) *'household vacuum cleaner'* means a dry vacuum cleaner, including water filter vacuum cleaner, as declared by the manufacturer to have an intended use in private households, tested for debris pick-up with test debris conditions specific for household vacuum cleaners;
- (9) *'commercial vacuum cleaner'* means a dry mains-operated vacuum cleaner declared by the manufacturer to have an intended use for professional housekeeping including hotels⁴, tested for debris pick-up with test debris conditions specific for commercial vacuum cleaners;
- (10) *'test debris'* means a test that uses artificial soil items with standardised geometry, physical and chemical properties simulating debris such as food spills of rice and lentils. to be used to test household vacuum cleaners; for the test on commercial vacuum cleaners, the soil items are identical but the test uses a material with higher density than for household vacuum cleaners, simulating pick-up of small metal objects;
- (11) *'water filter vacuum cleaner'* means a mains-operated dry vacuum cleaner that uses more than 0,5 litre of water as the main filter medium, whereby the suction air is forced through the water entrapping the removed dry material as it passes through;
- (12) *'hybrid vacuum cleaner'* means a vacuum cleaner that can be operated at end-user choice by mains or batteries;
- (13) *'dry robot vacuum cleaner'* means a battery-operated dry vacuum cleaner, consisting of a mobile part and a docking station and/or other accessories to assist its operation, capable of operating autonomously within a defined perimeter;
- (14) *'wet vacuum cleaner'* means a vacuum cleaner that removes dry and/or wet material (soil) from the floor surface by applying water, water-based detergent or steam to the floor surface to be cleaned, and removing it, and the soil by an airflow created by underpressure developed within the unit, including types commonly known as sprayextraction vacuum cleaners;
- (15) *'wet and dry vacuum cleaner'* means a vacuum cleaner designed to remove a volume of more than 2,5 litres of liquid in combination with the functionality of a dry vacuum cleaner;
- (16) *'industrial vacuum cleaner'* means a vacuum cleaner designed to be part of a production process, designed for removing hazardous material, designed for removing heavy dust from building, foundry, mining or food industry, part of an industrial machine or tool and/or a commercial vacuum cleaner with a head width exceeding 0,50 m;
- (17) *'central vacuum cleaner'* means a vacuum cleaner with a fixed (not movable) underpressure source location and the hose connections located at fixed positions in the building;
- (18) *'floor polisher'* means an electrical appliance that protects, smoothes and/or renders shiny certain types of floors, usually operated in combination with a polishing means

⁴ To double-check that water filter vacuum cleaners are only household vacuum cleaners and that commercial vacuum cleaners cannot be water filter ones.

to be rubbed on the floor by the appliance and commonly also equipped with the auxiliary functionality of a vacuum cleaner;

- (19) ‘*outdoor vacuum*’ means an appliance that is used outdoors to collect debris such as grass clippings and leaves into a collector by means of an airflow created by underpressure developed within the unit and which may contain a shredding device and may also be able to perform as a blower;
- (20) ‘*handheld non-floor vacuum cleaner*’ means a lightweight battery-operated vacuum cleaner, operated whilst being held in one hand, designed specifically for cleaning surfaces other than floors and cannot be combined with any accessory allowing it to be used also for cleaning floors;
- (21) ‘*floor mopping system*’ means an electrical appliance that removes dry and/or wet material (soil) from the floor by applying a steam and/or water, water-based detergent to the floor surface and mopping it with a textile or foamed material and commonly also equipped with the auxiliary functionality of a vacuum cleaner.
- (22) ‘*robot mop*’ means an autonomously operating floor mopping system;
- (23) ‘*robot 2:1*’ means a floor cleaning device that combines the function of a robot mop and a robot vacuum cleaner in a single device.

For the purposes of the Annexes, additional definitions are set out in Annex I⁵.

Article 3

Ecodesign requirements

The ecodesign requirements set out in Annex II shall apply from the dates indicated therein.

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 shall contain the declared values of the parameters listed in Annex II, points 2, 3 and 4, and the details and the results of the calculations undertaken in accordance with in Annex III.
3. Where the information included in the technical documentation for a particular vacuum cleaner model has been obtained:
 - (a) from a model that has the same technical characteristics relevant for the technical information to be provided but is produced by a different manufacturer, or

⁵ To put in a recital the reference to the definitions of manufacturer, importer, authorised representative, end-user, market surveillance, market surveillance authority, placing on the market and other relevant ones from the framework ecodesign legislation.

(b) by calculation on the basis of design or extrapolation from another model of the same or a different manufacturer, or both.

The technical documentation shall include the details of such calculation, the assessment undertaken by the manufacturer to verify the accuracy of the calculation and, where appropriate, the declaration of identity between the models of different manufacturers.

4. The technical documentation shall include the information in the order and as set out in *Annex xxx of Regulation (EU) 2024/XXX [OP - Please insert here references of the energy labelling regulation on vacuum cleaners]*. For market surveillance purposes, manufacturers, importers or authorised representatives may, without prejudice to point 2(g) of Annex IV to Directive 2009/125/EC, refer to the technical documentation uploaded to the product database which contains the same information laid down in Regulation (EU) 2024/XXX [OP - Please insert here references of the energy labelling regulation on vacuum cleaners].

Article 5

Verification procedure for market surveillance purposes

Member States shall apply the verification procedure described in Annex IV when performing the market surveillance checks referred to in Article 3, point 2 of Directive 2009/125/EC.

Article 6

Circumvention

The manufacturer, importer or authorised representative shall not place on the market products designed to be able to detect they are being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering their performance during the test with the aim of reaching a more favourable level for any of the parameters declared by the manufacturer, importer or authorised representative in the technical documentation or included in any documentation provided.

The consumption of energy of the product and any of the other declared parameters shall not deteriorate after a software or firmware update when measured with the same test standard originally used for the declaration of conformity, except with the explicit consent of the end-user prior to the update. No performance change shall occur as a result of rejecting the update.

Article 7

Indicative benchmarks

The indicative benchmarks for best-performing products and technologies available on the market at the time of adopting this Regulation are set out in Annex V.

Article 8

Review

The Commission shall review this Regulation in the light of technological progress and present the result of that review, including, if appropriate, a draft revision proposal, to the Consultation Forum by *[OP – please insert date - seven years after its entry into force]*.

⁶ Do we need an article on software updates like for tumble driers? Probably not even if we had robots, as robots would not be fully in scope?

{Article 9⁷

Amendment to Regulation (EU) 2023/826

Point 1 of Annex II to Regulation (EU) 2023/826 is amended as follows:

- 'other appliances for cooking and other processing of food, preparing beverages, cleaning, and maintenance of clothes, but excluding' is replaced by 'other appliances for cooking and other processing of food, preparing beverages, cleaning, and maintenance of clothes, but excluding vacuum cleaners covered by Commission Regulation (EU) [*OP – please insert here the number of this Regulation*]'. }

Article 10

Repeal

Commission Regulation (EC) No 666/2013 is repealed.

Article 11

Entry into force and application

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

It shall apply from 1 September 2025⁸. However, Article 6, first paragraph shall apply from [*OP – please insert the day of entry into force of this Regulation*].

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

Done at Brussels,

For the Commission

The President

⁷ To keep only if we put requirements on low mode/maintenance power for robot vacuum cleaners.

⁸ Minimum 12 months after adoption. To be adapted accordingly to the adoption time and have the same date for energy labelling.

ANNEX I

Definitions applicable for the annexes⁹

For the purpose of the Annexes II to V, the following definitions apply:

- (1) '*test dust*' or '*dust*' means a standard type of artificial dust to be picked up in order to simulate the removal of dust from floors and dust re-emission;
- (2) '*carpet vacuum cleaner*' means a dry vacuum cleaner declared with an intended use for cleaning carpets only;
- (3) '*hard floor vacuum cleaner*' means a dry vacuum cleaner declared with an intended use for cleaning hard floors only;
- (4) '*general purpose vacuum cleaner*' means a dry vacuum cleaner declared with an intended use for cleaning both carpets and hard floors;
- (5) '*universal nozzle*' means an active (also battery-operated) or passive nozzle that is used for dust and debris pick-up on hard floor or carpet;
- (6) '*active nozzle*' means a cleaning head of a vacuum cleaner, equipped with an agitation device to assist dirt removal;
- (7) '*passive nozzle*' means a cleaning head of a vacuum cleaner, without any driven agitation devices;
- (8) '*battery-operated active nozzle*' means a cleaning head of a mains-operated vacuum cleaner, equipped with a battery-powered agitation device to assist dirt removal;
- (9) '*cleaning test*¹⁰ is a test of a vacuum cleaner measuring the removal of test debris or test dust after 3 double strokes of the universal nozzle over a test area soiled with test dust or test debris. The cleaning test consists of at least 3 test runs starting with a forward stroke and an equal number of test runs starting with a backward stroke, each test runs starting with a partially filled receptacle, a new preparation of a clean carpet or hard floor test area with a standard soil distribution. The declared test result is the average of the test runs for debris or dust pick-up and the average power intake during the tests when the head is moving over the test area;
- (10) '*double stroke*' means one forward and one backward movement of the cleaning head in a parallel pattern, where the forward strokes and the return strokes are congruent, performed at a constant test stroke speed and with a standard test stroke length;
- (11) '*debris pick-up*' means the mass increase of a receptacle after a test run, in grams, in the cleaning test divided by the mass of debris on the test area before the test run, in %;
- (12) '*dust pick-up*' means in a cleaning test the mass increase of a receptacle after a test run, in grams, divided by the mass of dust on the test area before the test run or the mass

⁹ Reference to the definitions for off mode, standby mode, reactivation function, network and networked standby (Commission Regulation (EU) 2023/826, article 2) will be in a recital.

¹⁰ To see if to add it in Annex 3a

decrease of the crevice after a test run, in grams, divided by the test dust mass applied to the U-shaped crevice, in %;

- (13) '*partially loaded receptacle*' means a receptacle loaded with the mass of simulated household dust, in grams, calculated as 100 grams/litre of the maximum usable volume declared by the manufacturer;
- (14) '*manufacturer declared usable volume*' (*muv*) means the maximum usable volume of the receptacle of a vacuum cleaner as declared by the manufacturer, in litres rounded to 2 decimals;
- (15) '*carpet floor dust pick-up*' (*dpuc*), in %, means the result of a cleaning test on a standard carpet floor surface with an appropriate amount of test dust distributed in a standardised way over the test area;
- (16) '*carpet floor debris pick-up*' (*debc*), in %, means the result of a cleaning test on a standard carpet floor surface soiled with an appropriate mass and type of household test debris, distributed in a standardised way over the test area;
- (17) '*hard floor dust pick-up*' (*dpuhf*), in %, means the result of a cleaning test on a standard hard floor surface with a dust filled U-shaped test crevice, placed at an angle of 45 degrees with the direction of the cleaning head strokes;
- (18) '*hard floor debris pick-up*' (*debfh*), in %, means the result of a cleaning test on a standard hard floor surface soiled with an appropriate amount and type of household or commercial test debris, distributed in a standardised way over the test area;
- (19) '*test crevice*' means a removable U-shaped insert with appropriate dimensions filled at the beginning of a cleaning cycle with test dust;
- (20) '*cleaning cycle*' means a sequence of 3 double strokes of the vacuum cleaner on a floor-specific test surface ('carpet' or 'hard floor');
- (21) '*cleaning head width*' (*B*) means the external maximum width of the cleaning head in m, rounded to 3 decimal places;
- (22) '*test stroke speed*' (*v*) means the appropriate cleaning head speed for testing, in m/s, preferably realized with an electromechanical operator. Products with self-propelled cleaning heads shall come as close as possible to the appropriate speed, but a deviation is permitted when clearly stated in the technical documentation;
- (23) '*maximum operational power*' in W means the power level that the machine is not capable of exceeding in any operating condition set either by the user or automatically by the appliance;
- (24) '*dust re-emission*' means the ratio, expressed as a percentage rounded to 3 decimal places, of the number of all dust particles of a size from 0.3 to 10 µm emitted by a vacuum cleaner to the number of all dust particles of the same size range entering the suction inlet when fed with a specific amount of dust of that particle size range. 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;
- (25) '*sound power level*' means airborne acoustical noise emissions, expressed in dB(A) re 1 pW and rounded to the nearest integer;
- (26) '*motion resistance*' means the average of the 2 results of the test conducted to determine the force, in N rounded to 2 decimals, when moving the cleaning head forward and backward over the test area while measuring debris pick-up on carpet or

hard floor for household vacuum cleaners and measuring debris pick-up on hard floor for commercial vacuum cleaners;

- (27) ‘*battery endurance*’ means the minimum number of discharged/charged cycles a battery can withstand until its runtime capacity has reached 70¹¹ [or 80]% of its initial capacity;
- (28) ‘*battery runtime*’¹² means the time it takes from a fully charged vacuum cleaner to reach <40% of original vacuum h_0 or when battery is fully discharged;
- (29) ‘*maintenance power*’ means the power intake of battery-operated vacuum cleaners, including their docking/charging station, when not in on-mode or charging, to compensate self-discharging of the connected battery operated vacuum cleaner’s battery and may include the display of information or status and networked standby when connected to a network;
- (30) ‘*spare part*’ means a separate part that can replace a part with the same or similar function in a vacuum cleaner;
- (31) ‘*primary hose*’ means the flexible hose between the nozzle and the vacuum cleaner housing;
- (32) ‘*secondary hose*’ means an extendable and flexible hose for a secondary cleaning head to clean the stairs or other surfaces than the floor;
- (33) ‘*professional repairer*’ means an operator or undertaking which provides services of repair and professional maintenance of vacuum cleaners;
- (34) ‘*declared values*’ means the values provided by the manufacturer, importer or authorised representative for the stated, calculated or measured technical parameters in accordance with Article 5, for the verification of compliance by the Member State authorities;
- (35) ‘*equivalent model*’ means a model which has the same technical characteristics relevant for the technical information to be provided, but which is placed on the market or put into service by the same manufacturer, importer or authorised representative as another model with a different model identifier; ‘*model identifier*’ means the code, usually alphanumeric, which distinguishes a specific product model from other models with the same trade mark or the same manufacturer’s, importer’s or authorised representative’s name;
- (36) ‘*maximum continuous airflow*’ is the airflow that occurs when the highest permanently adjustable power level of the vacuum cleaner is selected. For battery-operated vacuum cleaners, a minimum runtime of 5 minutes must be achieved in order to refer to maximum continuous airflow. A temporary power mode that does not exceed 5 minutes is not considered as continuous airflow.

¹¹ To discuss if 70% or 80% - the ecodesign Regulation (EU) 2023/1670 on smartphones, mobile phones, cordless phones and slate tablets requires that “the devices achieve at least 800 cycles at 80 % remaining capacity”. The Nordic Swan and Blue Angel ecodesign, for universal portable battery use, require 175% of the number of cycles prescribed in the IEC 61960-3:2017, e.g. 700 cycles (175% x 400) voor Li-ion cells until capacity <70%

¹² To double-check and refine this definition in accordance with the standard mentioned in annex IIIa.

ANNEX II
Ecodesign requirements

1. ENERGY REQUIREMENTS

From 1 September 2025 vacuum cleaners shall meet the following requirements:

- (1) The annual energy consumption calculated in accordance with point 1 of Annex III shall be less than or equal to 36 kWh/year for mains operated vacuum cleaners and 24 kWh/year for battery-operated vacuum cleaners.
- (2) The maximum operational power for mains operated vacuum cleaners shall be less than or equal to 750 W.
- (3) The maximum operational power for battery-operated vacuum cleaners shall be less than or equal to 500 W.

2. FUNCTIONAL REQUIREMENTS

From 1 September 2025 vacuum cleaners shall meet the following requirements:

- (1) dust pick-up on carpet (dpu_c) for household and commercial vacuum cleaners shall be greater than or equal to 70%;
- (2) dust pick-up on hard floor (dpu_{hf}) for household and commercial vacuum cleaners shall be greater than or equal to 95%;
- (3) debris pick-up on carpet (deb_c) shall be greater than or equal to 55% for household vacuum cleaners;
- (4) debris pick-up on hard floor (deb_{hf}) shall be greater than or equal to 60% for household vacuum cleaners and for commercial vacuum cleaners, each using their own specific type of standardised debris;
- (5) dust re-emission shall be no more than or equal to 0,08% for all vacuum cleaners in scope;
- (6) sound power level for all vacuum cleaners in scope shall be less than or equal to 80 dB(A);
- (7) motion resistance shall be no more than 40 N;
- (8) operational motor lifetime for mains-operated household and commercial vacuum cleaners shall be greater than or equal to 500 hours with partially-loaded receptacle;
- (9) the primary hose, if any, shall be durable so that it is still useable after 40 000 oscillations under bending strain;
- (10) the secondary hose, if any, shall be durable so that it is still usable after 40 000 oscillations under push-pull strain;

- (11) battery endurance in operation inside the battery-operated vacuum cleaner shall be at least 700 [or 800] cycles while maintaining 70 [or 80]¹³ % of its initial run time.

The dust pick-up on carpet and hard floor, debris pick-up on carpet and hard floor, dust re-emission, motion resistance, maintenance power sound power level, durability of the hose, operational motor lifetime and battery lifetime are measured and calculated in accordance with Annex III.

3. [LOW POWER MODES REQUIREMENTS]¹⁴

- (1) From 1 September 2025 robot vacuum cleaners and charging stations / docking stations shall meet the following requirements:
- a. Robot vacuum cleaners and charging stations / docking stations shall have an off-mode or a standby mode. The power consumption of these modes shall not exceed 0,50 W;
 - b. If the standby includes the display of information or status, the power consumption of this mode shall not exceed 1,00 W;
 - c. If the standby mode provides for a connection to a network, the networked standby the power consumption of this mode shall not exceed 2,00 W;
 - d. Robot vacuum cleaners and charging stations / docking stations that can be connected to a network shall provide the possibility to activate and deactivate the network connection(s). The network connection(s) shall be deactivated by default.]

4. RESOURCE EFFICIENCY REQUIREMENTS

From 1 September 2025, vacuum cleaners shall meet the following requirements:

- (1) Availability of spare parts.
- (a) Manufacturers, importers or authorised representatives of vacuum cleaners shall make available to professional repairers at least the following spare parts for a minimum period of:
 - (i) for household vacuum cleaners: power cord roll-up, carbon brushes (if applicable) and motor, for a minimum period of five years after placing the last unit of the model on the market;
 - (ii) for commercial vacuum cleaners: power cord roll-up, carbon brushes (if applicable) and motor, for a minimum period of five years after placing the last unit of the model on the market;

¹³ 800 and 80% depend if we align to the the ecodesign Regulation (EU) 2023/1670 on smartphones, mobile phones, cordless phones and slate tablets.

¹⁴ This part would amend the new standby regulation if we introduced a maintenance power for robots as all the standby requirements for vacuum cleaners would move to the regulation for vacuum cleaners to have them under a single hat. To keep in mind that for non-robot battery-operated vacuum cleaners, the maintenance power is already included in the definition of P: so if there is no maintenance power set for robots, the standby regulation will not be amended.

- (iii) for battery-operated vacuum cleaners: batteries and motor for a minimum period of five years after placing the last unit of the model on the market.
 - (b) Manufacturers, importers or authorised representatives of vacuum cleaners shall make available to professional repairers and end-users at least the following spare parts:
 - (i) for household vacuum cleaners: hose, nozzles, filters, bags (if applicable), cable drum and tube extensions, for a minimum period of ten years after placing the last unit of the model on the market;
 - (ii) for commercial vacuum cleaners: hose, nozzles, filters, bags (if applicable), cable drum and tube extensions, for a minimum period of ten years after placing the last unit of the model on the market;
 - (iii) for battery-operated vacuum cleaners: hose or tube (as applicable), nozzles, filters, bags (if applicable), batteries that are replaceable by end users (if applicable) for a minimum period of ten years after placing the last unit of the model on the market.
 - (c) Manufacturers, importers or authorised representatives of vacuum cleaners shall ensure that the spare parts mentioned in point (a) and (b) can be replaced with the use of commonly available tools and without permanent damage to the vacuum cleaner.
 - (d) The list of spare parts in point (a) and the procedure for ordering them shall be publicly available on the free access website of the manufacturer, importer or authorised representative, at the latest two years after the placing on the market of the first unit of a model and until the end of the period of availability of these spare parts.
 - (e) The list of spare parts concerned by point (b) and the procedure for ordering them and the repair instructions shall be publicly available on the free access website of the manufacturer, importer or authorised representative, when placing the first unit of a model on the market and until the end of the period of availability of these spare parts.
- (2) Maximum delivery time of spare parts

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

In the case of spare parts concerned by point (1)(a), the availability of spare parts may be limited to professional repairers registered in accordance with point (3)(a) and (b).

In the case of spare parts concerned by point (1)(d), the procedure for ordering them and the repair instructions shall be publicly available on the manufacturer's, the importer's or authorised representative's free access website, at the moment of the placing on the market of the first unit of a model and until the end of the period of availability of these spare parts.

(3) Access to Repair and Maintenance Information¹⁵

[After a period of two years after the placing on the market of the first unit of a model and until the end of the period mentioned under point (1),]¹⁶the manufacturer, importer or authorised representative shall provide access to the vacuum cleaner's repair and maintenance information to professional repairers in the following conditions:

- (a) the manufacturer's, importer's or authorised representative's website shall indicate the process for professional repairers to register for access to information; to accept such a request, the manufacturers, importers or authorised representatives may require the professional repairer to demonstrate that
 - (i) the professional repairer has the technical competence to repair vacuum cleaners and complies with the applicable regulations for repairers of electrical equipment in the Member States where it operates. Reference to an official registration system as professional repairer, where such system exists in the Member States concerned, shall be accepted as proof of compliance with this point;
 - (ii) the professional repairer is covered by insurance covering liabilities resulting from its activity regardless of whether this is required by the Member State.
- (b) The manufacturers, importers or authorised representatives shall accept or refuse the registration within 5 working days from the date of request;
- (c) Manufacturers, importers or authorised representatives may charge reasonable and proportionate fees for access to the repair and maintenance information or for receiving regular updates. A fee is reasonable if it does not discourage access by failing to take into account the extent to which the professional repairer uses the information;
- (d) Once registered, a professional repairer shall have access, within one working day after requesting it, to the requested repair and maintenance information. The information may be provided for an equivalent model or model of the same family, if relevant;
- (e) The vacuum cleaner's repair and maintenance information shall include:
 - the unequivocal vacuum cleaner identification;
 - a disassembly map or exploded view;
 - technical manual of instructions for repair;
 - list of necessary repair and test equipment;
 - component and diagnosis information (such as minimum and maximum theoretical values for measurements);
 - wiring and connection diagrams;

¹⁵ To double check the introduction of requirements for cord retractor assembly (dismountable and/or durability requirement).

¹⁶ To discuss: can it be since day 1?

- diagnostic fault and error codes (including manufacturer-specific codes, where applicable);
- instructions for installation of relevant software and firmware including reset software; and
- information on how to access data records of reported failure incidents stored on the vacuum cleaner (where applicable).

(4) Requirements for dismantling for material recovery and recycling while avoiding pollution.

Manufacturers, importers or authorised representatives shall ensure that vacuum cleaners are designed in such a way that the materials and components referred to in Annex VII to Directive 2012/19/EU¹⁷ can be removed with the use of commonly available tools.

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

5. INFORMATION REQUIREMENTS

From 1 September 2025 vacuum cleaners shall meet the following requirements.

User instructions shall be provided in the form of a user manual on a free access website of the manufacturer, importer or authorised representative, and shall include:

- (1) the following general information:
 - (a) for hard floor vacuum cleaners, mention that they are not suitable for use on carpets with the nozzle supplied;
 - (b) for carpet vacuum cleaners, mention that they are not suitable for use on hard floors with the nozzle supplied;
 - (c) for appliances that are enabled to function also for other purposes than vacuum cleaning, the electric input power relevant to vacuum cleaning if this is lower than the rated input power of the appliance;
 - (d) intended use as regards floor surface: general purpose vacuum cleaner, hard floor vacuum cleaner or carpet vacuum cleaner;
 - (e) intended use as regards application area: household or commercial vacuum cleaner;
 - (f) information on how to activate and deactivate the network connection (if applicable) and its impact on energy consumption;
 - (g) instructions on how to find the model information as set in *Commission Delegated Regulation (EU) [OP -Please insert regulation number energy labelling regulation for vacuum cleaners]* by means of a weblink that links to the model

¹⁷ Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE), OJ L 197, 24.7.2012, p. 38.

information as stored in the product database or a link to the product database and information on how to find the model identifier on the product.

- (2) Declared values for the following parameters:
- (a) the annual energy consumption in kWh/year;
 - (b) maximum operational power in W;
 - (c) dust pick-up on hard floor dpu_{hf} and the average power demand during that test $P(dpu_{hf})$, for hard floor and general purpose vacuum cleaners in %;
 - (d) debris pick-up on hard floor deb_{hf} and the average power demand during that test $P(deb_{hf})$, for hard floor and general purpose vacuum cleaners in %;
 - (e) dust pick-up on carpet dpu_c and the average power demand during that test $P(dpu_c)$, for carpet and general purpose vacuum cleaners in %;
 - (f) for household vacuum cleaners: debris pick-up on carpet deb_c and the average power demand during that test $P(dpu_c)$, for carpet and general purpose vacuum cleaners in %;
 - (g) sound power level in dB(A);
 - (h) dust re-emission dre in %;
 - (i) for commercial vacuum cleaners: the speed S in m^2/min ;
 - (j) for household battery-operated vacuum cleaners: the battery endurance (in number of cycles) and the runtime (in minutes);
- (3) The user instructions shall also include instructions for the user to perform maintenance operations. Such instructions shall as a minimum include instructions for:
- (a) correct installation including connection to mains;
 - (b) cleaning of filters, including optimal frequency, procedure and main consequences of insufficient cleaning of filters;
 - (c) how to ensure long battery life and how to replace batteries (if applicable);
 - (d) emptying of receptacles and replacement of bags if relevant;
 - (e) identification of errors, the meaning of the errors, and the action required, including identification of errors requiring professional assistance;
 - (f) how to access professional repair (internet webpages, addresses, contact details);
 - (g) any implications of self-repair or non-professional repair for the safety of the end-user and for the commercial guarantee;
 - (h) the minimum period during which the spare parts for the vacuum cleaner are available.

Measurement and calculation methods

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

The cleaning tests for hard floor dust pick-up test dpu_{hf} , the hard floor debris test deb_{hf} , the carpet dust pick-up test dpu_c and the carpet debris test deb_c measure the cleaning performance and the average power demand using the universal nozzle only. The universal nozzle, in combination with other factors, is used to determine the annual energy consumption of the vacuum cleaner.

For hybrid vacuum cleaners all measurements shall be made with the vacuum cleaner powered by the mains and – if applicable – the battery-operated active nozzle.

1. POWER DEMAND

(a) Cleaning test weighting per category of intended use

The average power demand P of vacuum cleaners for the 3 categories of intended use, in W rounded to 2 decimals, is determined from the average power demand during the appropriate cleaning tests as follows:

$$P_c = 0.5 P(deb_c) + 0.5 P(dpu_c) \text{ for carpet vacuum cleaners,}$$

where

- P_c is the average power demand for cleaning of vacuum cleaners declared suitable for carpet only, in W rounded to 2 decimals;
- $P(deb_c)$ is the average power demand during the carpet debris test, in W rounded to 2 decimals;
- $P(dpu_c)$ is the average power demand during the carpet dust pick-up test, in W rounded to 2 decimals;

$$P_{hf} = 0.5 P(deb_{hf}) + 0.5 P(dpu_{hf}) \text{ for hard floor vacuum cleaners,}$$

where

- P_{hf} is the average power demand for cleaning of vacuum cleaners declared suitable for hard floors only, in W rounded to 2 decimals;
- $P(deb_{hf})$ is the average power demand during hard floor debris test, in W rounded to 2 decimals;
- $P(dpu_{hf})$ is the average power demand during the hard floor crevice dust pick-up test, in W rounded to 2 decimals;

$$P_{gp} = 0.25 P_c + 0.75 P_{hf} \text{ for general purpose vacuum cleaners.}$$

where

- P_{gp} is the average power demand for cleaning of general purpose vacuum cleaners, meaning declared as suitable for both carpet and hard floors, in W rounded to 2 decimals.
- (b) The average electric power demand of mains-operated vacuum cleaners over a cleaning test is determined from power measurements during the time periods that the center of the cleaning head is moving over the test area.
- (c) In case of a mains-operated vacuum cleaner equipped with active nozzle, if the active nozzle is battery-operated, the average nozzle power demand will be assessed in the same way as the average power intake of a battery-operated vacuum cleaner in point (d) hereafter. The calculated power over a cleaning test is the sum of the mains-power and nozzle power.
- (d) The average power demand of battery-operated vacuum cleaners during 50 nominal annual operational hours ($h_{on-mode}$):

$$P = P_{aux} + P_{on} + h_m \times P_m$$

where

- P_{aux} means the auxiliary power of the docking station with the vacuum cleaner not attached (being operated), including zero-load loss of the charger and possibly auxiliary power of the charger for computation and networked functions;
- P_{on} means the average on-mode power and is determined from the power P_{charge} and charging period T_{charge} needed to recharge the battery to its original state after the cleaning test has been run for an appropriate time period $T_{operation}$:

$$P_{on} = (T_{charge}/T_{operation}) \times P_{charge}, \text{ where}$$

the time periods are expressed in seconds, rounded to the nearest integer, and the power value is expressed in W rounded to 2 decimals;

- P_m is the average maintenance power, expressed in W rounded to 2 decimals;
- h_m is the number of hours of maintenance power per hour of on-mode, with

$$h_m = (h_{year} - h_{charge-mode} - h_{on-mode}) / h_{on-mode},$$

where

- $h_{on-mode}$ = annual hours in mode 50 h;
- $h_{charge-mode}$ = annual hours in charge mode (measured or default 710 h) ;
- h_{year} = hours per year 8760 h.

2. ENERGY EFFICIENCY INDEX

The Energy Efficiency Index (EEI) is

$$EEI = \frac{AE}{SAE} \times 100$$

Where:

- AE is the annual energy consumption in kWh/a, rounded to one decimal, with

$$AE = 17.4 \times SE, \text{ where}$$

- SE is the specific energy consumption per single stroke, expressed in Wh/m² rounded to 2 decimals, with

$$SE = P/(v \times B),$$

where

- P is the measured operating power in W, as determined under point 1 of this Annex depending on typology;
- v is the test stroke speed (1800 m/h);
- B is the cleaning head width, in m rounded to 2 decimals;
- SAE is the standard annual energy consumption of 36 kWh/year.

3. SPEED

For commercial vacuum cleaners only, the soil-specific cleaning speed S , as a function of nozzle width and performance, expressed in m²/min rounded to one decimal, is calculated

appliances for carpet only (suffix c) as

$$S_c = (v/60) \times B \times 0,42 \times (VAC_c / 77,5\%),$$

appliances for hard floor only (suffix hf) as

$$S_{hf} = (v/60) \times B \times 0,42 \times (VAC_{hf} / 62,5\%),$$

appliances for general purpose (suffix gp) as

$$S_{gp} = (v/60) \times B \times 0,42 \times (VAC_{gp} / 73,75\%)$$

where

- v is the test stroke speed (1800 m/h),
- B is the nozzle width (in m),
- 0,42 indicates that the cleaning result involves 3 double strokes at 0,7 m per stroke,
- VAC_c , VAC_{hf} , VAC_{gp} are floor-specific soil removal values (in % rounded to 1 decimal) defined as follows:

VAC_c is the average dust and debris¹⁸ pick up for carpet, with

$$VAC_c = 0,5 \text{ } dpu_c + 0,5 \text{ } deb_c, \text{ and}$$

VAC_{hf} is average dust and debris pick up on hard floor, with

$$VAC_{hf} = 0,5 \text{ } dpu_{hf} + 0,5 \text{ } deb_{hf};$$

VAC_{gp} is average weighted dust and debris pick up on carpet and hard floor, with

$$VAC_{gp} = 0,25 \text{ } VAC_c + 0,75 \text{ } VAC_{hf}.$$

¹⁸ To be discussed.

4. DUST PICK-UP

The dust pick-up on hard floor or carpet (dpu_{hf} or dpu_c) shall be determined as the average of the results of at least 3 cleaning cycles with a forward stroke and the same number of cleaning cycles beginning with a backward stroke in a hard floor crevice test or carpet test respectively. All dust and debris pick-up tests shall be measured with the same nozzle and vacuum cleaner settings.

To correct for deviations from a test carpet's original properties, the dust pick-up on carpet (dpu_c) shall be corrected with the measured dust pick-up of the reference vacuum cleaner system. Values of the measured dust pick-up of the tested vacuum cleaner with the test carpet, the dust pick-up of the reference vacuum cleaner system with the test carpet as is and in the original condition, for each of the cleaning cycles, dpu_c , dpu_{cat} and dpu_{ref} shall be included in the technical documentation.

5. DEBRIS PICK-UP

- (a) The debris pick-up on hard floor for commercial and household vacuum cleaners or carpet for household vacuum cleaners (deb_{hf} or deb_c) shall be determined as the average of the results of at least 3 cleaning cycles beginning with a forward stroke and the same number of cleaning cycles beginning with a backward stroke. All debris and dust pick-up tests shall be measured with the same nozzle, nozzle settings and vacuum cleaner settings.
- (b) The debris pick-up on carpet (deb_c) shall be determined as the average of at least 3 cleaning cycles beginning with a forward stroke and the same number of cleaning cycles beginning with a backward stroke. The debris pick-up on carpet shall be measured with the same nozzle, nozzle settings and vacuum cleaner settings as used in the measurement of dust pick-up on carpet.
- (c) The type, volume and distribution pattern of the test debris is different for household and commercial vacuum cleaners, to be as close as possible to real-life and reproducible between laboratories, following the appropriate test standards in Annex IIIa and within the verification tolerances given in Annex IV.

6. DUST RE-EMISSION

The dust re-emission shall be determined while the vacuum cleaner is operating at its maximum continuous air flow.

7. SOUND POWER LEVEL

Sound power level shall be determined on carpet or hardfloor or average¹⁹ to be measured in the same setting and with the same nozzle as in the respective performance tests.

8. MOTION RESISTANCE

For a carpet vacuum cleaner or a general-purpose vacuum cleaner, the motion resistance shall be determined as the average of the results of the cleaning cycles in a carpet test. The motion resistance shall be measured on the same carpet and with the same nozzle, nozzle setting and vacuum cleaner settings as when measuring the debris pick-up on carpet.

¹⁹ For discussion

For a hard floor vacuum cleaner, the motion resistance shall be determined as the average of the results of the cleaning cycles in a hard floor crevice test. The motion resistance shall be measured on the same hard floor and with the same nozzle, nozzle setting and vacuum cleaner settings as when measuring the debris pick-up on hard floor.

9. DURABILITY OF THE HOSE

The test of durability of the primary and/or secondary hose(s) shall be performed with state-of-the-art test and calculation methods that are reliable, accurate and reproducible.

10. OPERATIONAL MOTOR LIFE-TIME

The test of operational motor lifetime shall be performed with state-of-the-art test and calculation methods that are reliable, accurate and reproducible.

11. BATTERY ENDURANCE

The test of the battery endurance (in number of charge/discharge cycles until the capacity is less than 70% ²⁰ of the original capacity) of battery-operated vacuum cleaners shall be performed with state-of-the-art test and calculation methods that are reliable, accurate and reproducible.

²⁰ Or 80% as for smartphones & tablets

ANNEX IIIa
Measurement and calculation methods

Transitional Methods

Table

References and qualifying notes for vacuum cleaners

(The source of all references is IEC unless otherwise indicated)

Dry vacuum cleaners

Parameter	Reference/ Title	Notes and short description
Annual energy consumption (AE)	EN 60312-1:2017/A11:2022 - Vacuum cleaners for household use - Part 1: Dry vacuum cleaners - Methods for measuring the performance <i>Based on the draft version of IEC 62885-2:2021. For description of household debris see</i> <i>The first edition of EN 60312-1 (2017) is harmonised excluding clause 5.9 (Performance with loaded dust receptacle)</i>	
Rated power (P)		
Dust pick up on carpet (dpu c)		
Dust pick up hard floor (dpu hf)		
Debris pick-up on carpet (deb c)		
Debris pick-up on hard floor (deb hf)		
Dust re-emission (dre)		
Motion resistance (max 40N)		
Durability hose (in cycles)		oscillations bending (primary hose) or push-pull (secondary hose)
Operational motor lifetime(in h)		partially loaded
Sound power level (in dB(A))	EN IEC 60704-2-1:2020 - Household and similar electrical appliances - Test code for the determination of airborne acoustical noise - Part 2-1: Particular requirements for dry vacuum cleaners <i>The first edition (2017) is harmonised</i>	
Definition 'household'(safety standard)	EN 60335-2-2:2010 /AMD1:2013/AMD11:2012 Household and similar electrical appliances - Safety - Part 2-2: Particular requirements for vacuum cleaners and water-suction cleaning appliances <i>EN 60335-2-3:2010 first edition is harmonised</i>	
Household debris (medium-size debris)	IEC TS 62885-1:2020 Surface cleaning appliances – Part 1: General	Nylon (PA6.6) nuts and screws ISO 4032 (nuts, M3,

	requirements on test material and test equipment	weight approx. 0.5 g/piece) and ISO 4766 (screws, M3 x 6, approx. 0.35 g/piece) , distributed by weight (g/m ² test surface)
Repairability	EN 45554:2020. General methods for the assessment of the ability to repair, reuse and upgrade energy-related products	

Commercial mains-operated dry vacuum cleaners

Parameter	Reference/ Title	Notes and short description
Commercial test debris, type	EN IEC 62885-8:2019. Surface cleaning appliances – Part 8: Dry vacuum cleaners for commercial use	<i>Debris type: Brass (CuZn37) nuts ISO 4032-M3-CU2 and washers ISO 7089-3-200 CU2.</i>
Debris distribution	– Methods for measuring the performance <i>For miscellaneous tests refers to IEC 62885-2:2021 except for noise and rated input power uses IEC 60335-2-69, not applicable here</i>	<i>Perpendicular to the direction of testing rows of 5 nuts and 5 washers 140 mm apart over the full length of the 700 mm testing area (exact drawing given in standard)</i>
Definition ‘commercial’(safety standard)	IEC 60335-2-69:2021. Household and similar electrical appliances - Safety - Part 2-69: Particular requirements for wet and dry vacuum cleaners, including power brush, for commercial use	

Battery-operated dry vacuum cleaners

Parameter	Reference/ Title	Notes and short description
Auxiliary power P_{aux} (in W)	EN IEC 62885-4:2020/AMD1:2023. Surface cleaning appliances – Part 4:	<i>Pc1, power intake of docking station without vacuum cleaner (30 min. test)</i>
Charging power P_{charge} (in W)	Cordless dry vacuum cleaners for household or similar use – Methods for measuring the performance	<i>Pc2, average power intake during charging after cleaning test</i>
Maintenance power P_m (in W)	<i>Refers to IEC 62885-2:2021</i>	<i>Pc3, average power intake with fully charged²¹ battery (4h test)</i>
$T_{operation}$ (in s)		<i>Toperation, time for cleaning test (300s)</i>
T_{charge} (in s)		<i>Tcharge, time for recharging battery to original state after the test</i>
Average on-mode power P_{on} (in W)		$P_{eff} = (T_{charge}/T_{operation}) \times P_{charge}$

²¹ To double-check a definition for “fully-charged”.

Battery runtime (in s)		<i>Start fully charged²² VC on carpet. Final runtime is when vacuum is <40% of original vacuum h_0 or when battery is fully discharged²³</i>
Battery rated capacity (mAh)	IEC 61960-3:2017, ...Secondary lithium cells and batteries for portable applications –Part 3: Prismatic and cylindrical lithium secondary cells, and batteries ...	
Battery endurance (number of cycles)	IEC 61951-2:2017+AMD1:2022 CSV ... Secondary sealed cells and batteries for portable applications - Part 2: Nickel-metal hydride ETSI TR 125 914 -V16.0.0, chapter 9. Base station simulator for battery endurance test. ECMA 383 endurance test ambient conditions	Requirement 700 or 800 cycles until <70% or 80% of original capacity C. The IEC 61960-3 standard considers a Depth of Discharge (DoD) of 70% to be ‘fully discharged’. Fully charged equals nominal capacity. These standards follow the ones in the ecodesign regulation (EU) 2023/1670, given that the new Battery Regulation is not specific on the issue.
Sound power level in dB(A)	EN IEC 60704-2-1:2020 - Household and similar electrical appliances - Test code for the determination of airborne acoustical noise - Part 2-1: Particular requirements for dry vacuum cleaners	

Robot vacuum cleaners

Parameter	Reference/ Title	Notes and short description
Off-mode power P_{off} (in W)	IEC/ASTM 62885-7:2020 +AMD1:2022 CSV (Consolidated version). Surface cleaning appliances – Part 7: Dry-cleaning robots for household and similar use	<i>Power intake of docking station without vacuum cleaner</i>
Standby power P_{sb} (in W)	– Methods for measuring the performance	<i>Average power intake with fully charged battery</i>

Note for CF: The harmonised standards for the ecodesign regulation of vacuum cleaners (EU) No 666/2013 were developed under mandate M/540, published on 11 December 2015 (Commission Implementing Decision C(2015)8753)

Note for CF: Commission Communication 2017/C 267/02 on transitional methods for (EU) No 666/2013 published OJ, C 267/p. 4 , 11.8.2017

Note for CF:

²² The power settings should be identical to those for performance testing. Double-check the definition.

²³ Double-check the definition, i.e. until nominal cell voltage e.g. 1.0V for Li-ion cells or 70% of nominal capacity.

IEC/ASTM 62885-7:2020+AMD1:2022 CSV cancels the box test, extends straight-line tests to also remove different kinds of debris from hard floors and carpets as well as fibers from carpets. As a miscellaneous test adds a method for determination of energy consumption, which may be of interest for low power mode requirements. For future review clause: Investigate full energy requirements for robot (?)

DRAFT

ANNEX IV

Verification procedure for market surveillance purposes

1. The verification tolerances set out in this Annex relate only to the verification of the declared values by Member State authorities and shall not be used by the manufacturer, importer or authorised representative as an allowed tolerance to establish those values in the technical documentation or in interpreting these values with a view to achieving compliance or to communicate better performance by any means.
2. Where a model is not in conformity with the requirements laid down in Article 6, the model and all equivalent models shall be considered not compliant.
3. As part of verifying the compliance of a product model with the requirements laid down in this Regulation pursuant to Article 3(2) of Directive 2009/125/EC, the authorities of the Member States shall apply the following procedure:
 - (1) the Member State authorities shall verify one single unit of the model;
 - (2) the model shall be considered to comply with the applicable requirements where it meets all the following conditions:
 - (a) the declared values given in the technical documentation pursuant to point 2 of Annex IV to Directive 2009/125/EC, and, where applicable, the values used to calculate such declared values, are not more favourable for the manufacturer, importer or authorised representative than the results of the corresponding measurements carried out pursuant to point 2(g) of that Annex;
 - (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, importer or authorised representative than the declared values;
 - (c) when the Member State authorities check the unit of the model, they find that the manufacturer, importer or authorised representative has put in place a system that complies with the requirements in the second paragraph of Article 6²⁴;
 - (d) when the Member State authorities check the unit of the model, it complies with the energy requirements in point 1, functional requirements in point 2, [*low power mode requirements in point 3*]²⁵, resource efficiency requirements in point 4 and information requirements in point 5 of Annex II; and
 - (e) when the Member State authorities test the unit of the model, the determined values, that is to say the values of the relevant parameters as measured in testing and the values calculated from these measurements, comply with the validity criteria set out in Table 1 and the respective verification tolerances set out in Table 1.
4. Where the results referred to in point 3.(2)(a), (b), (c) or (d) are not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
5. If the result referred to in point 3(2)(e) is not achieved, the Member State authorities shall select 3 additional units of the same model for testing. As an alternative, the 3 additional units selected may be of one or more equivalent models.

²⁴ Is it relevant for vacuum cleaners to have an article 7 on software updates?

²⁵ Only if inserted.

6. The model shall be considered to comply with the applicable requirements where, for the 3 units referred to in point (5), the arithmetical mean of the determined values complies with the respective verification tolerances set out in Table 1.
7. Where the result referred to in point 6. is not achieved, the model and all equivalent models shall be considered not in compliance with this Regulation.
8. 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 is taken on the non-compliance of the model pursuant to points 2, 4 or 7.
9. The Member State authorities shall use the measurement and calculation methods set out in Annex III.
10. The Member State authorities shall only apply the verification tolerances that are set out in Table 1 and shall only use 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. Tolerances for household and commercial vacuum cleaners are identical, unless indicated differently.

Table 1 - Verification tolerances

Parameter	Verification tolerances
Annual energy consumption (AE)	The determined value* shall not exceed the declared value by more than 10 %.
Power demand (P)	The determined value* shall not exceed the declared value by more than 4%.
Dust pick-up on carpet (dpu_c)	The determined value* shall not be lower than the declared value by more than 6%-points
Debris pick-up on carpet (deb_c)	The determined value* shall not be lower than the declared value by more than 6%-points
Dust pick-up on hard floor (dpu_{hf})	The determined value* shall not be lower than the declared value by more than 6%-points
Debris pick-up on hard floor (deb_{hf})	The determined value* shall not be lower than the declared value by more than 6%-points
Dust re-emission (dre)	The determined value* shall not exceed the declared value by more than 0,012 %-points.
[Power consumption in maintenance mode (Pm)] ²⁶	The determined value* shall not exceed the declared value by more than 0.10W
Pon	The determined value* shall not exceed the declared value by more than 4%.
Paux	The determined value* shall not exceed the declared value by more than 4%.
Poff	The determined value* shall not exceed the declared value by more than 0.10W
Pstandby ²⁷	The determined value* shall not exceed the declared value by more than 0.10W

²⁶ This will stay if we introduce maintenance standby for robot VC.

²⁷ Same comment

P network standby ²⁸	The determined value* shall not exceed the declared value by more than 0.10W if <1W; otherwise not by more than 10%
Sound power level	The determined value* shall not exceed the declared value by more than 2 dB(A).
Operational motor lifetime	The determined value* shall not be lower than the declared value by more than 25h.
Motion resistance	The determined value* shall not exceed the declared value by more than 4 N.
Battery lifetime	The determined value* shall not be lower by more than 5% of the declared value.
Durability of the hose	The determined value* shall not be lower than the declared value by more than 100 oscillations.

²⁸ Same comment

ANNEX V
Benchmarks

At the time of entry into force of this Regulation, the best available technology on the market for products in the scope are given in table 2 below. Note that these are best values for single parameters. There are as yet no products featuring a combination of all these best values, because there are trade-offs between annual energy and maximum operational power on one hand versus cleaning performance (dpu_c in particular) and/or sound power on the other hand.

Table 2 – Benchmark values

Parameter	Mains operated household	Mains operated commercial	Battery-operated
Maximum operational power	300 W	350 W	250 W
Annual Energy	14,5 kWh/year	N/A	12 kWh/year
speed	N/A	5,9 m ² /min	N/A
dpu_{hf}	1,11	1,13	1,06
deb_{hf}	0,89	N/A	N/A
deb_c	0,89	N/A	N/A
dre	0,0002%.	0,0001%.	0,001%.
Sound power level	62 dB(A)	68 dB(A)	77 dB(A)
Battery lifetime	N/A	N/A	1000 cycles