

EL406. Electric Vacuum Cleaners

[EL406-2001/3/2005-107]



1. Scope

The criteria shall apply to household electric vacuum cleaners whose rated power consumption is between 100W and 1,500W.

2. Definitions

2.1

“Suction power” refers to the ability of picking up dusts and pollutants, and shows the performance of vacuum cleaners.

2.1

“Suction efficiency” refers to the ratio of maximum suction power to measured power consumption of the product

2.3

“Ozone depletion potential (ODP)” refers to the value indicating relative impact of ozone depleting substances when the ozone depletion impact of CFC-11 is set to be 1.

3. Certification Criteria

3.1 Environmental Criteria

3.1.1

With respect to use of chemical substances in manufacturing process and recyclability of the parts of the product at disposal stage, the product shall comply with the following requirements.

Note) This Criteria shall not applied on materials which are exempted from Hazardous Substances Restriction lists on EU Directive 2002/95/EC and lead in solder of printed circuit board (PCB). However, in case of revision of EU Directive 2002/95/EC, this shall follow revised EU Directive which is applicable at the time the application for eco-label certification.

3.1.1.1

Lead, cadmium, mercury and their compounds, and hexavalent chromium compounds shall not be used in the product.

3.1.1.2

Content of lead, cadmium, mercury and hexavalent chromium(Cr^{+6}) in the parts of the product shall comply with one of the following requirements.

a) The applicant shall have an appropriate system to control the content of hazardous substances as following requirements.

Substance	Pb	Cd	Hg	Hexavalent Chromium(Cr^{+6})
Content [mg/kg]	≤ 1000	≤ 100	≤ 1000	≤ 1000

b) Provided that the applicant does not have an appropriate system for the control of hazardous substances, the content of hazardous substances in the parts of the product shall comply with the following requirements.

Substance	Pb	Cd	Hg	Hexavalent Chromium(Cr^{+6}) (note)
Content [mg/kg]	≤ 1000	≤ 100	≤ 1000	≤ 1000

Note) In case the content of total chromium (Cr) is 1000 mg/kg or less, it is regarded as equivalent

3.1.1.3

PBBs (polybrominated biphenyls), PBDEs (polybromodiphenyl ethers) and short-chain chlorinated paraffins (C= 10~13) whose chlorine concentration is 50% or more shall not be used in the product.

3.1.2

With respect to energy consumption and noise emission during the use stage, the product shall comply with the following requirements.

3.1.2.1

The suction efficiency shall comply with the followings and the permissible error of both power consumption and suction power from the claimed one respectively shall be

within $\pm 10\%$.

class	products using HEPA filter	other products
suction efficiency [%]	≥ 32	≥ 37

Note) HEPA filter : high efficiency particulate arrestor filter

3.1.2.2

Noise emission of the product (sound pressure level or sound power level) shall comply with the following requirements. If the test results of both sound pressure level and sound power level are available, the result of sound power level shall be applied preferentially

class	sound pressure level [dB(A)]	sound power level [dB(A)]
requirements	≤ 65	≤ 76

3.1.2.3

The product shall have a suction controller with three modes at least.

3.1.3

With respect to recycling in the manufacturing process or recyclability of the product in disposal, the following requirements shall be satisfied.

3.1.3.1

Separable plastic parts (weighing 25g or more and covering a flat surface of 200mm² or more) shall be visibly marked with material identification to facilitate separation and collection in disposal.

3.1.3.2

Shock-absorbing materials in packaging shall be made of recycled pulp or paper such as pulp mold. However, following materials are regarded as equivalent.

a) Shock-absorbing materials certified according to 'EL 606. Packaging Materials'

b) Shock-absorbing materials manufactured by using more than 50wt% of recycled plastics

c) EPS (expanded polystyrene), EPE (expanded polyethylene) and EPP (expanded polypropylene) whose foaming agent has zero ODP

d) Air cell packing bubble wrap that injects air into synthetic resins.

3.1.3.3

Applicants shall maintain the take-back and recycling system for discharged products (including cushioning material for packaging). In case that an applicant manages the system by assigning a specialized company, submission of relevant documents proving it shall be a sufficient proof of compliance.

3.2 Quality Criteria

The quality of the product shall satisfy the safety standards in accordance with the Korean Safety and Control Act for Electric Appliances.

3.3 Information for Consumers

3.3.1

Information on changing filters

3.3.2

Information that the performance of the product gets better and also its energy consumption are reduced if the dust container or bag is frequently emptied

3.3.3

Information about the fact that adequate controlling of the suction power can save the energy consumption

4. Test Methods

Certification Criteria		Test and Verification Methods	
Environmental Criteria	3.1.1	3.1.1.1	Verification of submitted documents
		3.1.1.2	Verification of submitted documents in accordance with the test method specified in and 4.2
		3.1.1.3~ 3.1.1.4	Verification of submitted documents
	3.1.2	3.1.2.1	Test report of an accredited testing laboratory in accordance with the Energy Efficiency Standards & Labeling Program under the "Rational Energy Utilization Act" or or certificate of equivalent

		3.1.2.2	<ul style="list-style-type: none"> • Sound pressure level: Test report of an accredited testing laboratory in accordance with the test method specified in 4.1 and 4.3 • Sound power level: Test report by an accredited testing laboratory in accordance with the EN 60704-2-1 (Test code for the determination of airborne acoustical noise emitted by household and similar electrical appliances. Particular requirements. Particular requirements for vacuum cleaners)
		3.1.2.3	Verification of submitted documents
	3.1.3		Verification of submitted documents
Quality criteria			Test report by an accredited testing laboratory in accordance with the safety standards for electric appliances or certificate of equivalent
Consumer Information			Verification of submitted documents

4.1 General Matters

4.1.1

One test sample shall be required for each applied product.

4.1.2

Test samples shall be collected at random by a certification institute from products in market or those in storage at the production site.

4.1.3

All test measurements shall be, in principle, made at the normal use condition of the sample.

4.1.4

Test result shall be numerically set according to KS Q 5002 (Statistical interpretation method of the data – Part 1: Statistical description of the data).

4.2 Compliance verification and test method regarding the control of hazardous substances

4.2.1

Verification method for the hazardous substance management system

Note) This is the method to verify the compliance with the requirement of the restriction of the use of lead, cadmium, mercury and their compounds, and hexavalent chromium compounds in the parts of the product. This method is applicable to verify that the applicant properly controls

PBBs (polybrominated biphenyls), PBDEs (polybromodiphenyl ethers) and short-chain chlorinated paraffins (C=10~13).

4.2.1.1

Compliance verification shall be done by one of the following documents or more.

a) Explanatory note on the management system, established by the manufacturer on purpose to control the hazardous substances when each part of the product is supplied from the suppliers, and relevant documents

b) Test result conducted by the manufacturer in order to control the hazardous substances when each part of the product is supplied from the suppliers (In this case, test method including pre-conditioning method applied shall be specified in detail)

c) Certificate issued by the accredited third party showing that each part of the product satisfies the relevant requirements (e.g. Certificate of Korea Eco-Label according to 'EL 763. Electric and Electronic Parts')

d) Other documents showing that the manufacturer properly controls the hazardous substances when each part of the product is supplied from the suppliers.

4.2.1.2

In case the compliance of the management system cannot be verified by '4.2.1.1' or the test result for specific parts of the product is required by deliberation committee of eco-label certification, compliance verification shall be done by the following '4.4.2 Test method for measuring the content of the hazardous substances' for the parts collected at random by eco-label certification body.

4.2.2

Test method for measuring the content of the hazardous substances

Note) This is one of the test methods applicable to verify the content of lead (Pb), cadmium (Cd), mercury (Hg) and hexavalent chromium (Cr^{6+}) contained in the parts of the product. The content of the hazardous substances can be also verified according to the internationally recognized test methods. In this case, test method including pre-conditioning method shall be specified in detail and the specified test method shall be approved by deliberation committee of eco-label certification.

4.2.2.1

Test samples shall be homogenized by pre-conditioning method such as pulverization of each part.

4.2.2.2

Analysis method of lead (Pb), cadmium (Cd), mercury (Hg), hexavalent chromium (Cr^{6+}), total chromium (Cr)

a) lead (Pb), cadmium (Cd): KS M 0016 (General rules for atomic absorption spectrochemical analysis), KS M 0032 (General rules for ICP emission spectrochemical analysis) and Inductively coupled plasma mass spectrometry (ICP-MS)

b) mercury (Hg): Atomic absorption spectrochemical analysis by using gold amalgamation method and KS M 0016 (General rules for atomic absorption spectrochemical analysis)

c) hexavalent chromium (Cr^{6+}): Ultraviolet spectrophotometric analysis by diphenylcarbazide and Ultraviolet spectrophotometric analysis by lead acetate trihydrate

d) total chromium (Cr): KS M 0016 (General rules for atomic absorption spectrochemical analysis), KS M 0032 (General rules for ICP emission spectrochemical analysis) and Inductively coupled plasma mass spectrometry (ICP-MS)

4.3 Test method for noise emission

4.3.1

In regard to noise tests, noise shall be measured with the following requirements according to KS I ISO 1996-1 (Acoustics - Description, measurement and assessment of acoustics - Description, measurement and assessment of environment noise - Part 1: Basic quantities and assessment procedures). Sound level meters defined in KS C 1502 (sound level meters) shall be used and measurements shall be based on weighting network A characteristics.

4.3.2

The temperature and humidity of the ambient air shall be normal temperature and

humidity.

4.3.3

The noise shall be measured at a point, 1m away from the sides, front and back, by using sound level meters. The measurements shall be determined 3 times at each point and is represented the average of the three values.

4.3.4

Set the suction control at maximum level, and in case of suction nozzle changeable into the mode for floor cleaning, set it at “Use for floor” mode.

4.3.5

If the noise is measured in a non-anechoic room, the distance between the walls and the tested product shall be broad enough, 2m or more, not to create reflecting sounds. A gap between the background noise and measured noise shall be at least more than 8dB(A).

5. Reasons for Certification

“Power-saving, low noise, less wastes”

Common Criteria, Notice No. 2012-36, the Ministry of Environment

1. Eco-label products must follow the following provisions with regard to the proper treatment of environmental pollution substances, such as air and water wastes and noxious chemical substances emitted in the process of manufacturing or service operation.

A. When first applying for certification, the product manufacturer should observe the environment related laws and agreements pertaining to the region where the production factory or the place of service operation is located for a period of one year prior to the date of application. Any case of violation of the penalty clause will be verified by confirming documents involved during a period of one year to the date of application. Regarding any violation not related to the penalty clause, confirmation will be made on the completion of appropriate measures.

B. A person who has received a certification of eco-labeling shall observe the environment related laws and agreements pertaining to the region where the production factory or the place of service operation is located during the period of certification. However, regarding any violation besides a penalty, confirmation will be made on the completion of appropriate measures.

2. As a general rule, information for consumers shall be indicated on the surface of the product in such a way not to be easily erased. However, in case that indication on the surface of the product is impossible or undesirable, it can be indicated on the appropriate part such as product packaging, product guidebook and user's manual that consumers can recognize. However, the service information should be indicated inside and outside of the place of service operation. In case that indication inside and outside of the place of service operation is impossible or undesirable, it can be indicated on the appropriate part such as an agreement, letter of delivery, letter of guarantee, and PR materials that consumers can recognize.

3. In order to establish fair trade and to protect consumer, the applicant for eco-label and the holder of eco-label license shall observe the Act on the Fairness of

Indication and Advertisement with respect to the environmental aspects of the product.

4. For Various standards referred in the certification criteria by target product, the latest revised edition applies at the date of application, if not specified otherwise.

5. In applying the quality related criteria for each target product, if no standard is available that can be applied as the quality criteria, the president of Korea Environmental Industry & Technology Institute (KEITI) (hereafter referred to as "president of KEITI") may establish and operate the quality criteria for the product involved after review by a competent committee.