

EL407. Air Cleaners

[EL407-2003/4/2009-72]



1. Scope

The criteria shall apply to the air purifier with functions of collecting dust and deodorizing or collecting dust that is usually set up inside household or office.

2. Definitions

2.1

“Electronic air purifier” refers to the product with the function of collecting dust by charging with electricity with the use of high voltage.

2.2

“Mechanical air purifier” refers to the product that has the function of collecting dust by using a filter or spraying water.

2.3

“Complex air purifier” refers to the product in which machine and electric type of collecting dust, both are applied.

2.4

“Rated consumption power” refers to the power consumed when an air purifier is operated under the maximum burden condition at the usual state.

3. Certification Criteria

3.1 Environmental Criteria

3.1.1

With respect to the use of chemical substance during the production process, the product shall satisfy 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.

Item	Pb	Cd	Hg	Hexavalent Chromium(Cr^{+6})
Criteria [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.

Item	Pb	Cd	Hg	Hexavalent Chromium(Cr^{+6}) (Note)
Criteria [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 (polybrominated diphenylethers) and short-chain chlorinated paraffins (C= 10~13) whose chlorine concentration is 50% or more shall not be used in the product.

3.1.1.4

Halogenated plastics such as PVC shall not be used for the plastic case parts weighing 25g or more, and also halogenated compounds shall not be contained in the plastic parts. Exempted from this criterion are the fluororganic additives with less than 0.5 wt% (e.g. anti-dripping).

3.1.2

With respect to the emission of pollutants of product during the use stage, the product shall comply with that Emission volume of ozone concentration generated towards

external space in operation shall be less than 0.5mg/h. However, in case mechanical purifier shall not apply this criterion.

3.1.3

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

3.1.3.1

The product should satisfy the requirements for the first class Energy Efficiency Rating, according to the efficiency management equipment operation regulations in the Energy Use Rationalization Act.

3.1.3.2

Noise [sound pressure level] of product shall satisfy the following requirements by rated wind quantity.

Rated Wind Quantity [m^3/min]	< 5	5~10	10~20	≥ 20
Sound Pressure Level [dB(A)]	≤ 45	≤ 50	≤ 55	≤ 60

3.1.4

With respect to the recycling capability of product during the recycling or disposal stage of production process, the product shall satisfy the following requirements.

3.1.4.1

The classification of quality shall be marked on each part of synthetic resin used for the product (with more than 25g weight and more than 200 mm^2 flat part) in order to make separation-withdrawal of the product easy in the disposal stage.

3.1.4.2

Halogen group synthetic resin including PVC, should not be used for the products and packing materials.

3.1.4.3

The packaging shock-absorbing material of the product shall use recycled paper and pulp such as a pulp-mold. However, the following cases shall be considered for the same material.

a) Packaging shock-absorbing material acquired the environment certificate by 'EL 606. Packaging materials'

b) Packaging shock-absorbing material manufactured with the waste synthetic resin of

50weight% or more

c) Foaming synthetic resin (EPS, EPE, EPP) packaging shock-absorbing material manufactured with the zero ODP material as a foaming agent

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

3.1.5

The product shall be designed and manufactured in consideration of resource-energy saving, reduction of releasing pollutants and using harmful substances, use of recycled materials, improvement of recycling capability and expansion of life span of the product in order to reduce the environmental burden in the whole process of the product

3.2 Quality Criteria

3.2.1

Collecting rate of dust, maintaining volume of dust, gas removal rate and gas removal volume shall satisfy the performance criteria of KS C 9314(air purifier), and in the case that the value is indicated on the product, it shall be more than 95% of the indicated value.

3.2.2

The quality of product shall satisfy the safety standard of electric appliances in accordance with Electric Appliances Safe Control Act.

3.3 Information for Consumers

3.3.1

Indication on the items that the product contributes to the reasons for certification (less noise, reduction in release amount of ozone and environmental-friendly designing) during its consumption stage

3.3.2

Items on filter cleansing and replacing period

3.3.3

Way of disposing waste filters and telephone number of the agent collecting old air purifiers

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	Test report by an accredited testing laboratory in accordance with the test methods 4.2
		3.1.1.3~3.1.1.4	Verification of submitted documents
	3.1.2		Test report by an accredited testing laboratory in accordance with the test methods 4.1 and 4.3
	3.1.3	3.1.3.1	Test report or certification by an accredited testing laboratory in accordance with 'regulations on management of efficiency control equipment in accordance with the Energy Use Rationalization Act.
		3.1.3.2	Test report by an accredited testing laboratory in accordance with KS C 9314 (air purifier) or certificate of equivalent
	3.1.4~3.1.5		Verification of submitted documents
Quality Criteria	3.2.1		Test report by an accredited testing laboratory in accordance with KS C 9314 (air purifier) or certificate of equivalent
	3.2.2		Test report by an accredited testing laboratory in accordance with the safety standard of 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

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 Test and Verification Methods for the Use Limitation of The Harmful Element

4.2.1

The verification method for the proper management system construction and operation of harmful element

Note) This method is to verify the appropriateness of the use limitation standard for lead, cadmium, mercury, and their compounds, 6+ chrome in the parts comprising the product. It can be applied to verify if the applicant manage properly for PBBs, PBDEs, short-chain chlorinated

paraffins (C=10~13) other than harmful element.

4.2.1.1

Verify the appropriateness by checking one of the following 4.5.1.1.1~4.5.1.1.4, the equivalent document, or the test result.

- a) Instruction sheet and relevant document about the management system prepared for managing properly the corresponding element when the producer is provided the parts from the supplier
- b) Test result conducted in-house to manage corresponding harmful element properly, when the producer is provided the parts from the supplier (In this case, there should be clearly indicated the specific test methods including applied pre-treatment methods.)
- c) Certificates (e.g. Eco label certificate for EL 763.Electrical and Electronic Parts) from the third party accredited laboratory that can prove the appropriateness of the part comprising the product
- d) Other data that can prove the applicant manage corresponding harmful element properly, when the producer is provided parts from the supplier

4.2.1.2

In case it is difficult to evaluate whether the management system for harmful element is properly operated according to 4.5.1.1, or the Eco label certificate committee requests the test result of the particular part, verify the randomly sampled part in accordance with 4.5.2 Test method for the content of harmful element.

4.2.2

Test method for the content of harmful element

Note) This is one example of test methods to verify the content of Pb, Cd, Hg, and hexavalent chromium (Cr⁶⁺) contained in the part comprising the product. It is possible to verify with the other method that can be used internationally in common. In this case, specific test method including the pre-treatment methods shall be indicated, and its appropriateness shall be decided by the examination from the Eco label certificate committee.

4.2.2.1

The part to conduct test of the harmful element content shall be collected at random by a certificate institute.

4.2.2.2

Analyzing method of Pb, Cd, Hg, hexavalent chromium (Cr⁶⁺), chromium (Cr)

a) Pb, Cd: KS M 0016 (Atomic absorption analysis methods), KS M 0032 (High frequency ICP emission spectroscopic analysis methods), High frequency ICP mass spectrometer (ICP-MS)

b) Hg: Atomic absorption analysis methods by heating vaporization gold amalgamation, KS M 0016 (Atomic absorption analysis methods)

c) hexavalent chromium (Cr⁶⁺): Ultraviolet rays spectrometry by diphenylcarbazide method, and ultraviolet rays spectrometry by lead acetate trihydrate method

d) chromium (Cr): KS M 0016 (Atomic absorption analysis methods), KS M 0032 (High frequency ICP emission spectroscopic analysis methods), ICP mass spectrometer (ICP-MS)

4.3 methods for measuring the ozone emission

Note) This is a modified and adjusted method based on the ozone emission measurement method specified in 'ISO IEC 28360'.

4.3.1

Testing room

4.3.1.1

The size of testing room shall meet follow requirement. If in doubt, a smaller chamber size should be selected

$$0.01 < \frac{V_{EUT}}{V_{Chamber}} < 0.25$$

V_{EUT} : volume of product [m³]

$V_{Chamber}$: volume of testing room
[m³]

4.3.1.2

The wall, floor and the various ports and wall of the test chamber must make good

seals with the power cables and sensor lines passing through allowing VOC, dust and ozone to be sampled simultaneously.

4.3.1.3

The following test conditions have to be adhered and under no circumstances must water condensation take place in the chamber

- Temperature: $23\text{ °C} \pm 2$

- Relative air humidity: $50\% \pm 5\%$

- Adjustable air exchange rate:

(Large chamber $> 5\text{ m}^3$) : $1 \sim 2 / \text{h} \pm (0.5\%)$

(Small chamber $\leq 5\text{ m}^3$) : $1 \sim 5 / \text{h} \pm (0.5\%)$

- Air flow velocity: $0.1 \sim 0.3\text{ m/s}$

4.3.1.4

Chambers must be checked for compliance with the test requirements before they are first used. The chamber blank values must stay below the following levels at an air exchange rate of $n=1\text{ h}^{-1}$ and ozone must below $4\mu\text{g}/\text{m}^3$

4.3.2

Test procedure

4.3.2.1

For the determination of the blank value and for the testing in the pre-operating phase an air exchange rate of $n = 1\text{ h}^{-1}$ must be set in the chambers.

4.3.2.2

The device to be tested is placed in the emission test chamber with sufficient paper and toner on 3 times air exchange before the emission test. Measurements of the internal atmospheric conditions are recorded from the start of this conditioning phase.

4.3.2.3

The testing materials keep the maximum loading condition and after power on until finish the measurements.

4.3.2.4

Ozone measurements should keep checked between after third air circulation and before fourth air circulation and keep going until sufficient time to check the half-life.

4.3.2.5

Measurements are conducted at the outlet of air.

4.3.3

Calculation of the test result should followed the way defined in 'ISO IEC 28360.

4.3.4

If necessary, the test method may be changed within the range of not affecting much to the test result. However, the changed test method shall be approved by deliberation committee of eco-label certification.

5. Reasons for Certification

“Low noise, low ozone emission(Limited to the concerned product), design for environment”

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.