

EL704. Electric Two-Wheeled Vehicle

[EL704-2009/1/2010-13]



1. Scope

The criteria shall apply to a two-wheeled vehicle using electrical energy charged from an electrical supply source as power, and target an electric two-wheeled vehicle having the rated output of 0.59 kW or more and 1.5 kW or less.

2. Definition

2.1

“Two-wheeled vehicle” refers to a two-wheeled vehicle manufactured suitably to transport 1 or 2 persons.

3. Certification Criteria

3.1 Environmental Criteria

3.1.1

With respect to the use of chemical substances and emission of ozone depletion substances in the manufacturing process shall conform to the following criteria.

3.1.1.1

Plastic components used for the products shall conform to the following criteria

a) As additives of resin, organo-tin compound (TBT, TPT), lead compound and cadmium compound shall not be used.

b) Pb, Cd, Hg included in the product shall satisfy following criteria.

Item	Pb	Cd	Hg
Criteria [mg/kg]	≤ 50	≤ 0.5	≤ 0.5

c) Phthalate-system plasticizer shall not be used as the plasticizer of resin, which has the boiling points of DEHP(di-(2-ethylhexyl) phthalate) or less.

d) For flame-retardants in products, PBBs: polybrominated biphenyls, PBDEs: polybrominated diphenylethers, and short-chain chlorinated paraffins C=10~13 shall not be used as flame retardants.

3.1.1.2

When blowing agents are used, the ODP and GWP of the agents shall, respectively, be equal to zero and 3,000 or below 3,000.

3.1.2

At the stage of use, in regard to resource conservation and energy consumption, the charge capacity of a battery shall be 80% or more of the rated capacity indicated on the battery after 800 times battery charge and discharge cycle test. In addition, no leakage shall occur during the test.

3.1.3

With respect to the life span of product that affects the consumption of resources during its use stage, replaceable parts of wooden furniture with the same color and at least the same function shall be provided in order to replace broken parts when repairing.

3.1.4

At the stage of use or abrogation, in regard to the emission of hazardous substances, a battery used in the product shall not include lead (Pb) and cadmium (Cd).

3.2 Quality Criteria

3.2.1

The product shall include the function of securing stability in regard to conflict and explosion on charging and discharging.

3.2.2

If Korean Industrial Standards are available as a national standard of the product in question, it should satisfy the quality or performance criteria of the standard in question. However, items related to “3.1 Environmental Criteria” are excluded

3.2.3

If no Korean Industrial Standards are available as a national standard of the product in question, it should satisfy the quality and performance standard according to the following sequence. However, the items related to “3.1 Environmental Criteria” are excluded. Also, if the E-Mark Certification Criteria Setting Committee determines that the applying criteria are not reasonable considering the characteristic of the product, it should satisfy the standards that were modified by the committee (test item, test method, standards, etc.).

3.2.3.1

National standards other than Korean Industrial Standards.

3.2.3.2

Overseas national standards or international standards regarding the product quality in question.

3.2.3.3

Standards of the organizations at home and abroad that are referred by the current E-mark target product and certification standard.

3.2.3.4

A private standard that is recognized as higher than the national standard in the industry of the product in question.

3.3 Information for Consumers

3.3.1

Guide for method of maintaining product and supply of replaceable parts.

3.3.2

Indication of matters contributing to reasons (reduction of indoor air pollution, reduction of harmful substances) for the certification of relevant product at the stage of consumption.

4. Test Methods

Certification Criteria			Test and Verification Methods	
Environmental Criteria	3.1.1	3.1.1.1	a)	Verification of submitted documents
			b)	Test report by an accredited testing laboratory in accordance with following test methods <ul style="list-style-type: none"> ▪ Pb, Cd: KS M 0016(Directives of atomic absorption analysis), KS M 0032(Directives of spectrometry for emitting high frequency inductively coupled plasma), high frequency inductively coupled plasma mass spectrograph (ICP-MS) ▪ Hg: Atomic absorption analysis by hot vaporizing gold amalgamation, KS M 0016(Directives of atomic absorption analysis)
			c) ~d)	Verification of submitted documents
		3.1.1.2	Verification of submitted documents	
		3.1.2	Lithium-ion and Lithium-polymer batteries : Test report by an accredited testing laboratory in accordance with the test method specified in 4.1 and 4.2	
		3.1.3~3.1.4	Verification of submitted documents	
Quality Criteria	3.2.1		Verification of submitted documents	
	3.2.2~3.2.3		Test report by the relevant accredited testing laboratory or certificate of equivalent	
Consumer Information			Verification of submitted documents	

4.1 General Matters

4.1.1

In principle, the number of test samples will be one for each applied product. However, two samples shall be used for the battery capacity test.

4.1.2

The environment upon testing shall be subject to ambient temperature and humidity (temperature $20 \pm 15^{\circ}\text{C}$ and relative humidity $65 \pm 20\%$), unless otherwise specified. However, the following conditions shall be satisfied with respect to storage condition, open circuit voltage, duration and leakage resistance.

Division	Duration	Storage Condition	Leakage Resistance	Open
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		Standard	High Temperature	Over-discharge	High Temperature	
Temperature [°C]	20±2	20±2	45±2	20±2	45±2	20±2
Relative Humidity [%]	65±20	65±20	70 or less	65±20	70 or less	65±20

4.1.3

The range of voltage and current measurement error shall be $\pm 0.5\%$ or less.

4.1.4

Test samples shall be the product provided the public, however, in the inevitable situation it shall be collected at random by a certification institute from products in market or those in storage at the production site.

4.1.5

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

4.2 Capacity Test of Lithium-ion and lithium polymer (Li-ion and Li-polymer) Battery

4.2.1

The standard for the end of charging shall be 20 mA or less of charging current or 3 hours charging. In addition, the standard for the end of discharge shall be 80% of rated capacity per unit battery.

4.2.2

The break time between charging and discharging or between discharging and charging shall be 30 minutes.

4.2.3

According to the following discharging conditions, the initial test shall be executed by charging under the nominal conditions suggested by a manufacturer. However, if the capacity measured at stage 3 is less than 90% of the rated capacity indicated on the battery, the test doesn't need to be executed anymore.

Stage	Residual Discharge	Stabilization	Capacity Measurement
Discharging Conditions	0.2 C (1time)	1 C (3 times)	0.2 C (1Time)

4.2.4

The life test shall execute 800 times the action of charging by 1C constant voltage (referring to the following note) and discharging by 1C constant current.

Note) The condition of 'constant voltage' shall be the voltage prescribed in a battery specifications, and in general, shall apply 4.1V or 4.2V.

4.2.5

After completing the life test, the charging shall be executed according to the normal conditions suggested by a manufacturer and according to 0.2C discharging condition, the capacity of a battery shall be measured.

5. Reasons for Certification

"Reduced harmful substances, Reduced air-pollutants, energy saving"

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.