



EL764. Batteries

[EL764-2005/4/2012-126]

1. Scope

The criteria shall apply to the cell that is able to charge and discharge used for the small sized portable power for office or house.

2. Definitions

2.1

“Rechargeable Alkaline-Manganese batteries” refers to a charging and discharging possible battery (“RAM battery” hereinafter) using a manganese dioxide at a positive pole, a zinc at a negative pole, and alkaline solution as electrolyte.

2.2

“Nickel-metal hydride batteries” refers to a secondary battery using nickel oxide at a positive pole, a hydrogen storage alloy at a negative pole, and alkaline solution as electrolyte.

2.3

“Lithium secondary batteries” refers to a secondary battery using a carbon or lithium metal at a negative pole, and this category includes Lithium-ion batteries, lithium ion polymer batteries, and others.

3. Certification criteria

3.1 Environmental criteria

3.1.1

With respect to the use of chemicals in the course of manufacturing, the contents of lead (Pb), cadmium (Cd) shall satisfy the EU guidelines 2006/66/EC.

Item	Lead(Pb)	Cadmium(Cd)	Mercury(Hg)
Criteria [mg/kg]	≥40	≥10	≥1

3.1.2

At the stage of use, in regard to resource conservation and waste reduction, the following conditions shall be satisfied.

3.1.2.1

RAM battery shall be 40% or more of rated capacity indicated in the battery in regard to the charge capacity after a 25 times charging and discharging cycle test, and during test, no leakage shall occur.

3.1.2.2

Nickel-metal hydride batteries and Lithium secondary batteries shall be 80% or more of rated capacity indicated in the battery in regard to the charge capacity after a 400 times charging and discharging cycle test, and during test, no leakage shall occur.

3.1.3

With respect to the recyclability in disposal stage, halogen group synthetic resin including PVC, should not be used for the packing materials.

3.2 Quality criteria

3.2.1

With respect to the safety by the battery type, it shall satisfy the following criteria.

3.2.1.1

RAM batteries shall comply with 6. Test and requirements in KS C IEC 60086 - 5 (Primary battery – Safety of the aqueous solution type battery).

3.2.1.2

Nickel-metal hydride batteries shall satisfy 4 of KS C IEC 62133 (Secondary cells and batteries containing alkaline or other non-acid electrolytes-Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications)

3.2.1.3

Lithium secondary batteries shall satisfy the criteria of Voluntary Safety Confirmation Annex 05, Part 2 (Safety of lithium secondary battery for portable device).

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

Indication for the items that contribute to the reasons for certification of the product (low content of the harmful substance) in the use stage

4. Test Methods

Certification Criteria		Test and Verification Method
Environmental Criteria	3.1.1	Test report by an accredited testing laboratory in accordance with KS M 0016 (General rules for atomic absorption spectrochemical analysis) and KS M 0032 (General rules for ICP emission spectrochemical analysis)
	3.1.2	3.1.2.1 RAM battery : Test report by an accredited testing laboratory in accordance with the test methods 4.1 and 4.2
		3.1.2.2 <ul style="list-style-type: none"> ▪ Nickel-metal hydride battery: Test report by an accredited testing laboratory in accordance with the Test Methods 4.1 and 4.3. ▪ Lithium secondary battery: Test report by an accredited testing laboratory in accordance with the Test Methods 4.1 and 4.4.
	3.1.3	Verification of submitted documents
Quality Criteria	3.2.1	<p>Test report by an accredited testing laboratory in accordance with the following testing methods.</p> <ul style="list-style-type: none"> * Test report by an accredited testing laboratory in accordance with KS C IEC 60086-5 (Primary batteries - Safety of batteries with aqueous electrolyte) * Test report by an accredited testing laboratory in accordance with KS C IEC 62133 (Secondary cells and batteries containing alkaline or other non-acid electrolytes-Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications)

		* Voluntary Safety Confirmation of Lithium secondary batteries
	3.2.2~3.2.3	Test report by the relevant accredited testing laboratory or certificate of equivalent
Consumer Information		Verification of submitted documents

Note) In a case that it can be verified to conform the quality-related standards with the explanation of self-test results or structure, according to the review of the Eco-label certification review committee, it can be considered as being satisfied with the criteria. However, if the Eco-label certification review committee requests the verification of the test or a certificate, it cannot be accepted.

4.1 General Matters

4.1.1

Number of test samples shall be reduced to the minimum, and five test samples shall be required for the rechargeable battery capacity test.

4.1.2

In case without any notification, the tests shall make it a rule to be conducted in a stabilized condition in which the product is set in regular use stage and reaches to normal conditions (Temperature $20\pm 15^{\circ}\text{C}$, Relative humidity $65\pm 20\%$). However, storage conditions, open circuit, persistent time and leakage-resistance shall satisfy the following requirements.

Section	Persistent time	Storage conditions		Leakage-resistance		Open circuit voltage
		Standard	High temp.	Over discharge	High temp.	
Temperature [$^{\circ}\text{C}$]	20 ± 2	20 ± 2	45 ± 2	20 ± 2	45 ± 2	20 ± 2

Relative humidity [%]	65±20	65±20	70 and lower	65±20	70 and lower	65±20
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4.1.3

The measuring difference range between voltage and current shall be less than ± 0.5 °C.

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

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 Capacity Test of RAM Battery (referring to the following note1)

4.2.1

The charging shall be executed with 1C constant current (referring to the following note 2) and when the manufacturer-recommended voltage is reached, it shall be changed to the constant voltage method to thereby execute the charge. When the charging current is 10 mA or 3 hours has elapsed, the charging shall be completed.

4.2.2

The standard of discharging end shall be 0.8 V per unit battery.

4.2.3

The break time between charging and discharging or between discharging and charging shall be at least one hour, and shall be no more than 24 hours.

4.2.4

The life test shall execute 25 times charging and discharging operation under the condition of 0.2C constant current.

4.2.5

The capacity of a battery shall be measured after completing the life test.

Note 1) The “capacity” of a secondary battery is referred to as the quantity of current that can continuously flow for 1 hour after being charged under nominal conditions as presented by the corresponding manufacturer, i.e., the quantity of electric charge that can be discharged under specified conditions. It is expressed as [Ah].

Note 2) “C”, or the C-rate, is referred to as the current of a secondary battery that flows when the nominal capacity presented by the corresponding manufacturer is entirely discharged within 1 hour.

4.3 Capacity test for the nickel-metal hydride battery

4.3.1

The constant current which is 1C shall be used for the electric charging, and the filling is terminated when the voltage change per unit battery is 5mV.

4.3.2

The standard of discharging kinds shall be 1 V per unit battery.

4.3.3

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

4.3.4

After charging under normal conditions suggested by a manufacturer, the initial test shall be executed for each stage according to the following discharge conditions. However, if the capacity measured at the third stage is less than 90% of the rated capacity indicated on the battery, the test shall no longer be executed.

Stage	Residual discharging	Conditioning	Capacity determining
Discharging Condition	0.2C (once)	1C (thrice)	0.2C (Once)

4.3.5

The life test shall execute 400 times charging and discharging operation under constant current conditions of 1C.

4.3.6

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

4.4 Capacity test for lithium secondary battery

4.4.1

The charging shall be executed with 1C constant current (referring to the following note) and when the charging current is 20mA or 3 hours has elapsed, the charging shall be completed.

Note) The 'constant voltage' condition shall be the voltage suggested by battery specifications, and in general, 4.1 V or 4.2 V shall be applied.

4.4.2

The standard of discharging end shall be 3 V.

4.4.3

The pause between the set of charging and discharging operation shall be 30 minutes.

4.4.4

After charging under normal conditions suggested by the manufacturer, the initial test shall be executed for each stage according to the following discharging conditions. However, if the capacity measured at third stage is less than 90% of the rated capacity indicated in the battery, the test shall no longer be executed.

Stage	Residual discharging	Conditioning	Capacity determining
Discharging Condition	0.2C (once)	1C (thrice)	0.2C (Once)

4.4.5

The life test shall execute charging and discharging operation 400 times under 1C constant current conditions.

4.4.6

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

5. Reasons for Certification

“Reduction of hazardous materials and waste”

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.