

EL612. Industrial Lithium-ion Battery 【EL612-2014/1/2014-53】



1. Application Scope

The criteria shall apply to the lithium-ion batteries with a single battery capacity of over 8Ah and below 100Ah that are used as an emergency power source for electrical appliances and for photovoltaic power generation, and installed in an indoor location or an independent space. However, this criteria shall not apply to those products installed in electric vehicles.

2. Definitions

2.1

“Battery” refers to a product composed of one or more cells, which can be readily used by attaching a battery protection structure with a specific terminal arrangement or battery management system (BMS).

2.2

“Battery management system (BMS)” refers to a device used to control the charged/discharged currents in order to ensure the safe and efficient use of batteries and to control battery functions, including the activation of a safety breaker during abnormal operations.

Note) Except when specified otherwise, the terms used in this criteria comply with the following standards and definitions.

- KS C IEC 60050 – 482:2006(International Electric Terms – Chapter 482 : Primary and Secondary Single Cell and Battery)
- KBIA-10104-01(Lithium secondary battery for battery energy storage device Part 1 : Safety assessment of Single Cell and Battery System A)
- KBIA-10104-02(Lithium secondary battery for battery energy storage device Part 2 : Performance Assessment of Single Cell and Battery System A)

3. Certification Criteria

3.1 Environmental Criteria

3.1.1

With respect to the use of chemical substances in the manufacturing stage or the regeneration of parts in the disposal stage, it is necessary to satisfy the following criteria.

Note) The criteria shall not apply to products that are not subject to EU Guidelines 2002/95/EC or those that are excluded from the limitation on the use of hazardous substances specified in the “Act on the Resource Circulation of Electrical and Electronic Equipment and Vehicles”, as well as to soldering lead for printed circuit boards. However, if EU Guidelines 2002/95/EC or the “Act on the Resource

Circulation of Electrical and Electronic Equipment and Vehicles” is amended, the amended guidelines or laws in force at the time of the application for certification shall be complied with.

3.1.1.1

With respect to lead (Pb), cadmium(Cd), mercury(Hg), and Hexavalent chromium(Cr⁶⁺) included in the parts constituting the product, it is required to satisfy the following criteria. However, if an appropriate management system satisfying the applicable criteria is established and implemented, it is considered to have satisfied the criteria.

Item	Lead (Pb)	Cadmium(Cd)	Mercury(Hg)	Hexavalent chromium (Cr ⁶⁺) ^{Note)}
Criteria [mg/kg]	below 1 000	below 100	below 1 000	below 1 000

Note) If the sum of total chromium (Cr) content is 1,000 mg/kg, it is considered to have satisfied the criteria.

3.1.1.2

No polybrominated biphenyls (PBBs), polybrominated diphenylethers (PBDEs), Hexabromocyclododecane (HBCDD) or short-chain chlorinated paraffin (C=10~13) with a chlorine concentration over 50% should be used in the product.

3.1.2

With respect to the resource consumption in the manufacturing and consumption stage as well as the emission and regeneration of hazardous materials in the disposal stage, it is required to satisfy the following criteria.

3.1.2.1

The synthetic resin used in the product (weighing over 25 g and with flat area of over 200 mm²) should be printed with a label on its matching substance to ensure easy disassembly and retrieval in the disposal stage.

3.1.2.2

The materials of synthetic resin parts weighing over 25g which comprise the product housing should be no more than four different types that are easily detachable. The material of each detachable housing unit should be either one type of polymer (homopolymer or copolymers) or recyclable mixed materials (polymer alloy). If a label, mark or sticker is applied on a synthetic resin part, it should be made with the same material used in the attached area, or should be easily detachable to prevent any hindrance to recycling of the product.

3.1.2.3

Shock absorbing foams for packaging the product should satisfy one of the following criteria and be made of a single material.

3.1.2.3.1

Recycled paper or pulp material including pulp mould, etc.

3.1.2.3.2

Shock absorbing foams for packaging which have been certified as "Packaging Material (EL606)" in the certification criteria for Eco label certified products

3.1.2.3.3

Shock absorbing foam for packaging made of disposed synthetic resin which accounts for over 50% of the total weight

3.1.2.3.4

Foaming synthetic resin (EPS, EPE, EPP) shock absorbing material for packaging which was made with a foaming agent with zero ODP

3.1.2.3.5

Air cell shock absorbers for packaging made by blowing air inside the synthetic resin materials

3.1.2.4

Synthetic resin packaging materials and foaming synthetic resin shock absorbing material should be printed with a label regarding separated disposal in accordance with the guidelines on the labeling on separate disposal.

3.1.3

With respect to the service life of products affecting the consumption of resources, the battery capacity after 500 cycles of service life should be over 85% of the rated capacity. In addition, the manufacturer should indicate the rated cycle service life of the product in the product manual, homepage or catalogue, and then back up the value with a warranty of concrete methods.

Note) Here, "concrete methods" of warranty refers to an additional description of the warranty if found to be different from the facts detailed in the specifications, contract notes, etc.

3.1.4

With respect to the use of chemical substances in the manufacturing stage and the emission of hazardous materials in the disposal stage, it is necessary to satisfy the following criteria.

3.1.4.1

For the compound used to produce electrolyte, the material safety data sheet (MSDS) should be submitted.

3.1.4.2

The battery should have a structure that prevents the swift spread of electrolyte in the event of a leak.

3.1.5

The applicant should set up and implement a system that collects disposed products, and an after service system for products sold. However, if the applicant has a designated specialized partner for this undertaking and can show concrete achievements in this area, it is considered to have satisfied the requirement.

3.2 Quality Criteria

3.2.1

If the series or parallel connection of batteries is not explicitly restricted, the battery management system (BMS) should be capable of controlling the failure state.

3.2.2

The product quality excluding "7. Functional Safety" in KBIA-10104-01 (Lithium secondary battery for battery energy storage device Part 1: Safety assessment of single cell and battery system A) should satisfy KBIA-10104-01 and KBIA-10104-02 (Lithium secondary battery for battery energy storage device Part 2: Safety assessment of single cell and battery system A).

3.3 Consumer Information

3.3.1

Instructions on storage and disposal method for retrieval and recycling of the waste storage battery

3.3.2

Contact for inquiries on the after service of the sold products, as well as for product inquiries (Phone number)

4. Test Method

Certification Criteria		Test and Verification Method
Environmental Criteria	(A)	1) (2) Check submitted document in accordance with the verification and test methods
		2) Check submitted document
	(B)	Check submitted document
	(C)	Check submitted document as well as a test report by an accredited test laboratory in accordance with KBIA-10104-02 (Lithium secondary battery for battery energy storage device Part 2: Safety assessment of single cell and battery system A), or equivalent certificate.
	(D)	Check submitted document
	(E)	Check submitted document
Quality Criteria	(A)	A test report by an accredited test laboratory in accordance with (3) Test Method and KBIA-10104-02 (Lithium secondary battery for battery energy storage device Part 1: Safety assessment of single cell and battery system A)
	(B)	A test report by an accredited test laboratory in accordance with KBIA-10104-01 (Lithium secondary battery for battery energy storage device Part 1: Safety assessment of single cell and battery system A) and KBIA-10104-02 (Lithium secondary battery for battery energy storage device Part 2: Safety assessment of single cell and battery system A), or equivalent certificate.
Consumer Information		Check submitted document

4.1 General

4.1.1

Make it a principle to take one test sample per product under application. Where one or more test samples are required, however, this shall not be applicable.

4.1.2

Environmental labeling certification institutions shall conduct random sampling of test samples among the products commercially available or kept in production locations.

4.1.3

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

4.2 Verification of appropriateness and test method on the restriction of hazardous elements criteria

4.2.1

Method for verification of the establishment and implementation of an appropriate management system for the hazardous element

Note) This method is used to verify the appropriateness of criteria that restricts the use of lead (Pb), cadmium (Cd), mercury (Hg) and its compounds and Hexavalent chromium (Cr6+) compounds in the parts constituting the product. This method can also be used to determine if the applicant is managing PBBs, PBDEs and monoenoic chlorinated paraffin(C=10~13) appropriately, in addition to the hazardous substances.

4.2.1.1

Determine whether the product satisfies the criteria by checking one of the documents or test results shown in A)~D).

4.2.1.1.1

Instruction or related document on the management system which was prepared and implemented by the product manufacturer in order to manage the applicable hazardous elements appropriately when the manufacturer receives parts

4.2.1.1.2

Results of in-house tests by the manufacturer that were prepared and implemented by the product manufacturer in order to manage the applicable hazardous elements appropriately when the manufacturer receives parts (in such case, details of the test method including pre-treatment method applied to the in-house test should be specified)

4.2.1.1.3

A certificate by a third-party certification agency that can confirm that the parts constituting the product satisfy the applicable certification criteria [e.g: Eco label certificate on the “Parts for Electric & Electronic Appliances” (EL763) in the Certification Criteria per Candidate for Eco Label Certification.]

4.2.1.1.4

Other files that can verify that the product manufacturer is managing the applicable hazardous elements when it receives parts from suppliers.

4.2.1.2

If it is difficult to verify the management system for hazardous elements in accordance with 1), or the Eco label Certificate Deliberation Committee requests a test result on specific parts, the parts selected through a random sampling by an agency entrusted with Eco label

certification shall be verified in accordance with “(B) Test Method to Verify Content of Hazardous Element.”

4.2.2

Test method to verify the content of hazardous element

Note) This is an example of a test method to verify the content of lead (Pb), cadmium (Cd), mercury (Hg) and Hexavalent chromium (Cr⁶⁺) in the parts constituting the product. Other objective test methods that are accepted internationally shall be used to verify the content. In such a case, details of the test method including the pre-treatment method applied to the test should be specified, and whether the test method satisfies the applicable criteria will be confirmed through a deliberation by the Eco label Certification Deliberation Committee.

4.2.2.1

In principle, the test specimen that will be analyzed for its content shall be homogeneous, after going through various manipulations including pulverization per basic unit of parts.

4.2.2.2

Analysis method of lead (Pb), cadmium (Cd), mercury (Hg), Hexavalent chromium (Cr⁶⁺) and total chromium (Cr) : KS C IEC 62321(Electric/Electronic Appliances- Measurement of the content of 6 restricted substances (lead, mercury, cadmium, Hexavalent chromium, PBBs, PBDEs))

4.3 Test method to verify the failure control performance of the battery management system (BMS)

4.3.1

With the exception of the items specified below, it is necessary to comply with “7. Functional Safety” in “KBIA-10104-01 (Lithium secondary battery for battery energy storage device Part 1: Safety assessment of single cell and battery system A).”

4.3.2

BMS performance verification is performed on a battery system made by assembling more than three sets of parallel-connected batteries, each with 10 series-connected cells.

4.3.3

BMS should support checking and controlling of the status of each unit cell in the battery system.

Note) Example: The BMS system can be checked for its functional operation by changing a random cell with another cell which was tuned to a failure state deliberately. In this case, the verification should be performed on each set of batteries.

5. Reasons for Certification: “Reduction of hazardous substances, long service life, reduction in electrolyte leak”

[Common Criteria]

1. The candidate products for Korea Eco-Label shall comply with the following regulations with regard to the appropriate processing of environmental contaminants that occur in the process of manufacturing or service operation, including air contaminants, water contaminants, waste and harmful chemical substances.
 - 1.1 A person who violates any environment-related law or agreement applicable in the region where his or her factory or operating establishment is located within one year prior to the date of application may not apply for Korea Eco-Label certification. For violations other than the ones subject to penalties, however, a person may apply for the certification after completion of any action for the violation.
 - 1.2 A person who has obtained Korea Eco-Label certification must comply with the environment-related laws and agreements applicable in the region where the factory or operating establishment is located during the certification period. If any violation against penal provisions is found during the certification period, however, the certification may be canceled, and for violations other than the ones against penal provisions, the certification may be suspended until the relevant action is completed.
2. In principle, the “consumer information” specified in the certification standards by product shall be marked in a way not to be removed easily on the surface of the product. If it is impossible or undesirable to mark it on the surface of a product, the information shall be marked on another appropriate part of a product where consumers will notice it, including product packaging, a guidebook, an instruction or etc. For services, however, the consumer information shall be, in principle, marked on the internal and external areas of a building where the service is provided. If it is impossible or undesirable to mark it on the internal or external area of a building, however, it shall be marked on an appropriate part where consumers can notice it, including a contract, statement of delivery, letter of guarantee or brochure.
3. A person who has applied for, or obtained approval for, use of Korea Eco-Label on a product shall comply with the Fair Labeling and Advertising Act in order to establish fair trade order and protect consumers, and if they violate the law, their application for certification may be rejected or their certification may be canceled.

4. Unless otherwise specified, the various specifications cited in the certification criteria by product shall be the latest ones at the time of application for certification.
5. If application of the standards for quality in accordance with the certification criteria by product is deemed as inappropriate, the President of Korea Environmental Industry & Technology Institute (hereinafter referred to as KEITI president) may establish and operate the quality criteria for the product after deliberation committee review or expert consultation.