PRODUCT SAFETY DATA SHEET

Manufacturer

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Name of Product

Lithium ion rechargeable cell (or, Lithium ion secondary cell)

(Model name) (LR2170SD)

Substance Identification

Substance : Lithium ion rechargeable cell

CAS number : Not specified.

UN Class : Even classified as lithium batteries(UN/ID No,3480), they are exempted from Dangerous Goods.(1)

*Lithium ion rechargeable cells are not subject to the UN Regulations if they meet the following provisions. (Special provision 188)

・The equivalent Lithium content calculated by 0.3 times of the rated capacity in Ampere-hour(Ah) is not more than 1.5g.

・Each cell is of type proved to meet the requirements of each test in the UN Manual of Test and Criteria, Part Ⅲ, sub-section 38.3

Composition:

Positive electrode: Metal Oxide	45－50wt%
Negative electrode: Graphite	20－25wt%
Electrolyte: Organic electrolyte	10－15wt%
Aluminum	3-6wt%
Copper	9-12wt%

Hazardous and Toxicity Class

Class name : Not applicable for regulated class

Hazard : It may cause heat generation or electrolyte leakage if battery terminals contact with other metals. Electrolyte is flammable. In case of electrolyte leakage, move the battery from fire immediately.

Toxicity : Vapor generated from burning batteries, may make eyes, skin and throat irritate.

First Aid Measures

The product contains organic electrolyte. In case of electrolyte leakage from the battery, actions described below are required.

Eye contact : Flush the eyes with plenty of clean water for at least 15 minutes immediately, without rubbing. Take a medical treatment. If appropriate procedures are not taken, this may cause an eye irritation.

Skin contact : Wash the contact areas off immediately with plenty of water and soap. If appropriate procedures are not taken, this may cause sores on the skin.

Inhalation : Remove to fresh air immediately. Take a medical treatment.

Fire Fighting Measures

Extinguishing method : Since vapor, generated from burning batteries may make eyes, nose and throat irritate, be sure to extinguish the fire on the windward side. Wear the respiratory protection equipment in some cases.

Fire extinguishing agent : Dry chemical, alcohol-resistant foam, carbon dioxide and plenty of water are effective.

Measures for electrolyte leakage from the battery

- Take up with absorbent cloth.
- Move the battery away from the fire.

Handling and Storage

- When packing the batteries, do not allow battery terminals to contact each other, or contact with other metals. Be sure to pack batteries by providing partitions in the packaging box, or in a separate plastic bag so that the single batteries are not mixed together. (1)
- Do not let water penetrate into packaging boxes during their storage and transportation.
- The Cell will be stored at room temperature, charged to about 10－30% of capacity.
- Do not store the battery in places of the high temperature exceeding 35 deg. C or under direct sunlight or in front of a stove. Please also avoid the places of high humidity. Be sure not to expose the battery to condensation, water drop or not to store it under frozen condition.
- Cells are sure to be packed in such a way as to prevent short circuits under conditions normally encountered in transport.(1)
- Please avoid storing the battery in the places where it is exposed to the static electricity so

that no damage will not be caused to the protection circuit of the battery pack.

Exposure Control (In case of electrolyte leakage from the battery)

Acceptable concentration: Not specified in ACGIH. (3)

Facilities : Provide appropriate ventilation system such as local ventilator in the storage place.

Protective clothing : Gas mask for organic gases, safety goggle, safety glove.

Physical and Chemical Properties

Appearance : Single cell: Cylindrical cell

Nominal voltage : Single cell: 3.6 volts

Stability and Reactivity

Since batteries utilize a chemical reaction they are actually considered a chemical product. As such, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, the various usage conditions such as charge, discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage.

Toxicological Information

Irritancy: Electrolyte is corrosive. Causes chemical burns on contact with skin. Inhalation of fine mist or vapors are irritating to the respiratory system. Prolonged contact with the skin or mucous membranes may cause irritation.

Sensitization: No information is available at this time.

Carcinogenicity: No information is available at this time.

Reproductive toxicity: No information is available at this time.

Teratogenicity: No information is available at this time.

Mutagenicity: No information is available at this time.

Ecological Information

- In case of the worn-out battery was disposed in land, the battery case may be corroded, and leak electrolyte. But, we have no ecological information.
- Heavy metal in cell
  Mercury (Hg) and Cadmium (Cd) are neither contained nor used in cell

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Disposal Considerations (Precautions for recycling)

- When the battery is worn out, dispose of it under the ordinance of each local government or the low issued by relating government.
- Disposal of the worn-out battery may be subjected to Collection and Recycling Regulation.

Transport Information

The rechargeable Lithium-Ion battery pack as stated in Appendix are made in compliance to the requirements stated in the latest edition of the IATA Dangerous Goods Regulations Packing Instruction 965 section Ⅱ such that they can be transported as a NOT RESTRICTED (non-hazardous/non-dangerous) goods. However, if those lithium-ion battery packs are pack with or contained in an equipment, then it is the responsibility of the shipper to ensure that the consignment are packed in compliance to the latest edition of the IATA Dangerous Goods Regulations section Ⅱ of either Packing Instruction 966 or 967 in order for that consignment to be declared as NOT RESTRICTED (non-hazardous/non-Dangerous).

With regard to transport, the following regulations are cited and considered:

- The International Civil Aviation Organization (ICAO) Technical Instructions, Packing Instruction 965, Section Ⅱ (2013-2014 Edition),
- The International Air Transport Association (IATA) Dangerous Goods Regulations, Packing Instruction 965, Section Ⅱ (59th Edition, 2018)
- The International Maritime Dangerous Goods (IMDG) Code (2012 Edition),
- US Harzardous Materials Regulations 49 CFR(Code of Federal Regulations)

Sections 173-185 Lithium batterie and cells,

- The UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria 38.3 Lithium batteries, Rev.5, Amend.1
- UN No. 3480

Our products are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to all the applicable international and national governmental regulations, not limited to the above mentioned. We further certify that the enclosed products have been tested and fulfilled the requirements and conditions in accordance with UN Recommendations (T1 – T8) on the Transport of Dangerous Goods Model Regulations and the Manual of Testes and Criteria that can be treated as “Non-Dangerous Goods”.

Regulatory Information

- IATA Dangerous Goods Regulations 59th Edition Effective 1 January 2018
- ICAO Technical Instructions for the safe transport of dangerous goods by air

Others

References

(1) UN Recommendations on the Transportation of Dangerous Goods Model Regulations (ST/SG/AC.10/1/Rev.15)

(2) IATA Dangerous Goods Regulations 59th Edition Effective 1 January 2018

(3) TLVs and BEIs 2010 ACGIH