

PRODUCT SAFETY DATA SHEET

Manufacturer

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Name of Product Lithium ion rechargeable cell (or, Lithium ion secondary cell)
(Model name) (LR1865SI)

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	30—35wt%
Negative electrode:	Graphite	15—18wt%
Electrolyte:	Organic electrolyte	8—13wt%
Aluminum		3-5wt%
Copper		6-9wt%

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.
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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.
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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.
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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 30—50% 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 or Prismatic 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 (in case of electrolyte leakage from the battery)

Acute toxicity : Oral (rat) LD50 >2g/kg (estimated)

Irritation : Irritating to eyes and skin.

Mutagenicity : Not specified.

Chronic toxicity : Not specified.

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

Disposal Considerations (Precautions for recycling)

- When the battery is worn out, dispose of it under the ordinance of each local government or the law issued by relating government.

- Disposal of the worn-out battery may be subjected to Collection and Recycling Regulation.

Transport Information

Except when installed in equipment, cells are separated so as to prevent short circuits and packed in strong packagings.

Each package containing more than 24 Lithium ion cells must addition meet the following requirements.

- (1) Each package must be marked indicating that it contains lithium-ion batteries and that special procedures should be followed in the event that package is damaged.
- (2) Each shipment must be accompanied with a document indicating that the packages contain lithium- ion batteries and special procedures should be followed in the event a package is damaged.
- (3) Each package is capable of withstanding 1.2m drop test in any orientation without damage to cells contained therein, without shifting of the contents so as to allow cell to cell contact and without release of contents. And except in the case of lithium- ion batteries packed with equipment, packages may not exceed 30kg gross mass.

-During the transportation of a large amount of cells by ship, trailer or railway, do not leave them in the places of high temperatures and do not allow them to be exposed to condensation.

-During the transportation do not allow packages to be fallen down or damaged.

-For shipping, cells may be in a less than 50% charged state (SOC).

- **Transportation of Batteries (assembled over two cells) is subjected to UN –Recommendations and IATA Dangerous Good Regulations.**

Regulatory Information

- IATA Dangerous Goods Regulations 55th Edition Effective 1 January 2014

- 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 55th Edition Effective 1 January 2015
 - (3) TLVs and BEIs 2010 ACGIH
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