

PRODUCT SAFETY DATA SHEET

Manufacturer

Name of Company : Matsushita Battery Industrial Co., Ltd.
Address : 1-1 Matsushita-cho, Moriguchi-shi, Osaka, 570-8511 Japan
Division : Lithium and Micro Battery Business Unit
Department : Engineering Group
Telephone number : +81-6-6994-4537
Facsimile number : +81-6-6992-1827
For emergency : Tel.(Working hours) +81-6-6994-4537
: Tel.(Holiday) +81-6-6991-1141
Contact Person : Shuichi Nishino / Manager

Document number: CR-PSDS-1

Issued or revised date : September 7. 2001

Name of Product

Manganese dioxide lithium battery
Model name : CR-, 2CR-,

Substance Identification

Substance : Lithium battery
CAS number : Not specified.
UN Class : Even classified as lithium batteries, they are exempted from Dangerous Goods.
UN-Recommendations on the Transport of Dangerous Goods Model Regulations.
(ST/SG/AC. 10/1 Rev. 11)

**Lithium cells are not subject to the UN Regulations if they meet the following provisions.

•The Lithium content is not more than 1.0g. [1]

**Lithium batteries are not subject to the UN Regulations if they meet the following provisions.

•The Lithium content is not more than 2.0g. [1]

Composition : Positive electrode ; Manganese dioxide 10~45wt%
: Negative electrode ; Lithium metal 0.5~ 5wt%
: Electrolyte ; Organic electrolyte 1~20wt%

Hazardous and Toxicity Class

Class name	: Not applicable for regulated class
Hazard	: Electrolyte and lithium metal are flammable. (When lithium metal contacts with water, highly flammable gases are liberated.) Risk of explosion by fire if batteries are disposed in fire or heated above 100 degree C. Stacking or jumbling batteries may cause external short circuits, heat generation, fire or explosion.
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. The Lithium metal in batteries reacts with water and generates Hydrogen gas. Risk of explosion by fire fighting using water.
Fire extinguishing agent	: Dry chemical, alcohol-resistant foam, carbon dioxide and dry sand are effective.

Measures for electrolyte leakage from the battery

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

Handling and Storage

- Handling
- : 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) (2)
 - : Use strong material for packaging boxes so that they will not be damaged by vibration, impact, dropping and stacking during their transportation. (1) (2) (3)
 - : Do not recharge batteries. Do not deform batteries.
 - : Do not mix different type of batteries.
 - : Do not solder directly onto batteries.
- Storage
- : Do not let water penetrate into packaging boxes during their storage and transportation.
 - : Do not store the battery in places of the high temperature exceeding 35 degree. 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.
 - : Fire fighting apparatus should be installed.

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

- Acceptable concentration : Not specified in ACGIH.(4)
- 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 coin shape
- Voltage : Single cell ; 3 volts

Physical Hazard (Stability and reactivity)

- When batteries are short-circuited
- : There is the possibility that stacking or jumbling batteries cause short circuits, heat generation, fire or explosion.
- When batteries are recharged
- : Risk of swelling, fire or explosion. The safety mechanism may work and contents may be released.
- When batteries are heated or disposed in fire
- : Risk of fire or explosion.
- When batteries are disassembled
- : Risk of short circuits and heat generation.
Electrolyte and/or Lithium metal may catch fire.

Toxicological information

Acute toxicity	: No information as a battery
Irritation	: No information as a battery
Mutagenicity	: No information as a battery
Chronic toxicity	: No information as a battery

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 quantity for cell

: Hg	< 0.5ppm	Measurement Analysis: Atomic Absorption Spectrometer
: Cd	< 4.0ppm	Measurement Analysis: Atomic Absorption Spectrometer
: Pb	< 1000ppm	Measurement Analysis: Atomic Absorption Spectrometer

Disposal Considerations

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

Transport Information

During the transportation of a large amount of batteries 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 air shipment that contain more than 24 new lithium cells or more than 12 new lithium batteries, they are recommended to be subject to the following Federal Register / Vol.65, No.174/ Thursday, September 7, 2000 / Notices. (2)

1. Each packages shall be marked indicating that it contains lithium batteries and special procedures shall be followed in the event that the package is damaged.
2. Each shipment shall be accompanied with a document indicating that packages contain Lithium batteries and that special procedures shall be followed in the event that the package is damaged.
3. Same documents shall be provided to air carriers.
4. Packages shall not exceed 30kg.
5. Packages shall be strong boxes, at the Packing Group II performance level.

Regulatory Information

IATA Dangerous Goods Regulations

ICAO Technical Instructions for the safe transport of dangerous goods by air

Other information

This PSDS is described on the basis of present materials, information and data. So, please notice that it will be revised by new information. Also this sheet is supplied to entrepreneurs as reference information in order to handle batteries safely. Please notice that entrepreneurs have to deal with batteries as they think fit.

- References
- (1) UN Recommendations on the Transportation of Dangerous Goods Model Regulations (ST/SG/AC.10/1/Rev.11)
 - (2) Federal Register/ Vol. 65, No. 174/Thursday, September 7, 2000/Notices
 - (3) IATA Dangerous Goods Regulations 42nd Edition Effective 1 January 2001
 - (4) TLVs and BEIs 1999 ACGIH
-

(END)