

PRODUCT SAFETY DATA SHEET

1 Name of Product and Manufacturer

Name of Product : Manganese dioxide lithium battery
Model name : See table

Name of Company : Matsushita Battery Industrial Co., Ltd. Primary Battery Company
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2 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. 12)

Lithium cells are not subject to the UN Regulations if they meet the following provisions. (1) (3)

- The Lithium content is not more than 1g.
- Each cell is of the type proved to meet the requirements of each test in the *Manual of Tests and Criteria*, Part III, sub-section 38.3.

Composition : Positive electrode ; Manganese dioxide 12~50wt%
: Negative electrode ; Lithium metal 0.5~ 6wt% (6~300mg)
: Electrolyte ; Organic electrolyte 3~12wt%
; Lithium Perchlorate 0.2~0.7wt%

3 Hazardous and Toxicity Class

Class name : Not applicable for regulated class

Hazard : Electrolyte and lithium metal are inflammable. (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.

4 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.

5 Fire Fighting Measures

Extinguishing method : Since vapor, generated from burning batteries may make eyes, nose and throat irritates, 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.

6 Measures for electrolyte leakage from the battery

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

7 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.

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

Acceptable concentration

: Not specified in ACGIH.

Facilities

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

Protective clothing

: Gas mask for organic gases, safety goggle, and safety glove.

9 Physical and Chemical Properties

Appearance

: Coin shape

Voltage

: 3 volts

10 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 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.

11 Toxicological Information (in case of electrolyte leakage from the battery)

Acute toxicity : Oral(rat) LD50 > 2,000mg/kg(estimated)

Irritation

: Irritating to eye and skin.

Mutagenicity

: Not specified.

Chronic toxicity

: Not specified

12 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.

13 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.

14 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, except when installed in equipment, each package containing more than 24 lithium cells or 12 lithium batteries shall in addition meet the following requirements. (3)

1. Each package shall be marked indicating that it contains lithium batteries and that special procedures should 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 should be followed in the event a package is damaged;
3. Each package is capable of withstanding a 1.2 m drop test in any orientation without damage to cells or batteries contained therein, without shifting of the contents so as to allow battery to battery (or cell to cell) contact and without release of contents; and
4. Except in the case of lithium batteries packed with equipment, packages may not exceed 30 kg gross mass.

15 Regulatory Information

IATA Dangerous Goods Regulations

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

16 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 entrepreneur 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.12)
 - (2) Federal Resister / Vol. 65, No. 174 / Thursday, September 7, 2000
/ Notices
 - (3) IATA Dangerous Goods Regulations 47th Edition (2006)

Table : This PSDS is applicable to the following models.

CR1025	CR1216	CR1612	CR2012	CR2320	CR2404	CR3032
	CR1220	CR1616	CR2016	CR2330	CR2405	
		CR1620	CR2020	CR2354	CR2412	
		CR1632	CR2025		CR2450	
			CR2032		CR2477	
					CR2450A	

(END)