FDK

Issued date: October 29, 2014

SAFETY DATA SHEET (SDS)

1. Product and Company identification

Product Category : Manganese Dioxide Primary Lithium Battery
Nominal Voltage : 3V
Product name

Type	Lithium (g)
CR17335E-N	0.63

Supplier's Name : FDK CORPORATION
Supplier's Address : 5-36-11, Shimbashi, Minato-Ku, Tokyo, 105-8677, Japan
Telephone +81-3-3434-1279
Emergency Contact : CHEMTREC at (800)424-9300

Note: SDS is not applicable to the product hermetically sealed as dry battery. The battery has no risk to life and health under normal use or transportation because ingredients of battery are not leaked out by virtue of hermetical sealing with metal case.
This SDS notify possible risk of our battery under abnormal use but mainly aim to provide information about ingredients, notification of handling and transportation regulations as a useful reference.

2. Hazards identification

The important hazards and adverse effects of the chemical product	No information available
Chemical product - specific hazards	No information available
Outline of an anticipated emergency	Chemical contents are sealed in metal can. Therefore, risk of exposure never occurs unless battery is mechanically or electrically abused. Risk of explosion by fire is anticipated if batteries are disposed of in fire or heated above 100 degree Celsius. Stacking or jumbling of batteries may cause external short circuits, heat generation, in some case, allowing fire or explosion.

Note) Our battery is not classified in accordance with the GHS classification.

3. Composition/ information on Ingredients

Material	CAS No.	Contents
Manganese dioxide	1313-13-9	42wt%
Boron oxide	1303-86-2	0.1wt%
Lithium	7439-93-2	4wt%
Ethylene glycol dimethyl ether	110-71-4	10wt%
Polyethylene	9002-88-4	2wt%
Polypropylene	9003-07-0	1wt%
Iron	7439-89-6	34.4wt%
Molybdenum	7439-98-7	0.5wt%
Nickel	7440-02-0	2wt%
Chromium	7440-47-3	2wt%
Bisphenol A-Epichlorohydrin polymer	25068-38-6	1wt%
Polyethylene terephthalate	25038-59-9	1wt%

4. First-aid measures

Inhalation	If ingredient leaked out from inside of a battery and if inhaled it, move to a place where fresh air is provided. Refer for medical attention.
Skin contact	If ingredient leaked out from inside of a battery and stuck on skin, 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. Refer for medical attention.
Eyes contact	If ingredient leaked out from inside of a battery and came into eyes, flush the eyes with plenty of 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.
Swallowing	In case of swallowing of battery, immediately refer for medical attention.

5. Fire-fighting measures

Fire extinguishing agent:

Dry chemical, alcohol-resistant foam, powder, atomized water, carbon dioxide and dry sand are effective.

Extinguishing method:

Escape batteries to safe place prevent from ignition by spreading fire.

Because packaging material of battery is paper, use water extinguisher, CO2 extinguisher or powder extinguisher as normal extinguisher.

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.

6. Accidental release measures

Chemical contents are sealed in metal can. But if the battery is mechanically or electrically abused, contents may leak out. In such case, take action as showing below.

Personal precautions: Temporary inhalation of odor and attaching of electrolyte to skin does not cause serious health hazard. Be sure the ventilation and washing out of electrolyte quickly.

Environmental precautions: Clean up it quickly. Specific environmental precaution is not necessary.

Method and materials for containment and methods and materials for cleaning up:

Contain and collect spillage and place in container for disposal according to local regulations.

7. Handling and storing

Handling	Do not charge, short-circuit, disassemble, deform, heat above 100℃ or incinerate. Do not pile up or mingle batteries with each other. Do not place battery on metal case, metal plate or antistatic material. In case of multi cell application, replace all batteries to new at once when replacing used batteries.
Storage	Be sure to store batteries in well-ventilated, dry and cool conditions. Keep away from water, rain, snow, frost or dew condensation. Do not store batteries near source of heat or nozzle of hot air. Do not store batteries in direct sunshine. Take care not to get wet packing by dew condensation when packing is removed from cold to warm and humid condition. Enough number of fire fighting apparatuses should be installed in warehouse.

8. Exposure controls and personal protection

There is no need of personal protective equipment on regular handling and storage. In the event, however, a large amount of electrolyte should be released by mechanical or electrical abuse, use the protections as shown below.

Respiratory protection : Mask (with a filter preferably)
Hand protection : Synthetic rubber gloves
Eye protection : Goggles or glasses

9. Physical and chemical properties

State : Solid
Shape : Cylindrical

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10. Stability and reactivity

Stability: Stable on regular handling
Conditions to avoid: External short circuit of battery, deformation by crush, exposure at high temperature of more than 100 degree C (may cause heat generation and ignition), direct sunlight, high humidity
Materials to avoid: Substances that cause short circuit.

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11. Toxicological information

Since chemicals are contained in a sealed can, there are no hazards.
Toxicological information of main components of battery is shown below as reference.
Manganese Dioxide
Acute toxicity: rabbit : LDL_0(blue pipe) =45mg/kg, mouse: LD_{50}(subcutaneous)=422mg/kg
Local effects: Stimulus to an eye, a nose, a throat, and a skin
Chronic toxicity or long-term toxicity: Inhalation of powder dust or fume for a long time (at least 3 months) may cause specific central nerve symptom like Parkinson's disease.
Lithium metal
Acute toxicity: No information in a metal state
Local effects: Touching on a skin or an eye causes thermal burn and alkaline chemical burn.
Electrolyte
Acute toxicity: No information at present
Local effects: Slight stimulus to an eye

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12. Ecological information

Persistence and degradability	No information available
Mobility in soil	No information available

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13. Disposal considerations

Dispose of batteries in accordance with applicable federal, state and local regulations.
For safety precaution, battery should be insulated in proper manner; covering both terminals by tape, wrapping of battery in insulative bag or packing battery in original package is recommended in order to prevent ignition or explosion due to short-circuit.

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14. Transportation Information

Lithium metal cells and batteries are classified as Class 9 Dangerous Goods in the United Nations Recommendation, and given UN numbers as shown in the below table. In case of transport of lithium metal cells and batteries, compliance with all the relevant UN regulations in addition to the requirements of United Nations Recommendation is required.
Our battery (listed on section 1) and its shipping package complies with the requirement of UN Manual of Test and Criteria, Part III, subsection 38.3 as well as the requirements described below, so it is permitted to transport.

＜Air Transport＞

Our battery is applicable to IATA Dangerous Goods Regulations (IATA-DGR) Packing Instruction 968 section IB because it corresponds to either case that the cell – lithium content is more than 0.3g and less than 1g or the battery – lithium content is more than 0.3g and less than 2g. Our battery and its shipping package is permitted to transport as Class 9 Dangerous Goods but without using packing group II package when it complies with all requirements of the transport conditions for Section IB.

＜Sea Transport＞

Our battery is applicable to the International Maritime Dangerous Goods Code (IMDG-Code) Special provision 188 because it corresponds to either case that the cell – lithium content is less than 1g or the battery – lithium content is less than 2g, so it is permitted to transport as Exempted Dangerous Goods when it complies with all requirements of the transport conditions.

UN No.	Proper Shipping Name/Description
3090	Lithium metal batteries
3091	Lithium metal batteries contained in equipment
3091	Lithium metal batteries packed with equipment

Related regulations: Following regulations shall be cited and considered.

Transportations	Related organization / Issue documents
Air transport (by airplane)	ICAO（International Civil Aviation Organization）/ TI（Technical Instruction） IATA（International Air Transport Association）/ DGR（Dangerous Goods Regulations）*1
Maritime transport (by ship)	IMO（International Maritime Organization）/ IMDG Code（International Maritime Dangerous Goods Code）*2
Land transport (Intra-European)	RID（International Carriage of Dangerous Goods by Rail）, ADR（International Carriage of Dangerous Goods by Road）
USA / UN	USDOT（US Department of Transportation）/ DOT 49 CFR（US law） UN: Recommendations on the transport of dangerous goods: Manual of Tests and Criteria 5th revised edition Amendment 1 [ST/SG/AC.10/11/Rev.5/Amend.1]: PartⅢ, Subsection 38.3

15. Regulatory information

Environment-related law of batteries: EU nations have applicable law in accordance with Directive 2006/66/EC and other some countries, China, Korea, Brazil, some provinces of USA and Canada or so have similar law.

16. Other information

Reference

- IATA Dangerous Goods Regulations, latest edition *1

Notes on this sheet

*1Dangerous Goods Regulations – 55th Edition Effective 1 January 2014: International Air Transport Association (IATA)

*2 IMDG Code – 2012 Edition: International Maritime Organization (IMO)

This sheet refers to normal use of the product in question. FDK Corp. makes no warranty expressed or implied.