PRODUCT SAFETY DATA SHEET

Lithium Battery Used in Fire Knight AS3786 Smoke Alarm: Model PFKSA-LB

This product is a consumer product which is used in a hermetically sealed state. So, it is not an object of the SDS system. This document is provided to customers as reference information for the safe handling of the product. The information and recommendations set forth are made in good faith and are believed to be accurate at the date of preparation.

Details of the supplier of the safety data sheet

Supplier:	FlameStop Australia
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Dep. responsible for information:	Compliance
Emergency contact number:	+61 425 342 729

Issued date: January 1, 2018

SAFETY DATA SHEET (SDS)

1. Product and Company identification

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

Type	Lithium (g)
CR1/2 6･L	0.31
CR2/3 6･L	0.41
CR6･L	0.71
CR2/3 6L	0.43
CR1/2 6LHT	0.31
CR2/3 6LHT	0.43
CR2/3 8･L	0.57
CR8･L	0.87

Type	Lithium (g)
CR8･LHC	0.90
CR8LHT	0.90
CR12600SE	0.52
CR17335SE	0.52
CR17335SE-R	0.52
CR17450SE	0.75
CR17450SE-R	0.75

Supplier's Name : FDK CORPORATION
Supplier's Address : 1-6-41, Konan, Minato-ku, Tokyo 108-8212 Japan
Telephone +81-3-5715-7435
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. Principal Composition/ information on Ingredients

Part	Material	CAS No.	Contents
Positive electrode	Manganese Dioxide	1313-13-9	30 ～ 50 wt%
Negative electrode	Lithium metal	7439-93-2	2 ～ 4 wt%
Electrolyte	Lithium perchlorate	7791-03-9	0.5 ～ 1.5 wt%
	1,2-Dimethoxyethane	110-71-4	3 ～ 4.5 wt%
	Mixture of organic solvent	N/A	5 ～ 15 wt%

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 short-circuit, disassemble, deform, heat 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. Keep batteries out of reach of children.

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

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.

11. Toxicological information
Since chemicals are contained in a sealed can, there are no hazards.

12. Ecological information

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

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.

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.
Our products can be transported by cargo aircraft only since our products are classified into lithium metal batteries. However, in the case of transporting our cells or batteries packed with or contained in equipment, such cells or batteries are permitted for carriage on passenger aircraft.

＜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.	Packing Instruction	Proper Shipping Name/Description
3090	968	Lithium metal batteries
3091	969	Lithium metal batteries packed with equipment
3091	970	Lithium metal batteries contained in 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 6th edition [ST/SG/AC.10/11/Rev.6]: PartⅢ, Subsection 38.3

15. Applicable legislation

EU Directive 2006/66/EC
CA Lithium Perchlorate Regulation

16. Other information

Reference

- IATA Dangerous Goods Regulations, latest edition *1

Notes on this sheet

*1 Dangerous Goods Regulations – 59th Edition Effective 1 January 2018: International Air Transport Association (IATA)
*2 IMDG Code – 2016 Edition: International Maritime Organization (IMO)

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