Issued date: January 2, 2018

PRODUCT SAFETY DATA SHEET

1. Product and Company identification

Product Category: Lithium Manganese Dioxide Primary Battery, Nonrechargeable

Nominal Voltage: 9 V

Product name:

Type	Lithium (gr.)	Type	Lithium (gr.)
CP 9V	1.23		

Supplier's Name: Huiderui Lithium Battery Technology Co., LTD.

Supplier's Address: No.67, Hechang West 3rd Road, Zhongkai Hi-Tech Development

Telephone (0086)-752-2652968

Emergency Contact: (0086)-752-2652968

Note: The battery is neither substance nor mixture but product and having no risk to life and health under normal use or transportation because ingredients of battery is not leaked out by virtue of hermetical sealing with metal case. This sheet notifies 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.

3. Composition/ information on Ingredients

Component	Material	CAS No.	Contents
Positive electrode	Manganese Dioxide	1313-13-9	10 ~ 30 wt%
Negative electrode	Lithium metal	7439-93-2	1 ~ 6 wt%

Electrolyte	Mixture of organic solvent	—	3 ~ 25 wt%
Others (Steel or Plastic parts)	Steel	7439-89-6	10-45 wt%
	Polypropylene	9003-07-0	1-20 wt%

Note) Electrolyte is mixture of organic solvent and does not include substances available for classification of GHS.

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, CO_2 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. Handling 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	: Prismatic

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.
Toxicological information of main components of battery is shown below as reference.
Manganese Dioxide

Acute toxicity: rabbit *[1]: LDL_0 (blue pipe) = 45mg/kg, mouse*[2]:$LD5_0$ (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.

Reproduction toxicity: Mouse*[3] inhalation TCL_0=49mg/m^3

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

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

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 dropped or damaged.

UN Number: UN3090 (only for the Air transport, over 8-cells per package)
: Even though the cells are classified as lithium metal batteries (UN3090 or 3091),

they are exempted from Dangerous Goods because they meet the following:

1. For cells, the lithium content is not more than 1g;
2. Each cell is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, PartIII, sub-section 38.3.
3. Each cell is manufactured in ISO9001 certified factory.

Proper shipping Name: Lithium metal batteries

UN Class: Class9 (only for the Air transport, over 8-cells per package)
: Not Applicable (for the Air transport by Section II and the Marine transport)

Please refer to the following reference information about concrete ways of transportation. Actual content of packaging label and shipping documents varies by shipping companies. Make sure to confirm in advance with your shipping company.

Information of reference

	Reference (Reference number)	Special provision	Note
Air transport	IATA (2)	Packing Instruction 968 Section I A	Cells, Net quantity per package Cargo Aircraft only; Max. 35kg
		Packing Instruction 968 Section I B	Cells, Net quantity per package Cargo Aircraft only; Max. 2.5kg
		Packing Instruction 968 Section II	Cells, on Cargo Aircraft only Maximum number of cell per package; 8 cells
		Packing Instruction 969 Section II	Cells packed with equipment
		Packing Instruction 970 Section II	Cells contained in equipment
Marine transport	IMDG (3)	Special provision 188	

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

This PSDS is provided to customers as reference information in order to handle batteries safely. It is necessary for the customer to take appropriate measures depending on the actual situation such as the individual handling, based on this information.

References (1) UN Recommendations on the Transportation of Dangerous Goods, Model Regulations

(2) IATA Dangerous Goods Regulations 57th Edition (2016)

(3) IMO International Maritime Dangerous Goods Code 2014 Edition

(4) UN Recommendations on the Transportation of Dangerous Goods, Manual of Tests and Criteria Association (IATA)

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