

# Material Safety Data Sheet

Reference number: MSDS-HYLB-2186-2019

Issued and Revised Date:01. Jan.2019

## 1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Manganese dioxide lithium battery

Applicable Model: LM34S002A battery Pack manufactured with the CR123A-Cells of Panasonic

Supplier Identification: Shenzhen Hengyu Energy Technology Co.,Ltd

Address:Block B3(H),Glory Technology Industrial Park,Baolong Road 5th,Longgang District,Shenzhen Guangdong, China

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## 2. HAZARDOUS AND TOXICITY CLASS

GHS Classification : Not applicable

Hazard : Electrolyte and lithium metal are inflammable. Risk of explosion by fire if batteries are disposed in fire or heated above 100°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.

## 3. SUBSTANCE IDENTIFICATION

Component	Material	CAS No.	Content (%)
Positive electrode	Manganese dioxide	1313-13-9	25-45
Negative electrode	Lithium metal	7439-93-2	2-5
Negative electrode	1,2-dimethoxyethane	110-71-4	3-5
	Organic electrolyte	-	5-17
Others (Steel or Plastic parts)	Steel	439-89-6,7440-47-3	25-50
	Polypropylene	9003-07-0	3-15

### **Lithium content**

Model Number	Lithium content (g)	Comment
CR123A	0.6	Single cell
LM34S001A	7.2	Battery Pack (12 cells)

### **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. FIREFIGHTING 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.

Fire extinguishing agent : Alcohol-resistant foam and dry sand are effective.

### **6. MEASURES FOR ELECTROLYTE LEAKAGE FROM THE BATTERY**

Take up with absorbent cloth, treat cloth as inflammable. 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.

Use strong material for packaging boxes so that they will not be damaged by vibration, impact, dropping and stacking during their transportation.

Do not short-circuit, recharge, deform, throw into fire or disassemble.

Do not mix different type of batteries.

Do not solder directly onto batteries.

Insert the battery correctly in electrical equipment.

**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 or under direct sunlight.

Please also avoid the places of high humidity. Be sure not to expose the battery to condensation, rain or frozen condition.

**8. EXPOSURE CONTROLS AND PERSONAL PROTECTION**

Acceptable concentration : Not specified in ACGIH. Facilities : Provide appropriate ventilation system such as local ventilator in the storage place.

Protective Equipment (in case of electrolyte leakage from the battery) Respiratory Protection : Self-Control Breathing Apparatus for organic gases Hand Protection : Safety gloves Eye Protection : Safety goggle

**9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance : Prismatic

Nominal Voltage : 12V for each Battery Pack (single cell: 3V)

**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. UN Number : UN3090 , UN3091

1. for cells, the lithium content is not more than 1g;

for battery packs, the lithium content is more than 2g.

2. each cell or battery pack 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/battery pack is manufactured in ISO9001 certified factory.

Proper shipping Name: Lithium metal batteries

UN Class : Class9 Applicable

Information of reference

	Reference (Reference number)	Packing Instruction(PI)/ Special provision(SP)	Note
Air transport	IATA(2)(5)	PI 968 Section IA	Battery Packs, Net quantity per package Cargo Aircraft only; Max. 35kg
		PI 969 Section I	Battery Packs packed with

			equipment; Max. (Pax A/C=5kg,CAO=35kg)
		PI 970 Section I	Battery Packs packed in equipment; Max. (Pax A/C=5kg,CAO=35kg)
Marine transport	IMDG(3)	SP 188	

## 15. REGULATORY INFORMATION

IATA Dangerous Goods Regulations 60th Edition(IATA DGR)

IMO International Maritime Dangerous Goods Code 2016 Edition(IMDG Code)

UN Recommendations on the Transportation of Dangerous Goods, Model Regulations

UN Recommendations on the Transportation of Dangerous Goods, Manual of Tests and Criteria

EU Battery Directive (2006/66/EC,2013/56/EU)

Regulation(EC) No. 1907/2006 on the Registration, Evaluation, Authorization and Restriction of  
Chemicals(REACH)

State of California Regulations – Best management practices for Perchlorate Materials

## 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.