

MATERIAL SAFETY DATA SHEET

**Product: Lithium Manganese Dioxide Batteries (3V):
CR2, CR123A**

Revision: Aug 22, 2019

Contact : MMD Hong Kong Holding Limited
Address : Units 1006-7, 10/F, C-Bons International Center, 108 Wai Yip Street,
Kwun Tong, Hong Kong

The batteries are exempt articles and are not subject to the OSHA Hazard Communication Standard Requirement. This sheet is provided as technical information only. The information and recommendations set forth are made in good faith and are believed to be accurate as of the date of preparation. However, Gibson Innovations makes no warranty expressed or Implied.

Section 1-Product and Company Identification

Product Name Lithium Metal Batteries	Type No: CR Type	Volts: 3V	
CHEMICAL SYSTEM: Lithium Manganese Dioxide	Approximate Weight: 0.49g	Designed for Recharge: NO	
Company: MMD Hong Kong Holding Limited		Telephone Numbers: (852) 93831791	
Address (Number, Street, City, State, and ZIP Code): Units 1006-7, 10/F, C-Bons International Center, 108 Wai Yip Street, Kwun Tong, Hong Kong			

Section 2- Composition/Information on Ingredients

Ingredient	CAS NO.	Content (wt%)
Lithium	7439-93-2	1 ~ 6 wt%
Polypropylene	9003-07-0	1 ~ 10 wt%
Manganese dioxide	1313-13-9	20 ~ 40 wt%
1,2-Dimethoxyethane	110-71-4	3 ~ 5 wt%
Organic solvent	-	8 ~ 16 wt%
Steel	7349-89-6	0.5 ~ 4.5 wt%

Section 3 – Hazards Identification

This contains lithium, organic solvent, and other combustible materials. For this reason, Improper handling of the battery could lead to distortion, leakage*, overheating, explosion of fire and cause human injury or equipment trouble. Please strictly observe safety instruction.
(*Leakage is defined as an unintended escape of liquid from a battery.)

Section 4 – First Aid Measures

None unless internal materials exposure. If contents are leaked out, observe following Instructions

Inhalation	Fumes can cause respiratory irritation. Remove to fresh air and consult a physician.
Skin	Immediately flush skin plenty of water. If itch or irritation by chemical burn persists, consult a physician.
Eyes	Immediately flush eye with plenty of water for at least 15 minutes. Consult a physician immediately
Ingestion	If swallowing a battery, consult a physician immediately. If contents come into mouth, immediately rinse by plenty of water and consult a physician.

Section 5-Fire Fighting Measures

Extinguishing Media	Extinguisher of alkaline metal fire is effective. Plenty of cold water is also effective to cool the surrounding area and control the spread fire. But hydrogen gas may be evolved by the reaction of water and lithium and it can form an explosive mixture. Therefore in the case that lots of lithium batteries are burning in a confined space, use a smothering agent.
Firefighting procedure	Use self-contained breathing apparatus and full protective gear not to inhale harmful gas.

Section 6-Accidental Release Measures

Accidental Releases: Do not breathe vapors or touch liquid with bare hands (see section 4).

Waste Disposal Methods: Evacuate area. If possible, a trained person should attempt to stop or contain the leak by neutralizing spill with soda lime or baking soda. A NIOSH Approved Acid Gas Filter Mask or Self-Contained Breathing Apparatus should be worn. Seal leaking battery and soda lime or baking soda in a plastic bag and dispose of as hazardous waste.

Other: Follow North American Emergency Response Guide (NAERG) #138 for cells involved in an accident, cells that have vented, or have exploded.

Section 7-Handling and Storage

Handling	Never swallow. Never reverse the positive and negative terminals when mounting. Never short-circuit the battery. Never heat. Never expose to open flame. Never disassemble. Never weld the terminal or wire to the body of the battery directly. Never touch the liquid leaked out of battery. Never bring fire close to battery liquid. Never keep in touch with battery.
Storage	Never let the battery contact with water. Never store the battery in hot and high humid place.

Section 8 – Exposure Controls. Personal Protection

Respiratory Protection:		N/A
Ventilation	Local Exhaust:	N/A
	Mechanical:	N/A
	Special:	N/A
	Other:	N/A
Eye Protection:		N/A
Protective Gloves:		N/A
Other protective clothing:		N/A

Section 9 – Physical/Chemical Characteristics

Boiling Point:	1,2-Dimethoxyethane : 83°C
Vapor Pressure:	1,2-Dimethoxyethane : 6.40(20°C)
Vapor Density:	1,2-Dimethoxyethane : 3.11
Solubility in Water:	1,2-Dimethoxyethane : diffluence contact with water
Specific Gravity:	1,2-Dimethoxyethane : 1.63
Melting Point:	1,2-Dimethoxyethane : -67°C
Evaporation Rate:	N/A
Water Reactive:	1,2-Dimethoxyethane : diffluence contact with water
Appearance & Odor:	1,2-Dimethoxyethane : achromatism liquid; slight aether odor.

Section 10 – Stability and Reactivity

Stability:	Stable
Incompatibility:	Water
Hazardous polymerization:	Will not occur.
Condition to avoid:	See section 7.
Hazardous Decomposition or Byproducts:	Hydrogen

Section 11 – Toxicological Information

Acute Toxicity:

1,2-Dimethoxyethane:

LC (Inhalation): N/A

LD₅₀: N/A

Eye Effects: Corrosive

Skin Effects: Corrosive

Section 12 –Ecological Information

Aquatic Toxicity: Do not let internal components enter marine environments. Avoid releases into waterways, wastewater or groundwater.

Section 13 – Disposal condition

The battery may be regulated by national or local regulation. Please follow the instructions of proper regulation. As electric capacity is left in a discarded battery and it comes into contact with other metals, it could lead to distortion, leakage, overheating, or explosion, so make sure to cover the (+) and (-) terminals with friction tape or some other insulator before disposal.

Section 14 – Transportation Information

Lithium battery model CR2016 is considered as “Not Restricted” cargo because they complied with IATA Dangerous Goods Regulations 58th Edition of 2015 & Section II of Packing Instruction PI 968.

Shipping Name: Lithium Metal Batteries
 UN Number: UN3090
 Hazard Classification: Class 9 (Miscellaneous)

Organizations governing the transport of lithium batteries

Area	Method	Organization	Special Provision
International	Air	IATA, ICAO	Best Practice 012
International	Water	IMO	188 & 230
U.S.A	Air, Rail, Highway, Water	DOT	49 CFR Section 173.185

These regulations are based on the UN Recommendations. Each special provision provides specifications on exceptions and packaging for shipping lithium batteries. All the Lithium metal cells of Gibson Innovations comply in all respects can be shipped as “Not Restricted” cargo in accordance with IATA Dangerous Goods Regulations 58th Edition & Section II of Packing Instruction PI 968. If all of following 3 requirements are satisfied, lithium metal batteries can be transported as “Not Restricted” cargo.

1) Lithium weight or equivalent lithium content must be less than value in table.

Contents	Lithium metal cells and/or batteries with a lithium content not more than 0.3 g	Lithium metal cells and/or batteries with a lithium content greater than 0.3 g but not more than 1 g	Lithium metal cells and/or batteries with a lithium content greater than 1 g but not more than 2 g
Maximum number of cells / batteries per package	No limit	8 pieces per carton	2 pieces per carton
Maximum net quantity (mass) per package	2.5 Kg	N/A	N/A

Equivalent lithium content (g) is calculated as 0.3 (g/Ah) times the rated capacity (Ah).

2) Each cell or battery is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part III, section 38.3 Cells

3) Section II of Packing Instruction PI 968:

- a. Be marked to indicate that it contains lithium metal cells & batteries, and that special procedures be followed in the event that the package is damaged.
- b. Each package must be labelled with a lithium battery handling label, and Cargo Aircraft Only label. Both labels must be located on the same surface of the package when the package dimension adequate.
- c. Be accompanied by a shipping paper explaining that the cells and batteries are excepted from regulations.
- d. Packaging requirement follow to above 1) Lithium weight or equivalent lithium content must be less than value in table.
- e. Be capable of withstanding a 1.2m drop test in any orientation without shifting of the contents that would allow short-circuiting, and without release of package contents.

Because the consignor has to take the responsibility, the customer has to confirm the exception conditions when shipping.

Section 15-Regulatory Information

EC Labeling: None
Risk Phrases: None
Safety Phrases: None

Labeling is not required because batteries are classified as “articles” under the Dangerous Preparations Directive and as such are exempt from the requirements of the Directive.

Section 16-Other Information

Not applicable