

Product Safety Data Sheet

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, **Maxell makes no warranty expressed or implied.**

Section 1 - Product and Company Identification

Product Name Lithium Manganese Dioxide Rechargeable Batteries (ML)	Sizes: All	Date of preparation: Jan. 1, 2009
Company: Hitachi Maxell, Ltd., Primary Battery Division	Telephone: 81-(0)794-63-8054	
Address (Number, Street, City, State, and ZIP Code): 5, Takumidai, Ono-shi, Hyogo 675-1322, Japan	Fax: 81-(0)794-63-8058	

Section 2 - Composition/Information on Ingredients

Ingredient	CAS#	Content (wt%)
Manganese Dioxide	1313-13-9	5 to 20
Propylene Carbonate	108-32-7	2 to 10
1,2-Dimethoxyethane	110-71-4	1 to 3
Lithium Hexafluorophosphate	21324-40-3	0 to 2
Lithium	7439-93-2	0 to 3
Aluminum	7429-90-5	3 to 20
Graphite	7782-42-5 1333-86-4	0 to 2

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, or fire and cause human injury or equipment trouble. Please strictly observe safety instructions.

(* 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 with 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.
Fire fighting procedure	Use self-contained breathing apparatus and full protective gear not to inhale harmful gas.

Section 6 - Accidental Release Measures

N/A

Section 7 - Handling and Storage

1) Handling

Never swallow. Do not replace. Never use two or more batteries connected in series or in parallel. 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.

2) 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

N/A

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

N/A

Section 12 - Ecological Information

N/A

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

Shipping Name	Lithium Batteries
UN Number	UN3090 (UN3091 for Lithium batteries in equipment)
Hazard Classification	Class 9 (Miscellaneous)

Organizations governing the transport of lithium batteries

Area	Method	Organization	Special Provision
International	Air	IATA, ICAO	Packing Instruction 968-970
International	Marine	IMO	SP188
U.S.A	Air, Rail, Road, Marine	DOT	49 CFR Section 173.185

Their regulations are based on the UN Recommendations. Each special provision provides specifications on exceptions and packaging for lithium batteries shipping. All CR batteries of Maxell meet all special provisions.

Ref) Summary of Packing Instruction (IATA Dangerous Goods Regulations 50th Edition)

The minimum requirements necessary to transport as non-restricted goods are as follows;

- 1) For a lithium metal or lithium alloy cell, the lithium content is not more than 1 g. For a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2g.
- 2) Each cell or battery is of the type proven to meet the requirement of each test in the UN Manual of Tests and Criteria, Part III, sub-section 38.3.
- 3) Each package must be displayed a battery handling label. (Telephone number must be printed for emergency call on the handling label.)
- 4) Each consignment must be accompanied with a declaration of non-dangerous goods document. (Telephone number must be printed for emergency call on the document.)
- 5) Each package must be capable of withstanding a 1.2 m drop test.

Maxell will offer the certificate of 1) and 2). If our package is used for transport, we offer the certificate of 5).

a) Transportation of batteries installed in equipment as non-restricted goods

If each package contains no more than 4 cells or 2 batteries, the requirement is the same as current. But for other cases of cell or battery quantity, the requirements are 1), 2), 3) and 4).

b) Transport of batteries packed with equipment as non-restricted goods

Regardless of the battery quantity, the requirements 1) to 5) shall be satisfied.

Also the battery quantity within one package is restricted in air transport to the minimum quantity to operate the application and 2 batteries as spares.

c) Transportation of batteries only as non-restricted goods

Regardless of the battery quantity, the requirements 1) to 5) shall be satisfied.

Also the maximum weight of one package is restricted in air transport, 2.5kg or less for lithium metal cells or batteries.

Section 15 - Regulatory Information

N/A

Section 16 - Other Information

If you want further information, please contact Maxell sales representative.