Product Information Sheet

Panasonic Batteries
Panasonic Industrial Company
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Product: Manganese Dioxide (CR Type) Lithium Batteries
Applicable models/sizes: All CR type coin batteries

Revision: January 1, 2019

The batteries referenced herein are exempt articles and are not subject to the OSHA Hazard Communication Standard requirement. This sheet is provided as a service to our customers.

SDS

Safety Data Sheets (SDS) are a sub-requirement of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR Subpart 1910.1200. This Hazard Communication Standard does not apply to various subcategories including anything defined by OSHA as an "article". OSHA has defined "article" as a manufactured item other than a fluid or particle; (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g. minute or trace amounts of a hazardous chemical, and does not pose a physical hazard or health risk to employees.

Because all of our batteries are defined as "articles", they are exempt from the requirements of the Hazard Communication Standard; hence a SDS is not required.

The following components are found in a Panasonic Manganese Dioxide (CR) Lithium battery:

Coin Cell Components	Material	Formula	
Positive Electrode	Manganese Dioxide	MnO_2	1313-13-9
Negative Electrode	Lithium	Li	7439-93-2
Electrolyte	Propylene Carbonate-Solvent	$C_4H_6O_3$	108-32-7
	1,2 Dimethoxyethane-Solvent	$C_4H_{10}O_2$	110-71-4
	Lithium Perchlorate-Salt	$LiClO_4$	7791-03-9

DISPOSAL

Lithium batteries are neither specifically listed nor exempted from the Federal Environmental Protection Agency (EPA) hazardous waste regulations as promulgated by the Resource Conservation and Recovery Act (RCRA). The only metal of possible concern in a lithium battery is lithium that is not a listed or characteristic toxic hazardous waste. Waste lithium batteries can be considered a reactive hazardous waste if there is a significant amount of unreacted, or unconsumed lithium remaining in the spent battery. The key to disposing of a lithium battery as a non-hazardous waste is to guarantee that it is fully or mostly discharged. Once it is discharged it can be disposed of as non-hazardous waste. You can dispose of a fully charged or partially discharged lithium battery as a hazardous waste after they are first neutralized through an approved secondary treatment. The need for a secondary treatment prior to disposal is a requirement of the U.S. Land Ban Restrictions of the Hazardous and Solid Waste Amendments of 1984. A secondary treatment center can only receive these batteries as manifested hazardous waste. The waste code for charged lithium batteries is D003, reactive. **In either case, button cell batteries contain so little lithium that they never qualify as a reactive hazardous waste. These batteries are safe for disposal in the normal municipal waste stream.**
Disposal of large quantities of undischarged lithium batteries should be performed by permitted, professional disposal firms knowledgeable in Federal, State and local hazardous materials and hazardous waste transportation and disposal requirements. As always, households are exempt from the RCRA hazardous waste guidelines.

In California, packages that contain CR lithium coin cells and the Owners/Operating Instructions of products that contain CR lithium coin cells must include the following statement: “Perchlorate Material – special handling may apply, See www.dtsc.ca.gov/hazardouswaste/perchlorate/”.

TRANSPORTATION

All Panasonic lithium batteries are not subject to the requirements of the Department of Transportation (DOT) Subchapter C, Hazardous Materials Regulations if shipped in compliance with 49 CFR 173.185.

Effective January 1, 2019 all Panasonic lithium batteries can be shipped by air in accordance with International Civil Aviation Organization (ICAO), 2019-2020 edition, Section II or Section 1B or International Air Transport Association (IATA) 60th edition, Section II or Section 1B Packing Instructions (PI) 968 (Batteries), PI 969 (Batteries, packed with equipment) and PI 970 (Batteries, contained in equipment) as appropriate

All Panasonic lithium batteries are regulated by the International Maritime Organization (IMO), 2018, 39th amendment, under Special Provisions 188 and 230.

All Panasonic lithium cells are tested and comply with the UN Model Regulations, Manual of Test and Criteria, Part III, subsection 38.3.

If you build any of our lithium cells into a battery pack, you must also assure that they are tested in accordance with the UN Model Regulations, Manual of Test and Criteria. Part III, subsection 38.3, 6th Revised Edition, Amendment 1.

If you plan on transporting any untested prototype battery packs contact your Panasonic Sales Representative for regulatory information. Check with your air carrier before shipping. Many air carriers have additional requirements.

First Aid

If you get electrolyte in your eyes, flush with water for 15 minutes without rubbing and immediately contact a physician. If you get electrolyte on your skin wash the area immediately with soap and water. If irritation continues, contact a physician. If a battery is ingested, call the Rocky Mountain Poison and Drug Center at 800-498-8666 for the US and Canada and 303-389-1300 internationally or your local poison center immediately. Lithium coin batteries lodged in the esophagus should be removed immediately. Leakage, chemical burns and perforation can occur within hours of ingestion.

General Recommendations

CAUTION: Risk of fire, explosion and burns. Do not recharge, crush, heat above 212^{O}F (100^{O}C) or incinerate.

Fire Safety

In case of fire, you can use a Class “D” fire extinguisher or other smothering agent such as Lith-X, copper powder or dry sand. If you use water, use enough to smother the fire. Cooling the exterior of the batteries will help prevent rupturing. Fire fighters should use self-contained breathing apparatus. Detailed information on fighting a lithium metal battery fire can be found in Guide 138 (Substances – Water – Reactive) of the US DOT Emergency Response Guide.

The first edition: July 16, 2008
Revised date: November 24, 2022
Document Number: ML414H-043-W

Article Information Sheet

Articles, such as batteries, are exempt from GHS SDS classification criteria. Therefore, this document is provided as reference information for the safe handling of the product. The information set forth herein are made in good faith and are believed to be accurate as of the date of preparation. However, Seiko Instruments Inc. makes no warranty, either express or implied, with respect to this information and disclaims all liability from reference on it.

SECTION 1: Product and Company Identification

Product Name ML Lithium Rechargeable Battery

Model Name: ML414H (with Tab)
Nominal Voltage: 3 V
Nominal Capacity: 1.0 mAh (3.1 V-2.0 V)

Manufacturer
Seiko Instruments Inc.
Micro-Energy Division
Address: 45-1, Aza Matsubara, Kamiayashi, Aoba-ku, Sendai-shi, Miyagi, 989-3124 Japan
Telephone: +81-22-391-9331 Fax: +81-22-391-9330

Seller
Seiko Instruments Inc.
Electronic Components Sales Head Office
Address: 8, Nakase 1-chome, Mihama-ku, Chiba-shi, Chiba, 261-8507 Japan
Telephone: +81-43-211-1735 Fax: +81-43-211-8034

Emergency Contact International / call +81-22-391-9331 (Seiko Instruments Inc.)
North America / call +1-800-424-9300（CHEMTREC）

SECTION 2: Hazards Identification

GHS Classification Not applicable

The chemical compositions are sealed inside the battery. However, if the battery is used improperly, electrolyte and gas will leak from the inside and may irritate the eyes, skin, and throat, so please strictly observe the safety instructions.

The electrolyte and lithium contained in the battery are inflammable. If heated or short-circuited, it may generate heat and ignite or explode.

SECTION 3: Composition and Information on Ingredients

Chemical Classification Article (Not Substances or Mixtures)

Main Materials and Main Ingredients

Part Name	Material Name	CAS No.	Content(%)
Anode	Lithium-Aluminium alloy	-	1 - 10
Cathode	Lithium-Manganese composite oxide	-	1 - 10
Solute	Lithium imide salt	-	1 - 10
Solvent	1,2-Diethoxyethane (EGDEE)	629-14-1	1 - 10
	bis(2-(2-methoxyethoxy)ethyl) ether	143-24-8	1 - 10
Others (Case,Tab etc.)	Nickel plated stainless steel	12597-68-1/7440-02-0	60 - 80
	Plastic	-	1 - 10
	Tin (Surface treatment)	7440-31-5	0.1 - 2

Blanks are trade secret.

SECTION 4: First Aid Measures

In the case of a leakage (e.g. electrolyte) from the can, take the following measures:

Inhalation	Fumes can cause respiratory irritation. Remove to fresh air and seek medical treatment immediately.
Skin contact	Immediately rinse with plenty of clean water and seek medical treatment.
Eyes contact	Immediately rinse with plenty of clean water and seek medical treatment.
Ingestion	:Rinse mouth with clean water and seek medical treatment immediately.

In the case of ingestion of a battery :

Swallowing coin cells can cause chemical burns, perforation of soft tissue and, in severe cases, death. Seek medical assistance promptly.

SECTION 5: Fire Fighting Measures

Fire extinguishing agent : Dry sand and expanded vermiculite are effective.

・Do not use water to extinguish the fire because lithium reacts with water.

・Vapor generated from burning batteries may irritate the eyes, nose, and throat. Wear respiratory protection equipment and extinguish the fire on the windward side.

SECTION 6: Accidental Release Measures

The battery is sealed to prevent leakage of gas and liquid. Should liquid leak from the battery, wipe it off with a dry rag and move the battery away from the fire.

SECTION 7: Precautions During Handling and Storage

Handling	Keep out of reach of children.
	Do not charge using a higher current or voltage than specified.
	Do not heat or throw into a fire.
	Do not deform or disassemble.
	Do not short-circuit. Do not connect wires to the terminals, stack batteries, or carry or store them with metal products such as necklaces and hairpins.
	Do not connect the terminals in reverse.
	Do not weld or solder directly.
	Do not swallow the battery. Seek medical advice immediately if a battery has been swallowed.
	Do not allow children to replace batteries without adult supervision.
Storage	Store in their original packaging to prevent short circuits.
	Keep dry.
	Do not store in places of the high temperature, high humidity, or under direct sunlight.

SECTION 8: Exposure Controls / Personal Protection

The battery is sealed to prevent leakage. There is no need of personal protective equipment on regular handling and storage. Should a large amount of liquid (electrolyte) leak from the batteries, wear protective equipment.

Respiratory Protection:	Protective mask with a filter preferably
Hands Protection:	Safety gloves
Eye Protection:	Safety goggles and/or glasses for chemicals

SECTION 9: Physical and Chemical Properties

Shape	Coin-type
Chemical System	Lithium-Manganese composite oxide/ Lithium-Aluminium alloy
Rechargeable	(YES) / NO

SECTION 10: Stability and Reactivity

Stability:	Stable on regular handling and storage
Condition to Avoid:	See section 7

SECTION 11: Toxicological Information

There is no toxicity because the chemical compositions are sealed inside the battery.

SECTION 12: Ecological Information

It has been confirmed that there is almost no outflow of metal when exhausted batteries are landfilled in the ground. There is no other environmental impact information.

SECTION 13: Disposal Considerations

When disposing of this battery, insulate the terminals with tape or other means before disposal to prevent a short circuit due to contact between the battery and metal.

Dispose in accordance with applicable federal, state, and local regulations.

SECTION 14: Transport Information

United Nations Number	UN3090 (Batteries contained in equipment; or batteries packed with equipment; UN309
Shipping Name	Lithium metal batteries
UN Hazard Classification	Class 9

This product can be transported as non-dangerous goods because it meets the transportation conditions listed in the Special provision 188.

＜Lithium content＞	Less than 1g. ※The Lithium content of this battery is 0.0004 g.
＜Safety Certificate＞	Each cell or battery must be of the type proven to have met the requirements of every test in the UN Manual of Tests and Criteria, Part III, sub-section 38.3. ※This battery has passed the UN 38.3 test and is manufactured in a factory that has acquired ISO 9001 based on the quality program.
＜Packaging for preventing short circuit ＞	Except when the battery is contained in equipment, it must be stored to prevent short circuit and wrapped in a sturdy container or packaging.
＜Label & Marking display＞	Appropriate labeling and marking are required for each package.
＜Packing Drop test＞	Except when the battery is contained in equipment, every package must be capable of withstanding a 1.2 m drop test.

International Transportation Regulations

Method	Organization : Regulation	United Nations Number	Packaging instruction and special provision applicable to this product		
Air	IATA:DGR ICAO:ICAO TI	Lithium Metal Batteries(UN3090)	PI968	Section IB (Dangerous Goods)	*1, 3
		Packed in equipment(UN3091)	PI969	Section I (Dangerous Goods)	
		Contained with equipment(UN3091)	PI970	Section I (Dangerous Goods)	
				Section II (Not Dangerous Goods)	
Marine	IMO:IMDG code		SP 188 *2, 3		

*1 Batteries contained in equipment can be transported as non-dangerous goods if certain conditions are met.

*2 When this product is transported on the sea while satisfying the special provision SP 188, it can be transported as non-dangerous goods. However, each package should not exceed 30 kg. (Not subjected to batteries contained in equipment or packed with equipment.)

*3 Please confirm the details of each packing criteria, be sure to carry out the required packaging labeling and shipper's declaration for dangerous goods, etc. Also, as every country and transportation company have their own regulations, please check in advance.

SECTION 15: Regulatory Information

・IATA Dangerous Goods Regulations 63rd Edition

・UN Recommendations on the Transport of Dangerrous Good : Model Regulations

・UN Recommendations on the Transport of Dangerrous Good : Manual of Test and Criteria

・EU Battery Directive : Directive 2006/66/EC and Directive 2013/56/EU

SECTION 16: Other Information

If you need further information, please contact your local sales representative.

End of Documents.