

MSDS 62

Revision G

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SECTION 1: Product and Company Identification

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Primary Batteries SHIPPING NAME LITHIUM METAL BATTERIES

1096NH Battery (LiMnO₂) RLB-32 (Three battery packs. Each Pack contains three 2/3A cells)

1098.1NH Battery (LiMnO₂) RLB-36/37/38/40 (Three battery packs. Each Pack contains three 2/3A cells)

1098.1NH Battery (LiMnO₂) RLB-35 (Four battery packs. Each Pack contains three 2/3A cells)

Batteries Contained in Equipment SHIPPING NAME LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT

3Si Guardian SART (Three battery packs. Each Pack contains three 2/3A cells)

2742NH, 2742.8NH, 2744NH, 2744.8NH

SECTION 2: HAZARDS IDENTIFICATION

Physical Appearance: Small cylindrical batteries

EMERGENCY OVERVIEW

CAUTION: Battery can explode or leak if heated, disassembled, shorted, recharged, exposed to fire or high temperature or inserted incorrectly. Keep in original package until ready to use. Do not carry batteries loose in your pocket or purse. Keep batteries away from children. If swallowed, consult a physician at once. For information on treatment, call the NATIONAL BUTTON BATTERY INGESTION HOTLINE, collect day or night, at (202) 625-3333. Under certain misuse conditions and by abusively opening the battery, exposed lithium can react with water or moisture in the air causing potential thermal burns or fire.

Potential Health Effects: The chemicals and metals in this product are contained in a sealed can. Exposure to the contents will not occur unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused.

Eye Contact: Contact with battery contents may cause irritation.

Skin Contact: Contact with battery contents may cause irritation.

Inhalation: Inhalation of vapours or fumes released due to heat or a large number of leaking batteries may cause respiratory and eye irritation.

Ingestion: Swallowing is not anticipated for larger batteries due to battery size. Smaller

batteries may be swallowed. If battery is swallowed, seek immediate medical advice. Batteries lodged in the oesophagus should be removed immediately since leakage, caustic burns and perforation can occur as soon as two hours after ingestion. Irritation to the internal/external mouth areas may occur following exposure to a leaking battery. Do not give ipecac.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS Number	Concentration/ Concentration Range	Classification and Hazard labelling
Manganese Dioxide	1313-13-9	30 – 40%	Specific hazards
Lithium Metal	7439-93-2	3.4%*	Water forbiddance
Mixture solvent of carbonate and ether	–	10 – 20%	Inflammability
Lithium trifluoro methane sulphonate (LiCF ₃ SO ₃)	33454-82-9		–

*Weight of Lithium per cell: 0.57g

SECTION 4: FIRST AID MEASURES

Eye Contact: If battery is leaking and material contacts the eye, flush thoroughly with copious amounts of running water for 30 minutes. Seek immediate medical attention.

Skin Contact: If battery is leaking and material contacts the skin, remove any contaminated clothing and flush exposed skin with copious amounts of running water for at least 15 minutes. If irritation, injury or pain persists, seek medical attention.

Inhaled: If battery is leaking, contents may be irritating to respiratory passages. Move to fresh air. If irritation persists, seek medical attention.

Swallowed: If battery is swallowed seek immediate medical advice. Batteries lodged in the esophagus should be removed immediately since leakage, caustic burns and perforation can occur as soon as two hours after ingestion. If mouth area irritation or burning has occurred, rinse the mouth and surrounding area with tepid water for at least 15 minutes. Do not give ipecac.

SECTION 5: FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Batteries may burst and release hazardous decomposition products when exposed to a fire situation.

Extinguishing Media: Use dry chemical, alcohol foam, water or carbon dioxide as appropriate for the surrounding fire. For incipient fires, carbon dioxide extinguishers are

more effective than water.

Special Fire Fighting Procedures: Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing. Fight fire from a distance or protected area. Cool fire exposed batteries to prevent rupture. Use caution when handling fire-exposed containers (batteries may explode in heat of fire).

Hazardous Combustion Products: Thermal degradation may produce hazardous fumes of lithium and manganese; hydrofluoric acid, oxides of carbon and sulphur and other toxic by-products.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Notify safety personnel of large spills. Irritating vapours and flammable may be released from leaking or ruptured batteries. Eliminate all ignition sources. Evacuate the area and allow the vapours to dissipate. Clean-up personnel should wear appropriate protective clothing to avoid eye and skin contact and inhalation of vapours or fumes. Increase ventilation. Carefully collect batteries and place in an appropriate container for disposal. Remove spilled liquid with absorbent and contain for disposal.

SECTION 7: HANDLING AND STORAGE

Avoid mechanical or electrical abuse. DO NOT short circuit or install incorrectly. Batteries may explode pyrolize or vent if disassembled, crushed, recharged or exposed to high temperatures. Install batteries in accordance with equipment instructions. Replace all batteries in equipment at the same time. Do not carry batteries loose in a pocket or bag.

Storage: Store batteries in a dry place at normal room temperature.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical Name	Exposure Limits ACGIH	
	TLV-TWA	BEI
Manganese Dioxide	Mn 0.2 mg/m ³	None Established
Lithium Metal	None Established	None Established
Mixture solvent of carbonate and ether	None Established	None Established
Lithium trifluoro methane sulphonate (LiCF ₃ SO ₃)	None Established	None Established

The following occupational exposure limits are provided for informational purposes. No exposure to the battery components should occur during normal consumer use.

Ventilation: No special ventilation is needed for normal use. **Respiratory Protection:** None required for normal use.

Skin Protection: None required for normal use. Use butyl rubber gloves when handling leaking batteries.

Eye Protection: None required for normal use. Wear safety goggles when handling leaking batteries.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Water Solubility: DME-Complete, PC-Moderate **Boiling Point:** (°C): DME-85, PC-242

Vapour Pressure: (mmHg): DME-61, PC-0.03 **Vapour Density:** (Air=1): DME-3.1
Flash Point: 29°F DME:-1 **Evaporation Rate:** (Butyl Acet.=1):DME:4.99
Melting Point: (°C): Li-179, MnO₂-decomposes at 535, LiCl₄-236
Specific Gravity: (H₂O=1): MnO₂-5.03, PC-1.20, DME-0.87, Li-0.54, LiClO₄-2.43
Appearance and Odor: Lithium is a soft, silvery metal. MnO₂ is a black powder. PC is a colourless, odourless liquid. DME is a colourless liquid with a sweet odor.

SECTION 10: STABILITY AND REACTIVITY

Stability: This product is stable.
Incompatibility/Conditions to Avoid: Contents are incompatible with strong oxidizing agents. Do not heat, crush, disassemble, short circuit or recharge.
Hazardous Decomposition Products: Thermal decomposition may produce hazardous fumes of lithium and manganese; hydrofluoric acid, oxides of carbon and sulfur and other toxic by-products.
Hazardous Polymerization: Will not occur

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Toxicity Data:

Manganese Dioxide: Acute toxicity: rabbit*¹: LD₅₀(blue pipe)=45mg/kg, Mouse*²: LD₅₀ (subcutaneous)= 422mg/kg Local effect: Irritation to eye, nose, throat and skin
Lithium Metal: Acute toxicity: No information in a metal state: Local effect: contact with skin or eye causes thermal burn and alkaline's chemical burn
Carbonate: Acute toxicity: No information at present: Local effect: No information at present
Ether: Acute toxicity: Rat*₄ oral LD₅₀=7000mg/kg: Local effect Light irritation to skin
Lithium Trifluoro methane Sulfonate(LiCF₃SO₃): Acute toxicity: No information at present: Local effect: Slight irritation to mucous membranes

Chronic Effects: The chemicals in this product are contained in a sealed can and exposure does not occur during normal handling and use. No chronic effects would be expected from handling a leaking battery.

Target Organs: Skin, eyes and respiratory system.

SECTION 12: ECOLOGICAL INFORMATION

No ecotoxicity data is available. This product is not expected to present an environmental hazard.

SECTION 13: DISPOSAL INFORMATION

Lithium batteries are best disposed of as a non-hazardous waste when fully or mostly discharged. The Federal Environmental Protection Agency (EPA) (governed by the Resource Conservation and Recovery Act (RCRA)) do not list or exempt Lithium as a hazardous waste. However, if waste lithium batteries are still fully charged or only partially discharged, they can be considered a reactive hazardous waste because of significant amounts of unreacted lithium in the battery. The batteries must be neutralized through an approved secondary treatment facility prior to disposal as a hazardous waste (as required by the U.S. Land Ban Restrictions for the hazardous and Solid Waste Amendments of 1984.) Secondary treatment centres receive these batteries as manifested hazardous waste under code "D003 - reactive." Use a professional disposal firm for disposal of mass quantities of undischarged lithium batteries. DO NOT INCINERATE or subject battery cells to temperatures in excess of 212°F. Such treatment can cause cell rupture.

Contact your local government for disposal practices in your area.

SECTION 14: TRANSPORT INFORMATION

The transportation of lithium metal batteries and lithium metal batteries contained in equipment is regulated as UN3090 and UN3091 by ICAO, IATA, IMO and US DOT. However, the listed lithium metal batteries cells and batteries are not subject to the other provisions of the regulations as long as they are packaged and marked in accordance with the regulations.

(The lithium content of cells contained in this document is less than 1 gram. The lithium content of batteries contained in this document is less than 2 grams)

The listed lithium metal batteries meet the requirements of the UN Manual of Tests and Criteria, Part III subsection 38.3. In addition, each shipment must be accompanied by appropriate documentation and the package must be capable of withstanding the drop test requirements.

Transportation Internationally**(Reference IATA Dangerous Goods Regulations 51st edition)**

Lithium Metal Batteries: Effective January 1, 2010, new ICAO regulations (Packing Instruction 968, Part 2) for air cargo shipments require a reduced package size quantity and the use of a new label. The maximum quantity per package must not exceed 2.5 Kg G. The new Lithium Battery Caution label (IATA Figure F.4.I) requires an Emergency Contact telephone number. In the case of primary lithium metal batteries, the UN number is UN 3090.

Lithium Metal Batteries Contained in Equipment: Effective January 1, 2010, new ICAO regulations (Packing Instruction 970, Part 2) for air cargo shipments require a reduced package size quantity and the use of a new label. The new Lithium Battery Caution label (IATA Figure F.4.I) requires an Emergency Contact telephone number. The UN number is UN 3091.

SECTION 15: REGULATORY INFORMATION

Not applicable

SECTION 16: OTHER INFORMATION

P&G Hazard Rating: Health: 0 Fire: 0 Reactivity: 0

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