



ACR ELECTRONICS, INC.

Material Safety Data Sheet

MSDS 11

Revision T

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SECTION 1: Product and Company Identification

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EMERGENCY 24-HOUR TELEPHONE NUMBERS: CHEM-TEL, INC, Inside U.S. (800) 255-3924, Outside U.S. (813) 248-0585 and FAX (813) 248-0582 see www.chemtelinc.com for more information about Chem-Tel, Inc.

Primary Batteries SHIPPING NAME **LITHIUM METAL BATTERIES**

1032, 1034 LLB-1 BATTERY (TWO 2/3A BATTERIES)

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

2766.6 MINI B300 ILS RLB-30 (ONE 2 2/3A BATTERY)

2767 MINI B300 ILS H2ON (ONE 2 2/3A BATTERY)

2769.4, 2769.5 VECTA2™ (ONE 2 2/3A BATTERY) Also see MSDS 29 for Mini B 2 Test Beacon in this Kit

2869, 2869.1 VECTA3™ (ONE 2 2/3A BATTERY) Also see MSDS 29 for Mini B 2 Test Beacon in this Kit

2781, 2785 AND 2786 FPR 100 KIT (ONE 2 2/3A BATTERY), FPR-100 KIT (ONE 2 2/3A BATTERY), RLB-35 PROGRAMING HEAD (ONE 2 2/3A BATTERY)

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 vapors 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 esophagus 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.



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SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Amount
Manganese Dioxide	1313-13-9	15-45%
1,2-Dimethoxyethane	110-71-4	5-10%
Propylene Carbonate	108-32-7	1-10%
Lithium	7439-93-2	1-5%
Lithium Trifluoromethane Sulfonate	33454-82-9	0-5%
Carbon Black	1333-86-4	0-5%
Ethylene Carbonate	96-49-1	0-5%
Graphite	7782-42-5	0-5%

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.

Note to Physician: Published reports recommend removal from the esophagus be done endoscopically (under direct visualization). Batteries beyond the esophagus need not be retrieved unless there are signs of injury to the GI tract or a large diameter battery fails to pass the pylorus. If asymptomatic, follow-up x-rays are necessary only to confirm the passage of larger batteries. Confirmation by stool inspection is preferable under most circumstances. For information on treatment, telephone (202) 625-3333 collect, day or night. Potential leakage of dimethoxyethane, propylene carbonate and lithium trifluoromethane sulfonate.

Dimethoxyethane rapidly evaporates. 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.



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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 sulfur and other toxic by-products.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Notify safety personnel of large spills. Irritating vapors and flammable may be released from leaking or ruptured batteries. Eliminate all ignition sources. Evacuate the area and allow the vapors to dissipate. Clean-up personnel should wear appropriate protective clothing to avoid eye and skin contact and inhalation of vapors 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

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

Chemical Name	Exposure Limits
Manganese Dioxide	5 mg/m ³ Ceiling OSHA PEL 0.2 mg/m ³ TWA ACGIH TLV
1,2-Dimethoxyethane	None Established
Propylene Carbonate	2 mg/m ³ Ceiling ACGIH TLV
Lithium	None Established
Lithium Trifluoromethane Sulfonate	None Established
Carbon Black	3.5 mg/m ³ TWA OSHA PEL/ACGIH TLV
Ethylene Carbonate	None Established
Graphite (natural-non-fibrous)	15 mppcf TWA OSHA PEL 2 mg/m ³ TWA (respirable dust) ACGIH TLV
Graphite (synthetic non-fibrous)	5 mg/m ³ TWA (respirable dust), 15 mg/m ³ TWA (total dust) OSHA PEL 2 mg/m ³ TWA (respirable dust) ACGIH TLV

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.



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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Water Solubility: Insoluble
Vapor Pressure: Not applicable
Vapor Density: Not applicable

Boiling Point: Not applicable
Melting Point: Not applicable
Flash Point: 29°F (-2°C) (1,2-Dimethoxyethane)
Auto Ignition Point: Not applicable

Appearance and Odor: Small cylindrical batteries. Contents dark in color.

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: LD50 oral rat >3478 mg/kg 1,2-Dimethoxyethane: LDLo oral rat 1000 mg/kg, LCLo inhalation rat 63 g/m³/6 hr Propylene Carbonate: LD50 oral rat 29100 uL/kg; LD50 dermal rabbit >20 mL/kg; LC50 inhalation rat >5 g/m³ Ethylene Carbonate: LD50 oral rat 10,000 mg/kg; LD50 dermal rabbit >3000 mg/kg Lithium Trifluoromethane Sulfonate: LD50 oral rat 1250-1500 mg/kg

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.

Carcinogenicity: Carbon Black is classified by IARC as Possibly Carcinogenic to Humans (Group 2B). None of the other components of this product are listed as carcinogens by ACGIH, IARC, NTP or OSHA.

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 centers 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.

Some communities offer recycling or collection of batteries – contact your local government for disposal practices in your area.



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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 in the United States (Reference 49 CFR parts 171, 172, 173 and 175) Passenger Aircraft Ban for shipments (Lithium Batteries only)

All primary lithium metal batteries are banned as cargo on passenger aircraft. The outside of each package must be labeled with the following statement: **"PRIMARY LITHIUM BATTERIES- FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT"**. The labeling requirement covers shipments via highway, rail, vessel or aircraft and covers all shipments inside the US.

Lithium Metal Batteries and Lithium Metal Batteries contained in Equipment are "excepted" from Dangerous Goods Classification based on US/DOT CFR 49 Section 173.185, Section 172.102. The listed batteries and battery packs were tested and meets requirements for shipping per The UN Manual of Tests and Criteria, Part III, Subsection 38.3, UN T1-T8 Tests ST/SG/AC.10/11.

Except for personal use, the shipment of lithium metal batteries aboard passenger aircraft is no longer allowed. Airline passengers may continue to have non-rechargeable lithium batteries for their equipment and a reasonable amount of spare non-rechargeable lithium batteries for their equipment in their carry-on luggage – not in their checked baggage. For more information, air travelers should consult the US Department of Transportation (DOT) Safety Travel web site at <http://safetravel.dot.gov>

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.

At this time, IMO and ADR continue to follow Special Provision 188 from the UN Model Regulations.



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SECTION 15: REGULATORY INFORMATION

United States

OSHA Status: While the finished product(s) is considered an article and not covered by the OSHA Hazard Communication Standard, 29 CFR 1910.1200, this MSDS contains valuable information critical to the safe handling and proper use of the product".

EPA TSCA Status: All intentionally-added components of this product are listed on the US TSCA Inventory.

SARA 313/302/304/311/312 chemicals: Manganese compounds 15-45%

California: This product has been evaluated and does not require warning labeling under California Proposition 65.

State Right-to-Know and CERCLA:

The following ingredients present in the finished product are listed on state right-to-know lists or state worker exposure lists

Ingredient	CAS #	Level	CERCLA RQ	State				
				IL	MA	NJ	PA	RI
Manganese Dioxide	1313-13-9	15-45%	None	Y	Y	N	Y	Y
1,2-Dimethoxyethane	110-71-4	5-10%	None	Y	Y	Y	Y	N
Propylene Carbonate	108-32-7	1-10%	None	Y	Y	Y	Y	Y
Lithium	7439-93-2	1-5%	None	Y	Y	Y	Y	Y
Carbon Black	1333-86-4	0-5%	None	Y	Y	Y	Y	Y
Lithium Trifluoromethane Sulfonate	33454-82-9	0-5%	None	N	N	N	N	N
Ethylene Carbonate	96-49-1	0-5%	None	Y	Y	N	Y	Y
Graphite	7782-42-5 7440-44-0	0-5%	None	Y	Y	N	Y	Y

Canada All intentionally-added components of this product are listed on the Canadian DSL. This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and this MSDS contains all information required by the Controlled Products Regulations.

SECTION 16: OTHER INFORMATION

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

Data supplied is for use only in connection with occupational safety and health.

DISCLAIMER: This MSDS is intended to provide a brief summary of our knowledge and guidance regarding the use of this material. The information contained here has been compiled from sources considered by the Gillette Company and its affiliates to be dependable and is accurate to the best of the Company's knowledge. It is not meant to be an all-inclusive document on worldwide hazard communication regulations.