defibtech
Life-Saving Technology Within Reach

# Technical Note

## *Summary*

This Technical Note provides the safety data sheet for the following batteries:

| *Defibtech Product / Description* | *Defibtech P/N* | *Manufacturer P/N* |
|---|---|---|
| **DBP-1400** Non-Rechargeable Battery Pack (5 year) | B-000003 | Duracell DL123A |
| **DBP-2800** Non-Rechargeable Battery Pack (7 year) | B-000003 | Duracell DL123A |

These batteries are used in Defibtech DDU-100 Series AEDs, along with a DAC-410 9V Battery. These combinations are available as kits:

| *Defibtech Product / Description* | *Defibtech P/N* | *Manufacturer P/N* |
|---|---|---|
| **DCF-200** DBP-1400 plus DAC-410 9Volt Battery | B-000003 | Duracell DL123A |
| | DAC-410 | Ultralife U9VL-JP10 |
| **DCF-210** DBP-2800 plus DAC-410 9Volt Battery | B-000003 | Duracell DL123A |
| | DAC-410 | Ultralife U9VL-JP10 |

# Article Information Sheet (AIS)

This Article Information Sheet (AIS) provides relevant battery information to retailers, consumers, OEMs and others users requesting a GHS-compliant SDS. Articles, such as batteries, are exempt from GHS SDS classification criteria. The GHS criteria is not designed or intended to be used to classify the physical, health and environmental hazards of an article. Branded consumer batteries are defined as electro-technical devices. The design, safety, manufacture, and qualification of branded consumer batteries follow ANSI and IEC battery standards. This document is based on principles set forth in the following hazard communication approaches: ANSI Z-400.1, GHS, JAMP AIS, and IEC 62474.

| **1. Document Information** | |
|---|---|
| **Document Name** | **Duracell Lithium HPL Cells and Batteries (primary lithium metal cells and batteries)** |
| **Document ID** | AIS-Li HPL |
| **Issue Date** | 8-Dec-15 |
| **Version** | 2a |
| **Preparer** | Global Product Stewardship |
| **Last Revision** | 1/22/2016 |
| **Information Contact** | benoit.sa@duracell.com |
| **2. Company Information** | |
| **Name & Address** | Duracell Global Business Unit, 14 Research Drive, Bethel, CT USA 06801 |
| **Telephone** | (203) 796-4000 |
| **Website** | www.duracell. com |
| **Consumer Relations** | North America: 1-800-551-2355 (9:00 AM - 5:00 PM EST) |
| **3. Article Information** | |
| **Description** | Duracell branded consumer lithium battery |
| **Product Category** | Electro-technical device |
| **Use** | Portable power source for electronic devices |
| **Global sub-brands (Retail)** | Duracell, Ultra |
| **Global sub-brands (B2B)** | Bulk |
| **Sizes** | DLCR-2, DLCR-V3, DL1/3N, DL123(DL123A; DL2/3A), DL223 (DL223A), DL245, DL1604, PL123, PX28L |
| **IEC Designation (IEC-60086-2; Annex D)** | CR-P2, 2CR5, CR15H270, CR11108, 2CR13252, CR17345 |
| **Principles of Operation** | A battery powers a device by converting stored chemical energy into electrical energy. |
| **Representative Product Images** |  |
| **4. Article Construction** | |
| **Applicable Battery Industry Standards** | ANSI C18.3M Part 1, ANSI C18.3M Part 2, ANSI C18.4, IEC 60086,1, IEC 60086-2, IEC 60086-4 |
| **Electro-technical System** | Lithium Manganese Dioxide |
| **Electrode - Negative** | Lithium Alloy (CAS # 7439-93-2) |
| **Electrode - Positive** | Manganese Dioxide (CAS # 1313-13-9) |
| **Electrolyte** | Propylene Carbonate Solvent (CAS # 108-32-7) |
| **Electrolyte** | 1,2-Dimethoxyethane Solvent (CAS # 110-71-4) |
| **Materials of Construction - Can** | Steel (CAS # 110-71-4) |
| **Declarable Substances (IEC 62474 Criteria 1)** | 1-2-Dimethoxyethane (CAS # 110-71-4) |
| **Mercury Free Battery (ANSI C18.4M <5ppm)** | Yes |
| **Small Cell or Battery (ANSI C18.1M Part 2; IEC 60086-5)** | Sizes 1/3N, 123, 28L, CR2 fit inside a specially designed test cylinder 2.25 inches (57.1 mm) long by 1.25 inches (31.70 mm) wide. |
| **5. Health & Safety** | |

# Article Information Sheet (AIS)

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|---|---|
| **Ingestion** | Required for sizes 1/3N, 123, 28L, CR2: Keep away from children. If swallowed, consult a physician immediately. |
| **Normal Conditions of Use** | Exposure to contents inside the sealed battery will not occur unless the battery leaks, is exposed to high temperatures, or is mechanically abused. |
| **Note to Physician** | Cell Ingestion: 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. Published reports recommend removal from the esophagus should 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, call the NATIONAL BATTERY INGESTION HOTLINE @ (202) 625-3333 collect, day or night (USA calls only). |
| **First Aid - If swallowed** | DO NOT GIVE IPECAC. Do not induce vomiting. Seek medical attention immediately. USA: CALL NATIONAL BATTERY INGESTION HOTLINE @ (202) 625-3333 COLLECT, DAY OR NIGHT. If mouth area irritation or burning has occurred, rinse mouth and surrounding area with tepdi water for at least 15 minutes.. |
| **First Aid - Eye Contact** | Flush with running water for at least 30 minutes. Seek medical attention immediately. |
| **First Aid - Skin Contact** | Remove contaminated clothing and flush skin with running water for at least 15 minutes. Seek medical attention if irritation persists. |
| **First Aid - Inhalation** | Contents of leaking battery may be irritating to respiratory passages. Move to fresh air. Seek medical attention if irritation persists. |
| **Battery Safety Standards & Testing** | Duracell lithium metal batteries meet the requirements of ANSI C18. 3M Part 2 and IEC 60086-4. These standards specify tests and requirements for lithium batteries to ensure safe operation under normal use and reasonably foreseeable misuse. The test regimes assess three conditions of safety. These are:<br>**1-Intended use simulation:** Partial use, vibration, thermal shock, and mechanical shock<br>**2-Reasonably foreseeable misuse:** Incorrect installation, external short-circuit, free fall (user-drop), over-discharge, and crush<br>**3-Design consideration:** Thermal abuse, mold stress |
| **Precautionary Statements** | CAUTION: Keep batteries away from children. If swallowed, consult a physician at once. For information on treatment, within North America call (202) 625-3333 collect. Ingestion may lead to serious injury or death. Cell 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. |
| **6. Fire Hazard & Firefighting** | |
| **Fire Hazard** | Batteries may rupture or leak if involved in a fire. |
| **Extinguishing Media** | Use any extinguishing media appropriate for the surrounding area. For incipient (beginning) fires, carbon dioxide extinguishers or copious amounts of water are effective in cooling burning lithium metal batteries. If fire progresses to where lithium metal is exposed (deep red flames), use a Class D extinguisher suitable for lithium metal. |

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| **Fires Involving Large Quantities of Batteries** | Large quantities of batteries involved in a fire will rupture and release irritating fumes from thermal degradation<br><br>Use a Class "D" fire extinguisher or other smothering agent such as Lith-X, copper powder or dry sand. If using water, use enough to smother the fire. Using an insufficient amount of water will make the fire worse. Cooling exterior of batteries will help prevent rupturing. Burning batteries generate toxic and corrosive lithium hydroxide fumes. Firefighters should wear self-contained breathing apparatus. Detailed information on fighting a lithium metal battery fire can be found in US DOT Emergency Response Guide 138 (Substances–Water–Reactive). |
| **7. Handling & Storage** | |
| **Handling Precautions** | Avoid mechanical and electrical abuse. Do not short circuit or install incorrectly. Batteries may rupture or vent if disassembled, crushed, recharged or exposed to high temperatures. Install batteries in accordance with equipment instructions. |
| **Storage Precautions** | Store batteries in a dry place at normal room temperature. Refrigeration does not make them last longer. |
| **Spills of Large Quantities of Loose Batteries (unpackaged)** | Notify spill personnel of large spills. Irritating and flammable vapors may be released from leaking or ruptured batteries. Spread batteries apart to stop shorting. Eliminate all ignition sources. Evacuate area and allow vapors to dissipate. Clean-up personnel should wear appropriate personal protective equipment to avoid eye and skin contact and inhalation of vapors or fumes. Increase ventilation. Carefully collect batteries and place in appropriate container for disposal. Remove any spilled liquid with absorbent material and contain for disposal. |
| **8. Disposal Considerations (GHS Section 13)** | |
| **Collection & Proper Disposal** | Dispose of used (or excess) batteries in compliance with federal, state/provincial and local regulations. Do not accumulate large quantities of used batteries for disposal as accumulations could cause batteries to short-circuit. Do not incinerate. In countries, such as Canada and the EU, where there are regulations for the collection and recycling of batteries, consumers should dispose of their used batteries into the collection network at municipal depots and retailers. They should not dispose of batteries with household trash. |
| **USA EPA RCRA (40 CFR 261)** | "Charged" lithium metal batteries meet the criteria (D003 - Reactivity) of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CRT 261.23. If recycled, lithium metal batteries are classified as Universal Waste. |
| **USA DOT (49 CFR 173.184 (d))** | d) Lithium cells or batteries shipped for disposal or recycling. A lithium cell or battery, including a lithium cell or battery contained in equipment, that is transported by motor vehicle to a permitted storage facility or disposal site, or for purposes of recycling, is excepted from the testing and record keeping requirements of paragraph (a) and the specification packaging requirements of paragraph (b)(3) of this section, when packed in a strong outer packaging conforming to the requirements of §§173.24 and 173.24a. A lithium cell or battery that meets the size, packaging, and hazard communication conditions in paragraph (c)(1)-(3) of this section is excepted from subparts C through H of part 172 of this subchapter. |
| **California Universal Waste Rule (Cal. Code Regs. Title 22, Div. 4.5, Ch. 23)** | California prohibits disposal of batteries as trash (including household trash). |
| **9. Transport Information (GHS Section 14)** | |

# Article Information Sheet (AIS)

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| **Regulatory Status** | Duracell lithium metal batteries are produced and delivered in accordance with current IATA/ICAO regulations. Duracell lithium metal batteries can be by air shipped in accordance with ICAO or IATA. Persons who prepare or offer lithium batteries for transport are required by regulation to be trained to the extent of their responsibility. The information in this section is provided for informational purposes only. The transportation of lithium metal batteries is regulated by ICAO, IATA, IMO, ADR and US DOT. |
| **Total Lithium Content (grams)** | See below for each catalog number: |

| Catalog No. | Total Lithium Content (grams) | Type | Total Cell/Battery Weight (grams) | |
|---|---|---|---|---|
| DL 1/3N | 0.06 | Cell | 3 | |
| DL 123 | 0.55 | Cell | 17 | |
| DL 223 | 1.1 | Battery | 38 | |
| PX 28L | 0.12 | Battery | 9.4 | |
| CR-V3 | 1.4 | Battery | 39 | |
| DL CR2 | 0.26 | Cell | 11 | |
| DL 245 | 1.1 | Battery | 38.6 | |
| DL 1604 | 0.9 | Battery | 34 | |

| | |
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| **UN Identification Number/ Shipping Name** | UN3090 Lithium metal batteries<br>UN3091 Lithium metal batteries packed with or contained in equipment |
| **UN 38.3 Transportation Tests** | Duracell certifies that all of its lithium batteries meet the requirements of the UN Manual of Tests and Criteria, Part III subsection 38.3. If you assemble these batteries into larger battery packs, it is recommended that you perform the UN Tests to ensure the requirements are met prior to shipment. |
| **Special Provisions Conformance** | Special regulatory provisions require batteries to be packaged in a manner that prevents the generation of a dangerous quantity of heat and short circuits. |
| **USA DOT Special Provision** | 49 CFR 173.185( c) SP A101 (packed within equipment by air) |
| **USA DOT Exceptions for Lithium Cells or Batteries Shipped for Disposal or Recycling** | 40 CFR 173.185(d) |
| **Air Transport (IATA/ICAO) Packing Instructions (57th edition/2016)** | PI 968 – Lithium metal batteries (shipped alone)<br>PI 969 – Lithium metal batteries packed with equipment<br>PI 970 – Lithium metal batteries contained in equipment |
| **Marine/Water Transport (IMDG) Special Provision** | 188 |
| **ADR/RID Special Provision** | 188 |
| **Passenger Air Travel** | Air travelers should consult the US Department of Transportation (DOT) Safety Travel web site at http://safetravel.dot.gov for guidance regarding carry on of lithium batteries. |
| **Emergency Transportation Hotline** | **CHEMTREC 24-Hour Emergency Response Hotline<br>Within the United States call +703-527-3887<br>Outside the United States, call +1 703-527-3887 (Collect)** |
| **10. Regulatory Information (GHS Section 15)** | |
| **10a. Battery Requirements** | |
| **USA EPA Mercury Containing & Rechargeable Battery Management Act of 1996** | During the manufacturing process, no mercury is added. |
| **EU Battery Directive 2006/66/EC & amendment 2013/56/EU** | Compliant with marking and substance restrictions for mercury (<0.0005%); cadmium (<0.0020%)l and lead (<0.0040%). EU retail and bulk packaging containing lithium metal batteries are marked with the special collection sysmbol in accordance with Article 21. |
| **10b. General Requirements** | |

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| **USA CPSIA 2008 (PL. 11900314)** | Exempt |
| **USA CPSC FHSA (16 CFR 1500)** | Consumer batteries are not listed as a hazardous product. |
| **USA EPA TSCA Section 13 (40 CFR 707.20)** | For customs clearance purpose, batteries are defined as an "Article". |
| **USA EPA RCRA (40 CFR 261)** | "Charged" lithium metal batteries meet the criteria (D003 - Reactivity) of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261.23. If recycled, lithium metal batteries are classified as Universal Waste. |
| **USA California Prop 65** | No warning required per 3rd party assessment. |
| **CANADA Products Containing Mercury Regulations SOR/20140254** | Mercury free |
| **EU REACH SVHC's (168 Substances/Candidate List Updated** | Contains 1,2-dimethoxyethane (CAS# 110-71-4) |
| **EU REACH SVHC Communication** | SVHC Substance Name: 1,2-dimethoxyethane (EGDME)<br>Use: Incorporated in a lithium battery as electrolyte solvent<br>EINEC Number: 203-794-9<br>CAS Number: 110-71-4<br>Concentration: The battery contains EGDME –SVHC in a concentration ranging from 1.0 to 5.0% by weight. Because the battery is sealed, 100% of the EGDME-SVHC is contained in the battery.<br>Safe Handling: Do not open the battery or disassemble it. Do not expose to fire or high temperatures (>60°C). At end of life, the battery should be taken back to the nearest collection point established by a National Collection Scheme used for batteries. |
| **EU REACH Article 31** | An SDS is not required for articles. |
| **10c. Regulatory Definitions - Articles** | |
| **USA OSHA** | 29 CFR 1910.1200(b)(6)(v) |
| **USA TSCA** | 40 CFR 704.3; 710.2(3)( c); and [19 CFR 12.1209a)] |
| **EU REACH** | Title 1 - Chapter 2 - Article 3(3) |
| **GHS** | Section 1.3.2.1 |
| **11. Other Information** | |
| **11a. Certification & 3rd Party Approvals** | |
| **UL Listing** | Lithium Batteries - Component BBCV2.MH12538 |
| **11b. AIS Hazard Communication Approaches (consulted in developing this document):** | |
| **Globally Harmonized System (GHS)** | GHS SDS requirements and classification criteria do not apply to articles or products (such as batteries) that have a fixed shape, which are not intended to release a chemical. The article exemption is found in Section 1.3.2.1.1 of the GHS and reads: ***The GHS applies to pure substances and their dilute solutions and to mixtures. "Articles" as defined by the Hazard Communication Standard (29 CFR 1900.1200) of the OSHA of the USA, or by similar definition, are outside the scope of the system."*** |
| **Joint Article Management Promotion Consortium JAMP** | JAMP is a Japanese Industry Association who developed the concept of an Article Information Sheet as a supply chain tool to share and communicate chemical information in articles. The AIS authoring process is based on “declarable” substances to meet global regulatory requirements as well as substances to be reported by GADSL, JIG, etc. |
| **IEC 62474 Ed. 1.0 B:2012 Material Declaration for Products of and for the Electro-technical Industry** | An international standard that came into effect in March 2012 concerning declaration for electrical and electronic products. IEC 6274 replaces the defunct Joint Industry Guide – Material Declaration for Electro-technical Products (JIG-101-Ed 4.1 (May 21, 2012) |

# Article Information Sheet (AIS)

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|---|---|
| **IEC 62474 Database - Publically available online (http://std.iec.ch/iec62474). Maintained by TC11: Environmental Standardization for electrical and electronic products and systems.** | The general principle for a substance to be included in the database as a declarable substance is: 1) existing national laws or regulations in an IEC member country that are relevant to Electro-technical products and that prohibit or restrict substances, or that have a labeling, communication, reporting or notification requirement, and 2) applying IEC 62474 criteria results in identification of declarable substance. |
| **ANSI Z 400.1/Z19.1 (2010)** | 2.1 Scope: Applies to preparation of SDSs for hazardous chemicals used under occupational conditions. Does not address how the standard may be applied to articles. It presents basic information on how to develop and write a SDS. Additional information is provided to help comply with state and federal environmental and safety laws and regulations. Elements of the standard may be acceptable for International use. |

**DISCLAIMER: This AIS is intended to provide a brief summary of our knowledge and guidance regarding the use of this article. The information contained here has been compiled from sources considered by Duracell 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. This information is offered in good faith. Each user of this material needs to evaluate the conditions of use and design the appropriate protective mechanisms to prevent employee exposures, property damage or release to the environment. Duracell assumes no responsibility for injury to the recipient or third persons or for any damage to any property resulting from misuse of the product.**

ULTRALIFE®



# SAFETY DATA SHEET

| SECTION I – PRODUCT AND COMPANY IDENTIFICATION | | | |
|---|---|---|---|
| Product Description<br>Product Identification | 9-Volt Lithium Manganese Dioxide Batteries (TFSi Style) | | |
| Manufacturer<br>Name/Address | Ultralife Corporation<br>2000 Technology Parkway<br>Newark, NY 14513 | 24 Hour<br>Emergency<br>Contact | ChemTrec<br>800-424-9300 (US)<br>703-527-3887 (International) |
| Technical Contact | 800-332-5000 | Issue Date | 02 FEB 10 |
| Prepared By | Rick Marino | Revision Date: | 11 MAR 15 |

| Section II - HAZARD IDENTIFICATION | |
|---|---|
| Hazard Classification | This Ultralife battery product meets the definition of an article. Under the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), "Articles" as defined in the Hazard Communication Standard (29 CFR 1910.1200) of the Occupational Safety and Health Administration of the United States of America, or by similar definition, are outside the scope of the system. [Rev. 2 (2007) Part 1.3.2.1.1] |
| Hazard/Caution Statements | • Do not open or disassemble.<br>• Do not expose to fire or open flame.<br>• Do not mix with batteries of varying sizes, chemistries or types.<br>• Do not puncture, deform, incinerate or heat above 60ºC (140ºF). |

**The materials contained in this product may only represent a hazard if the integrity of the cell or battery is compromised; physically or electrically abused.**

## SECTION III - COMPOSITION - INGREDIENTS/IDENTITY INFORMATION

**Under normal use conditions, cells and batteries do not emit hazardous or regulated substances.**

| Component | CAS Number | EINECS Number | % by Wt. |
|---|---|---|---|
| Manganese Dioxide, $MnO_2$ | 1313-13-9 | 215-202-6 | 50-60 |
| Lithium Metal, Li | 7439-93-2 | 231-102-5 | 2-6 |
| Propylene Carbonate, $C_4H_6O_3$ | 108-32-7 | 203-572-1 | 1-5 |
| Ethylene Carbonate, $C_3H_4O_3$ | 96-49-1 | 202-510-0 | 1-5 |
| Ethyl Methyl Carbonate,$C_4H_8O_3$ | 623-53-0 | NA | 1-5 |
| Bis (Trifluoromethane) Sulfonimide Lithium (LiTFSi) | 90076-65-6 | 415-300-0 | 1-5 |
| Non-hazardous components | NA | NA | 25-35 |

Depending on product configuration, components used to assemble battery packs (e.g. housings, electronic components and wiring) may contain additional hazardous materials.

| SECTION IV - FIRST AID MEASURES | |
|---|---|
| Inhalation | • Avoid inhaling any vented gases.<br>• Remove to fresh air immediately.<br>• If breathing is difficult, seek emergency medical attention. |
| Ingestion | Consult a physician or local poison control center immediately |
| Skin Contact | • Exposure to materials from a ruptured or otherwise damaged cell or battery may cause skin irritation.<br>• Flush immediately with water and wash affected area with soap and water. |
| Eye Contact | • Exposure to materials from a ruptured or otherwise damaged cell or battery may cause eye irritation.<br>• Flush immediately with copious amounts of water for at least 15 minutes; consult a physician immediately. |

| SECTION V - FIRE FIGHTING MEASURES | |
|---|---|
| Extinguishing Media | • Copious amounts of cold water or water-based foam may be used to cool burning cells or batteries. Do not use warm or hot water.<br>• A carbon dioxide ($CO_2$) extinguisher is also effective.<br>• For fires involving exposed, raw lithium metal (characterized by deep red flames), use only metal (Class D) fire extinguishers. |
| Special Fire Fighting Procedures | • Use a positive pressure self-contained breathing apparatus (SCBA) if cells or batteries are involved in a fire.<br>• Full fire fighting protective clothing is necessary.<br>• During water application, caution is advised as burning pieces of flammable particles may be ejected from the fire. |
| Unusual Fire and Explosion Hazard | Cells or batteries that are damaged, opened or exposed to excessive heat/fire may flame or leak potentially hazardous organic vapors. |

## SECTION VI - ACCIDENTAL RELEASE MEASURES

- In the event a cell or battery is crushed; releasing its contents, rubber gloves must be used to handle all battery components.
- Avoid inhalation of any vapors that may be emitted.
- Damaged batteries that are not hot or burning should be placed in a sealed plastic bag or container.

| SECTION VII - HANDLING AND STORAGE | |
|---|---|
| Precautions for Safe Handling | • Batteries are not designed to be recharged. Charging a primary cell or battery may result in electrolyte leakage and/or cause the cell or battery to flame.<br>• Never disassemble a battery or bypass any safety device.<br>• More than a momentary short circuit will generally reduce the battery service life. Batteries with fuses will no longer be functional after being shorted.<br>• Extended short-circuiting creates high temperatures in the cell.<br>• High temperatures can cause burns in skin or cause the cell to flame.<br>• Avoid reversing battery polarity within the battery assembly. To do so may cause cell to flame or to leak. |
| Conditions for Safe Storage and Incompatibility | • Batteries should be separated from other materials and stored in a non-combustible, well ventilated structure with sufficient clearance between walls and battery stacks. Do not place batteries near heating equipment, nor expose to direct sunlight for long periods.<br>• Do not store batteries above 60ºC (140ºF) or below -40ºC (-40ºF). Store batteries in a cool (below 25ºC (77ºF)), dry area that is subject to little temperature change. Elevated temperatures can result in reduced battery service life. Battery exposure to temperatures in excess of 130ºC (266ºF) will result in the battery venting flammable liquid and gases.<br>• Do not store batteries in a manner that allows terminals to short circuit. |

| SECTION VIII: EXPOSURE CONTROLS / PERSONAL PROTECTION | |
|---|---|
| Engineering Controls and Work Practices | • Under conditions of normal use, batteries do not emit hazardous or regulated substances.<br>• No engineering controls are required for handling batteries that have not been damaged. |
| Personal Protective Equipment | • Personal protective equipment for damaged batteries should include chemical resistant gloves and safety glasses.<br>• In the event of a fire, SCBA should be worn along with thermally protective outer garments. |

## SECTION IX. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---|---|---|---|
| Appearance | Rectangular pack | UEL/LEL | Not Applicable |
| Odor | None | Vapor Pressure | Not Applicable |
| Odor Threshold | Not Applicable | Vapor Density | Not Applicable |
| pH | Not Applicable | Relative Density | Not Available |
| Melting Point | Not Available | Solubility | Not Applicable |
| Boiling Point | Not Available | Partition Coefficient | Not Applicable |
| Flash Point | Not Applicable | Auto-ignition Temperature | Not Available |
| Evaporation Rate | Not Applicable | Decomposition Temperature | Not Available |
| Flammability | Not Applicable | Viscosity | Not Applicable |

## SECTION X. STABILITY AND REACTIVITY

| | | | |
|---|---|---|---|
| Stability | Stable | Hazardous Polymerization | Will Not Occur |
| Conditions to Avoid | It is not recommended that this product be stored above 60ºC (140ºF). | | |
| Hazardous Decomposition | Carbon Monoxide (CO), Hydrogen Fluoride (HF) and other VOC's | | |

## SECTION XI – TOXICOLOGICAL INFORMATION

- No toxicological impacts are expected under normal use conditions.
- The electrolytes contained in this cell or battery can irritate eyes with any contact.
- Prolonged contact of electrolytes with lung tissue, skin or mucous membranes may cause irritation.
- Detailed information regarding sensitization, carcinogenicity, mutagenicity or reproductive toxicity related to internal cell or battery components has not been included in this document.

**Carcinogen References**

National Toxicology Program (NTP): No

IARC Monographs: No

OSHA: No

## SECTION XII – ECOLOGICAL INFORMATION

- No ecological impacts expected under normal use conditions.
- Detailed information regarding the ecological impact of internal cell or battery components has not been included in this document.

## SECTION XIII. DISPOSAL CONSIDERATIONS

Do not dispose in fire. Battery disposal regulations vary on national, state/provincial and local bases.

**Disposal must be conducted in accordance with the applicable regulations.**

**These batteries contain recyclable materials and recycling is encouraged over disposal.**

## SECTION XIV. TRANSPORTATION INFORMATION

Ultralife's lithium metal primary cells and batteries and lithium-ion cells and batteries are classified and regulated as Class 9 dangerous goods (also known as "hazardous materials" in the United States) by the International Civil Aviation Organization (ICAO), International Air Transport Association (IATA), International Maritime Organization (IMO) and many government agencies such as the U.S. Department of Transportation (DOT). These organizations and agencies publish regulations that contain detailed packaging, marking, labeling, documentation, and training requirements that must be followed when offering (shipping) Ultralife's cells and batteries for transportation. **However, small cells and batteries are not subject to certain provisions of the regulations (e.g. Class 9 labeling and UN specification packaging) if they meet specific requirements**. The regulations are based on the UN Recommendations on the Transport of Dangerous Goods Model Regulations and the UN Manual of Tests and Criteria. **These regulations also apply to shipments of cells and batteries that are packed with or contained in equipment.** Failure to comply with these regulations can result in substantial civil or criminal penalties.

The dangerous goods regulations require that each cell and battery design be subject to tests contained in Section 38.3 of the UN Manual of Tests and Criteria prior to being offered for transport.
**Approved, production level cells and batteries manufactured and assembled by Ultralife have been tested to Section 38.3 of the UN Manual of Tests and Criteria and passed T1 through T8.**
Batteries or battery packs constructed by other parties using Ultralife's cells must be subjected to the tests contained in Section 38.3 of the UN Manual of Tests and Criteria.

For more detailed information, refer to the Transportation Regulations Page on Ultralife's website:
http://ultralifecorporation.com

| | |
|---|---|
| Air, Sea and Surface Classification | UN 3090, Lithium metal batteries<br>UN 3091, Lithium metal batteries, contained in equipment<br>UN 3091, Lithium metal batteries, packed with equipment |

These cells and batteries must be identified as above on the Bill of Lading (or other shipping documentation) and properly packaged with their terminals protected from short circuit.

Air shipments of lithium metal cells and batteries must be packed and marked according to IATA/ICAO Packing Instruction 968 (batteries only); 969 (with equipment) or 970 (contained in equipment).

Sea shipments of lithium metal cells and batteries must be packed and marked according to IMDG Packing Instruction P903.

| | | | | | |
|---|---|---|---|---|---|
| Hazard Class | 9 | Packing Group | II | Tunnel Code | E |
| Stowage Location | A | Marine Pollutant | No | | |

| SECTION XV. REGULATORY INFORMATION | | |
|---|---|---|
| US | Hazard Communication Standard (29 CFR 1910.1200) | Article |
| | CERCLA SECTION 304 Hazardous Substances | NA |
| | EPCRA SECTION 302 Extremely Hazardous Substance | NA |
| | EPCRA SECTION 313 Toxic Release Inventory | NA |
| | EPCRA SECTION 312 | NA |
| | Components Listed on US Toxic Substances Control Act (TSCA) Inventory | Yes |
| | California Prop 65 Classification | None |
| EU | Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) 1907/2006 | Article |
| | European RoHS2 Directive 2011/65/EU | Not Applicable |
| | European WEEE Directive 2012/19/EU<br>Note: Applies to cells and batteries incorporated into electrical and electronic equipment, when that equipment becomes waste. | See Note |

## SECTION XVI. OTHER INFORMATION

If returning product to any division of Ultralife, consult the relevant regulations regarding handling, packaging, labeling and transportation.

## Disclaimer

The information contained herein is furnished without warranty of any kind. Users should consider this data only as a supplement to other information gathered by them and must make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers.