DURACELL®

14 Research Drive
Berkshire Corporate Park
Bethel, CT, USA 06801

# UN Manual of Tests Part III, Subsection 38.3

**DURACELL**® – Lithium Metal MnO2 Batteries

March 19, 2019

To Whom It May Concern:

The **DURACELL**® - lithium metal manganese dioxide batteries:

**Size/Designations:**
**HPL:** 123A, 223, 245, 1/3N, CR2, CRV3
**Coin cells**: 1216, 1220, 1616, 1620, 1632, 2016, 2025, 2032, 2430, 2450, 2477

have been tested in accordance with the United Nations Manual of Tests and Criteria, Part III, sub-section 38.3. We hereby certify that the product meets the requirements of the tests in the Manual of Tests and Criteria as stated below.

**Packaging 1.2m Drop Test:**
The DURACELL shipping package/carton for the above lithium cell/battery is capable of withstanding a 1.2 meter drop test in any orientation without damage to cells or batteries contained therein, without shifting of the contents so as to allow battery to battery (or cell to cell) contact and without release of contents.

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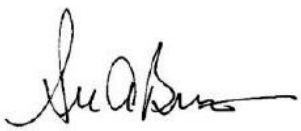
| T1: Altitude simulation | Pass |
| T2: Thermal test | Pass |
| T3: Vibration | Pass |
| T4: Shock | Pass |
| T5: External Short Circuit | Pass |
| T6: Impact | Pass |
| T7: Overcharge | N/A – for rechargeable batteries only |
| T8: Forced Discharge | Pass |

Sincerely,



Stephen Benoit
**DURACELL**, Bethel CT 06801
Manager Product Safety & Regulatory

DURACELL

# 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** | 2b |
| **Preparer** | Global Product Stewardship |
| **Last Revision** | 2/24/2016 |
| **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** | |

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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)** | |

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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>**Note: Per IATA, on *April 1, 2016* PI 968 Section II will be amended to limit to 1 the quantity of packages offered for consignment, quantity (1) in an overpack and the package must be offered separately from other cargo.**<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. |

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| **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** | |
| **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) |

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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. |