



# Product Safety Data Sheet (PSDS)



The battery products referenced in this PSDS document are consumer products. Batteries are considered "articles" under the Global Harmonized System and are exempted from the GHS labeling and SDS classification criteria. This PSDS document is provided as service in response to requests for information on battery use, safety and regulatory compliance.

## SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** DURACELL LITHIUM MANGANESE DIOXIDE BATTERIES AND CELLS

**Product Identification:** Lithium Manganese Dioxide Cells –

**Duracell Designations:**

CR-V3; DL1/3N; DL123(DL123A; DL2/3A); DL223 (DL223A); DLCR2; PL123; DL245; PX28L; DL1604

**Product Use:** Energy Source

**PSDS Date of Preparation:** April 20, 2009 **Reaffirmed:** 4/08/2011; 6/10/11; 7/7/2011; **Updated:** April 8, 2015

**Document ID:** Lithium Batteries-NA

### Company Identification

US Office

Duracell, a P&G business  
Berkshire Corporate Park  
14 Research Drive  
Bethel, CT USA 06401  
(203) 796-4000

Canadian Office

Duracell, a P&G business  
4711 Yonge Street  
Toronto, Ontario  
Canada M2N 6K8  
(416) 730-4711

## 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.



### 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.

**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 <sup>3</sup> Ceiling OSHA PEL 0.2 mg/m <sup>3</sup> TWA ACGIH TLV
1,2-Dimethoxyethane	None Established
Propylene Carbonate	2 mg/m <sup>3</sup> Ceiling ACGIH TLV
Lithium	None Established
Lithium Trifluoromethane Sulfonate	None Established
Carbon Black	3.5 mg/m <sup>3</sup> TWA OSHA PEL/ACGIH TLV
Ethylene Carbonate	None Established
Graphite (natural-non-fibrous)	15 mppcf TWA OSHA PEL 2 mg/m <sup>3</sup> TWA (respirable dust) ACGIH TLV
Graphite (synthetic non-fibrous)	5 mg/m <sup>3</sup> TWA (respirable dust), 15 mg/m <sup>3</sup> TWA (total dust) OSHA PEL 2 mg/m <sup>3</sup> 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.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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

**Specific Gravity:** Not applicable

**Water Solubility:** Insoluble

**Vapor Pressure:** Not applicable

**Vapor Density:** Not applicable

**Boiling Point:** Not applicable

**Melting Point:** Not applicable

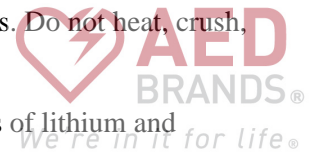
**Flash Point:** 29°F (-2°C) (1,2-Dimethoxyethane)

**Autoignition Point:** Not applicable

## 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/m<sup>3</sup>/6 hr

Propylene Carbonate: LD50 oral rat 29100 uL/kg; LD50 dermal rabbit >20 mL/kg; LC50 inhalation rat >5 g/m<sup>3</sup>

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

Disposal should be in accordance with Federal, state/provincial and local regulations. Large quantities of open batteries should be treated as hazardous waste. Do not incinerate except for disposal in a controlled incinerator.

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

**SECTION 14: TRANSPORT INFORMATION**



**Emergency Phone Number:**

**CHEMTREC 24-Hour Emergency Response Hotline  
+703-527-3887 (United States of America)**

**DURACELL lithium metal batteries are produced and delivered in accordance with current IATA/ICAO Regulations.** Duracell lithium metal batteries can be shipped in accordance with ICAO, 2013-2014 edition or IATA 56th edition. Persons who prepare or offer lithium batteries for transport are required by regulation to be trained and certified. The information in this section is provided for informational purposes only.

<b>DURACELL Primary Lithium Metal Batteries</b>
<b>UN3090</b> Primary lithium metal batteries <b>UN3091</b> Primary lithium metal batteries packed with or contained in equipment
<b>UN 38.3 Transportation Tests :</b> 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.
<b>US DOT:</b> Special Provision 29, 188, 189, 190, A54, A55, A100, A101, A103, A104
<b>Air Transport (IATA/ICAO)</b> Packing Instruction PI 968 – Lithium metal batteries, Section II or Section 1B Packing Instructions as appropriate PI 969 – Lithium metal batteries packed with equipment PI 970 – Lithium metal batteries contained in equipment
<b>Marine/Water Transport (IMDG):</b> Special Provision 188, 230, 310, 957
<b>ADR:</b> Special Provisions: 188, 230, 310, 957

**DOT** - Except for personal use, the shipment of lithium batteries aboard passenger aircraft is not allowed. Airline passengers may 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>.

Shipping packages containing non-rechargeable lithium batteries must be labeled, regardless of size or number of batteries, with the following statement: “PRIMARY LITHIUM BATTERIES – FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT.”

**The transportation of lithium metal batteries is regulated as UN3090 by ICAO, IATA, IMO and US DOT.** DURACELL lithium manganese dioxide batteries cells and batteries are not subject to the other provisions of the Dangerous Goods regulations as long as they are packaged and marked in accordance with the ICAO regulations. The gram weight of lithium metal in Duracell lithium manganese dioxide batteries and cells is:

<b>Catalog Number</b>	<b>Total Lithium Content</b>	<b>Type</b>	<b>Total cell/battery weight</b>
DL 1/3N	.06 g	Cell	3.0 g
DL 123	.55 g	Cell	17 g
DL 223	1.1 g	Battery	38 g
PL 123	.55 g	Cell	17 g
PX 28 L	.12 g	Battery	9.4 g
CR-V3	1.4 g	Battery	39 g
DL CR2	.26 g	Cell	11 g
DL 245	1.1 g	Battery	38.6 g
DL1604	0.9g	Battery	34 g

**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 PSDS 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 PSDS contains all information required by the Controlled Products Regulations.

## SECTION 16: OTHER INFORMATION

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

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

**DISCLAIMER:** This PSDS 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 P&G 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.

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