



## Safety Data Sheet

### SECTION 1: IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

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

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

**Product Use:** Energy Source

**SDS Date of Preparation:** April 20, 2009

**Product Designations:**

Battery Name/Size	Duracell Designation	Voltage	IEC Designation
Duracell CR-V3	CR-V3	3	CR-V3
Duracell 123	123A	3	CR17345
Duracell 223	223	6	CR-P2
Duracell 245	245	6	2CR5
Duracell CR2	CR2	3	CR17355
Duracell CP1	CP1	3	
Duracell 28L	28L	6	2CR13252
Duracell 1/3N	1/3N	3	CR1108

**Company Identification:**

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

### SECTION 2: HAZARDS IDENTIFICATION

**Physical Appearance:** Small cylindrical batteries.

**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 to the United States of America, 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.

EU Classification of Preparation: Not classified as a dangerous preparation.

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	EINECS Number	Amount	Classification
Manganese Dioxide	1313-13-9	215-202-6	15-45%	Xn, R20/22
1,2-Dimethoxyethane	110-71-4	203-794-9	5-10%	F, Repr Cat 2, Xn, R11, R19, R20, R60, R61
Propylene Carbonate	108-32-7	203-572-1	1-10%	Xi, R36
Lithium	7439-93-2	231-102-5	1-5%	C, F, R14/15, R34
Lithium Trifluoromethane Sulfonate	33454-82-9	251-528-5	0-5%	Xi R36/37/38
Carbon Black	1333-86-4	215-609-9	0-5%	None
Ethylene Carbonate	96-49-1	202-510-0	0-5%	Xi R36/37/38
Graphite	7782-42-5	231-955-3	0-5%	None

### SECTION 4: FIRST AID MEASURES

**General Advice:** 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:** If battery is leaking and material contacts the eye, flush thoroughly with copious amounts of running water for 30 minutes. Seek immediate medical advice.

**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 advice.

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

**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 to the United States of America, 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 any extinguishing media that is appropriate for the surrounding fire.

**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, pyrolyze 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. **Refer to specific country regulations for additional exposure limit information.**

Chemical Name	Exposure Limits
Manganese Dioxide	0,5 mg/m <sup>3</sup> TWA UK WEL 0,5 mg/m <sup>3</sup> TWA (inhalable) DFG MAK 0,2 mg/m <sup>3</sup> VL Belgium 0,2 mg/m <sup>3</sup> TWA Denmark LV
1,2-Dimethoxyethane	None established
Propylene Carbonate	None established
Lithium	None established
Lithium Trifluoromethane Sulfonate	None established
Carbon Black	3,5 mg/m <sup>3</sup> , 7 mg/m <sup>3</sup> STEL UK WEL 3,6 mg/m <sup>3</sup> VL Belgium 3,5 mg/m <sup>3</sup> TWA Denmark LV
Ethylene Carbonate	None established
Graphite	4 mg/m <sup>3</sup> TWA UK WEL (respirable dust) 10 mg/m <sup>3</sup> TWA UK WEL (inhalable dust) 1,5 mg/m <sup>3</sup> TWA DFG MAK (respirable dust)

	4 mg/m <sup>3</sup> TWA DFG MAK (inhalable dust) 2 mg/m <sup>3</sup> VL Belgium (respirable dust)
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**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:** Batteries, labeled Duracell®

**Water Solubility:** Insoluble

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

## 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

### 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.

**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:** None of the components of this product are listed as carcinogens by the EU Directive on the classification and labeling of substances.

<b>SECTION 12: ECOLOGICAL INFORMATION</b>
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No ecotoxicity data is available. This product is not expected to present an environmental hazard.

<b>SECTION 13: DISPOSAL INFORMATION</b>
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Disposal should be in accordance with national and local regulations. Do not incinerate for disposal except for in a controlled incinerator.

Duracell lithium manganese dioxide batteries are labeled in compliance with the EU Battery Directive 2006/66.

<b>SECTION 14: TRANSPORT INFORMATION</b>
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The transportation of lithium batteries is regulated as UN3090 by ICAO, IATA, IMO and US DOT. However, DURACELL lithium manganese dioxide 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.)

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. Cells and batteries are to be separated so as to prevent short circuits and packed in strong packaging, except when installed in equipment. Except when installed in equipment, each package containing more than 24 cells or 12 batteries must be marked indicating that it contains lithium batteries and that special procedures should be following in the event that the packaging is damaged. In addition, each shipment must be accompanied by appropriate documentation and the package must be capable of withstanding the drop test requirements.

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 labeling requirement covers shipments

via highway, rail, vessel or cargo-only aircraft and covers all shipments inside, into or out of the US. The label must be in contrasting color and the letters must be 12 mm (0.5 in) in height for packages weighing more than 30 kg (66 lbs) and 6 mm (0.24 in) in height for packages less than 30 kg (66 lbs).

Except for personal use, the shipment of lithium 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>

Effective January 1, 2009, new ICAO regulations for air cargo shipments require a reduced package size quantity and the use of two new labels. The maximum quantity a single master carton must not exceed 2.5 Kg. The new caution label requires the proper UN for the batteries being shipped and a telephone number for information. In the case of primary lithium metal batteries, the UN number is UN3090. The package must also bear a new 'cargo aircraft only' label.

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

## SECTION 15: REGULATORY INFORMATION

**EU Classification of Preparation:** Not classified as a dangerous preparation.

**REACH:** These products are manufactured articles and not subject to REACH registration requirements.

**EU Labeling:** None Required

Labeling is not required because batteries are classified as articles under the both REACH and the Dangerous Preparations Directive and as such are exempt from the requirement for labeling.

## SECTION 16: OTHER INFORMATION

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

EU Classes and Risk Phrases for Reference (See Sections 2 and 3)

C Corrosive

F Flammable

N Dangerous for the Environment

Repr Cat 2 Toxic to reproduction Category 2

Xi Irritant

Xn Harmful

R11 Very Flammable

R14/15 Reacts violently with water, liberating extremely flammable gases

R19 May form explosive peroxides

R20 Harmful by inhalation

R20/22 : Harmful by inhalation and if swallowed.

R22 Harmful if swallowed.

R34 Causes burns

R35 Causes severe burns

R36 Irritating to eyes

R36/37/38 Irritating to eyes, respiratory system and skin.

R50/53 : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R60 May impair fertility.

R61 May cause harm to the unborn child.

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

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