

## MATERIAL SAFETY DATA SHEET

**NAME:** **DURACELL LITHIUM MANGANESE DIOXIDE BATTERIES**

**CAS NO:** Not applicable

**Effective Date:** 4/4/05

**Rev:** 5

### A. — IDENTIFICATION

Manganese Dioxide (1313-13-9) 1,2-Dimethoxyethane (110-71-4) Propylene Carbonate (108-32-7) Lithium (7439-93-2) Ethylene Carbonate (96-49-1) Lithium Trifluoromethane Sulfonate (33454-82-9) Carbon Black (1333-86-4) Graphite (7782-42-5)	%	Formula: Mixture <u>Mixture</u>
	15-30	Molecular Weight: <u>NA</u>
	5-10	Synonyms: <u>Lithium Manganese Dioxide Cells: DL1/3N (3V); PX28L (6V) and batteries comprised of D1/3N Cells.</u>
	1-5	
1-5		
	0-5	
	0-5	
	0-5	

### B. — PHYSICAL DATA

Boiling Point <u>NA</u> °F <u>NA</u> °C	Melting Point <u>NA</u> °F <u>NA</u> °C	Freezing Point <u>NA</u> °F <u>NA</u> °C
Specific Gravity (H <sub>2</sub> O=1) <u>NA</u>	Vapor Density (air=1) <u>NA</u>	Vapor Pressure @ _____ °F <u>NA</u> mm Hg
Evaporation ( <u>NA</u> Ether =1)	Saturation in Air (by volume @ _____ °F) <u>NA</u>	Autoignition Temperature _____ °F _____ °C <u>NA</u>
% Volatiles <u>NA</u>	Solubility in Water <u>NA</u>	pH <u>NA</u>

Appearance/Color Small cylindrical batteries. Contents dark in color.

Flash Point and Test Method(s) 1,2-Dimethoxyethane 42.8 °F, 6°C (Closed Cup)

Flammable Limits in Air (% by volume) Lower NA % Upper NA %

### C. — REACTIVITY

Stability	<input checked="" type="checkbox"/> stable	<input type="checkbox"/> unstable	Polymerization	<input type="checkbox"/> may occur	<input checked="" type="checkbox"/> will not occur
Conditions to Avoid			Conditions to Avoid		
Do not heat, crush, disassemble, short circuit or recharge.			Not applicable		
Incompatible Materials			Hazardous Decomposition Products		
Contents incompatible with strong oxidizing agents.			Thermal degradation may produce hazardous fumes of manganese and lithium; hydrofluoric acid; oxides of carbon and sulfur and other toxic by-products.		

**\* IF MULTIPLE INGREDIENTS, INCLUDE CAS NUMBERS FOR EACH NA=NOT AVAILABLE**

Footnotes

Not applicable

**D. — HEALTH HAZARD DATA**

Occupational Exposure Limits PEL's, TLV's, etc.)

8-Hour TWAs: Manganese Dioxide (as Mn) - 5 mg/m<sup>3</sup> (Ceiling) (OSHA); 0.2 mg/m<sup>3</sup> (ACGIH/Gillette)  
 1,2-Dimethoxyethane - 0.15 ppm (Gillette)  
 Carbon Black - 3.5 mg/m<sup>3</sup> (OSHA/ACGIH/U.K.); 7mg/m<sup>3</sup> (STEL) (U.K.)  
 Lithium Trifluoromethane Sulfonate - 0.1 mg/m<sup>3</sup> (3M recommendation)  
 Graphite - 15 mg/m<sup>3</sup> (Dust); 5 mg/m<sup>3</sup> (Respirable) (OSHA); 2 mg/m<sup>3</sup> (ACGIH)

These levels are not anticipated under normal consumer use conditions.

Warning Signals

Not applicable

Routes/Effects of Exposure

These chemicals and metals are contained in a sealed can. For consumer use, adequate hazard warnings are included on both the package and on the battery. Potential for exposure should not exist unless the battery leaks, is exposed to high temperature, is accidentally swallowed or is mechanically, physically, or electrically abused.

1. Inhalation Not anticipated. Respiratory (and eye) irritation may occur if fumes are released due to heat or an abundance of leaking batteries.
2. Ingestion An initial x-ray should be obtained promptly to determine battery location. Batteries lodged in the esophagus should be removed immediately since leakage, burns and perforation can occur as soon as 4-6 hours after ingestion. Irritation to the internal/external mouth areas may occur following exposure to a leaking battery.
3. Skin
  - a. Contact  
Irritation may occur following exposure to a leaking battery.
  - b. Absorption  
Not anticipated.
4. Eye Contact Irritation may occur following exposure to a leaking battery.
5. Other Not applicable

**E. — ENVIRONMENTAL IMPACT**

1. Applicable Regulations All ingredients listed in TSCA inventory.
2. DOT Hazard Class - Not applicable
3. DOT Shipping Name - Not applicable  
 "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 followed in the event that the packaging is damaged. In addition, each shipment must be accompanied by appropriate documentation and the package of a type capable of meeting the drop test requirements. Except for personal use, the shipment of lithium batteries aboard passenger aircraft is no longer allowed. The following new marking requirement applies to all lithium battery shipments that are exempted from Class 9 according to CFR49: Primary Lithium Batteries - Forbidden From Transport Aboard Passenger Aircraft". This wording should appear on all packages offered for shipment."

Environmental Effects

These batteries pass the U. S. EPA's Toxicity Characteristic Leaching Procedure and therefore, may be disposed of with normal waste.

**F. — EXPOSURE CONTROL METHODS**

## Engineering Controls

General ventilation under normal use conditions.

## Eye Protection

None under normal use conditions. Wear safety glasses when handling leaking batteries.

## Skin Protection

None under normal use conditions. Use butyl gloves when handling leaking batteries.

## Respiratory Protection

None under normal use conditions.

## Other

Keep batteries away from small children.

**G. — WORK PRACTICES**

## Handling and Storage

Store at room temperature. Avoid mechanical or electrical abuse. **DO NOT** short 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 pocket or bag.

## Normal Clean Up

Not applicable

## Waste Disposal Methods

No special precautions are required for small quantities. Large quantities of open batteries should be treated as hazardous waste. Dispose of in accordance with federal, state and local regulations. Do not incinerate, since batteries may explode at excessive temperatures.

**H. — EMERGENCY PROCEDURES**

Steps to be taken if material is released to the environment or spilled in the work area

Notify safety personnel of large spills. Evacuate the area and allow vapors to dissipate. Increase ventilation. Avoid eye or skin contact. **DO NOT** inhale vapors. Clean-up personnel should wear appropriate protective gear. Remove spilled liquid with absorbent and contain for disposal.

**Fire and Explosion Hazard**

Batteries may burst and release hazardous decomposition products when exposed to a fire situation. See Sec. C.

**Extinguishing Media**

As per surrounding area. Dry chemical, alcohol foam, water or carbon dioxide. For incipient fires, carbon dioxide extinguishers are more effective than water.

**Firefighting Procedures**

Cool fire-exposed batteries and adjacent structures with water spray from a distance. Use self-contained breathing apparatus and full protective gear.

**I. — FIRST AID AND MEDICAL EMERGENCY PROCEDURES****Eyes**

Not anticipated. If battery is leaking and material contacts eyes, flush with copious amounts of clear, tepid water for 30 minutes. Consult physician at once.

**Skin**

Not anticipated. If battery is leaking, irrigate exposed skin with copious amounts of clear, tepid water for at least 15 minutes. If irritation, injury or pain persists, consult a physician.

**Inhalation**

Not anticipated. If battery is leaking, contents may be irritating to respiratory passages. Remove to fresh air. Contact physician if irritation persists.

**Ingestion**

Consult a 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 passage of larger batteries. Confirmation by stool inspection is preferable under most circumstances. If mouth area irritation/burning has occurred, rinse the mouth and surrounding area with clear, tepid water for at least 15 minutes.

**Notes to Physician**

- 1) Potential leakage of dimethoxyethane, propylene carbonate and lithium trifluoromethane sulfonate.
- 2) Dimethoxyethane rapidly evaporates.
- 3) 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.

Replaces #2031.4

The information contained in the Material Safety Data Sheet is based on data considered to be accurate, however, no warranty is expressed or implied regarding the accuracy of the data or the results to be obtained from the use thereof.