

DURACELL PRODUCT STANDARD

REC'D APR 09 1996

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BAT00012

MATERIAL SAFETY DATA SHEETS

**LITHIUM MANGANESE DIOXIDE
BATTERIES**

LITHIUM
MANGANESE
DIOXIDE
CELL

DL 1430 CELLS

Prepared By:
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APPLICABILITY:

This MSDS is applicable only for non-consumer uses of batteries such as when batteries are accumulated, managed or used in large quantities. For consumer uses, adequate hazard warnings are included on both the package and on the battery.

IDENTITY:

Chemical Name: Lithium Manganese Dioxide Cell
Common Name: DL 2430 Battery.

MANUFACTURER:

Fuji Electrochemical Co., Ltd.
5-36-11, Shimbashi
Minato-ku, Tokyo 105
Japan

IMPORTER:

Duracell Inc.
Berkshire Corporate Park
Bethel, CT 06801 U.S.A.
203-796-4000

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HAZARDOUS INGREDIENTS / IDENTITY INFORMATION:

COMPONENTS Chemical/Common Names	OSHA PEL	ACGIH TLV	Other Limits	% by Weight (Approximate)
Lithium (Li)	---	---	---	2
Manganese Dioxide (MnO ₂)	5 mg/m ³	5 mg/m ³	---	25
Graphite (Synthetic Gr)	10 mg/m ³	10 mg/m ³	---	3
Propylene Carbonate (PC)	---	---	---	5
Dimethoxyethane (DME)	---	---	3 mg/m ³	2.5
Lithium Perchlorate (LiClO ₄)	---	---	---	0.5

PHYSICAL/CHEMICAL CHARACTERISTICS:

Boiling Point (°C): PC: 242, DME: 85
Vapor Pressure (@ 20°): PC: 0.03, DME: 61
Vapor Density (Air = 1): DME: 3.1

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Solubility in Water: PC: moderately soluble
DME: completely soluble

Specific Gravity (H₂O = 1): MnO₂: 4.9, Gr: 2.4, Li: 0.53,
PC: 1.2, DME: 0.87, LiClO₄: 2.4

Melting Point (°C): Li: 182, LiClO₄: 236,
decomposes @ 535 MnO₂

Evaporation Rate (Butyl Acetate = 1): DME: 4.99

Appearance & Color: PC is a odorless and colorless liquids. Li is a soft, silvery metal. MnO₂ and Gr are black powders. DME is a colorless liquid with a sweet odor.

FIRE AND EXPLOSION HAZARD:

Flash Point (Method Used): (°C): DME: 1

Extinguishing Media: Water

Flammable Limits: LEL PEL
N/A N/A

Special Fire Fighting Procedures: The preferred procedure is to rapidly cool the batteries and adjacent structures with water. Cells can vent when subjected to excessive heat. When large numbers of cells are involved in a fire, fire fighters should use SCBA.

REACTIVITY DATA:

Stability: Stable.

Conditions to Avoid: **DO NOT** heat, disassemble, recharge or shorted.

Hazardous Decomposition or Byproducts: Hazardous polymerization will not occur.

HEALTH HAZARD DATA: These chemicals and metals are contained in a sealed can. 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.

Routes of Entry: Inhalation - Yes Skin - Yes Ingestion - Yes

Acute/Chronic Health Hazards: These chemicals are contained in a sealed can. Risk of exposure occurs only if the battery is mechanically, physically or electrically abused. The most likely risk is acute exposure when a cell leaks. DME is believed to be slightly to moderately toxic. Contact of electrolyte and extruded lithium with skin and eyes should be avoided. Inhalation or ingestion of lithium trifluoromethane sulfonate may be harmful.

Carcinogenicity: NTP - No IARC Monograph - No OSHA Regulated - No

Signs/Symptoms of Exposure: Irritation of skin and eyes. Lithium can cause thermal and chemical burns upon contact with the skin. DME may be a reproductive hazard.

Medical Conditions Generally Aggravated by Exposure: An acute exposure will not generally aggravate any medical condition.

Emergency and First Aid Procedures: If leakage from a cell contacts the skin, flush immediately with water. For eye contact, flush with copious amounts of water for 15 minutes and see physician at once. **DO NOT** inhale vented material. If irritation persists, get medical help.

PRECAUTIONS FOR SAFE HANDLING AND USE:

Steps to be Taken in Case Material is Released or Spilled: The preferred response is to leave the area and allow batteries to cool and vapors to dissipate. Avoid skin and eye contact. **DO NOT** inhale vapors. Remove spilled liquid with absorbent and incinerate. Preferably, cleanup crew should wear full-face respirator (particulate/organic vapor cartridge).

Waste Disposal Method: Dispose of in accordance with applicable regulations. Open cells should be treated as hazardous waste. Discharged cells are non-hazardous and non-reactive and can be disposed of, in small quantities, with normal household trash. These batteries are considered to be non-hazardous waste.

Precautions to be Taken in Handling and Storage: Avoid mechanical or electrical abuse.

Other Precautions: Batteries may explode, pyrolyze, or vent if disassembled, crushed, recharged or exposed to fire or high temperatures. **DO NOT** short or install with incorrect polarity.

CONTROL MEASURES:

Respiratory Protection : SCBA (fire); full-face respirator with particulate/organic cartridge (spill).

Ventilation: In case of venting, provide as much ventilation as possible.

Protective Gloves: Butyl.

Eye Protection: Wear safety glasses when handling leakers.

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Other Protective Clothing or Equipment: None.

ABBREVIATIONS:

ACGIH	American Council of Governmental Industrial Hygienists
IARC	International Agency for Research on Cancer
OSHA	Occupational Safety and Health Administration (U.S.)
NTP	National Toxicology Program (U.S.)
PEL	Permissible Exposure Limit.
TLV	Threshold Limit Values.

NOTE: This document complies with 29 CFR 1910.1200 for an OSHA Hazard Communication Sheet.