



STAY POWERED®

# Lithium Manganese Dioxide SDS

Trade name: Lithium Manganese Dioxide Battery  
Revision Date: September 11, 2020

## I. Description and Company Data

Distributor:  
Universal Power Group, Inc.  
120 Dividend Drive, Suite 100  
Coppell, Texas 75019

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| Name: Li-MnO <sub>2</sub> Cylindrical Battery      |
| Chemical System: Manganese Dioxide Lithium Primary |
| Product nominal voltage: 3.0V or 6.0V              |
| Designated for recharge: No                        |

## II. Hazards Identifications

GHS Classification : Not applicable  
Hazard : Electrolyte and lithium metal are flammable.  
Risk of explosion by fire if batteries are disposed in fire or heated above 100 degrees C.  
Stacking or jumbling batteries may cause external short circuits, heat generation, fire or explosion.  
Toxicity : Vapor generated from burning batteries may irritate eyes, skin and throat.

## III. Composition and Information on Ingredients

| Component          | Material          | Cas No    | Content |
|--------------------|-------------------|-----------|---------|
| Positive Electrode | Manganese Dioxide | 1313-13-9 | 25-40%  |
| Negative Electrode | Lithium Metal     | 7439-93-2 | 2-5%    |
| Electrolyte        |                   |           | 16%     |
| Plastic            |                   |           | 10%     |
| Steel              |                   |           | 15%     |
| Other              |                   |           | 15-20%  |

| Battery | Lithium Content in Grams |
|---------|--------------------------|
| CR123   | .5                       |
| CR2     | .3                       |
| CR-P2   | .9                       |
|         |                          |

**NOTE:** The battery should not be opened or exposed to heat because exposure of the ingredients contained within could be harmful under some circumstances.

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### IV. First Aid Measures

In Case of Battery leaking:

- 1.Skin contact: Wash with water
- 2.Eye contact: Rinse with water at once and see a doctor.
- 3.Inhaling: Breathe fresh air
- 4.Eating: See a doctor at once

### V. Firefighting Measures

Applicable fire extinguisher: CO<sub>2</sub> fire extinguisher ABC dry powder fire extinguisher or sand, etc.

Special harm:

May explode if large quantities of batteries are burning.

Extinguishing fire procedure:

Do not use water to put out fire.

Use a fire extinguisher or cover with sand.

Special equipment for fire protection person: Air Machine, PPE, and glasses, etc.

### VI. Accidental Release Measures

Note item for individual:

Do not dismantle, press, short circuit, heat, pile or stack batteries.

Environment note item:

Do not heat battery or throw in fire. Keep out of humid conditions.

Properly Dispose of battery according to regulations.

### Steps to be taken in case material is released, leaked, or spilled:

The preferred response is to leave the area and allow the batteries to cool and the vapors to dissipate. Avoid skin and eye contact or inhalation of vapor. Collect all released material in a plastic lined metal container and remove spilled liquid with absorbent material. Doing this, protect your skin and eyes with gloves and protective glasses.

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### VII. Handling and Storage

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| Disposal:<br><br>Separate each battery. Do not let them contact each other, this could cause a short circuit and/or fire.  |
| Storage:<br><br>Store in original Container, don't press battery, or destroy packaging. Store in normal temperature conditions, humidity, and ventilation. Keep dry. |

To prevent potential leaking, overheating or explosion of batteries please be advised to take following precautions:

#### **WARNINGS!**

- Do not immerse the battery in water.
- Store the battery in a cool dry environment.
- Do not use or leave the battery near a heat source such as fire or heater.
- Do not reverse the position (+) and negative (-) terminals.
- Do not dispose the battery in fire or heat.
- Do not short-circuit the battery by directly connecting the positive (+) and negative (-) terminal with metal objects such as wire.
- Do not transport or store the battery together with metal objects such as necklaces, hairpins etc.
- Do not strike or throw the battery against hard surface.
- Do not directly solder the battery and pierce the battery with a nail or other sharp object.

### VIII. Exposure Control and PPE Measures

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| Project control:<br><br>Don't short circuit. Control storage temperature and humidity.             |
| Acceptable concentration:            Not specified in ACGIH.                                       |
| Facilities: Provide appropriate ventilation system such as local ventilator or forced ventilation. |
| Protective clothing: Gas mask for organic gases, safety goggles, and safety gloves.                |

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**IX. Physical and chemical characteristic**

|                                |                    |
|--------------------------------|--------------------|
| Substance station: solid state | Shape: cylindrical |
| Voltage                        | 3 Volt Cell        |
| Color: metal nature color      | Smell: No vapor    |
| Temperature:                   | Limit of 170 F     |

**X. Stability and Reactivity**

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| Invariability: invariability under normal station  |
| Harm effect under special situation: <ol style="list-style-type: none"> <li>1. The battery will leak when disassembled, punctured, smashed, thrown in fire, etc.</li> <li>2. The battery will self -discharge over time.</li> <li>3. A short circuit can cause heat and fire.</li> </ol> |

**XI. Toxicological Information (electrolyte leakage)**

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| Electrolyte Leakage:<br>Skin: -- Irritant<br>Eye: -- Irritant<br><br><b>Swallowing: Ingestion of a battery can be harmful.</b> |
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### XII. Ecological Information

Possible environmental effect: Dispose of battery properly, the case will corrode over time  
Under normal use, the battery is hermetically sealed and does not release the chemicals listed in Section II. It does not pose a physical or health risk to users.

### XIII. Disposal Considerations

Misuse disposal manner:

Disposal battery as normal rubbish after misuse battery the is put in water with conductance rate for 10 days.

Waste disposal method:

- 1) Dispose in accordance with appropriate national and international regulations, like as per directions in WEEE, etc.
- 2) Open cells should be treated as hazardous waste.
- 3) DO NOT INCINERATE or subject battery cells to temperature in excess of 212 F (100°C) Such treatment can cause cell rupture.

### XIV. Transportation Information

International transfer provision:

Lithium battery international transfer rules

Provisions for the international transportation:

Lithium Batteries (not restricted) meet with all the requirements of UN Manual of Tests and criteria Part III, subsection 38.3

Currently all UPG lithium batteries comply with IATA DGR 5<sup>th</sup> EDITION and can be transported under the International Civil Aviation Organization (ICAO) and the Packing Instructions (PI) 968 (Batteries), PI 969 (Batteries, packed with equipment) and PI 970(Batteries, contained in equipment).

Lithium batteries identified by the manufacturer as being defective for safety reasons, that have been damaged or have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Lithium metal or lithium alloy cells and batteries may be offered for transport if they meet the following.

1. a lithium metal cell, the lithium content is not more than 1 g;
2. a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2 g;
3. each cell or battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, subsection 38.3

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|                                      | Quantity per package<br>Passenger | Quantity per package Cargo<br>Aircraft Only |
|--------------------------------------|-----------------------------------|---|
| Lithium metal cells and<br>batteries | 2.5 kg G                          | 2.5kg G                                     |

Each package must be capable of withstanding a 1.2m drop test in any orientation without:

- Damage to cells or batteries contained therein;
- Shifting of the contents so as to allow battery to battery (or cell to cell) contact;
- Release of contents

Each consignment must be accompanied with a document such as an air waybill with an indication that

- The package contains lithium metal battery or batteries;
- The package must be handled with care and that a flammability hazard exists if the package is damaged
- Special procedure should be followed in the event that package is damaged, to include inspection and repacking if necessary; and
- A telephone number for additional information.

Each package must be labeled with a lithium battery handling label;

International conventions:

|      |            |     |
|------|------------|-----|
| Air  | IATA       | Yes |
| Sea  | IMDG       | Yes |
| Land | ADR (road) | Yes |
|      | RID (rail) | Yes |

Organizations governing the transport of lithium batteries

| Area          | Method                    | Organization | Special Provision     |
|---------------|---------------------------|--------------|-----------------------|
| International | Air                       | IATA, ICAO   | A58                   |
| International | Water                     | IMO          | 188                   |
| U.S.A.        | Air, Rail, Highway, Water | DOT          | 49CFR Section 173.185 |

Their Regulations are based on the UN recommendations. Each special provision provides specifications on exceptions and packaging for lithium batteries shipping.

**UPG's lithium cells or batteries do meet the above mentioned provisions. They can be described as "Not restricted, as per Special Provision...." In the transport documents.**

**GENERAL HANDLING INSTRUCTIONS:**

**Battery cartons should be handled with care. Rough handling may result in batteries being short circuited or damaged. This may cause leakage, explosion, or fire. (refer also to Section VII)**

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### XV. Regulatory Information

IATA Dangerous Goods Regulations

ICAO Technical Instructions for the safe transport of dangerous goods by air

Use statute:

•Former battery 4th part: lithium battery safety requirement• GB8897.4-2002

### XVI. Other Information

Company: Universal Power Group, Inc.  
120 Dividend Drive, Suite 100  
Coppell, TX 75019

For chemical emergency call:  
**INFOTRAC** 24-Hour Number:  
**1-800-535-5053** or +1-352-323-3500 (outside USA)