



Safety Data Sheet (SDS)  
 For LiMNO<sub>2</sub> (LITHIUM METAL)  
 Cylindrical Cells and Battery Assemblies (CR123A, CR-2, 2CR5, CRP2)

1. Chemical Product & Manufacturer Information

Name: Li-MnO <sub>2</sub> Cylindrical Battery (LITHIUM METAL)
Manufacturer Information: Name: Made for Dantona Industries
Chemical System: Manganese Dioxide Lithium Primary
Product nominal voltage: 3.0V or 6.0V
Designated for recharge: No

2. Chemical Component/Hazardous Ingredients

( ) Simple ( Yes ) Admixture
English Name: Lithium manganese dioxide cylindrical battery
CAS NO 1313-13-9
UN NO.:3090
Material Component (%) :
Lithium : 2.7% (0.5g for CR123A, 0.3g for CR2, 0.9g for CR-P2, 0.9g for 2CR5)
MnO <sub>2</sub> : 40%
Electrolyte : 16%
Plastic : 10%
Steel : 15%
Others : 16.3%

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

3. Hazards Identification

harm and effect	Health harm effect: There is no harm if battery is undamaged and not leaking. If battery is damaged, crushed, or leaking, avoid direct skin contact. May irritate skin.
	Environment effect: No
	Physical & chemistry effects: If there is no damage creating leak, there is no potential harm.
	Special Circumstance danger: Due to it's small size, this battery represents a choking hazard if put in mouth or swallowed. Battery should be kept away from children.
Main symptom: Breathing difficultly, dizzy ness	
Dangerous class (See:GB13690-92)	

#### 4. First aid measures

Manner: If battery Leaks 1.Skin contact: Wash with soap and water. 2.Eye contact : Rinse eye with clean water at once and see a doctor. 3.Inhalation: Breathe fresh air 4.Ingestion: See a doctor at once.
Most important danger and harmful effect. If put in mouth and swallowed, battery may clog windpipe, or cause choking and loss of breath.
First aid person if treating for chemical burn: Put on oxygen mask, protective gloves, and safety glasses

#### 5. Firefighting Measures

Applicable fire extinguisher: CO <sub>2</sub> fire extinguisher、ABC dry powder fire extinguisher、sand, etc.
Special risk when putting out fire: Batteries may explode when large quantity of batteries are burning.
Special procedure for putting out battery fire: Can't use water to put out fire. Small fire may be extinguished using sand to smother. Larger fire needs to be extinguished with a dry powder fire extinguisher.
Special equipment for fire protection person: Put on oxygen mask, protective clothing, and eye protection

#### 6. Accidental Release causes & Measures:

Note item for individual: Do not disassemble, crush, short circuit, or put near or in a extreme heat source like fire.
Environment note item: Can't heat battery or put them into fire, can't place batteries in high humidity zone.
Disposal: Can't put batteries into fire. Dispose of according to general provision.

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 vapors. 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.

## 7. Handling and Storage

<p><b>Disposal:</b> Package well, separate each battery, contacts on each battery can cause short circuit, burns, etc.</p>
<p><b>Storage:</b> Don't crush battery, destroy package. Storage at normal room temperature, normal humidity, airiness and dry. Dispose of batteries if stored at extreme temperature.</p>

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.
- When recharging, use the battery charger specifically for that purpose.
- 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, keys, coins, etc.
- Do not strike or throw the battery against hard surface.
- Do not directly solder to the battery and pierce the battery with a nail or other sharp object.

## 8. Exposure Controls / Personal Protection

<p><b>Project control:</b> Don't short circuit. Control storage temperature and humidity. Work temperature can't be high.</p>			
Control parameter			
TWA	STEL	CEILING	BEIs
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<p>Individual defence equipment: / It isn't necessary under normal situation.</p> <p>Breath defence: /</p> <p>Hand defence: /</p> <p>Eye defence: /</p> <p>Skin and body defence: /</p>			
<p>Sanitation measure: /</p>			

## 9. Physical and chemical Properties

Substance station: solid state	Shape: button
Color: metal nature color	Smell: No vapor (full)
PH : / Not Applicable	Boiling point: / Not Applicable
Disassemble temperature: / Not Applicable	Flash point: / Not Applicable Test manner: (/ NA) open cup close cup (/ NA)
Natural temperature: / Not Applicable	Explode limit: Higher than 170 degree will explode
Vapor tension: / Not Applicable	Vapor density: / Not Applicable
Relatively density (water=1) : / Not Applicable	Dissolve : / Not Applicable

## 10. Stability & Reactivity

Invariability: invariability under normal station
Harm effect under special situation: <ul style="list-style-type: none"> <li>1. The battery will leak when it is disassembled or crushed.</li> <li>2. The battery can burn or explode when the battery is put in fire.</li> <li>3. Do not swallow</li> <li>4. Short circuit can cause heat and burns.</li> </ul>
Avoid status: disassemble, destroy, short circuit, heat battery, Keep away from children
Escape substance: metal (Avoid battery anode contact cathode to short circuit )
Harm disassemble substance:--

## 11. Toxicological data

Virulence: breath: -- Skin: -- Eye: -- LD50(test animal, breathe track):-- LC50(test animal, breathe track):--
Part effect: --
Sensitivity:--
Slow virulence or long virulence:--
Special effect: --

Swallowing:

Ingestion of a battery can be harmful.

## 12. Ecological Information

Possible environment effect/environment:----

Under normal condition of use, the battery is hermetically sealed and does not release gas.

Chemicals listed in Section II. It does not pose a physical or health risk to users.

## 13. Disposal Considerations

Misuse disposal manner:

Disposal battery as normal rubbish after the used battery 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.

## 14. Transportation Information

International transfer provision:

Lithium battery international transfer rules

Provisions for the international transportation:

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

Currently all Dantona lithium batteries are complied with IATA DG R 56<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

	Quantity per package Passenger	Quantity per package Cargo Aircraft Only
Lithium metal cells and 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, IC AO	A55
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.

Dantona 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)

## 15. Regulatory Information

Use statute:

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

16. Other Information

Reference literature data	--
Company	Name: Made for Dantona Industries Inc.
	3051 Burns Ave. Wantagh, NY 11793
Drafter	Engineers: Zhang Yu Han      Wang Zhi Gang
Issue date	Jan.2, 2020
Emergency Contact Tel	
Remark	"- " means there is no relative data at present . "/" means the substance doesn't apply to this column.