

Material Safety Data Sheet (MSDS)

I. Description and Company data

Name: Li-MnO ₂ Cylindrical Battery (Lithium metal battery)
Chemical System: Manganese Dioxide Lithium Primary
Product nominal voltage: 3.0V
Designated for recharge: No

II. Chemical Component/Hazardous Ingredients

() Simple (Yes) Admixture
Chinese Name : 鋰-二氧化錳柱式電池
English Name : Lithium manganese dioxide cylindrical battery
Type: CR123A
CAS NO . : 1313-13-9
UN NO.: 3090
Material Component (%) :
Lithium: 2.7% (0.5g for CR123A)
MnO₂: 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.

III. Possible Hazardous

harm and effect	Health harm effect: There is no harm with no breakage battery. If battery is destroyed, there is light excite when contact skin directly.
	Environment effect: No
	Physics & chemistry harm: No breakage no harm
	Special harm: For the small battery, it will clog windpipe When gulp discarefully, influence breath.
Main symptom: Breathe difficultly, dizzy	
Dangerous class (See:GB13690-92) : --	

IV. First aid measure

Manner: When battery Leak 1.Skin contact: Wash by water 2.Eye contact: Clean by cleaning water at once and see a doctor. 3.Inbreathe: Breathe fresh air 4.Eat: See a doctor at once
Most important symptom and harm effect: It will clog windpipe When gulp discarefully, influence breath.
Defend first aid person: Pull on air breath machine, defence armet, glasses, etc.
Instruction for doctor: It can cause thrill gas and clog windpipe When patient gulp discarefully

V. Firefighting Measures

Applicable fire extinguisher: CO ₂ fire extinguisher, ABC dry powder fire extinguisher, sand, etc.
Special harm when put out fair: Be able to explode when large quantity battery burn
Special put out fire procedure: Can't use water to put our fire. Little burnt may use sand to cover. Large burnt need to use fire extinguisher.
Special equipment for fire protection person: Pull on air breath machine, defence armet, glasses, etc.

VI. Accidental Release

Note item for individual: Can't dismantle, press, short circuit, heat, pile battery, etc.
Environment note item: Can't heat battery and put them into fire, can't place them in humidity zone.
Clean manner: Can't pile battery, can't put them into fire. Else dispose 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 vapours to dissipate. Avoid skin and eye contact or inhalation of vapours. Collect all released material in a plastic lined metal container and remove spilled liquid with absorbent. Doing this, protect your skin and eyes with gloves and protection glasses.

VII. Handling and Storage

<p>Disposal: Package well, separate each battery, Contact each battery can cause short circuit, burnt etc.</p>
<p>Storage: Don't press battery, destroy package. Storage on the condition of normal temperature, normal humidity, airiness and dry. Disposal them in time if find abnormal situation.</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 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 Measures

<p>Project control: 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>			

IX. Physics and chemical characteristic

Substance station: solid state	Shape: cylindrical
Color: metal nature color	Smell: No sapor (full)
PH : /	Boiling point: /
Disassemble temperature: /	Flash point: / Test manner: (/) open cup (/) close cup
Natural temperature: /	Explode limit: Higher than 170°C will explode
Vapor tension: /	Vapor density: /
Relatively density (water=1) : /	Dissolve : /

X. Invariability and reaction

Invariability: invariability under normal station
Harm effect under special situation: <ol style="list-style-type: none">1. The battery will leak when it is disassembled, staved, destroyed and have light spinule.2. The battery can burn or explode when the battery is put in fire.3. Younger gulp.4. Short circuit can cause heat and burnt.
Avoid status: disassemble, stave, destroy, short circuit, heat battery, far away younger
Escape substance: metal (Avoid battery anode contact cathode to short circuit)
Harm disassemble substance:--

XI. Toxicological data

Virulence: breathe: -- 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.

XII. Ecological data

Possible environment effect/environment:----

Under normal condition of use, the battery is hermetically sealed and does not release Chemicals listed in Section II. It does not pose a physical or health risk to uses.

XIII. Disposal Considerations

Misuse disposal manner:

Disposal battery as normal rubbish after the misuse 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.

XIV. 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

Ref)

The batteries are complied with the PACKING INSTRUCTION OF the current IATA (57th regulation, 2016) section II of PI968.

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

Each package must be capable of withstanding a 1.2 m 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 procedures should be followed in the event the 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;

Internations 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	A57
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.

Wuhan Lixing’s lithium cells or batteries do meet the above mentioned provisions. They are okay to transit by truck/by sea and by air. 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 fie. (refer also to Section VII)

XV. Rule of law data

Use statute:
 ≤Former battery 4th part: lithium battery safety requirement≥ GB8897.4-2002

XVI. Other Infomation

Reference literature data	--
Issue date	Jan. 5, 2016

Remark	“-“ means there is no relative data at present . ”/” means the substance don't apply this column.
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