Material Safety Data Sheet

1. Identification of the substance/preparation and of the company / undertaking

Product name: Lithium Primary Battery
Product Designation: CR2016/ CR2025/ CR2032
Nominal Voltage: 3.0V
Chemical system: Lithium/ Manganese Dioxide
Designed for recharge: Yes___No √
Lithium content:

Type	Lithium/g
CR2016	Less than 0.144
CR2025	Less than 0.200
CR2032	Less than 0.248

Company name: Zhongyin Ningbo Battery Co., Ltd.
128 Xingguang Road, Hi-Tech Park
Ningbo
China
Tel: +86 574 87491087 / 87493214
Fax: +86 574 87493903

2. Hazards identifications

Use under normal conditions, the lithium battery is hermetically sealed.Thus the ingredients have no hazard potential, except batter is violated or dismantled.
Ingestion: Swallowing may lead to serious injury or death in as little as 2 hours due to chemical burns and potential of the esophagus. IMMEDIATELY SEE DOCTOR; Do not induct vomiting or give food or drink.
Inhalation: Contents of an open battery can cause respiratory irritation.
Skin Contact: Contents of an open battery can cause skin irritation.
Eye Contact: Contents of an open battery can cause severe irritation.
Attention: The battery should not be opened or burned. Exposure to the ingredients contained within or their combustion products could be harmful. If batteries are treated wrong the danger of burns or bursts occurs. Batteries must not be heated above 100°C or incinerated. The battery contents must not get in contact with water. If the negative electrode gets in contact with water or humidity hydrogen gas is formed, which may inflame spontaneously.

3. Compositions /Information on Ingredients

Ingredients	CAS No.	PEL(OSHA)	% (w/w)
lithium	7439-93-2	None Established	1-8%
propylene carbonate	108-32-7	None Established	1-9%
manganese dioxide	1313-13-9	5mg/m3Celling(as Mn)	10-22%
1,2-dimethoxyethane	110-71-4	None Established	0-6%
lithium perchlorate	7791-3-9	None Established	0-3%
carbon black	1333-86-4	3.5mg/m^3TWA	0-1%
dioxolane	646-06-0	None Established	0-8%
graphite	7782-42-5	15mg/m3TWA(total dust) 5mg/m3 TWA(respirable fraction)	4%
Steel	65997-19-5	None Established	32%
others	/	None Established	balance

Material	Identification code (CAS)	% (w/w)
Mercury (Hg)	7439-97-6	≤0.0005
Lead (Pb)	7439-92-1	≤0.0100
Cadmium (Cd)	7440-43-9	≤0.0020

4. First–aid measures

In case of electrolyte leakage, skin will be itchy when contaminated with electrolyte.
In contact with electrolyte can cause server irritation and chemical burns
Inhalation of electrolyte vapors may cause irritation of the upper respiratory tract and lungs.
If electrolyte leakage occurs and makes contact with skin, wash with plenty of water immediately
If electrolyte comes into contact with eyes, wash with copious amounts of water for fifteen (15) minutes, and contact a physician.
If electrolyte vapors are inhaled, provide fresh air and seek medical attention if respiratory irritation develops. Ventilate the contaminated area.

5. Fire-fighting measures

In case of fire where lithium batteries are present, flood area with water or smother with a Class D fire Extinguishant appropriate for lithium metal, such as lith-X. Water may not extinguish burning batteries but will cool the adjacent batteries and control the spread of fire. Burning batteries will burn themselves out. Virtually all fires involving lithium batteries can be controlled by flooding with water. However, the contents of the battery will react with water and form hydrogen gas. In a confined space, hydrogen gas can from an explosive mixture. In this situation, smothering agents are recommended. A smothering agent will extinguish burning lithium batteries.Emergency Responders should wear self-contained breathing apparatus. Burning lithium manganese dioxide.battery produce toxic and corrosive lithium hydroxide fumes.

6. Accidental release measures

Person relatedmeasures:
Wear personal protective equipment adapted to the situation (protection gloves, cloth, face protection, breathing protection).
Environment protection measures:
Bind released ingredients with powder (rock salt, sand). Dispose off according to the local law and rules. Avoid leached substances to penetrate into the earth, canalization or water.
Treatment for cleaning:
If battery casing is dismantled, small amounts of electrolyte may leak. Package the battery tightly including ingredients together with lime, sand or rock salt. Then clean with water.

7. Handling and storage

Storage :
Store in a cool, well ventilated area. Elevated temperatures can result in shortened battery life.
In locations that handle large quantities of lithium batteries, such as warehouse, lithium batteries should be isolated from unnecessary combustible.
Mechanical Containment:
If potting or sealing the battery in an airtight or watertight container is required, consult safety your New leader battery limited representative for precautionary suggestions. Do not obstruct release vents on batteries, encapsulation of batteries will not allow cell venting and can cause high pressure rupture.
Handling:
Accidental short circuit for a few seconds will not seriously affect the battery. Prolonged short circuit will cause the battery to lose energy, generate significant heat and can cause the safety release vent to open. Source of short circuits include jumbled batteries in bulk containers, metal jewelry, metal covered tables or metal belts used for assembly of batteries into devices. Damaging a lithium battery may result in an internal short circuit.
The contents of an open battery, including a vented battery, when exposed to water, may result in a fire

and/or explosion. Crushed or damaged batteries may result in a fire.

If soldering or welding to the battery is required, consult us for proper precaution to prevent seal damage or short circuit.

Charging:

This battery is manufactured in a charged state. Its is not designed for recharging. Recharging can cause battery leakage or in some case, high pressure rupture. Inadvertent charging can occur if a battery is installed backwards.

8. Exposure controls and personal protection

Under normal conditions (during discharge) release of ingredients does not occur.

9. Physical and chemical properties

Not applicable if closed.

10. Stability and Reactivity

Dangerous reactions: When heated above 100°C the risk of rupture occurs.

11. Toxicological information

Under normal conditions (during charge and discharge) release of ingredients does not occur. In case of accidental release see information in chapter 2.
Swallowing of a battery can be harmful. Call the local Poison Control Centre for advice and follow-up.

12. Ecological information

Not available.

13. Disposable considerations

Dispose of the batteries according to the government regulations.

14. Transport Information

Shipping Name (UN Number) lithium metal batteries(UN3090)
lithium metal batteries packed with equipment(UN3091)
lithium metal batteries contained in equipment(UN3091)

Organizations governing the transport of lithium batteries

Area	Method	Organization	Special Provision
International	Air	IATA,ICAO	Packing instruction 968 section II
International	Marine	IMO	SP188
U.S.A	Air, Rail, Road, Marine	DOT	49 CFR Section 173.185

Their regulations are based on the UN Recommendations. Each special provision provides specifications on exceptions and packaging for lithium metal batteries shipping. The products can be transported as “Non Dangerous Goods” when they meet the requirements of packing instruction 968 Section Ⅱ of IATA-DGR(58th Edition)or SP188 of IMDG Code (Amdt. 37-14) 2014 Edition.

15. Regulatory Information

Special requirement be according to the local regulatory.

16. Other information

The data in this Material Safety Data Sheet relates only to the specific material designated herein.