

MATERIAL SAFETY DATA SHEET

1. Chemical Product and Company Identification

Brand: Vinnic

Product Name: Manganese Dioxide Lithium Battery

Item No.: CR3677LT、CR3032、CR2477、CR2450、CR2450/S、CR2450X、CR2450HR、CR2450LT、
CR2430、CR2412、CR2050HR、CR2032、CR2032/S、CR2032HR、CR2032LT、CR2025、
CR2025/S、CR2016、CR1632、CR1632HR、CR1632LT、CR1620、CR1616、CR1612、
CR1220、CR1216、CR1025、CR927

Manufacturer: CHUNG PAK BATTERY WORKS LIMITED

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Effective Date: 2025/01/01

Note: Blank space are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

2. Composition/Information on Ingredients

Designation		Manganese Dioxide Lithium Battery	
Hazardous Components	CAS No.	wt%	mg
Lithium (Li)	7439-93-2	1.2~3.5	7.2~300.0
Manganese Dioxide (MnO ₂)	1313-13-9	17.3~42.0	103.8~4500.0
Mercury (Hg)	7439-97-6	≤0.0001	0.0006~0.0040
Cadmium (Cd)	7440-43-9	≤0.001	0.006~0.040
Lead (Pb)	7439-92-1	≤0.001	0.006~0.040

3. Hazards Identification

Health Hazards (Acute and Chronic):

These chemicals are contained in a sealed can. Risk of exposure occurs only if the battery is mechanically or electrically abused. Contact of electrolyte and extruded lithium with skin and eyes should be avoided.

Sign/Symptoms of Exposure:

A shorted lithium battery can cause thermal and chemical burns upon contact with the skin.

4. First-aid Measures

Eye: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin: Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes.

Get medical aid.

Inhalation: Remove from exposure and move to fresh air immediately. Use oxygen if available.

Ingestion: Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious.

Call a physician.

5. Fire Fighting Measures

Flash Point: N/A.

Auto-Ignition Temperature: N/A.

Extinguishing Media: Dry chemical.

Special Fire-Fighting Procedures: Self-contained breathing apparatus.

Unusual Fire and Explosion Hazards:

Cell may vent when subjected to excessive heat-exposing battery contents.

Hazardous Combustion Products:

Carbon monoxide, carbon dioxide, lithium oxide fumes.

6. Accidental Release Measures

Steps to be Taken in case Material is Released or Spilled:

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Wipe it up with a cloth, and dispose of it in a plastic bag and put into a steel can. The preferred response is to leave the area and allow the batteries to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate.

Waste Disposal Method:

It is recommended to discharge the battery to the end, handing in the wasted batteries to related department uniformly. Dispose of the batteries in accordance with approved local, state, and federal requirements. Consult state environmental protection agency and/or federal EPA.

7. Handling and Storage

The batteries should not be opened, destroyed or incinerated, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container. Do not short circuit terminals, or over charge, throw to fire. Do not crush or puncture the battery, or immerse in liquids.

Precautions to be taken in handling and storing:

Avoid mechanical or electrical abuse. Store preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.

Other Precautions:

Batteries may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

8. Exposure Control/Personal Protection

Respiratory Protection:

In case of battery venting, provide as much ventilation as possible. Avoid confined areas with

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venting batteries. Respiratory Protection is not necessary under conditions of normal use.

Ventilation:

Not necessary under conditions of normal use.

Protective Gloves:

Not necessary under conditions of normal use.

Other Protective Clothing or Equipment:

Not necessary under conditions of normal use.

Personal Protection is recommended for venting batteries: Respiratory Protection, Protective Gloves, Protective Clothing and safety glasses with side shields.

9. Physical and Chemical Properties

Nominal Voltage: 3.0V.

Rated Capacity: 27mAh~2000mAh

Appearance Characters: Silver, circular, odorless, solid battery.

10. Stability and Reactivity

Stability: Stable

Condition to Avoid: Heating, mechanical abuse and electrical abuse.

Hazardous Decomposition Products: N/A.

Hazardous Polymerization: N/A.

If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalis, halogenated hydrocarbons.

11. Toxicological Information

Inhalation, skin contact and eye contact are possible when the battery is opened. Exposure to internal contents, the corrosive fumes will be very irritation to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation.

12. Ecological Information

When promptly used or disposed the battery does not present environmental hazard. When disposed, keep away from water, rain and snow.

13. Disposal Consideration

Appropriate Method Of Disposal of Substance Or Preparation:

If batteries are still fully charged or only partially discharged, they can be considered a reactive hazardous waste because of significant amount of uncreated, or unconsumed lithium remaining in the spent battery. The batteries must be neutralized through an approved secondary treatment facility prior to disposal as a hazardous waste. Recycling of battery can be done in authorized facility, through licensed waste carrier.

14. Transport Information

The Manganese Dioxide Lithium Battery has passed the test UN38.3.

IATA Proper Shipping Name: Lithium Metal Batteries.

Hazard Class: 9

UN No.: UN3090

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Packaging group: II

Weight exceeds the standards, so it belongs to dangerous goods. Cargo only. The goods are packaged according to the packing instruction 968 Section IB of DGR.

When the weight no-exceeds the standard. According to PACKING INSTRUCTON 968 section IB of IATA DGR 66th Edition of 2025 for transportation, or the special provision 188 of IMDG (41-22), or the 《Recommendations On The Transport Of Dangerous Goods-Model Regulations》 (23rd), the goods are not subject to dangerous goods.

More information concerning shipping, testing, marking and packaging can be obtained from Label master at <http://www.labelmaster.com>.

Separate Lithium Metal batteries when shipping to prevent short-circuiting. They should be packed in strong packaging for support during transport. Take in a cargo of them without falling, dropping, and breakage. Prevent collapse of cargo piles and wet by rain.

Transport Fashion: By air, by sea, by railway, by road.

15. Regulatory Information

Law Information:

- 《Dangerous Goods Regulation》
- 《Recommendations on the Transport of Dangerous Goods Model Regulations》
- 《International Maritime Dangerous Goods》
- 《Technical Instructions for the Safe Transport of Dangerous Goods》
- 《Classification and code of dangerous goods》
- 《Occupational Safety and Health Act》 (OSHA)
- 《Toxic Substances Control Act》 (TSCA)
- 《Consumer Product Safety Act》 (CPSA)
- 《Federal Environmental Pollution Control Act》 (FEPCA)
- 《The Oil Pollution Act》 (OPA)
- 《Superfund Amendments and Reauthorization Act Title III (302/311/312/313)》 (SARA)
- 《Resource Conservation and Recovery Act》 (RCRA)
- 《Safety Drinking Water Act》 (CWA)
- 《California Proposition 65》
- 《Code of Federal Regulations》 (CFR)

In accordance with all Federal, State and Local laws.

16. Other information

The above information is based on the data of which we are aware and is believed to be correct as of the data hereof. Since this information may be applied under conditions beyond our control and with which may be unfamiliar and since data made available subsequent to the data hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

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