

ZHUHAI TOP BATTERY CO., LTD.

MATERIAL SAFETY DATA SHEET (MSDS)

Ref. No. GL-W5-875

The batteries are exempt articles and are not subject to the OSHA Hazard Communication Standard Requirement. This sheet is provided as technical information only. The information and recommendations set forth are made in good faith and are believed to be accurate as of the date of preparation. However, top-battery makes no warranty expressed or implied.

Section 1-Product and Company Identification

| | | |
|---|--------------------------------------|-------------------------------------|
| Product Name: Coin Type Lithium Manganese Dioxide Batteries(CR) | Sizes: All | Date of preparation: Jan.1, 2023 |
| Company: Zhuhai Top Battery Co. Ltd | Telephone Numbers: 86-756-5168193 | |
| Address: No. 2 Xinqing 5 th Rd, Doumen, Zhuhai, China | Fax Numbers: 86-756-5168163 | |

Section 2-Hazards Identification

This contains lithium, organic solvent, and other combustible materials. For this reason, improper handling of the battery could lead to distortion, leakage*,overheating, explosion, or fire and cause human injury or equipment trouble. Please strictly observe safety instructions. (*Leakage is defined as an unintended escape of liquid from a battery.)

Section 3-Composition/Information on Ingredients

| Ingredient | CAS# | Content(wt%) |
|---------------------------|------------|--------------|
| Manganese Dioxide | 1313-13-9 | 15 to 40 |
| Propylene Carbonate | 108-32-7 | 2 to 6 |
| 1,2-Dimethoxyethane | 110-71-4 | 0 to 1.5 |
| 1,3-Dioxolane; | 646-06-0 | 0 to 1.5 |
| Lithium Perchlorate | 7791-03-9 | 0 to 1.5 |
| Lithium or Lithium Alloy★ | 7439-93-2 | 1 to 5 |
| Graphite | 7782-42-5 | 1 to 4 |
| Stainless steel | 12597-68-1 | 40.5 to 60 |



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Lithium content for each battery

| Model | Rated Specification | Li content(g) | Model | Rated Specification | Li content(g) |
|--------|---------------------|---------------|--------|---------------------|---------------|
| CR1225 | 0.15WH | 0.015 | CR2016 | 0.24WH | 0.03 |
| CR1216 | 0.08WH | 0.008 | CR2025 | 0.45WH | 0.05 |
| CR1220 | 0.11WH | 0.011 | CR2032 | 0.63WH | 0.07 |
| CR1616 | 0.15WH | 0.02 | CR2430 | 0.84WH | 0.09 |
| CR1620 | 0.21WH | 0.025 | CR2450 | 1.65WH | 0.18 |
| CR1632 | 0.375WH | 0.04 | CR2050 | 0.90WH | 0.10 |
| CR2460 | 2.10WH | 0.20 | CR2477 | 2.4WH | 0.25 |
| CR2330 | 0.75WH | 0.07 | CR2354 | 1.68WH | 0.18 |

Section 4-First Aid Measures

None unless internal materials exposure. If contents are leaked out, observe following instructions

| | |
|------------|--|
| Inhalation | Fumes can cause respiratory irritation. Remove to fresh air and consult a physician. |
| Skin | Immediately flush skin with plenty of water. If itch or irritation by chemical burn persists, consult a physician. |
| Eyes | Immediately flush eye with plenty of water for at least 15 minutes. Consult a physician immediately |
| Ingestion | If swallowing a battery. consult a physician immediately. If contents come into mouth. immediately rinse by plenty of water and consult a physician. |

Section 5-Fire Fighting Measures

| | |
|-------------------------|---|
| Extinguishing Media | Extinguisher of alkaline metal fire is effective. Plenty of cold water is also effective to cool the surrounding area and control the spread fire. But hydrogen gas may be evolves by the reaction of water and lithium and it can form an explosive mixture. Therefore in the case that lots of lithium batteries are burning in a confined space, use a smothering agent. |
| Fire fighting procedure | Use self-contained breathing apparatus and full protective gear not to inhale harmful gas. |



Section 6-Accidental Release Measures

Person-related safety precautions: wear protective equipment. keep unprotected persons away.

Measure for environmental protection: Do not allow to enter sewers/surface or ground water.

Measure for cleaning/collecting: dispose contamination material as according to item.

Section 7-Handling and Storage

1) Handling

Never swallow. Never charge. Never heat. Never expose to open flame. Never disassemble. Never reverse the positive and negative terminals when mounting. Never short-circuit the battery. Never weld the terminal or wire to the body of the battery directly. Never use different batteries together. Never touch the liquid leaked out of battery. Never bring fire close to battery liquid, Never keep in touch with battery.

2) Storage

Never let the battery contact with water. Never store the battery in hot and high humid place.

Section 8-Exposure Controls, Personal Protection

| | | |
|---------------------------|---------------|----|
| Respiratory Protection | NA | |
| Ventilation | Local Exhaust | NA |
| | Mechanical | NA |
| | Special | NA |
| | Other | NA |
| Eye Protection | NA | |
| Protective Gloves | NA | |
| Other protective clothing | NA | |

Section 9-Physical/Chemical Characteristics

General Information

Form: solid

Color: silvery white

Odor: monotony

Change in condition

Melting point/Melting range: not available

Boiling point/Boiling range: not available

Flash point: not applicant

Flammability(solid, gaseous) not available

Ignition temperature: not available

Auto Ignition: Product is not selfigniting



Section 10-Stability and Reactivity

| | |
|---------------------------------------|-----------------|
| Stability | Stable |
| Incompatibility | Water |
| Hazardous polymerization | Will not occur. |
| Condition to avoid | See section 7. |
| Hazardous Decomposition or Byproducts | Hydrogen |

Section 11-Toxicological Information

Acute toxicity:

Primary irritant effect:

On the skin: Irritant to skin and mucous membranes.

On the eye: strong irritant with the danger of severe eye injury.

Sensitization:

Sensitization possible through inhalation

Sensitization possible through skin contact

Additional toxicological information:

The product shows the following dangers according to internally approved calculation methods for preparations.

Section 12-Ecological Information

General notes:

Water hazard class 1: slightly hazardous for water

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Section 13-Disposal condition

The battery may be regulated by national or local regulation. Please follow the instructions of proper regulation. As electric capacity is left in a discarded battery and it comes into contact with other metals, it could lead to distortion, leakage, overheating, or explosion, so make sure to cover the (+) and (-) terminals with friction tape or some other insulator before disposal.

Section 14-Transportation Information

During the transportation of a large amount of batteries by ship, trailer or railway, do not leave them in the places of high temperatures and do not allow them to be exposed to condensation.

During the transportation do not allow packages to be dropped or damaged.

Proper shipping name : Lithium metal batteries

UN Number, UN Class : UN3090, Class9 (for the Air transport by PI968 Section IA or IB)

: Exemption (for the Marine transport and the Air



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transport by Section II of PI 968, 969 or 970)

Even though the cells are classified as lithium metal batteries (UN3090), they are not subject to some requirements of Dangerous Goods Regulations because they meet the following:

1. for cells, the lithium content is not more than 0.3g ;
2. each cell is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part III, sub-section 38.3.
3. each cell is manufactured in ISO9001 certified factory.

Please refer to the following reference information about concrete ways of transportation. Actual content of packaging label and shipping documents varies by shipping companies. Make sure to confirm in advance with your shipping company.

Information of reference

| | Reference | Packing Instruction(PI)/ Special provision(SP) | Note |
|------------------|-----------|---|--|
| Air transport | IATA DGR | PI 968 Section I A | Cells, Cargo Aircraft only; Net quantity per package Max. 35kg |
| | | PI 968 Section I B | Cells, Cargo Aircraft only; net quantity per package Max. 2.5kg |
| | | PI 968 Section II | Cells, Cargo Aircraft only, not more than one package in any single consignment; net quantity per package Max. 2.5kg |
| | | PI 969 Section II | Cells packed with equipment |
| | | PI 970 Section II | Cells contained in equipment, button cell batteries |
| Marine transport | IMDG Code | SP 188 | |

Regulatory information

The goods are complied with the requirements of Section II of Packing Instructions 968 of 64th DGR Manual of IATA (2023 Edition) , Special provision 188 of IMDG CODE (Amdt. 40-20) (2020 Edition), including the passing of the UN38.3 test.

Section 15-Regulatory Information

Sara

Section 355(extremely hazardous substances)



None of the ingredient is listed.

Section 313(specific toxic chemical listings):

None of the ingredient is listed.

Proposition 65

Chemical known to cause cancer

None of the ingredient is listed.

Chemical known to cause reproductive toxicity for females

None of the ingredient is listed.

Chemical known to cause reproductive toxicity for males

None of the ingredient is listed.

Chemicals known to cause developmental toxicity:

None of the ingredient is listed.

Cancerogenity categories

EPA (Environmental Protection Agency).

None of the ingredient is listed.

IARC(International Agency for Research on Cancer)

None of the ingredient is listed.

NTP(National Toxicology Program)

None of the ingredient is listed.

TLV(Threshold limit values establishd by ACGIH)

None of the ingredient is listed.

NIOSH-Ca(National Institute for Occupational Safety and Health)

None of the ingredient is listed.

OSHA- Ca(Occupational Safety & Health Administration)

None of the ingredient is listed.

Product related hazard informations

The product has been classified and marked in accordance with directives on hazardous material.

Hazard symbol:

Harmful

Hazard-determining components of labelling:

Lithium Cobalt()oxide ?

Risk phrases:

Irritating to skin.

Risk of serious damage eyes

May cause sensitisation by inhalation and skin contact

Safety phrases:

Keep locked up and out of the reach of children.

Do not breathe dust.

Avoid contact with skin and eyes.



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In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Wear suitable gloves and eye/face protection.

In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Dispose of this material and its container to hazardous or special waste collection point.

In case of accident by inhalation: remove casualty to fresh air and keep at rest.

Section 16-Other Information

The contents and format of this MSDS is in according with 29 CFR 1910.1200(g)

