

MATERIAL SAFETY DATA SHEET

| | | |
|-----------------|---|---|
| Name of Company | : | JL World Corporation Limited |
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| Department | : | Engineering Dept. |
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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, JL World makes no warranty expressed or Implied.

Section 1-Product and Company Identification

| | | | |
|---|-----------------------------|---------------------------------------|--|
| Product Name Lithium Metal Batteries | Type No: CR2450 | Volts: 3V | Date of preparation: January 02, 2015 |
| CHEMICAL SYSTEM: Lithium Manganese Dioxide | Approximate Weight: 6.7g | | Designed for Recharge: NO |
| Company: JL World Corporation Limited | | Telephone Numbers: 852 - 2565 0319 | |
| Address (Number, Street, City, State, and ZIP Code): 407 Shui Hing Centre, 13 Sheung Yuet Road, Kowloon Bay, Kowloon, Hong Kong | | Fax Numbers: 852 - 2565 6979 | |

Section 2- Composition/Information on Ingredients

1.1 Active Materials

| Ingredient | CAS NO. | Approx Percent of Total Weight (%) |
|---------------------|-----------|------------------------------------|
| Lithium | 7439-93-2 | 2.7 (0.165 gram) |
| Propylene Carbonate | 108-32-7 | 8.0 |
| Manganese dioxide | 1313-13-9 | 34 |
| 1,2-Dimethoxyethane | 110-71-4 | 5.3 |
| Lithium perchlorate | 7791-03-9 | 1.0 |
| Graphite | 7782-42-5 | 5.0 |

1.2. Passive Materials

| Ingredient | | CAS NO. | Approx Percent of Total Weight (%) |
|------------|-----------------|------------|------------------------------------|
| Base Metal | Stainless Steel | 12597-68-1 | 40 |
| Others | Plastic (PP) | 9003-07-0 | 2.0 |
| | Teflon (PTFE) | 9002-84-0 | 2.0 |

Section 3 – 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 of fire and cause human injury or equipment trouble. Please strictly observe safety instruction.

(*Leakage is defined as an unintended escape of liquid from a battery.)

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 plenty of water. If itch or irritation by chemical bum 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 evolved 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

Accidental Releases: Do not breathe vapors or touch liquid with bare hands (see section 4).

Waste Disposal Methods: Evacuate area. If possible, a trained person should attempt to stop or contain the leak by neutralizing spill with soda lime or baking soda. A NIOSH Approved Acid Gas Filter Mask or Self-Contained Breathing Apparatus should be worn. Seal leaking battery and soda lime or baking soda in a plastic bag and dispose of as hazardous waste.

Other: Follow North American Emergency Response Guide (NAERG)#138 for cells involved in an accident, cells that have vented, or have exploded.

Section 7-Handling and Storage

1) Handling

Never swallow. Never reverse the positive and negative terminals when mounting . Never short-circuit the battery. Never heat. Never expose to open flame. Never disassemble. Never weld the terminal or wire to the body of the battery directly. 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

| | |
|----------------------|--|
| Boiling Point: | 1,2-Dimethoxyethane : 83°C |
| Vapor Pressure: | 1,2-Dimethoxyethane :6.40(20°C) |
| Vapor Density: | 1,2-Dimethoxyethane : 3.11 |
| Solubility in Water: | 1,2-Dimethoxyethane : :diffluence contact with water |
| Specific Gravity: | 1,2-Dimethoxyethane :1.63 |
| Melting Point: | 1,2-Dimethoxyethane :-67°C |
| Evaporation Rate: | N/A |
| Water Reactive: | 1,2-Dimethoxyethane : :diffluence contact with water |

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:

1,2-Dimethoxyethane:

LC₅₀ (Inhalation): N/A

LD₅₀ : N/A

Eye Effects: Corrosive

Skin Effects: Corrosive

Section 12 –Ecological Information

Aquatic Toxicity: Do not let internal components enter marine environments. Avoid releases into waterways, wastewater or groundwater.

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

Lithium battery model CR2450 is considered as “Not Restricted” cargo because they complied UN Recommendations.

Shipping Name Lithium Metal Batteries
UN Number UN3090
Hazard Classification Class 9 (Miscellaneous)

Organizations governing the transport of lithium batteries

| Area | Method | Organization | Special Provision |
|---------------|---------------------------|--------------|------------------------|
| International | Air | IATA,ICAO | Best Practice 012 |
| International | Water | IMO / IMDG | 188 & 230 |
| U.S.A | Air, Rail, Highway, Water | HHR | 49 CFR Section 173.185 |

These regulations are based on the UN Recommendations . Each special provision provides specifications on exceptions for shipping lithium batteries. All JL World’s batteries meet all special provisions

If all of following 2 requirements are satisfied, lithium metal batteries can be transported as “Not Restricted” cargo.

this material is not classified as dangerous/hazardous goods under IMDG (International Maritime Dangerous Goods Regulation).

If all of following 2 requirements are satisfied, lithium metal batteries can be transported as “Not Restricted” cargo.

- 1) Lithium weight or equivalent lithium content must be less than value in table.

| | Lithium Cell/Battery (Lithium weight) |
|---------|--|
| Cell | 1g or less |
| Battery | 2g or less |

Equivalent lithium content (g) is calculated as 0.3 (g/Ah) times the rated capacity (Ah) .

- 2) 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, section 38.3. T1 – T8 Test

Because the consignor has to take the responsibility, the customer has to confirm the exception conditions when shipping.

Section 15-Regulatory Information

EC Labeling : None

Risk Phrases :None

Safety Phrases : None

Labeling is not required because batteries are classified as “articles” under the Dangerous Preparations Directive and as such are exempt from the requirements of the Directive.

Section 16-Other Information

If you want further information, please contact:

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